

A POSSIBLE MANSIO IN ROMAN SOUTHWARK: EXCAVATIONS AT 15–23 SOUTHWARK STREET, 1980–86

Carrie Cowan

With contributions by Joanna Bird, John Buglass, Jonathan Cotton, Naomi Crowley, Brenda Dickinson, John Giorgi, Richenda Goffin, Michael Hammerson, Martin Henig, Jo Higson, Alison Locker, Liz Pearson, Alan Pipe, James Rackham, John Shepherd, Judith Stevenson, Hedley Swain, Ian Tyers, Tony Waldron, Angela Wardle and David Williams

CONTENTS

	<i>Page</i>		<i>Page</i>
Summary	4	Stone and marble	113
1. Introduction	4	Calcite	115
2. The site	8	Ceramic objects	115
Period 1: Prehistoric and early Roman features	8	Miscellaneous objects	118
Period 2: Buildings 1 and 2	13	Intaglios	119
Period 3: Buildings 3, 4 and 5	22	Glass	120
Period 4: Building 6 and 7	35	Coins	137
Period 5: Roman burials	56	Building material	144
Period 6: Later Roman levels	59	Wall plaster	157
Period 7: Medieval and post-medieval summary	60	4. Environmental evidence	164
3. The finds	61	Introduction	164
Introduction	61	Plant remains	165
Flint	62	Fish bones	170
Prehistoric pottery	67	Shellfish	171
Roman pottery	70	Mammal and bird bones	171
Registered finds: introduction	81	Dendrochronology	176
Copper alloy objects	82	Human bone	181
Iron objects	97	5. Conclusions	183
Lead and lead alloys	105	Acknowledgments	184
Worked bone	106	Bibliography	185
Jet and shale objects	111		

SUMMARY

The Roman settlement on the south bank of the Thames opposite the central core of Londinium has often been regarded as an ancillary suburb of the city across the river. That view has been challenged by the results of more recent excavations in several areas of north Southwark which produced evidence of high status buildings and associated artefacts. One such site is reported on here, that at 15–23 Southwark Street, SE1.

In Part I, the background to the project is presented; in Part 2 the results of the excavation are described and illustrated. The earliest recorded features have been dated to c. 2,000 BC. Use of the area in the later prehistoric period is shown by the presence of Iron Age or early Roman gullies, after which clay and timber Buildings 1, 2 and 3 were constructed in c. AD 60–70. These were succeeded by a substantial masonry complex: Buildings 4 and 5. This seems to have had a public or official function, perhaps as a mansion. Two phases of clay and timber buildings postdated the complex and were probably refurbishments of the Flavian building. They are notable for incorporating mosaic floors, painted wall-plaster, as well as hypocausts. Masonry additions followed in the mid 2nd and 3rd centuries. Towards the end of the Roman period the area was used as an inhumation cemetery. Deposits of dark grey silt sealed the horizontally-bedded Roman layers and burials, and these were cut by medieval and post-medieval pits. Notable post-Roman features included a 17th-century masonry building and a clay pipe kiln, but these are not described in detail in this report.

Illustrated finds studies are presented in Part 3, and include reports on the prehistoric flints and pottery, as well as the Roman wares, coins, a wide variety of registered finds, glass, building material and wall plaster. Part 4 brings together reports on the environmental material including plant remains, fish, animal and bird bones, dendrochronology and on the human skeletons. Part 5 summarises the conclusions drawn from the excavations.

1. INTRODUCTION

The site of the Calvert's Buildings warehouse at 15–23 Southwark Street, London SE1 (Fig 1) covered an area of some 2,000sq m. It lay within the settlement that developed in north Southwark during the late 1st century AD and continued into the later Roman period; approximately 400m upstream of the bridge connecting Southwark to Londinium and 80m to the west of the road that connected the bridge to Watling and Stane Streets.

In March 1980 proposals were made for development which would remove all archaeo-

logical levels down to the natural sands. In response to this threat the site was fully excavated by the Southwark and Lambeth Archaeological Committee.

There was no specific research strategy for the excavation but because of its location, the site was deemed likely to be an important addition to knowledge of Roman Southwark.

Initially an area of c. 900sq m was excavated (Area 1); and in 1982 work started on c. 300sq m at the western end of the site (Area II) (Fig 2).

Unfortunately very deep basements in the central area had resulted in the total destruction of all archaeological levels between the two excavations. Because of this, it is impossible to be certain of the relationships between the structures in each area. The area to the north of Areas I and II, against the Southwark Street frontage, was not excavated due to safety considerations and difficulties of site access.

Modern cellars truncated the Roman levels in Area I down to c. +2.50m OD. Area II was less truncated and some modern makeup was removed by machine at a height of +4m OD down to c. +3.20m OD, which marked the top of the dark earth deposits.

The area to the extreme east of the site was also excavated (Area III) but, owing to the proximity of the surrounding buildings, it was only possible to investigate the higher levels of the medieval and later periods from a height of +3.72m OD down to the top of the dark earth deposits at c. +2.60m OD.

As Area III appeared to have more bearing on the settlement of post-medieval Southwark, it was decided that this area should be published in a volume on post-medieval Southwark, rather than in the present report. The same decision was taken for the post-Roman features in Areas I and II. For a short summary of the post Roman on this site see pp 60–61.

Two site codes (15–23 SKS and CB80) were used and have been applied to the entire site archive, which is available for inspection at the Museum of London.

The contexts have been renumbered for this report; correlation tables are included in the archive. The context/feature numbers appear in square brackets throughout the report. The accession numbers for the small finds remain unchanged (they appear in triangular brackets).

Previous publication of the site includes an interim report by D. Beard and C. Cowan, 'Excavations at 15–23 Southwark Street' *London Archaeologist*, 5 no. 14 (Spring 1988), 475–81.

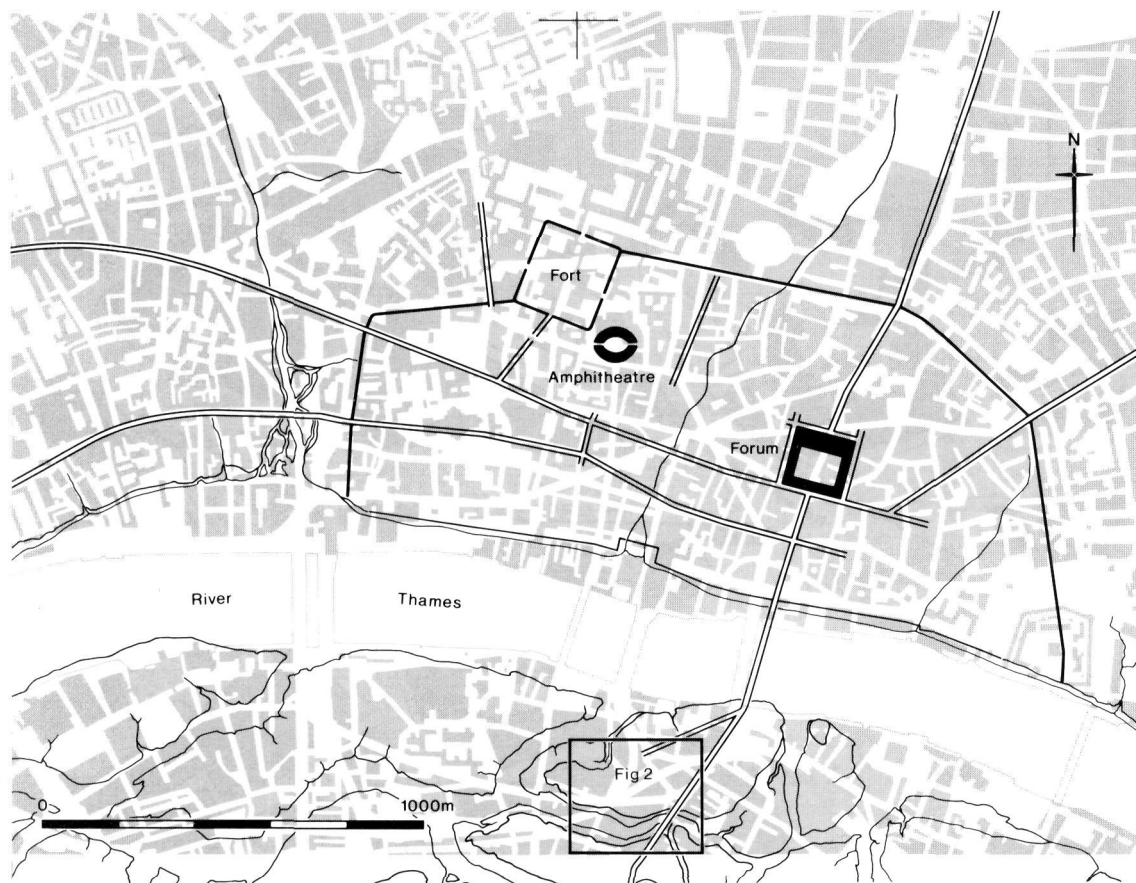


Fig 1. Plan of Central London showing the site in relation to the Roman city, and the main topographical features (1 : 20,000).

Excavation and post excavation methodology

The recording systems at 15–23 Southwark Street site were a combination of multi-context planning at 1:20 on 5m grid sheets and phase plans also at 1:20 on large A1 sheets. Single context planning was carried out towards the end of the excavation of Area II. No Harris matrix was used and little horizontal stratigraphy was planned, although sketches were made. A very slight difference in building alignments in each area may be due to inaccurate trench outlines or grid survey.

In Area I, 1,616 contexts, 272 multi context plans and 166 sections/profiles were recorded; in Area II, 2,233 contexts, 263 multi context plans, 4,500 single context plans and 15 sections.

Unfortunately no formal assessment programme was conducted prior to the commence-

ment of post excavation work (see English Heritage 1991). Consequently the limitations of the site archive, especially the difficulty in the compilation of site matrices from multi-context plans and sketches, was not fully recognised.

Because of the limitations of the site records the final phasing arrived at for Part 2 of the report is the author's preferred sequence and by no means the only feasible interpretation.

The problems encountered in processing and analysing the finds generally reflect the stratigraphic problems discussed above. For example, the varying precision of the records and the lack of coordination between different excavations lessened the scope for drawing broad conclusions. On a more practical level, the work was carried out over a long period during which staff redundancies were being made, which resulted in some finds reports being undertaken by more than one author.

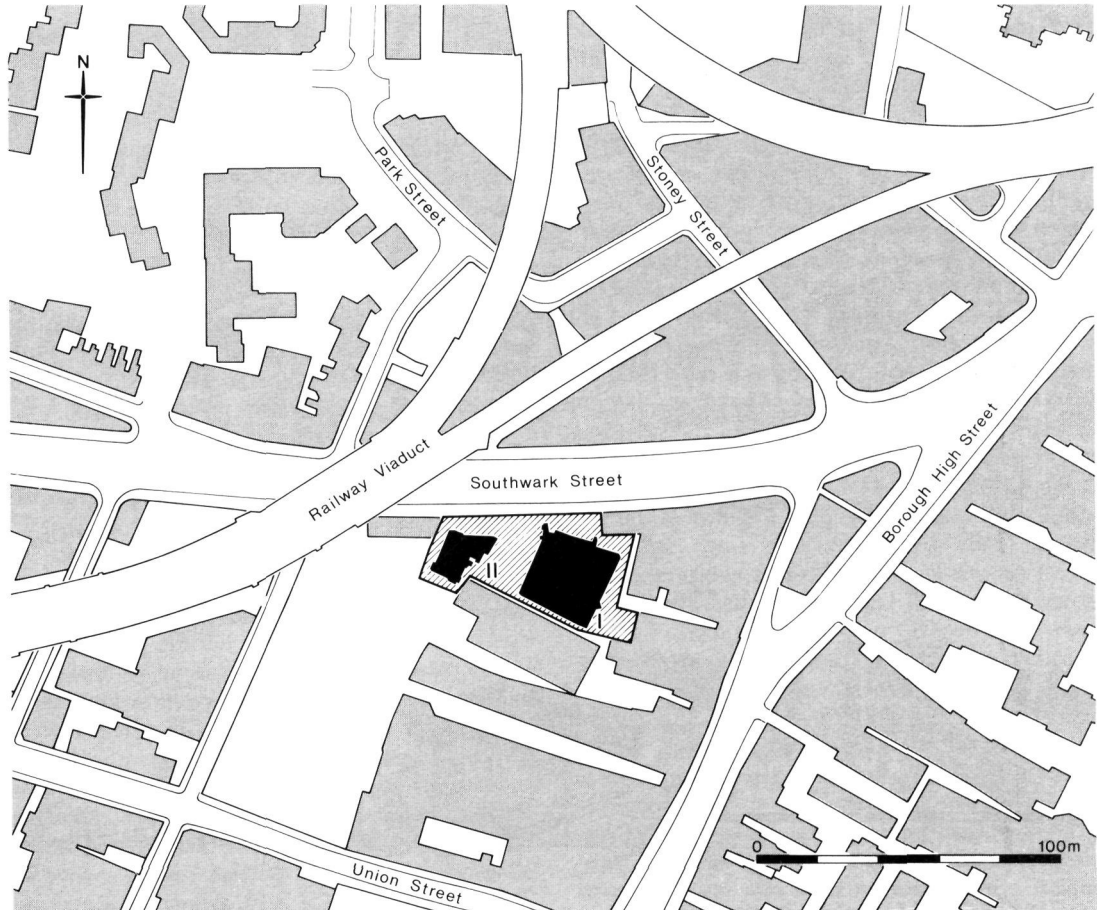


Fig 2. Location map of the site in relation to the modern streets and showing areas of controlled excavation (reproduced from the 1993 Ordnance Survey 1:2500 map with the permission of the Controller of Her Majesty's Stationery Office; Crown Copyright).

Similarly the resources allocated for pottery dating underestimated the volume of material, with the result that some Area II features were not dated—in particular the prehistoric/early Roman features, robber trenches and subsequent pits and dumps and the dark earth deposits.

In spite of the problems encountered enough data has been analysed to define successive phases of occupation on the site not only to reconstruct the developments, alteration and demolition of the buildings but also to postulate that at least some served as important official or public structures.

Geology and topography (Fig 3)

The site of 15–23 Southwark Street lies on the flood plain gravels of the Thames, the surface of

which has been found to vary considerably in height across north Southwark from +2m OD down to *c.* –1m OD. The sequence of the flood plain gravel in the north Southwark area appears to be complex, involving a number of buried channels, and probably changes in the river regime resulting in the periodic deposition of sands and clays (Graham 1978, 501). The height of the gravel at the site is unknown, but its top at the nearby site of 5–7 Southwark Street (Bird & Graham 1978, 524) was *c.* –1m OD.

Overlying parts of the flood plain gravels are layers of sand. Large scale erosion of these has left areas of high sand banks up to a height of +1.80m OD (Graham 1978, 507) separated from each other by braided channels of the Thames (Heard *et al* 1990, 609).

The site lies on the south edge of the most northerly sand island in Southwark. The southern

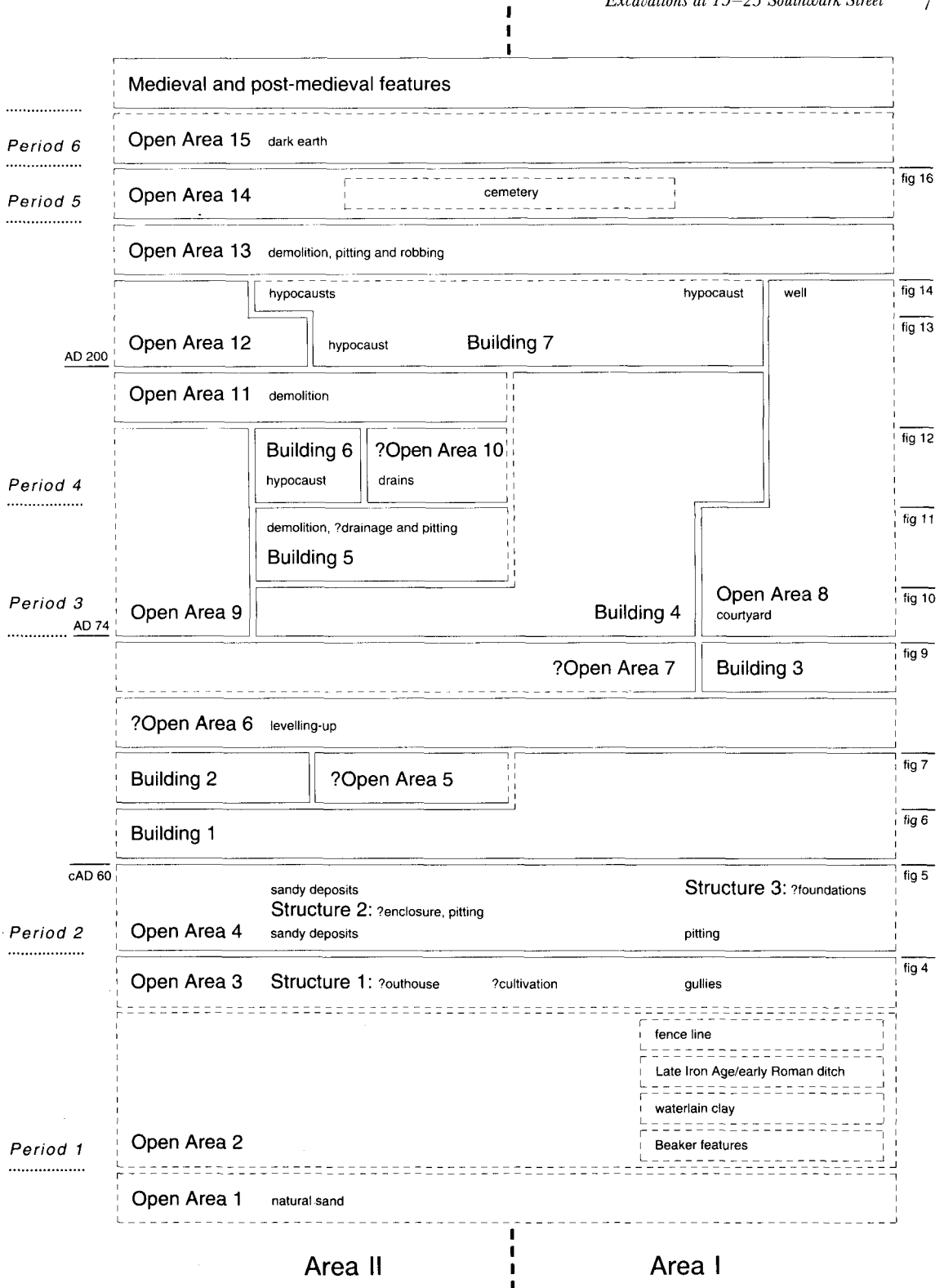


Fig 3. Land use diagram showing the main stages in the structural sequence (not to scale).

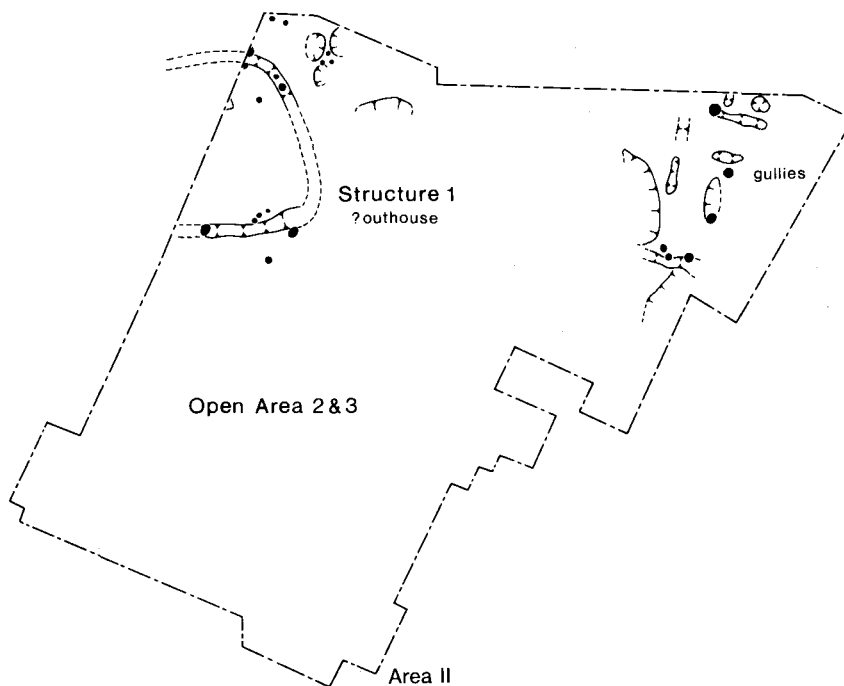


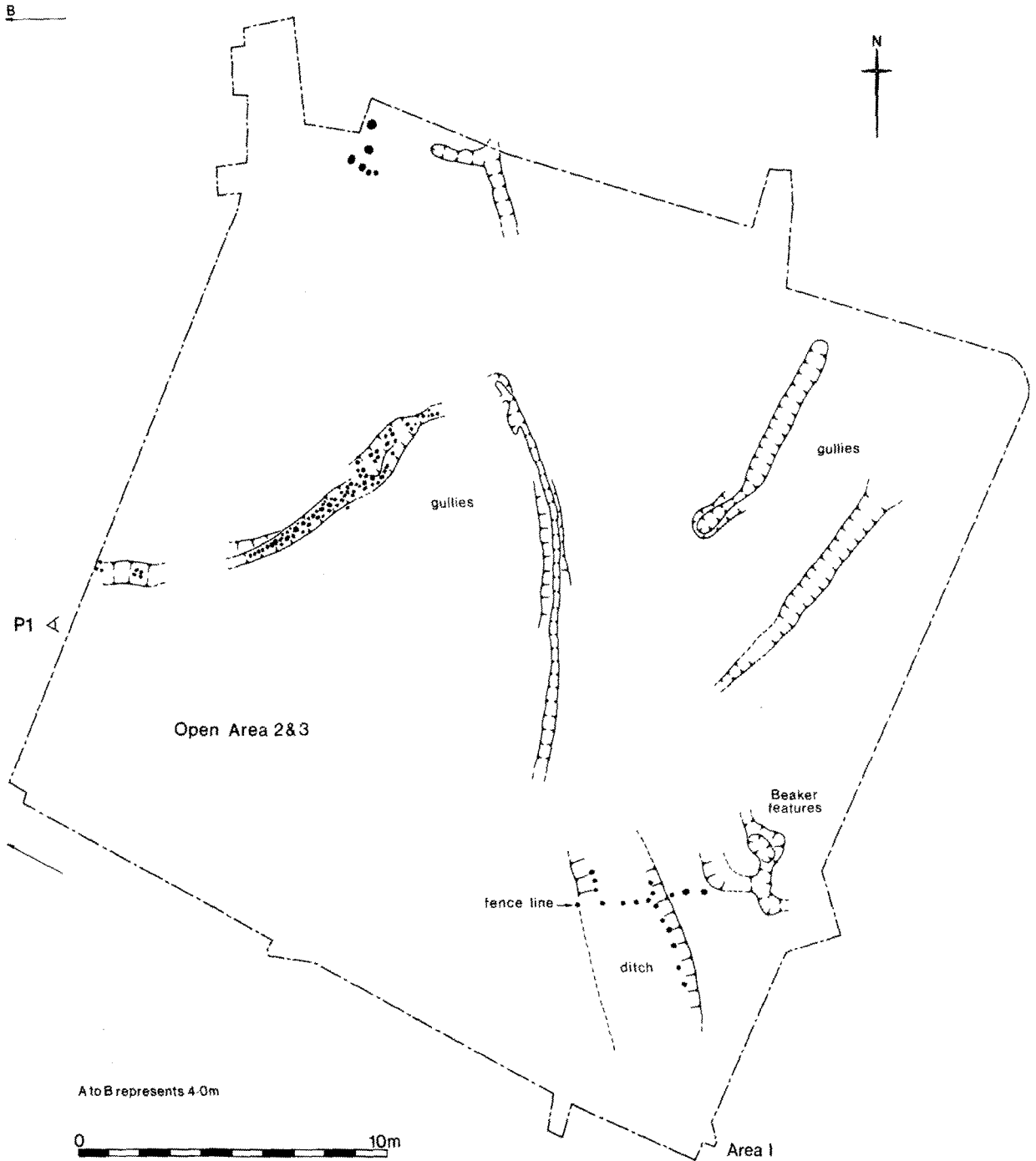
Fig 4. Prehistoric and early Roman features, including Structure 1 (1:200).

limit of the island may be defined by the course of a natural stream, revetted in the Roman period, the south side of which lay some 60m to the south of the site (Graham 1988a, 55). The north side of the stream probably lay just off the limits of excavation. The height of the sand [1] was +1.12m OD sloping down in the south-east corner of the site (Area I) to +0.80m OD.

2. THE SITE

Period 1: the prehistoric and early Roman features (Fig 4)

Large quantities of worked flint have been found close to areas of high sand and gravel in Southwark. These areas may have provided



convenient locations for the occasional exploitation of the river for fishing and hunting, though the exact position of the main channel during the prehistoric period is a matter of debate (Merriman 1987, 321-3). A number of stray Mesolithic and Neolithic flints, including micro-liths and a leaf arrowhead, were recovered from later contexts at 15-23 Southwark Street and

indicate a low level of activity on or near the site.

The earliest features on the site were found in Area I [2-4]. These contained pottery and flintwork dating to the Beaker period (*c.* 2200-1800 BC). They consisted of a small truncated gully or slot [2] 0.30m deep which was filled with silty sand. The gully contained a

cut [3] filled with sand and charcoal and may have been a large posthole or perhaps a small pit. They were separated from another small cut, [4] 0.10m deep, filled with similar material. This appeared to be associated with the slot [2], or part of it.

In the south-east corner of Area I, sealing one of the Beaker postholes [4], was a layer [5] of grey silty sand present up to a height of +0.86m OD which contained sherds of Iron Age pottery. This layer may have originated as a result of flooding from the nearby stream. Cut into the layer was a truncated portion of ditch [6]. It is possible that the ditch may have been revetted, as an alignment of stakeholes was visible, cut into its sides. Unfortunately these stakeholes were somewhat obscured by later features.

The ditch [6] was truncated and was only 0.45m deep. It had a flat base and was filled only by waterlaid clay layers up to a height of +1.06m OD, which had spread beyond it and had perhaps also originated from the flooding stream.

Other features in this area were an alignment of eight stakeholes [7] which had been cut across the waterlaid layers [6] and probably represent a later fence line. The stakeholes were cut by a trench of the next phase [24] and one of them contained a sherd of prehistoric pottery. However the alignment of the fence [7] and the lack of dating evidence from the ditch [6] may mean that these features were of Roman date.

To the north of the ditch [6] lay several gullies [8-13], each 0.30-40m deep, truncated at either end and therefore separated from each other. They were backfilled with sand and some contained stakeholes (Pl 1). There were further stakeholes in the northern part of the area [14].

The height of these features ranged from +1.03m OD in the southern part of Area I to +1.19m OD in the northern part.

Though much disturbed and truncated by later activity it was possible to assign many of the features to the later prehistoric/early Roman period. They had an uncertain relationship to a layer of 'weathered natural' [15] situated above the natural at a height of *c.* +1.30m OD. The weathered natural was a yellow sand which probably represents a disturbance of the top of the natural sand by roots, erosion and human activity. The interface between it and the underlying cleaner natural sand was often indistinct and consequently it was uncertain from which point the features were cut. Most of the features were only discovered after the removal of the weathered sand but some may well have cut through it.

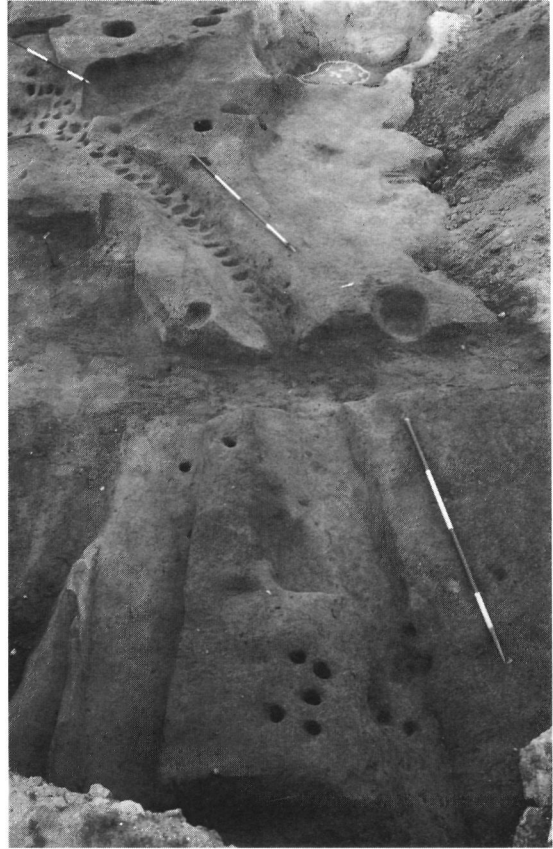


Plate 1. Prehistoric gully from Area I, showing stakeholes within it

In Area II were similar gullies/slots [16-18] cut into the weathered natural [15] at a height of *c.* +1.30m OD. Some were sealed by layers of sand [25 and 35] from the succeeding phases, but none of the Area II features were dated although Roman pottery came from the weathered natural and from one of the postholes [17].

Two semi-circular slots, [16] 0.30m deep, in the western part of Area II and containing stakeholes may perhaps have been part of a circular structure (Structure 1). Situated to the north, and probably associated with the circular structure, were postholes and stakeholes [17]. To the east of Area II were more slots containing postholes [18]. No features cut the weathered natural in the centre or in the south of the Area.

Discussion

The assemblage of flints and Beaker pottery can be taken to suggest more than passing occupation.

The number of pieces of flintwork and the large quantity of Beaker pottery in one pit or posthole, [3], together with the inclusion within it of four recognisable tools, may indicate a special 'structured' deposit rather than a random disposal of domestic refuse (see Flint report). However it is not possible to assess the significance of this further as the full nature and extent of the Beaker features remains unclear.

The importance of the Beaker assemblage is not in doubt, for it is the first of its kind to have been found in central London. Finds from the river apart, Beaker material is generally scarce in the London area: one sherd of Beaker pottery was recovered from the sands at 106–114 Borough High Street (Schwab 1978, 199) only 150m to the south of the site, and several other sherds were recovered during excavations at Cromwell Green, Westminster (Needham 1987, 101).

The later prehistoric features are more difficult to interpret. The ditch [6] filled by waterlaid clay layers appeared to be leading towards the stream noted above, and was probably dug to drain water into it. Numerous ditches were dug for this purpose in the mid to later 1st century in north Southwark (Yule 1988, 16).

The function of the gullies is less clear. Only the ditch [6] and the fence line [7] appear to have been aligned north-south/east-west, as were the later Roman buildings (see below). The alignments of the rest of the gullies and other features were at variance from this and from each other. As most of the features contained Iron Age pottery, it is not possible to distinguish native Iron Age from Roman features except perhaps in terms of alignment. The gullies may have been the remains of fence lines for animal enclosures.

The presence of the dolabra sheath guard (Copper alloy object No. 3) in what may be an Iron Age feature may indicate an early Roman military presence, for which there is some other evidence at this period in Southwark (Heard *et al* 1990, 611). It is equally possible that the gully [13] was of Roman date and that it cut through the weathered natural rather than being sealed by it.

The possible circular structure represented by two curving gullies (Structure 1) and containing stakeholes may represent construction trenches for a building. The area defined by the gullies may have been some 5m in diameter. There was little evidence in the way of finds or pottery to

suggest occupation, so it is more likely that the circular building was not a dwelling but an outhouse. It is possible that the features were the remains of a late Iron Age/early Roman farmstead.

Prehistoric pottery and flints have been recovered from many sites in the area. At 106–114 Borough High Street pottery dating from the Neolithic to the early Iron Age was recovered from the alluvial clays and sands (Schwab 1978, 178). Prehistoric material was also recovered from 201–211 Borough High Street and Kings Head Yard (Ferretti & Graham 1978, 56). At Toppings Wharf (Sheldon 1974, 8 and 32) alluvial clay sealed a group of flints and Iron Age pottery.

Prehistoric features include those found during excavations at the Courage Brewery site where Bronze Age pottery and an arc of six postholes (which may have been part of a prehistoric roundhouse) were found on the site. Further prehistoric activity was indicated by a 7m length of ditch and associated postholes (Dillon *et al* 1991, 256).

Closer to the later bridging point was a round barrow containing a cremation and pottery from the late Bronze Age/early Iron Age (Heard *et al* 1990, 610). Further to the south, four prehistoric pits were revealed during excavations at 199 Borough High Street together with worked flints and late Bronze Age and early Iron Age pottery (Schaaf 1988, 84). An inhumation considered to be of late Iron Age date was discovered during excavations at 124 Borough High Street (Dean & Hammerson 1980, 17).

The evidence would therefore perhaps indicate scattered prehistoric farmsteads or settlements in Southwark; there appeared to be no late Iron Age urban settlement established by the time of the Roman invasion (Heard *et al* 1990, 610).

Period 1: Dating evidence

Coins

[9] 1st century BC, Coin report, No. 1

Objects

[13] Dolabra sheath guard, Copper alloy object No. 3

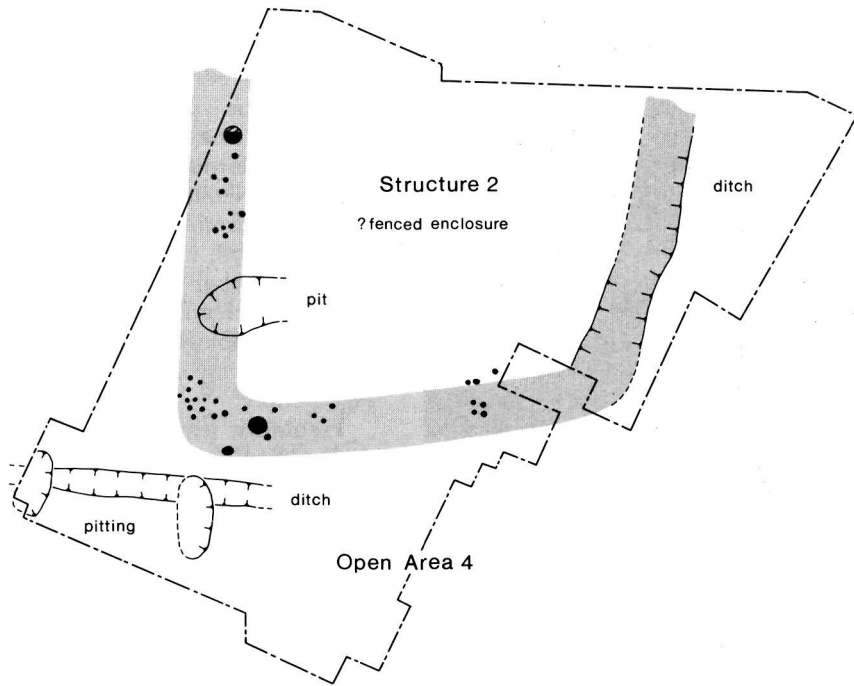


Fig 5. Pre-Flavian features, showing Structures 2 and 3 (1:200).

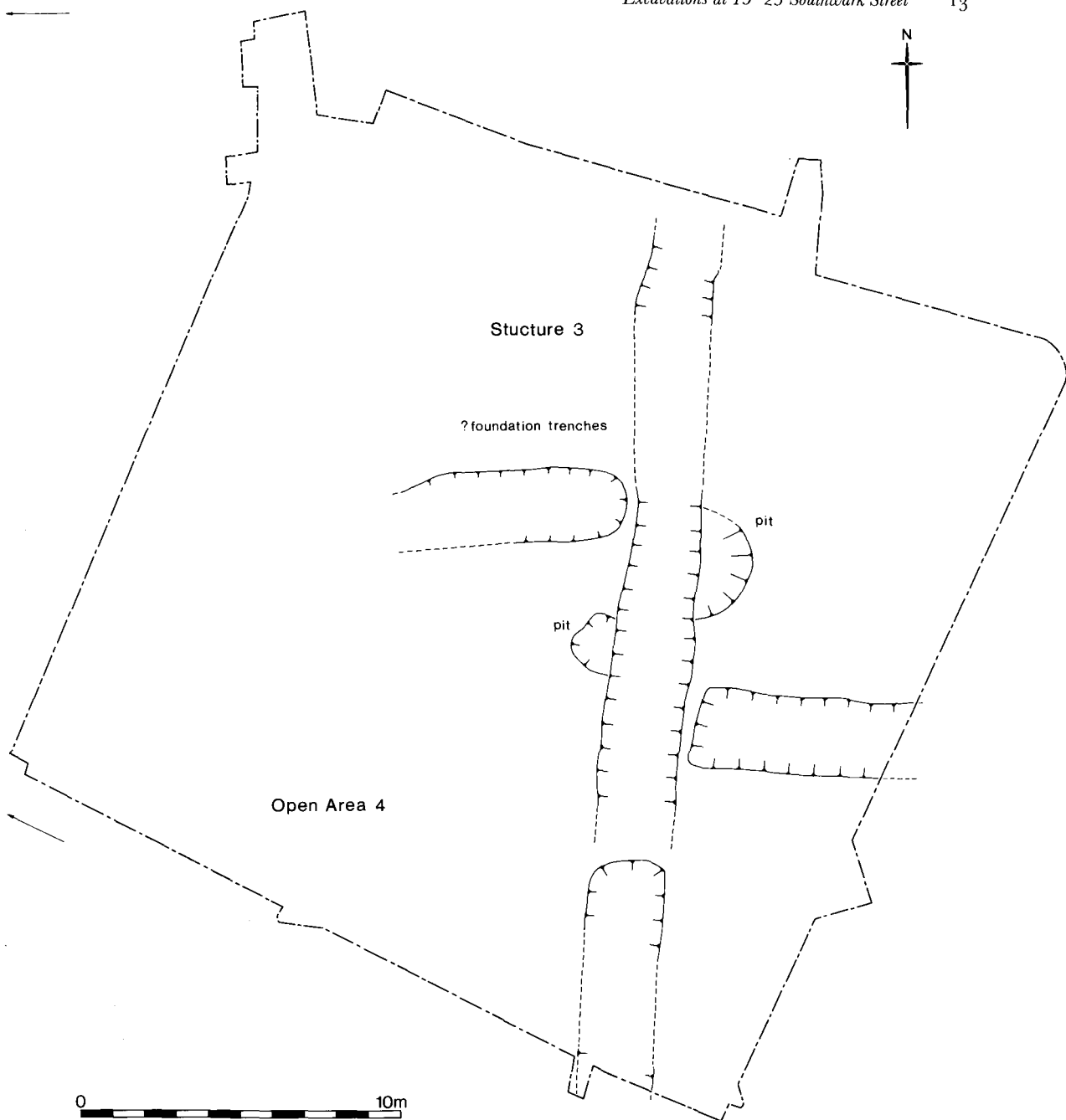
Pottery

- [2] Beaker, collared urn
- [3] Beaker
- [4] Beaker
- [5] Iron age
- [7] Prehistoric
- [8] Iron age
- [9] Iron age
- [10] Iron age

- [11] Iron age
- [12] Iron age
- [15] AHSU II, C18g, DR20, GROG, OXID I, OXID I A, RWS I, SAND V A, SHEL, AD 60-80
- [17] GROG, AD 45+

Decorated Samian

- [15] AD 50-65, SG Dr 29
- [15] AD 50-70, SG Dr 29



Period 2: the pre-Flavian buildings (mid to late 1st century AD)

Pre-Flavian features (Fig 5)

AREA I: STRUCTURE 3

The truncated remains of four large trenches [21-24] (Structure 3) were found cutting through the weathered natural sands [15].

Two pits [19 and 20] filled with clay were dug 0.20m deeper than the trenches and appeared to have been cut by one of them, though the relationship was unclear. The pits were thought to have been backfilled rather than to contain primary usage fills and were interpreted as refuse pits, although there was little indication that they had been used for this purpose.

Two of the trenches [22 and 24] were aligned

north-south and the other two [21 and 23] west-east, and were so positioned as to form a staggered junction. With a shallow depth of no more than 0.50m, but 2.5m wide, all four of the trenches were segmental and were separated from each other by distances varying from 0.10–0.50m.

The plan of the segmental trenches and their substantial dimensions would indicate that they were structural. However, their width seems excessive for wall foundations and their depth too shallow for construction. They may represent the bases of construction or robber trenches cut from a higher level subsequently truncated, as the absence of floor levels would suggest. There was little building material in the fills of the trenches except for two oolitic limestone column shaft fragments, occasional brick and roof tile, ragstone and daub fragments. The building material was incorporated randomly throughout the fills.

A parallel for these trenches comes from Milan (Perring 1991b, 105–161) where similar trenches were excavated. These were considered to be part of a Flavian building and consisted of square cut trenches up to 1.6m wide filled with layered fills of crushed building material or gravel alternated with bands of silt; a method necessitated by the instability of the ground. These foundation trenches were sealed by a foundation platform of compressed silt and gravel, and masonry footings were set directly over the buried trenches.

The trenches of 15–23 Southwark Street were not dissimilar. Their fills were of mixed clay and sand, but only one appeared to contain the layered fills noted in Milan. In trench [24] the top four fills were layers of sand 0.10m thick. The profiles of the trenches were flat bottomed with gradually sloping sides. The unstable nature of the sands in Area I became apparent later (see Period 3) when timber piles for Building 4 were placed in the wet ground at the edges of a channel. The trenches were cut in at a level of +1.40m OD.

Not enough evidence remains to suggest a reconstruction or function for the trenches of Area I. The fragments of column may imply a rather grand building but the fragments were probably from elsewhere, used as fill. The trenches may not have been structural and may have been ditches. Since they were segmental, it is unlikely that they were drainage ditches but they may have been boundary ditches or part of

an enclosure. The ordered layout of the Milan trenches and their correspondence with later wall lines provided the strongest indication of their function as a building, as opposed to ditches. It is worth noting that the wings of the later courtyard Building 4 [78–79] (Fig 10) at 15–23 Southwark Street were situated on the same boundary, so that their pile foundations pierced the fills of one of the trenches.

The trenches do not appear to have been aligned on the main Roman road to the south coast (now modern Borough High Street) which ran NNE/SSW in this area (see Fig 8), and it is possible that they may have been aligned on the channel to the south of the site (see above). This alignment persisted throughout the Roman period among all the buildings on the site.

A number of military objects came from the trenches of Area 1 as well as three irregular Claudian coins. The significance of these finds is discussed below.

AREA II: STRUCTURE 2

In the extreme west of the site, situated some 25m to the west of the trenches, were various stakeholes, ditches and pits, some stratigraphically separated by layers of sand [25–35].

The first layer to be deposited in the west area was a clean sand [25], probably a redeposited natural, which was no more than 0.15m deep and sealed many of the pre- and early Roman activities of Period 1. This lay at a height of *c.* +1.49m OD.

Cutting this sand layer were two 7m long but truncated portions of ditches [26 and 27] (Fig 5). One of these [26] was aligned west-east, had a U-shaped profile and was 0.55m deep. It was situated some 8m to the west of another ditch [27] which had a more gradual bowl-shaped profile and was 0.39m deep. Both were filled with a grey clay.

A series of stakeholes [28] situated in the area inside the ditches [26–27] appeared to conform roughly to a north-south alignment nearly 8m long, with further stakeholes [29] forming an east-west return. Perhaps these represent a fence line, or formed part of a fenced enclosure with the ditches [26–27], and are thus distinguished as Structure 2.

A number of large oval pits [30–32] with sandy fills were scattered around the area of the ditches but there was no indication of their function.

Partly sealing ditches [26 and 27] was a sandy layer [33] 0.10m thick with a top height of +1.58m OD. This layer was fairly clean but probably represents a dumping of material as it sealed both pits and ditches. It was disturbed in places, possibly by animal burrowing or prints consisting of many small irregular cuts, 0.04–0.08m deep and filled with sand. There were also a few small pits [34] cutting layer [33].

A mixed sand and charcoal layer [35] 0.05m thick sealed much of the former activity. This layer may have been a dump of debris, perhaps laid down to level up for the next building phase. It lay at a height of *c.* +1.58–1.78m OD.

The features of Area II were often difficult to excavate as they were poorly defined on account of the nature of the sand and truncation by later features. There was no indication of any building plan or coherent structure, but the postholes and stakeholes may be interpreted as the remains of a timber palisade, perhaps part of an animal enclosure.

FEATURES IN AREAS I AND II

The relationship of the Area II features [25–35] to the trenches in Area I [21–24] was obscured by the distance of 25m between them. However, the stratigraphic evidence would suggest that they may have been contemporary with the Area I trenches. These were cut through the weathered natural sand [15] of Period 1, and were themselves cut by slots of Building 1, which was dated AD 60–80, while the timber piles of Building 4 [78] (dated to the late 1st-century Flavian period) were driven through one of the trench fills [24].

The Area II features [25–35] were not dated but sealed all features of Period 1 in Area II [15–18] and were cut by Building 1 [37–48], dated AD 60–80.

The absolute levels would also indicate that these features of Areas I and II were possibly contemporary. But it was not clear whether all of Building 1 was contemporary, and the dating evidence for the trenches [21–24] is rendered unreliable by much intrusive material.

The functions during this period are difficult to reconstruct; if the trenches in Area I represent a building, it may not have been contemporary with the fenced enclosure, possibly for animals, in Area II.

Building 1 (Fig 6)

AREA I

Two of the foundation trenches of Structure 3 [22 and 23] were cut by a posthole and two slots [36–38] which appeared to be structural and were attributed to the next phase, Building 1.

This was not a single phase of building but rather consisted of many slots, some of which were probably part of the same phase and some, which intercut, were not. It is likely therefore that more than one phase of construction is represented: similarities of alignment, dimensions and fills indicate that the structural features may have related to a single building which had undergone renewal.

Building 1 was represented by slots [36–44] varying between 0.15m to 0.40m in depth and mostly filled with green sand and charcoal. There was no evidence of timbers or postholes in any of the slots, and in the absence of detailed recording it was not possible to reconstruct the building plans with any certainty. There were also some postholes and stakeholes in the area [45–48], again on a north-south alignment.

In the absence of any contemporary surfaces it could not be determined which was the inside or outside of the building. The features were cut in at a height of *c.* +1.30–1.52m OD.

AREA II

To the west of the site (Area II) more slots containing postholes were found, most of them cutting the sand layer [35], but it was unclear how these related to those of Area I.

Two hearths were excavated to the west of Area II. One hearth was in a deep circular cut [49] situated immediately to the west of, and cut by, a later slot [58]. The circular cut was 0.40m deep and 0.40m in diameter and was filled with 0.26m depth of grey clay and a layer of sooted pottery topped with orange-red clay. It presumably represents a hearth: the stratigraphy around and below it was scorched red and debris of pink and grey ash and charcoal [50] of 0.02–0.04m depth was spread in a 1m radius around it. Some 70 stakeholes, either void or filled with red burnt sand or ash, were situated around both hearth and later slot [58]. It was not clear which feature they were related to, but as some were angled it is possible that they may have formed some superstructure or tripod over the hearth. The hearth was bisected by a wall of Building 1 [58].

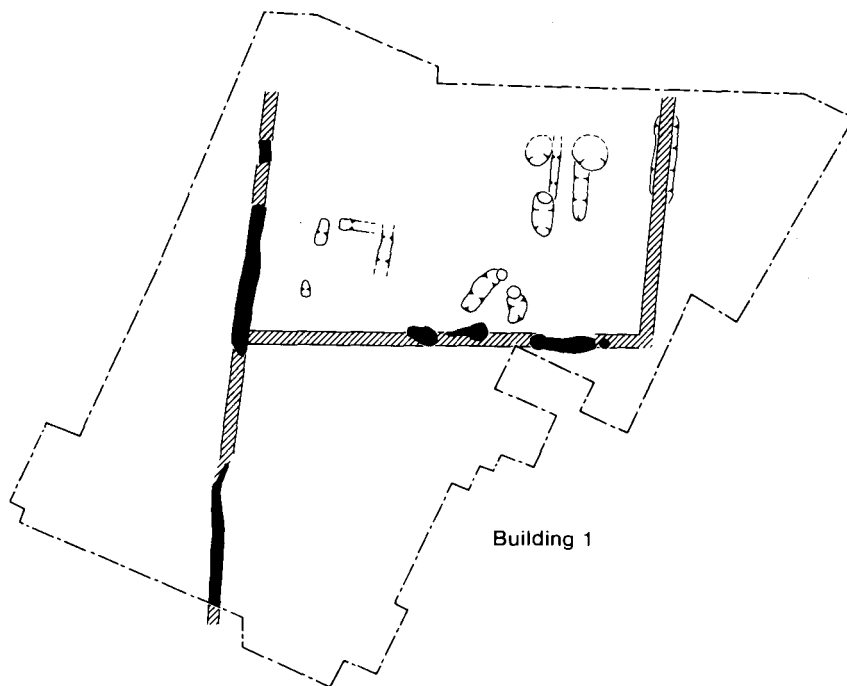
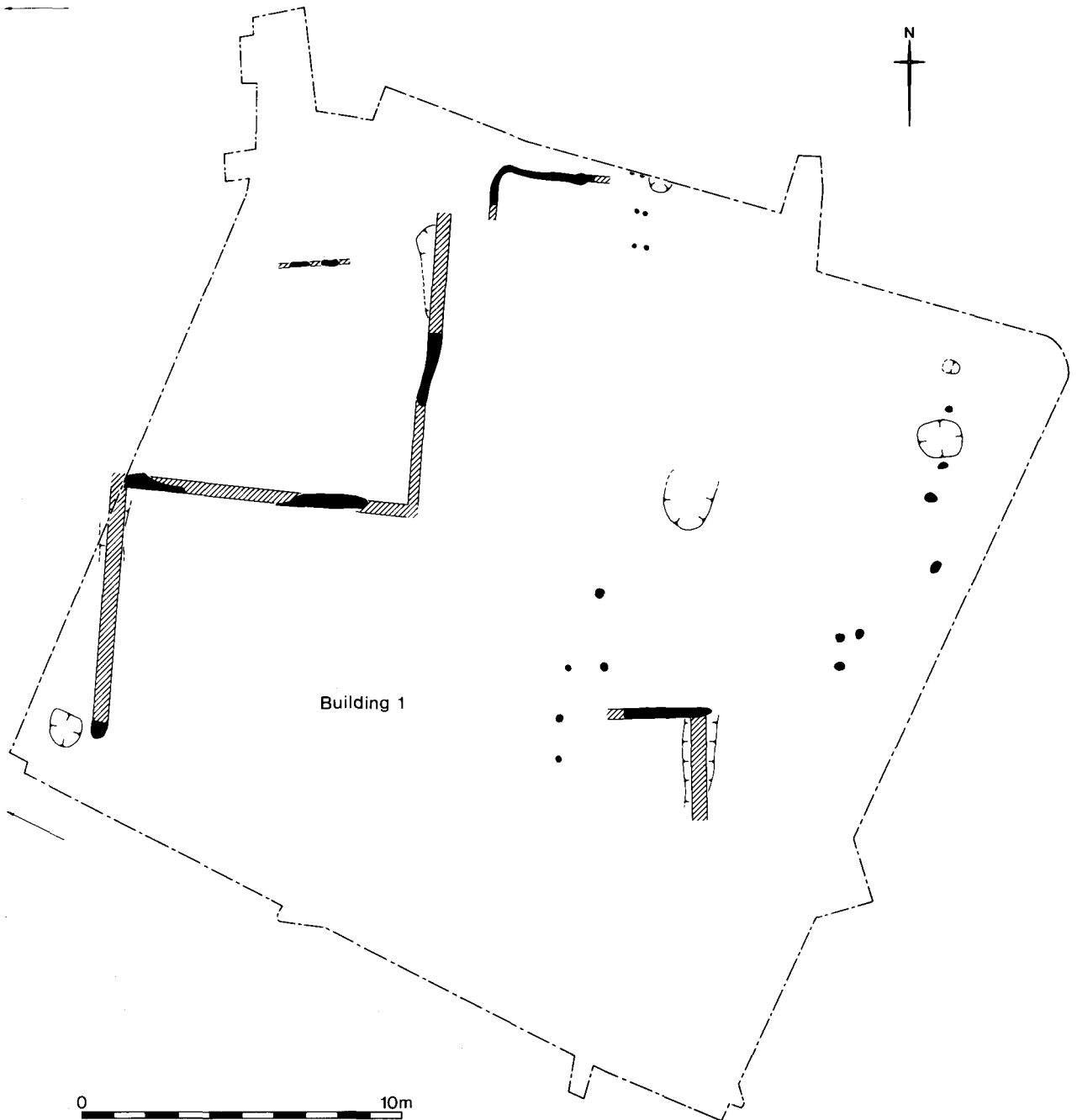


Fig 6. *Building 1* (1:200).

The remnants of a possible second hearth [51] of 0.40m diameter and 0.12m depth of clay covered with charcoal debris was located close to the western section. Both the hearths and the stakeholes were cut into sand layers [35].

Two west-east slots [52], 0.20–0.50m deep,

were cut into the sand layer of the previous phase [35]. Both slots had a posthole at either end, 0.30m deep. One of the postholes was packed with flints, but the rest of the postholes and slots contained fills of sand. It was unclear why short lengths of slot should be dug as opposed to the



continuous slots seen to the west of the Area [58]. The short slot may perhaps indicate the presence of a timber baseplate but there was no evidence for this. All these slots were cut into rather unstable material—mostly silty sands—and it may be that short timber baseplates would give additional strength to the foundations. However,

some slots were too short to contain horizontal timbers and may simply have been postholes extended by the removal of their posts.

These short slots appeared to cut the sandy fills of large depressions [53] 0.20m deep. The depressions appeared to surround each slot as if they formed part of the construction, but they

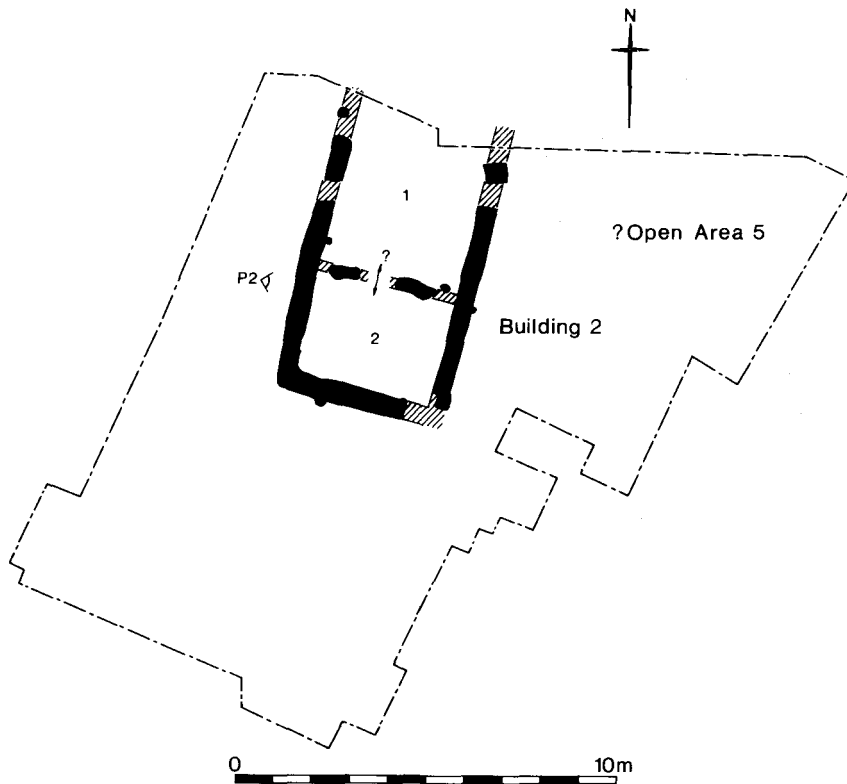


Fig 7. Building 2 (1:200).

were of an earlier phase and their function was unclear.

A number of other slots situated in and around the area [54–57] and also cut into sand layers [35] may have been part of Building 1, as may a north-south slot some 12m long to the west of Area II [58]. This was 0.20m deep, filled with sand and charcoal and contained stakeholes. It was longer than the other slots of Building 1 and therefore may imply the presence of a timber baseplate, although there was little evidence for this except the charcoal fill. The slot was cut through the burnt layers and ash debris from the hearth mentioned above [49].

Some layers of clay survived [59–61], up to 0.60m thick in places, and may have been a make-up and levelling layer for the construction of Building 1.

Building 1 in Area II was cut in at a height of c. +1.60–1.78m OD.

Discussion

It was not clear whether the fills of the slots of Building 1 related to construction or demolition, and hence dating evidence for the pottery

recovered from them is difficult to interpret. Pottery from the possible make-up layer [60] in Area II dated to AD 45–80.

In Area II part of Building 1 was cut by Building 2, which contained very little pottery. Sealing Buildings 1 and 2 were levelling layers [72–73] which date from AD 60–80.

In Area I, Building 1 was dated AD 60–80 and was partially sealed by debris layers [71] dated AD 70+. These in turn, were cut by Building 4, dated to the early Flavian period.

It is difficult to ascertain how many of the slots described above were contemporary, since few connected physically; as mentioned above, it is likely that more than one phase of construction is represented. It is also unclear whether the slots in Areas I and II were contemporary and therefore part of the same building. There was little to suggest a function.

Building 2 (Fig 7)

AREA II

Building 2 was a small rectangular structure, aligned north-south, and was partially constructed

over Building 1 [62 cut through 52]. This indicates that though some parts of Building 1, which consisted of more than one phase of construction, had gone out of use, other parts of it were still standing when Building 2 was erected. Thus, Building 2 could represent a part renewal of Building 1. However Building 2 was constructed on a slightly altered alignment (see Fig 7) and was of a slightly different construction in that it was formed of continuous, rather than interrupted, slots.

Formed of three sides of continuous slots [62] (the north side was not in evidence), Building 2 was at least 7m long and 4m wide (Plate 2). The slots were dug between 0.30–0.50m deep with vertical sides and a flat base, and were filled with brown sand with some charcoal. There was no evidence for a timber baseplate. Postholes were evenly spaced along the base of the slots 0.60m to 0.70m apart and were between 0.40m to 0.60m in diameter, 0.20m to 0.50m deep and filled with clay. They were not seen until the base of the slots was reached. The one remaining corner post did not appear to be dug deeper than the rest.

Two slots [63] were dug in what was thought to be the interior of the building and these may have supported a partition. Both were aligned

west-east and contained postholes positioned at either end of each slot. The partition was cut away in the centre by later features. It is possible there was a doorway here. The partition divided the building into two rooms.

Several scattered stakeholes [64] were found in both the interior and what was thought to be the exterior of the building and were probably part of the construction, although there was no indication of the role they played. No floor surfaces survived within Building 2, which indicates that it had been truncated. There were no contemporary features outside the building and it is possible that the whole area may have been external.

Deposits of charcoal and ash [65–67], no more than 0.06m thick, were situated within Building 2 and there were further layers immediately outside it [68–70]; seen in the foreground in Pl 2). As layers on one side of the building differed from those on the other, it is clear that they must have postdated the construction of the building but not clear whether they were occupation or dumped debris. Their descriptions indicate that they were burnt material and may have resulted from the demolition of Building 2, perhaps by fire.



Plate 2. General view of Building 2, looking east and showing exterior slots [62] and interior slots [63]

Building 2 was situated at a height of *c.* +1.58 to 1.69m OD.

Discussion

Building 2 contained pottery dated to AD 70–100 and no datable finds. Levelling layers [72–73] sealing Building 2 dated AD 60–80. Building 4 in Area II cut through Building 2 and was dated to the early Flavian period.

What existed in Area I at this time is unknown. It is possible that parts of Building 1 in Area I could have continued in use, or even that Building 3 was contemporary with Building 2, except that the latter was on a slightly different alignment from the other buildings.

There is little evidence on which to base a reconstruction of Building 2 but it is likely to have been of the simplest construction, as paralleled by pre-Flavian buildings in the City (Perring 1987, 149–150) and may have been built of earth-fast posts with wattle and daub walls.

Other excavations in the vicinity of 15–23 Southwark Street provide some parallels for Building 2. Excavations at the District Heating Scheme site (Fig 8, No. 7) revealed traces of two buildings (2 and 3) erected some time after AD 60 (Graham 1988b, 27). They are of interest in that they were of similar construction to Building 2, with a slot 0.70m wide and 0.30–0.45m deep and filled with gravel. Four postholes were positioned within the gravel. There was no evidence for a sill beam over the gravel: the walls were placed directly upon the gravel and were built of horizontal planks with a clay lining. Traces of vertical withies could be seen within the clay (Graham 1988b, 37).

Building 2 may have been constructed like this since the number of shallow stakeholes between the main postholes could have been positioned to take the uprights of the wattling or timber strengthening of the clay. In the absence of evidence for planking or clay, it is possible that all the wall had been removed and the slots backfilled. There was no evidence to suggest the roofing materials used.

The charcoal layers associated with Building 2 may indicate that it was burnt. It appeared to have been truncated and levelling layers were spread over it.

Discussion: the pre-Flavian buildings

It is not clear whether the site was in continuous use from the date of the early Roman features of

Period 1, although the pottery would indicate that there was occupation on the site by the AD 60s.

It is known that two roads were built in north Southwark in the early AD 50s and though there is evidence for activity from about AD 50 onwards, the character of the settlement is uncertain (Sheldon 1978, 15).

Road 1 (Fig 8) appears to have been the northern continuation of two routes from the south coast, Watling Street and Stane Street, which may have converged in the area of modern Borough High Street and Dover Street (Graham & Hinton 1988, 20–24).

A second road (Fig 10, Road 2) may have linked a Thames crossing between Lambeth and Westminster with one at London Bridge (Graham 1978, 252–254) but this is less certain following excavations at the Courage Brewery sites. The evidence there suggests that Road 2 must have changed alignment from its existence near the bridgehead and have diverted further to the south (Dillon *et al* 1991, 258). It may have followed a more west/east alignment, perhaps to correspond with the alignment of the buildings at the Courage sites, although there is as yet no evidence for Road 2 in that area. Any change of alignment would have occurred to the north-west of 15–23 Southwark Street, so that Road 2 would have lain at least 100m to the north of the site.

The existence of a Roman bridgehead suggested by the convergence of the roads on the edge of the most northerly sand island in Southwark was postulated by Sheldon (1978, 24) and has since been confirmed by the excavation of what has been interpreted as a later 1st-century bridge on the northern bank of the Thames (Milne 1982, 271–6). The bridge would have provided the southern access to the higher land on the north bank, later to become Londinium.

It is likely that the Roman army made use of land on both the north and south banks of the Thames as a base for the transport and distribution of supplies (Merrifield 1965, 35 and Sheldon 1978, 28), and that it was responsible for the construction of the roads and the associated engineering in the form of gravel quarrying and land drainage (Sheldon 1978, 28). This hypothesis is supported by the many finds of irregular Claudian coins and military equipment in north Southwark, which would confirm

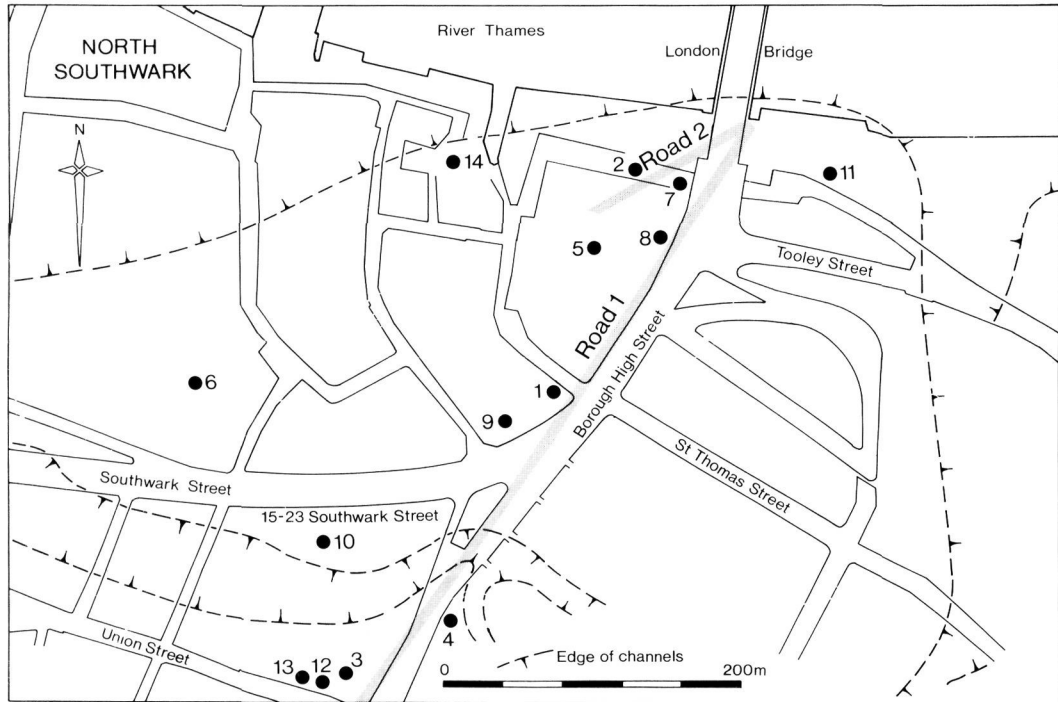


Fig 8. Buildings and roads of the 1st century AD in north Southwark mentioned in the text (1:5000). Key: 1 1a Bedale Street; 2 Bonded warehouse; 3 88 Borough High Street; 4 107–115 Borough High Street; 5 Cathedral Crypt; 6 Courage Brewery sites; 7 District Heating Scheme; 8 Montague Close Sewer Trench; 9 18–20 Southwark Street; 10 15–23 Southwark Street; 11 Toppings Wharf; 12 8 Union Street; 13 10–18 Union Street; 14 Winchester Palace.

that the army was present during the pre-Flavian period (Heard *et al* 1990, 611).

From trenches [21–24] of Area I came a lorica buckle and an auxiliary cavalry horse pendant (Copper alloy objects, Nos 1 and 4), while features in Area II [34] produced a lorica hinge plate and a harness ring (Copper alloy objects, Nos 7 and 2). A bone phallic amulet (Worked bone object No. 1) came from Building 1, and there were a number of other military finds in later contexts: a military horse harness pendant and a copper phallus pendant, as well as the dolabra sheath guard already mentioned (Copper alloy objects, Nos 5,6,9,3). There were also two bone button and loop fasteners (Worked bone objects, Nos 2 and 3) and 16 irregular Claudian coins (see Coin report) (Pls 10, 11, 12, 13, 18).

The precise nature of this early military presence is unknown and there is no evidence for buildings which can be directly related to the army.

Evidence for pre-Flavian buildings in Southwark is confined to half a dozen sites. Many of these, however, for example the 1a

Bedale Street and District Heating Scheme sites (Fig 8, Nos 1 and 7) lack firm dating, and others (Winchester Palace and Courage Brewery sites (Fig 8, Nos 14 and 6) await detailed analysis.

Some sites, for example 18–20 Southwark Street (Fig 8, No. 9) and Arcadia Buildings (situated some 450m to the south of 15–23 Southwark Street—not illustrated on Fig 8), contained only very fragmentary remains of buildings, a wattle and daub building interpreted as a domestic dwelling at the former site (Marsden 1971, 21) and traces of walls and a gravel floor at the latter (Dean 1980, 369).

The function of these buildings is difficult to interpret. The buildings at the District Heating Scheme site (Fig 8, No. 7; Graham 1988b, 27) were interpreted as strip buildings, which are paralleled in the City and characterised as having a shop frontage on the street, with workshop and living areas at the back (Perring 1987, 150).

It would be difficult to place the same interpretation on the buildings of 15–23 Southwark Street as there is no evidence of a commercial nature or for alignment on a street

frontage. The nearest known street (see Road 1 on Fig 8) was situated some 50m to the east and was on a different alignment from the 15–23 Southwark Street buildings.

It is possible that Buildings 1 and 2 were aligned instead on the channel situated to the south of the site. The south side of the channel was excavated on the site of 64–70 Borough High Street (Graham 1988a, 57), where it was found to be aligned north-west/south-east, but it is probable that the north side of the channel followed a more west-east alignment (Fig 8).

Period 2: Dating evidence for buildings 1 and 2 [19–70]

Coins

- [22] AD 45–65, Coin report, Nos 19, 20
- [22] AD 85–9, Coin report, No. 49
- [23] AD 45–65, Coin report, No. 13
- [34] AD 37–41, Coin report, No. 7
- [38] AD 64–8, Coin report, No. 30

Objects

- [20] Copper bow brooch, AD 243–65, Copper alloy object, No. 16
- [34] Bow brooch, pre-Flavian, Copper alloy object, No. 15
- [35] Bow brooch, mid-late 1st century AD, Copper alloy object, No. 19
- [37–48] Copper bow brooch, pre-Flavian, Copper alloy object, No. 12

Decorated Samian

- [19–20] Neronian, SG Dr 30
- [19–20] Pre-Flavian, Stamped Dr 24
- [20] AD 50–65, Stamped Dr 29
- [21] Neronian, SG Dr 29
- [22] Pre or early Flavian, SG Dr 29
- [22] Neronian-early Flavian, SG Dr 29
- [22] Early-mid Flavian, SG Dr 29 or 37
- [22] AD 100–125, CG Dr 37
- [23] AD 60–80, SG Dr 30
- [24] AD 45–65, Stamped Dr 15/17
- [24] AD 55–70, SG Dr 29
- [24] AD 55–75, Stamped Dr 18
- [37–48] AD 65–75, Stamped Dr 15/17R
- [40] AD 50–70, SG Dr 29
- [40] Pre-Flavian, Stamped Dr 27g

Pottery

- [20] GROG, SAM Dr 27, SHEL, AD 40–100
- [21] DR20, GROG, LYON, PE47, SAM Dr 29, SAND II Q, SAND V A, VRG, VRR, VRW M, AD 60+

Intrusive fabrics: BB2 IV J 2, C306, HWC III F, LOEG VI C, OXRC, VRW I B 2

[22] AHSU II A, C189, DR20, GROG II L, GROG IV J 3, H70, KOAN, LYON, NKSH II M, OXID I A, OXID I B 1, SAM Dr 15/17R, SAM Dr 18R, SAM Dr 27, SAM Dr 29, SAM Dr 33, SAND II N, SAND II P, SHEL II A, TNIM V A, VRG, VRW I D, VRW M, AD 60+

Intrusive fabrics: AHSU II C, EGGS VI C, FINE III B, GROG II A, HWC II E, HWC III F, LOMI IV J 3, OXID I B 6, OXID III C, OXID IV A, RDBK III B, SAND II A, SAND II G, SAND II H, SAND III C, SAND III F, SAND IV A, SAND IV F, VRW I B 2, VRW I B 4, VRW I B 5, VRW I B 8

[23] AHSU, FINE, G238, GROG IV F, KOAN, SAM RITT 13?, SAM Dr 15/17, SAM Dr 24/25, SAM Dr 27, SAM Dr 30, SAM RITT 9, SAND II N, SAND II Q, SAND IV A, SAND III A, TNIM, VRW I A, AD 60+

Intrusive fabrics: RDBK III B, SAND II A, SAND II B, SAND II R, SAND III A, VRW I B 2

[24] AHSU II A, AHSU II R, C189, DR20, FINE, G238, GROG II A, GROG II H, GROG IV F, LYON, OXID I A, PE47, SAM Dr 15/17, SAM Dr 18, SAM Dr 27, SAM Dr 29, SAM RITT 13, SAND II N, SAND II Q, SAND V A, SAND V B, SHEL II A, SHEL II M, TNIM V A, TN V A, VRW I A, VRW M, AD 60+

Intrusive fabrics: RDBK III B, SAND II B, FMIC, HWC, SAND IV A, VRW I B 3

[25] SHEL, SAND, OXID, AD 45+

[37–48] AHSU, DR20, FINE, GROG II A, H70, KOAN, LYON, OXID I A, PE47, SAM Dr 15/17, SAM Dr 18, SAM Dr 18R, SAM Dr 27, SAM RITT 12, SAND II A, SAND II N, SHEL II A, TN, TNIM, VRW I A, VRW I J, AD 60–80

[37] VRW, AD 60+

[38] C189, EGGS, GROG, RDBK IIIB, SAND IIB, VRW IB1, AD 70–100

[40] DR20, GROG II, OXID IIB, OXID IIK, SAM Dr 27, SAM Dr 29, SAND IIB, AD 70–100

[42] AHSU, FINE IIIH, GROG III, SAM Dr 15/17, SAM Dr 18, SAM RITT 12, SAND IIB, SAND IIN, SAND IVA, VRW, AD 70–100

[49] SHEL IIA, AD 45–80

[58] LYON, GROG IIN, OXID IIIA, SHEL, AD 45–80

[60] DR20, GROG, OXID IIA, SHEL IIA, SAM, SAND IID, AD 45–80

[62] GROG, GBWW, SHEL IIA, TNIM, RDBK IIIB, VRW, AD 70–100

[66] SAND, AD 45+

[67] GROG, SHEL IIA, AD 45–100

[69] GROG, SHEL IIA, VRW, AD 45–100

[70] DR20, GROG, GBWW, KOAN, NKSH IIM, AD 45–100

Period 3: The Flavian Buildings (late 1st century)

Demolition of Buildings 1 and 2

In Area I some of the slots of Building 1 [42,39,43] were sealed by what appeared to be demolition debris, presumably to level the area for the construction of Buildings 3 and 4 (see

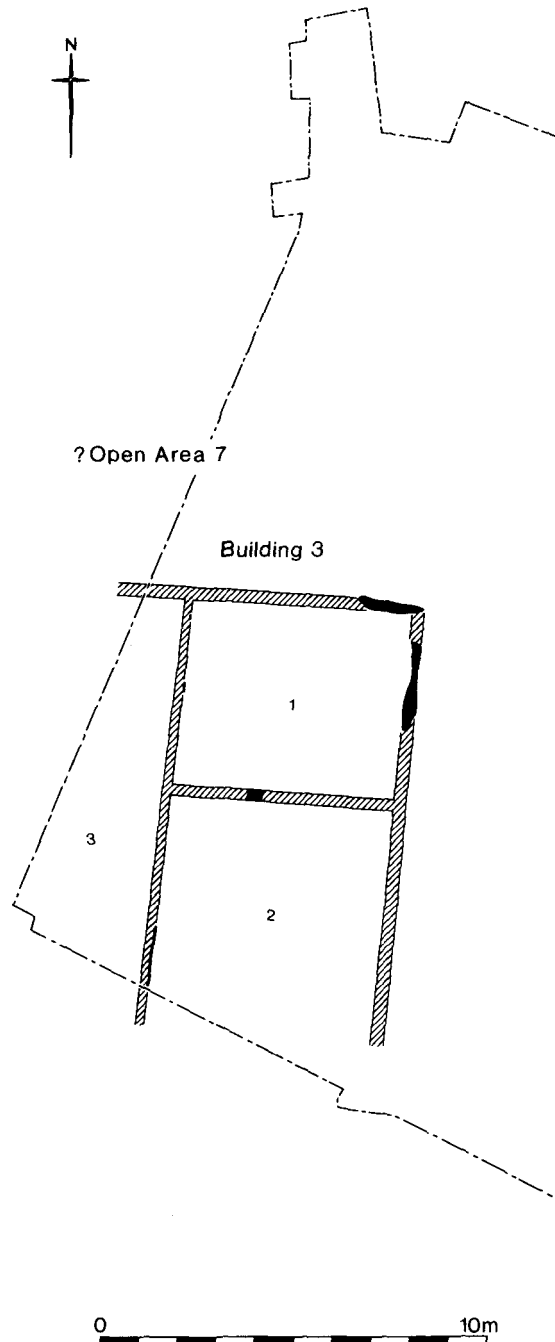


Fig 9. Building 3 (1:200).

below). These deposits, which consisted of layers of clay and silty sand with charcoal and burnt daub [71] were spread over Area I, thus indicating that much of Building 1 in this area had been demolished. They lay at a height of *c.* +1.50-1.80m OD.

In Area II, Building 2 was completely covered with dump layers about 0.10m thick [72]. Because these layers were restricted to the area of the building it seems likely that the debris derives from its destruction. One small shallow depression was levelled with pieces of broken

amphorae, but the rest of the dump levels were interleaving lenses of silt, sand and clay with a high charcoal content, which may suggest that the building had been burnt and the debris spread to level the area.

More generally distributed across Area II, and sealing the demolition deposits [72] described above, were layers [73] of clay, sand, charcoal, gravel, Kentish rag, and tile. These lay at a height of *c.* +1.60 to 1.95m OD.

None of this demolition process is closely dated, and with the possible exception of the material covering Building 2 there is little to indicate that the debris derived from the buildings it ultimately sealed.

It is possible that the dumping in the two areas might have been carried out at the same time. In Area I pottery in the dumps was dated to AD 70–100 and two coins (Coin report Nos 9–11) were dated to AD 45–65. There was also a coin dated to AD 64–68 (Coin report No. 33). In Area II, some sherds of pottery were dated AD 60–100 and a coin (Coin report No. 12) was dated AD 45–65.

Building 3 (Fig 9)

AREA I

Building 3 was a clay and timber structure built over the levelling debris [71]. It measured at least 11m long and 7.5m wide but was truncated. Unfortunately the building was excavated without detailed recording so it is not possible to give details of construction methods.

Layers of sandy clay [74] of 0.40m thickness were deposited to level part of the area for the building. Upon this a construction surface [75] of clay and gravel 0.20m thick was laid at +1.53mOD. The clay walls [76] were 0.30m wide and survived to a height of 0.12m. They appear to have been constructed over a timber baseplate with two planks on edge to retain them. Another wall [77] was of slightly different build, having a layer of broken amphorae sherds between the timber baseplate and the clay wall.

Building 3 was divided into at least three rooms. Room 1 had featured wall plaster but none was retained. There was no evidence of stakes, posts, foundation slots, or of a floor surface.

Evidence of the relationship of Building 3 to the foundations of Building 4 (Fig 10) [78] had been destroyed by the latter's robber trenches [211–215, 208–210]. Thus the sequence of

Buildings 3 and 4 is unclear, although there are indications that Building 3 was earlier than Building 4 (rather than added at a later date in the same way as Building 5—see below). For instance, the construction level of Building 3 at a height of +1.53m OD was *c.* 0.50m lower than that expected for Building 4 as evidenced in Area II.

However the dating evidence suggests that Building 3 had a short life span, and it may be even that these remnants belong to Building 4, perhaps as floor make-ups and internal walls.

A date of AD 70–100 is likely for Building 3 but the gravel surface within the building [75] contained sherds dated AD 90 and AD 130+. These may have been intrusive.

It is difficult in the absence of detailed field recording to understand how this building may be reconstructed or what may have existed outside it. A possible building plan is shown in Fig 9.

It was not clear when Building 3 was demolished. There was no recorded evidence of demolition debris or dumping over Building 3 until the area was covered with make-up layers [161–162] for a tessellated floor [198–202] in the mid 2nd century AD. Presumably Building 3 was destroyed long before that by the construction of Building 4.

Building 4 (Fig 10)

The remains of substantial masonry foundations belonging to a building were excavated in Areas I and II. The building had been removed by modern cellars between the two areas.

AREA I

The presence of the robber trenches in Area I meant that the relationship of the construction of Building 4 to the apparent earlier buildings was unclear. In Area II, Building 4 had cut through Building 2.

Although the building masonry had been extensively robbed in Area I, the wall alignments can be determined from the position of the robber trenches. This is further supported by the presence of pile foundations surviving beneath the robber trenches.

To the east of the cellars in Area I the building was identified from timber pile foundations measuring at least 15m by 20m [78–79]. Some

traces of Kentish rag foundations survived, but generally only the timber piles had escaped destruction by robbing in this portion of the building. The piles were arranged roughly in rows of three across the line of the wall; it is not known whether they were truncated by the robber trenches but their surviving depth was 0.50m. The piles ranged from roundwood stakes to quarter and smaller split sections (wedge shaped). They measured about 0.10m across and were evenly spaced (Pl 3).

The piles did not appear continuously across the building in Area I, as indicated by the robber trenches and remnants of surviving wall foundations. For example there were no piles in the southwest corner or in the northern part of the building. This could be explained by the position of the channel noted previously (see Period 1—prehistoric and early Roman features). Two hundred and eleven timber piles had been placed in the wet ground of the channel edges, presumably where the ground was less firm and needed stabilisation. The dendrochronological dating evidence of the preserved piles (see Dendrochronology report) would suggest that the parallel pile foundation lines in Area I were contemporary.

One small remnant of Kentish rag foundation [79] situated over the timber piles survived to a height of +1.56m OD. It consisted of layers of ragstones and flint set in compact mortar.

The original height of the construction trenches and the level of the contemporary ground surface were unclear.

AREA II

To the west of the modern cellars, where robbing was less extensive, the foundation trenches that survived appeared to have been dug in sections, 0.05m to 0.10m apart. Four of these were discovered, each of which had vertical sides and rounded corners [80–83]. The depths were about 1.30m OD with their base levels generally at a height of 0.68m to 0.77m OD, though one foundation [82] was less deep with its base at a height of 0.96–1.12m OD. The widths varied from 0.60m to 0.80m. The trenches were filled with a 0.40m thick layer of tightly packed, unmortared chalk blocks overlain by a similar thickness of very compact mortar with small flints and small chalk and Kentish rag blocks, in turn topped with a 0.10m thick band of grey clay and small Kentish rag and flints. Between the



Plate 3. Pile foundations in the base of a robber trench from Building 4

upper parts of each foundation section, clay packing [84–87] had been inserted to a depth of c. 0.30m from the top of the foundation. One exception [86] had been packed with silt and Kentish rag. The purpose of these infills was not fully understood, but they were thought to represent some sort of constructional aid, perhaps packed into the soft gap between foundation sections to create a firm and level base for the walls.

No walls survived upon the foundations but two of the sections [80 and 83] were capped with a mortar plinth which might indicate the actual top of the foundation. One of these plinths [80] was composed of a 0.15m thick layer of small Kentish rag and 34 reused fragments from ten broken wall tiles. These were mainly on the south edge of the plinth and may indicate the remnants of the offset course. The top of the plinth was at 2m OD.

A further portion of wall foundation [88],

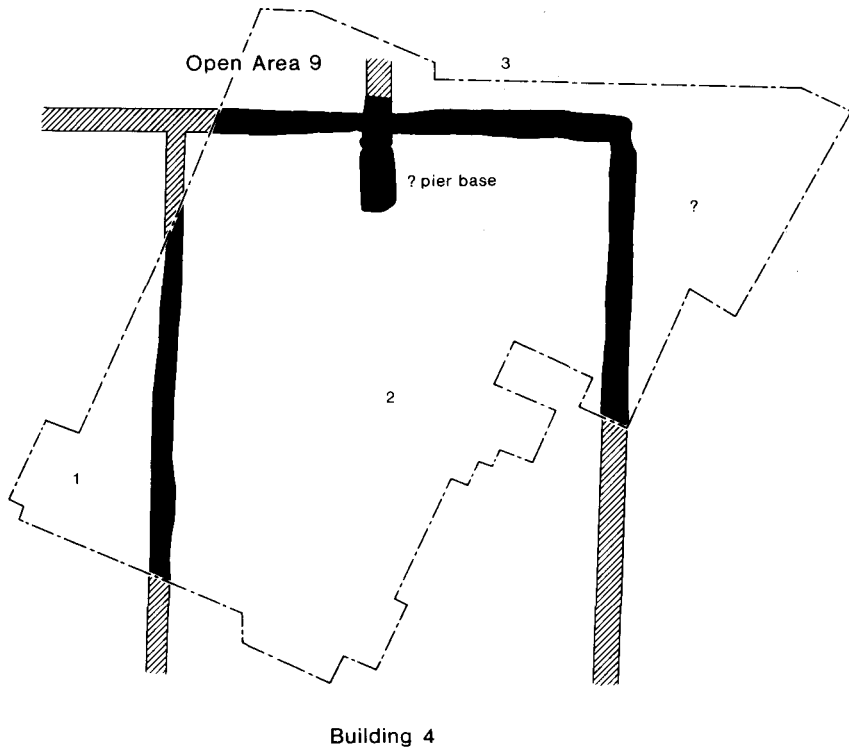
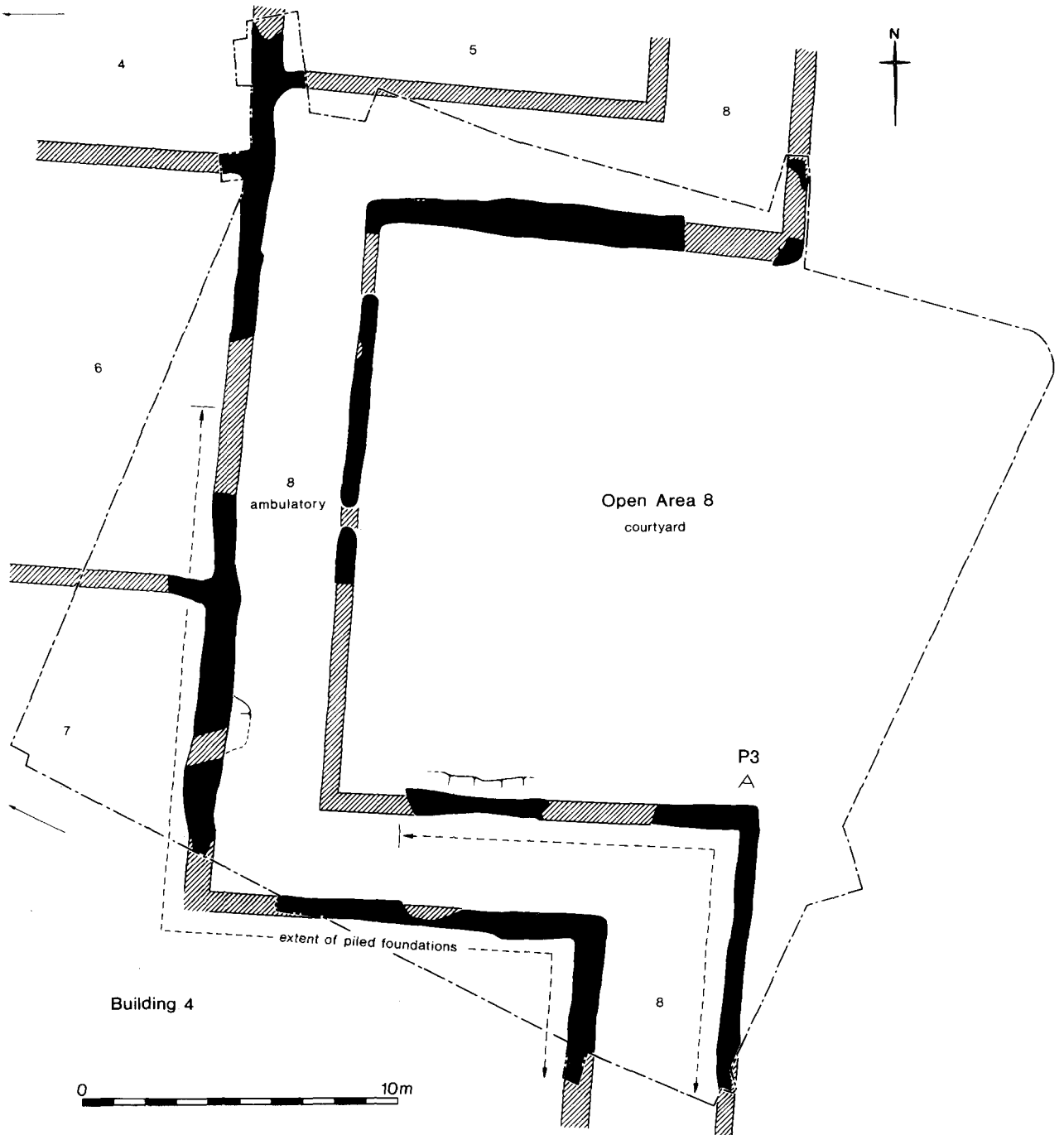


Fig 10. Building 4 (1:200).

situated to the south-west, was also possibly part of the building but appeared to be of a different construction. It was composed of two layers of gravel with a 0.10m thick layer of rammed chalk nodules sandwiched between them. The height

of the foundation as excavated was +1.81m OD but it was not clear whether it had been truncated. It was on the same alignment as, and of a similar width to, the other foundations. Its depth (base at +1.21m OD) was similar to that



of the robbed out shallower foundation mentioned above [82].

A further north-south [90] robbed out section probably represented a continuation of the north-south foundation [81] described above. It was shorter than the other sections, but was of similar width and depth, and had a similar infill [85]

between it and [81]. This indicates that the smaller section [90], although containing no masonry—which had presumably been robbed (it was backfilled with sand)—was most likely part of the original building. The small section [90] was clearly part of Building 4 and may have been a pier base or buttress. One of the

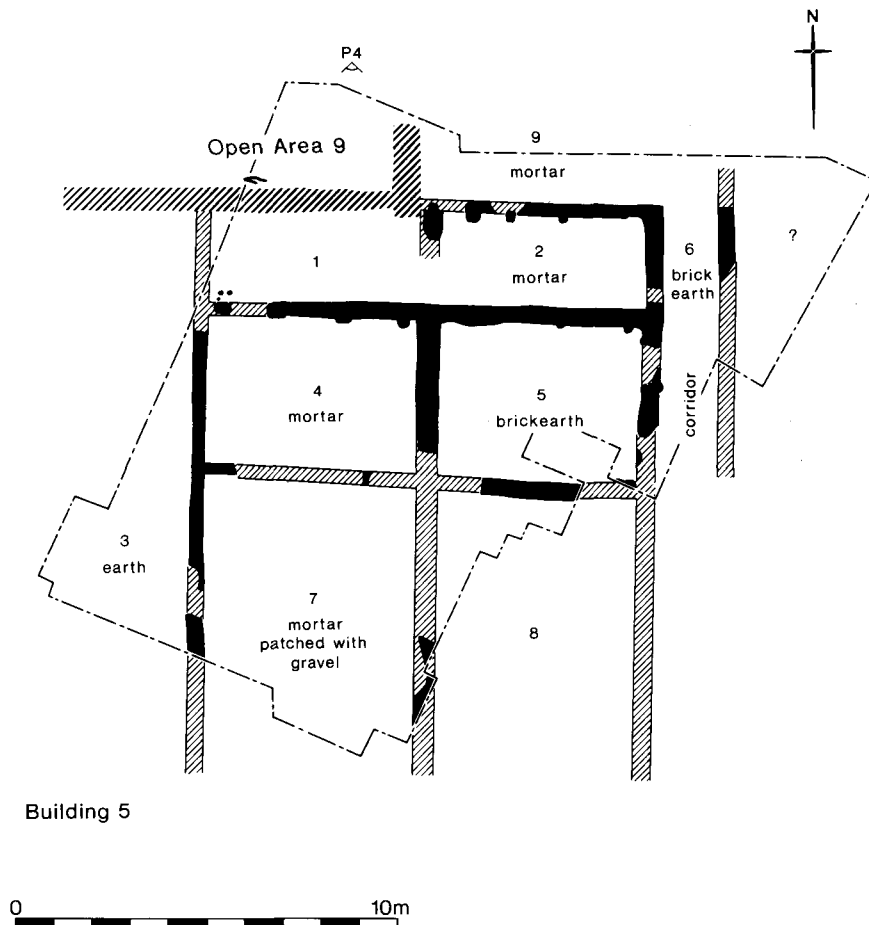


Fig 11. Building 5 (1:200).

foundations [81], which was truncated to the north, could also have been a small section like [90].

In Area II, several layers between 0.01–0.05m thick of clay and sand [89] were situated to the north of, and lapped over, the northern edge of the foundation [80]. They clearly post-dated the construction of the wall foundation and may either represent dumped debris, used as make-up for floor surfaces, or external surfaces. They were deposited from a height of +1.98m OD up to +2.28m OD. It was unclear whether they were deposited as makeup for Building 4 or for the later Building 5 (see below and Fig 11). No other make-up or floor surfaces remained, but the level of the plinth [80] at +2m OD indicates that the floor level was only a little higher.

Although it cannot be certain that the foundations in Area II were contemporary, it seems likely that they belong to the same building

phase. They were all cut into the levelling layers [73] and some (with the exception of [88], [81] and [80]) were sealed by the make-up for Building 5 [92].

Both foundations [82] and [88] were shallower than the others, but there was nothing to suggest that they were not contemporary with the building. They may have been internal walls carrying less weight, although there was no clear evidence to indicate that the other walls were external. However, though these foundations were of similar depth, the structure of the gravel foundation [88] differed both from the rest of Building 4 and also from Building 5. A timber baseplate [99] overlying the foundation showed that it was at least used or reused for Building 5.

Discussion

It is difficult to demonstrate how much of the structures in Area I were contemporary with

those in Area II, but the construction trenches and the foundations of flint and Kentish rag were similar, so it is likely that they form part of the same building.

In Area I, 27 timbers were dated by dendrochronological analysis. Two of these were felled in AD 72, and two others in AD 74. A further seven piles with sapwood were compatible with these dates. There was no significant evidence to show storage or reuse of these timbers, so the suggested period of construction is about, or soon after, AD 74.

It seems likely that Building 4 in Area II was of similar date, since the layers sealing it were dated to AD 70–100 (see Building 5).

The pile foundations of Building 4 in Area I appear to form three sides of an ambulatory or corridor 3.20m wide. This three-sided pattern is mirrored to the north of Area I by backfilled parallel robber trenches [208–210] and indicates a courtyard plan, enclosed on three sides but open on the fourth, measuring 18m across. There was no evidence as to what existed in the courtyard, though it is likely to have given access to the building from the east between the two wings. It appears that the ambulatory was an internal corridor, as the piled foundations suggest the presence of load-bearing walls rather than an open portico.

The area to the west of the ambulatory (and in Area II) was perhaps internal (Rooms 1–7), the presence of short lengths of robber trench such as [210] may indicate wall alignments for internal rooms. The distinctive plan of Building 4 allowed many structural elements to be allocated to it with confidence. Other remains cannot easily be reconciled with this plan, and they are attributed to later phases. For example, other robber trenches in the area of Building 4 [211–215], and also a hypocaust [193], appear to follow a different pattern and overlap the ambulatory; they are therefore assumed not to be part of Building 4. The date of the hypocaust indicates that it was also a later addition to Building 4—see Building 7 (Fig 14).

It is unclear which building was represented by the robber trenches [213 and 214] and small remnants of foundations [188 and 189] below them. They may represent wall lines from either Building 4 or 7, but a small amount of pottery from their foundations indicates a 3rd-century AD date.

Building 5 (Fig 11)

In addition to the short north-south robber trench mentioned above [90], another foundation of Building 4 [82] was robbed by [91] leaving only a few chalk blocks of the foundation. The similarity in size of trenches [90 and 91] to that of [83, 80, 81] suggests that the robbers did not enlarge the original construction trenches but removed the masonry with minimal damage to the surrounding layers. The robber trenches [90 and 91] had been backfilled with sand.

In Area I this part of Building 4 was apparently not robbed until the 4th century and probably continued in use. Similarly in Area II, some of Building 4 (specifically walls represented by foundations [80] and [81]) was probably reused and overlaid by the next phase of building—Building 5. There appeared to be no explanation as to why only some of the foundations were robbed but presumably this was to facilitate the construction of Building 5. The relationship between the two buildings is discussed in detail below.

Part of Building 4 (a backfilled robber trench and foundations [90], [91] and [83]) was overlaid by a layer of gravel [92], intermingled with small spreads of mortar and chalk [93].

The gravel covered the east part of Area II over Building 4, but was banked higher where the walls [94–8] of Building 5 were to be placed. The function of the gravel was presumably to act as a base for the construction of the walls and perhaps also to improve the drainage of the building. The gravel had also been placed over a masonry foundation of Building 4 [83]. Where there was no gravel spread in the western part of Area II, a timber baseplate for Building 5 was placed directly over a gravel foundation of Building 4 [99] above [88], which would have served the same purpose. One section of clay wall [100] was situated over a layer of wall plaster fragments.

No gravel or evidence of clay and timber building was seen to overlay Building 4 to the east of the site in Area I.

There was only limited evidence to suggest that the walls of Building 5 were built with the aid of construction slots: only one was noted at the south-east corner of the building [101], where the slot, 0.19m deep, had been filled with clay. Timber baseplates were laid directly upon the gravel for other walls [94–99] and [102–7]. The baseplates survived only as black stains, 0.04m

thick, which may be an indication that they were preserved by being deliberately charred.

Some walls, which lacked evidence for timbers, may have been constructed of lifts of clay without the use of a supporting timber framework. In these cases the wall appears to have been laid directly over the gravel [92] but again without evidence of a construction slot.

A surface [113] in Room 7 which overlapped the gravel foundation [88] but was laid up to the overlying timber baseplate [99], showed that the baseplate was 0.40m wide over the 0.60m wide gravel foundation.

Some of the timber baseplates were penetrated by post-holes presumably set into mortices. Some of the post holes were 0.30m deep from the top height of the baseplates, which must mean that they had gone through the baseplates into the ground surface below. They were situated about 1.20m apart and were filled with grey clay. The majority of the post holes were large, square and rectangular along most of the baseplates, but one baseplate [96] contained only very small circular stakeholes grouped in two parallel pairs along its length. These may represent internal strengthening of the wall rather than part of the main constructional framework.

Clay walls, which presumably had been packed around the upright posts, remained to a height of 0.20m over the baseplates. No mud bricks were seen and it is possible that they had either fused together or had been built in a series of layers or 'lifts'.

Laid on the gravel base [92] between, and respecting the walls, were 0.20m thick layers of clay [108] upon which were layers of broken *tegulae* mixed with clay, charcoal and ash [109] (Plate 4).

These layers must have served as floor make-up rather than having been dumped into the building after demolition, as they appear to have been deliberately laid to level the area. The tiles were mostly laid flat one or two deep but in the lower areas were five or six deep. The tiles showed no sign of having been previously used on a roof and may have been unused items, broken up to serve as levelling material. The make-up layers [108] and [109] may have come from the demolished walls of the previous building phases.

Several spreads [110–116] overlay the make-up, varying from room to room with a surface at +2.00m OD. It is likely that they were the remains of floors, although they could have been

make-ups or debris from the demolition of Building 5. Whichever was the case, it is clear that the deposits were laid down after the walls were erected, as they respected their alignments and mostly differed on either side of each wall.

Discussion

The clay walls of Building 5 divided the building into what was interpreted as two pairs of rooms of differing dimensions, the whole area being some 17 by 16 metres (Fig 11).

Room 1 appeared to be bounded to the north by reused masonry foundations from Building 4. It is unclear whether the west-east wall [105] of Room 1 continued to the west to form a corner with the north-south wall [106] of Room 4. Some postholes and stakeholes in this area may indicate that wall [105] did originally join wall [106], but no baseplate or clay survived. It is also possible that there was a doorway here.

Another possible place for a doorway may be seen in the area between walls [100 and 96] of Rooms 1 and 2. It was not clear whether or not wall [100] had been removed at its south end: it did not appear to have been joined to wall [105]. A small remnant of *opus signinum* floor [110] in this area would indicate that both Rooms 1 and 2 may have had such floors. However a patch of chalk and mortar [111] in Room 2 is inconsistent with this conclusion and it is possible that [111] may be a floor make-up.

Room 3 appeared to be a large room to the west but may perhaps have been a corridor mirroring that to the east—Room 6. Room 3 had a surface of crushed daub and clay [114] which may have been a floor or make-up.

Rooms 4 and 5 were of the same dimensions and were separated by a wall which had some remnants of plaster adhering to it but none was collected. Room 4 had a surface of crushed wall plaster and mortar [112] and Room 5 a clay floor [115].

Room 6 also had a clay floor and may be interpreted as a corridor [116] 1.5m wide. The area beyond the corridor to the east mostly lay beyond the limits of excavation and its character remains unclear.

Rooms 7 and 8 may again have been of the same dimensions but there was no east or south wall to Room 8—remnants of tile make-up indicate that it was a room. No floor surfaces survived. Room 7 had a floor of crushed wall



Plate 4. Tile make-up [109] of Rooms 1 and 2 of Building 5, showing foundations [80] and [81] of Building 4 in the foreground and cess pit [125]

plaster and mortar [113] patched with gravel in places.

Some of the clay walls of Building 5 [97, 98 and 106] were laid upon the foundations of Building 4 [83 and 88] but elsewhere a wall [94] had been built over a robbed and backfilled wall trench of Building 4 [91]. Similarly, part of the floor make-up of Building 5 [109] had been laid over a robber trench [90] that robbed part of Building 4. This indicates that Building 5 post-dates parts of Building 4. Elsewhere there are indications that parts of Building 4 remained in use; for example, there was no evidence that a clay wall or timber baseplate had overlain two of the masonry foundations of Building 4 [80 and 81]. It is possible that these were robbed for reuse but it is also possible that the superstructures that had existed on foundations [80 and 81] of Building 4 were still standing and were reused as part of Building 5. For this reason it is thought that Building 5 was a later addition to surviving remnants of Building 4. This is further supported by the absence of clay and tile floor make-up to the north of Building 4 foundations [80 and 81], which suggests that Building 5 did not exist in this area. It is unclear when the existing layers [89], which were interpreted as make-up for floor surfaces or an external area, were deposited:

whether as surfaces contemporary with this building or with the earlier Building 4.

To the east of the site (Area I) there was no counterpart to the clay and timber Building 5 and it is likely that the masonry Building 4 [78–79] continued in use. Building 5 may represent a refurbishment of part of Building 4.

The pottery from Building 5 mostly dated to AD 70–100 and a coin from the make-up layer [109] dated to AD 77–8. Pits, cut through the floors of Building 5 (see Period 4 [127]), contained pottery dating from AD 90–120 in the backfills.

In conclusion it would seem therefore that Building 5 was constructed a few years after Building 4 but was not in use by the early 2nd century.

An isolated foundation (not illustrated)

A large truncated masonry foundation aligned west-east was cut through the north-east walls [94, 100 and 102], the tile make-up [109] and floor [116] of Building 5.

A trench 0.47m deep contained a foundation of timber piles [117] represented by three straight rows of evenly placed circular pile holes. No timbers survived. Over the piles was a masonry

foundation [118] of Kentish rag and gravel packed in clay with a mortared skim on the top.

A small remnant of masonry foundation [119] had cut away part of the piled foundation [118]. This was of a different construction from [118], being composed of mortared Kentish rag and tile. It was not constructed on piles and was thought to be on a north-south alignment. The construction trench was backfilled with sandy clay around the west and east sides of the foundation. A complete pot had been incorporated into the constructional backfill [119], perhaps as a foundation offering. The pot is now lost.

Situated to the north of foundation [118] were remnants of mortar surfaces [120] which may have been contemporary with the foundation, or with Building 5: it was unclear whether they were cut by the foundation or laid up against it.

Unfortunately neither the foundation remnant or the piled foundation [118 and 119] were sufficiently well recorded to place them as part of Building 5. They had no relationship to Building 6 but were sealed by Building 7. It is most likely that they represent an addition to Building 5 replacing walls [94 and 102].

There was no datable material from this phase; no clues can be gleaned from wall plaster found within its robbing trench [121] which bore no similarity to any other fragments on the site.

Discussion of buildings 4/5

If parts of Building 4 in Areas I and II were contemporary, then this would have been a very substantial structure measuring some 50m by 30m.

There was no evidence to suggest that the masonry foundations of Building 4 supported masonry superstructures; in fact, masonry founded walls for clay superstructures are common, and stone buildings of this period are considered unusual. However, the depth of the foundations of Building 4 would suggest that they were intended to carry some weight, so that the building may have been constructed of masonry, and may even, on the basis of the massive foundations, have had an upper storey.

On the east side of the building, a corridor surrounded three sides of a large open courtyard. Access may have been from the Roman road to the south coast situated some 80m to the east through the courtyard. It is likely that the internal rooms would have been situated between

Areas I and II and the building in Area II may represent part of them. There was little evidence for the type of roofing material used, but a masonry structure is likely to have had a tiled roof. There was no evidence of floor surfaces until the end of the 1st century AD when the building probably underwent alterations and refurbishment in the shape of Building 5.

The wings of Building 4 were constructed over the earlier trenches (see above [21–24] (Fig 5)) and on the same alignment. This alignment does not seem to relate to the main Roman road which ran NNE/SSW (Fig 8). No road of similar alignment to the Roman buildings of 15–23 Southwark Street has yet been located, so it is likely that the buildings were aligned along the channel, noted above, situated to the south of the site. The south side of a channel was excavated at 64–70 Borough High Street (Graham 1988a, 65) and was found to have been revetted with posts and wattle sometime between AD 45–80, redefining the south bank of the pre-Conquest stream. The channel remained open until the end of the 1st century AD. The reason for alignment with the channel would be primarily topographical. However the channel may also have facilitated transport and supplies to the buildings as some of the channels in Southwark are known to have been navigable (Yule 1988, 16).

At the time that Buildings 4 and 5 were constructed during the later 1st century, both Londinium and Southwark were involved in a vigorous building programme. In the City, the forum and the port of London were constructed as well as the amphitheatre and the Huggin Hill baths (Perring 1991a, 26–33).

The status of the settlement of Southwark and its relation to Londinium is unknown. It may have been under military jurisdiction in the pre-Flavian period, but by the later 1st century it was perhaps part of Londinium or its *territorium* (Sheldon 1978, 45). The buildings of Southwark tend to be aligned along the roads or channels (Fig 8) and can best be interpreted as part residential and part commercial. The later 1st-century settlement stretched from the bridgehead southwards along the main road (now under Borough High Street) for at least 600m (Sheldon 1978, 31). The majority of the 1st-century buildings in Southwark (and in the City) were of clay and timber.

Some 50m to the south of 15–23 Southwark Street (Fig 8, No 10), clay and timber buildings were excavated at 10–18 Union Street (Fig 8,

No. 13). One of these (building 2) had at least three rooms, one of which—2.5m by 3.5m with plastered clay walls and a brickearth floor—was dated to AD 70–150 (Heard 1989a, 128). At 8 Union Street (Fig 8, No. 12), two rooms were revealed as divided by a north-south clay wall no more than 0.13m wide which was laid directly onto a levelling layer of sand over gravel. The floors were of baked clay, broken tile and crushed wall plaster (Marsh 1978, 223). Some 80m to the north-west of 15–23 Southwark Street, late 1st/early 2nd-century clay and timber buildings with differing construction techniques were excavated at the Courage Brewery site (Fig 8, No. 6). One of these had 1m deep foundation trenches with postholes at its base (Dillon *et al* 1991, 258). Further away from 15–23 Southwark Street, but still within the 1st-century settlement, clay and timber buildings have been excavated at several sites: Arcadia Buildings (not illustrated), 1a Bedale Street (Fig 8, No. 1), Bonded Warehouse (Fig 8, No. 2), 88 Borough High Street (Fig 8, No. 3), 107–115 Borough High Street (Fig 8, No. 4), Cathedral Crypt (Fig 8, No. 5), Montague Close sewer trench (Fig 8, No. 8) and Toppings Wharf (Fig 8, No. 11) (Swain 1988, 479–488), but these exist only in very fragmentary form and it is often not possible to distinguish rooms or construction technique.

The only 1st-century masonry-founded structures so far excavated in Southwark are Buildings 4/5 at 15–23 Southwark Street and a large raised floor building constructed of masonry and tile at Winchester Palace (Fig 8, No. 14; Yule 1989, 33). When these large, masonry-founded buildings are contrasted with the generally unsophisticated clay and timber structures found in the rest of Southwark, it is clear that they were no ordinary town houses. Substantial town houses tend not to appear in Roman towns until the mid 2nd century AD (Walthew 1975, 192). In the City, large stone warehouses and other 1st-century stone structures (for example Cannon Street Station complex, Huggin Hill baths, an aisled building at 5–12 Fenchurch Street) are thought to have a public rather than a private function (Perring 1991a, 35) and may have been part of a state programme. At Chelmsford, where suitable building stone was scarce, all the town buildings so far excavated were constructed of clay and timber and only the *mansio* and the temple were of masonry (Drury 1975, 165). It is likely therefore that Buildings 4/5 had a public rather than a private function.

Parallels with other large courtyard buildings of early date such as *mansiones*, temples and *macella* should also be considered.

Mansiones were normally large buildings with a range of rooms, grouped in suites, around a central courtyard and provided with a separate bathhouse. They provided overnight accommodation and fresh horses for members of the *cursus publicus*—the imperial posting service—and for other official travellers carrying goods and despatches (Burnham & Wachter 1990, 36). In this respect they cannot strictly be classed as public buildings—ones fulfilling a public function and open to the public—as they were reserved for government officials (Mackreth 1987, 133). There were also the intermediate *mutationes* which provided a change of horse but no accommodation. The *mutationes* are difficult to identify and the only possible *mutatione* has been identified at Thorpe-by-Newark (Burnham & Wachter 1990, 28).

The Chelmsford *mansio* measured 65m by 66m with a central courtyard some 40m across and was surrounded by an ambulatory about 3m wide; it lay in the angle between the principal roads but set back from them and not aligned on them, being oriented north-south (Drury 1975, 163). It dated from AD 125–50 (Wachter 1975, 200). Buildings 4/5 possessed a central courtyard and lay some 80m from the main road to the south coast. They were not aligned on the road but perhaps on the channel to the south. They were positioned outside the south entrance to the City, just as both the *mansio* at Lower Wanborough and the possible *mansio* at Wall lay outside the defences (Burnham & Wachter 1990, 37). At Silchester a *mansio* measuring 61m by 64m contained three ranges of rooms divided into suites grouped around a courtyard which was enclosed on the fourth side by a wall (Boon 1974a, 138). The presence of a bathhouse situated at its south-east corner and the arrangement of its rooms, together with its early date, are characteristic of a *mansio* (Wachter 1975, 264). It was situated close to the south gate of the town.

The *mansio* at Lower Wanborough was identified only from cropmarks but again was characteristic in that it was a large courtyard building with a bathhouse situated at the south-east corner, and lay close to the junction of two major Roman roads. Its courtyard measured 16m by 14m and was enclosed on three sides by an ambulatory 2m wide (Phillips & Walters 1977,

225). These are not dissimilar dimensions to Building 4, which had a courtyard 18m across and an ambulatory 3.20m wide. Unfortunately not enough of Buildings 4 and 5 survived to suggest the arrangements of rooms into suites and there was no evidence for a bathhouse. It is possible that much of Building 4/5 remains to be excavated, including the bathhouse.

Buildings 4/5 have some of the characteristics of a *mansio* and this would seem a very likely function in view of its position at the southern approaches to the City. However, it is worth noting other courtyard structures which may provide parallels for Buildings 4/5.

There is little to suggest that Buildings 4/5 were a temple, although the size of the structure and the central courtyard are compatible with this interpretation. However, the absence of votive objects often found in connection with temples (Burnham & Wachter 1990, 187) argue against this.

Another type of courtyard building is a *macellum* or market hall. A town might possess a separate *macellum* in addition to one in the forum (Wachter 1975, 60). However Buildings 4/5 have few of the characteristics of *macella* which have been identified in Britain at Verulamium, Cirencester, Leicester and Wroxeter (Mackreth 1987, 136) and there was no evidence for shops.

It is possible that Buildings 4/5 could be interpreted as the residence of an important military or government official. There may well have been buildings of special status deliberately placed on the south bank outside the City (Brian Yule, pers comm). The number of military objects from the site would support such a hypothesis. There is evidence for a possible military presence from Winchester Palace (see Fig 8, No. 14), albeit of later Roman date, perhaps in the form of a base or guild headquarters (Yule 1989, 35). The courtyard plan is an import introduced to Britain by the Roman army and derived from military architecture (Walthew 1975, 192).

In summary, it would appear that Buildings 4/5 were of high status but whether this status was of a military or public nature is unclear.

Period 3: Dating evidence for buildings 3, 4 and 5 [71-121]

Building material

[72-3] Tile fabric 3022, AD 50-80; 3023, AD 50-120; 3028, AD 70-100/120

Dendrochronology

[78-9] Timber piles, AD 72-4

Objects

[76] Flavian intaglio—Intaglios No. 2

Coins

[71] AD 45-65, Coin report, Nos 9-11
[71] AD 64-8, Coin report, No. 33
[73] AD 45-65, Coin report, No. 12
[74] AD 45-65, Coin report, No. 14
[105] AD 71, Coin report, No. 38
[109] AD 77-8, Coin report, No. 45
[112] AD 71, Coin report, No. 40
[113] AD 64-8, Coin report, No. 28
[117] AD 45-65, Coin report, No. 15

Decorated samian

[71] Neronian, SG Dr30
[71] Neronian-early Flavian, SG Dr 29
[71] Neronian/early Flavian, Stamped Dr 27g
[71] Pre-Flavian, SG Dr 29
[71] Pre-Flavian, SG Dr 30
[71] AD 70-85, Stamped Dr 27g
[71] Flavian, SG Dech 67
[72] AD 50-70, SG Dr 30
[73] Claudio-Neronian, SG Dr 29
[93] AD 35-50, SG Dr 29
[97] AD 70-95, Stamped Dr 27g
[109] Neronian, SG Dr 29
[109] Flavian, Stamped Dr 29g
[115] Neronian/Flavian, Stamped

Pottery

[71] AHSU IIA, AHSU IIC, BB2 IVH [intrusive?], C186, C189, DR20, FINE, GROG IIA, GROG IIB, HWB, KOAN, LYON, OXID IA, OXID IVC, PE47, PRW3V, RDBK IIB, SAM RITT 12, SAM Dr 15/17, SAM Dr 18, SAM Dr 18/31 [intrusive?], SAM Dr 24/25, SAM Dr 27, SAM Dr 23, SAM RITT 12, SAM RITT 9, SAM Dr 29, SAM RITT 8, SAM RITT 13, SAND IA, SAND IIB, SAND IID, SAND IIN, SAND IIQ, SAND IIIA, SHEL IIM, TR V, VRW, AD 70-100
[72] DR20, SHEL IIA, GROG IIA, SAND IIA, SAM, AD 45-100
[73] DR20, AHSU, FINE, GROG IIA, GROG IIIA, SAND IIA, SAND IIB, SAM Dr 27, SHEL IIA, KOAN, LYON, RHOD, TNIM, VRG, VRW IIB, VRW IVA, AD 60-100
[74] AHSU IIC, C189, DR20, FINE IIB, FINE IIIH, GROG IIA, GROG IVF, LYON, OXID IA, RDBK IIB, SAM RITT 13, SAM Dr 27, SAM Dr 15/17, SAM Dr 18, SAND IIIC, SAND IVA, SAND IIA, SAND IIC, SAND IIQ, SHEL IIA, VRW, AD 70-100

- [75] BB2 IIF [intrusive?], HWC IIF [intrusive?], SAM Dr 18, VRW, AD 60–100
 [76] AHSU, AD 60–150
 [88] DR20, GROG, AD 45 +
 [90] DR20, GROG, OXID IIA, SAM, VRG, AD 60–100
 [92] DR20, GROG, SAND IIA, SHEL, AD 45–100
 [93] DR20, C186, GROG, SAM Dr 27, SAND IIA, VRW, AD 60–100
 [94] AHSU, FINE IIB, SAND IVA, VRG, VRW, AD 70 +
 [99] FMIC, GROG, HWC, SAND IIA, SHEL, NKSH, VRW, AD60–100
 [100] AHSU, FINE, SAM, VRW, AD 70–100
 [105] PE47, SAM, VRG, VRW, AD 60–100
 [109] AHSU, DR20, FINE, GROG, HWC IVF, SAM Dr 27, SAND IVF, SAND IIB, SAND IIE, VRG IVA, VRW, AD 70–100
 [112] AHSU IVF, AHSU IIC/D, DR20, FINE IIB, GROG IIA, SAM, SAND IIA, SAND IIC, SAND IVF, VRW IB5, AD 70–120
 [113] AHSU IIB, HWB IVF, FINE, GROG IIA, RDBK, SAM, SAM Dr 18, SAND IIA, VRW, VRW IB2, Date: AD 70–100
 [114] AHSU, C186, GROG, H70, LOMI, PE47, SAM, SHEL IIA, VRW, AD 70–100
 [115] AHSU IIC, SAM, AD 45–100
 [118] DR20, VRW, AD 60–160

Period 4: Buildings 6 and 7 (2nd and 3rd centuries)

Demolition of Building 5

AREA II

In Area II the walls of Building 5 appeared to have been demolished down to *c.* +2.20m OD. Dumped layers of clay and charcoal [122] overlay the *opus signinum* floor [110] of Building 5. Layers of clay [123] were dumped over the tile make-up [109] in the east of Building 5 and small remnants of crushed tile and silt [124] were found above the tile make-up [109] in the west of the building. Elsewhere there were no dumps or infill. The building must have gone out of use when a series of pits, and what was interpreted as a drain, were cut through it.

One pit [125] was cut into dumped debris [124] which lay over the floor of Building 5. The pit was oval, measuring 2m across; it was over 2m deep and filled with a greenish clay which may have been cess. Running into its east side was a west-east linear cut [126] interpreted as a drain or gully. This gully was cut through the wall [97] and also the dumped debris over the floors [122–123] of the clay and timber Building 5. The drain/gully had near vertical sides and its base sloped from west to east by 0.24m from +2.12m OD down to +1.88m OD. It was 0.40m deep and filled with clay and silt. As it sloped and did not appear to be present to the

west of the pit [125] it was assumed to be associated with the pit and may have been a drain running into it.

There were also seven large pits [127] dug to the south of the site which cut through the floors [112, 113, 114]. These varied in size but averaged about 1m diameter and 0.40m deep and were backfilled with building debris.

The pits suggest that Building 5 was abandoned and left semi-robbled. It is not known how long this hiatus lasted but the dating evidence (see below) would suggest that the pits and the possible drain were backfilled AD 90–120. What purpose the drain and the pits served is also unknown—perhaps Building 4 in Area I was still in use and this derelict area of Building 5 was used as a refuse area.

The majority of the pottery recovered from these contexts was dated to AD 70–100 but a small amount of pottery from the backfills of the pits [127] dated from AD 90–120.

Building 6 (Fig 12)

AREA II

A new clay and timber building was constructed over the demolished Building 5.

Layers of sandy clay [128], 0.30m thick, were deposited over the backfilled pits [127] that cut through the floors of Building 5. These levelled the area and were used as make-ups for floor surfaces for Building 6.

Building 6 was built with construction slots 0.23m deep which appeared to have been cut into these clay make-up layers. The slots contained timber baseplates which survived for the most part only as charcoal and grey clay 0.03m thick at the base of the slot. Some of the clay walls: [129] between Rooms 7 and 9, [130] between Rooms 10 and 11 and [131] between Rooms 3 and 4, showed no evidence of baseplates. These apparent differences in construction may simply be due to differing survival of the timbers.

Only two slots produced evidence of upright posts—those between Rooms 6 and 7 [132] and Rooms 7 and 8 [133]. These were 0.50m deep and filled with black silt. The walls were built of brickearth, 0.20m deep, situated over the baseplates and packed both within and above the slots. The walls survived only *c.*0.10m high above the floors but it could be seen that they had been plastered in seven of the rooms. Not all of this plaster was collected.

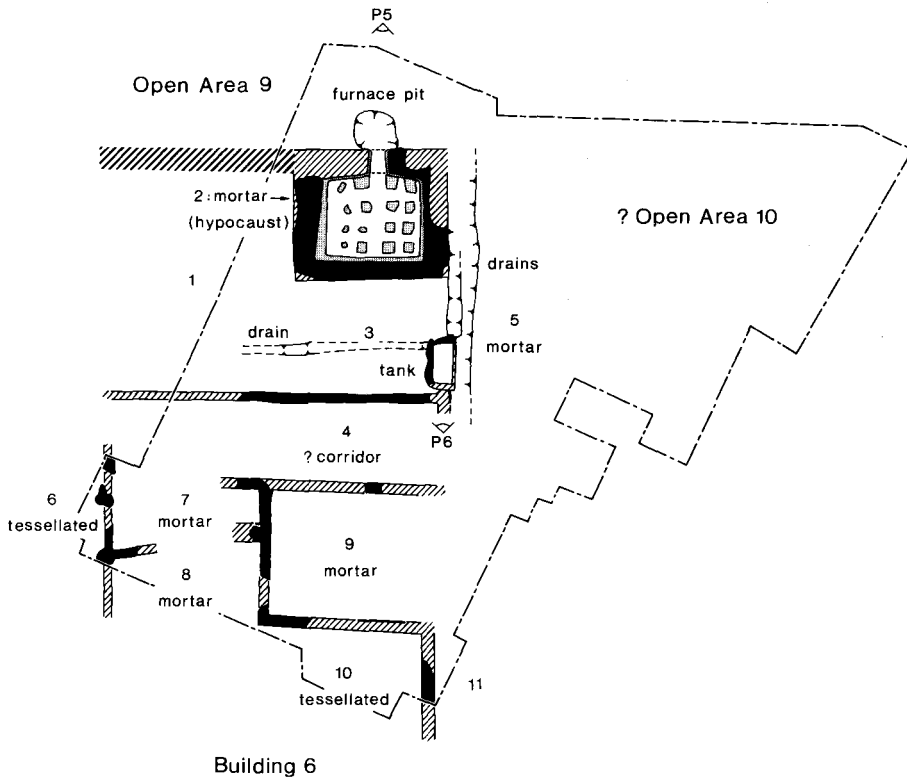
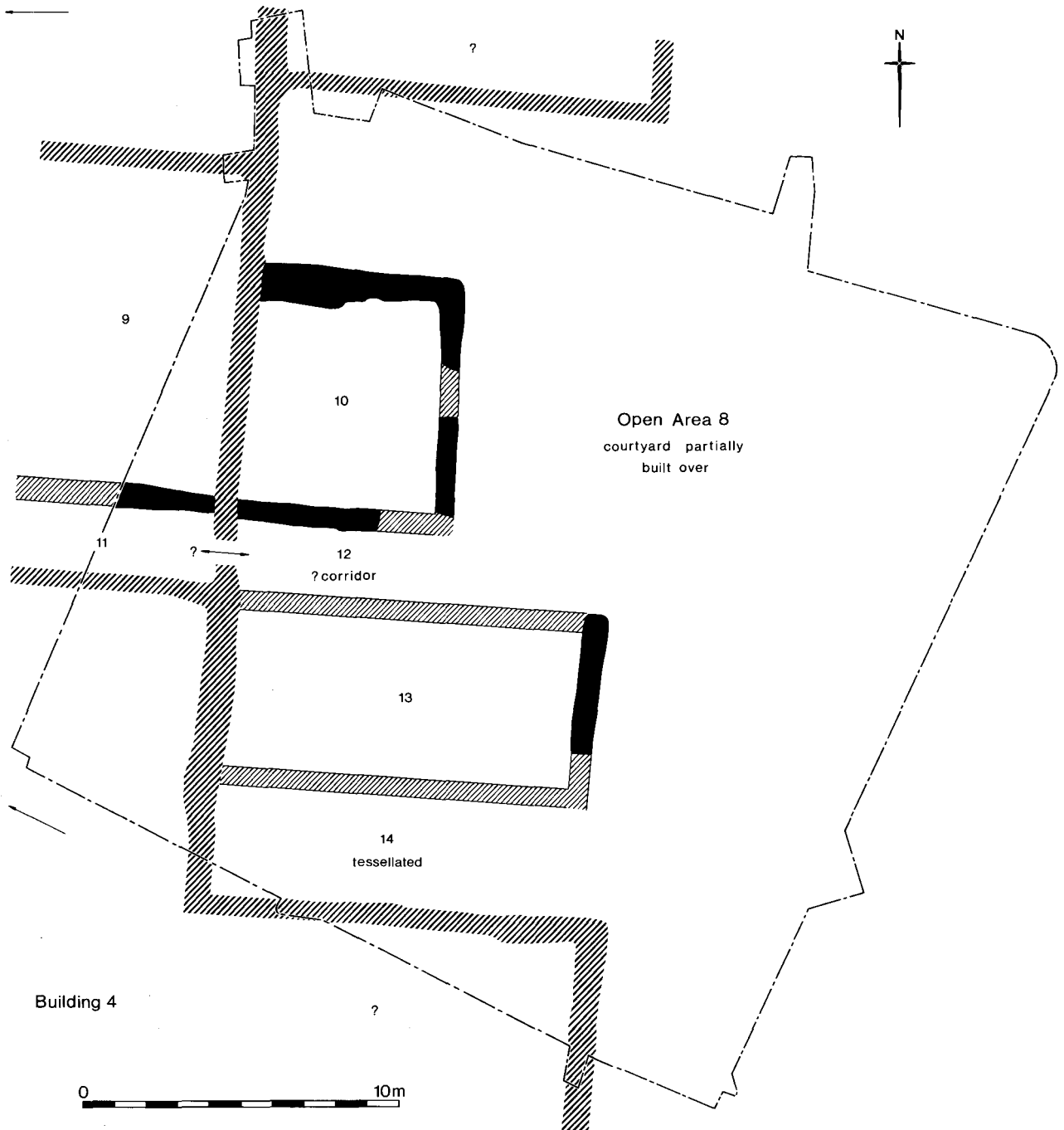


Fig 12. Building 6, with structural additions to Building 4 (1:200).

Six of the rooms—Rooms 5, 6, 7, 7/8, 9 and 10—had floor surfaces. These were situated over the clay make-ups described above [128] and respected the walls of the building. Constructed of white mortar, parts of the floor [138–141] had a skim of *opus signinum*. A small remnant of

tessellated floor (in Room 6 [142]) had *opus signinum* adhering to its base, and it may be that the mortar floors served only as makeup for grander and more substantial floor surfaces. However the presence of a quarter-round moulding between the south wall [130], and the



floor [141] of Room 9 clearly demonstrates the contemporaneity of the wall and floor. There was evidence of a further fragment of a white mortar and gravel surface [138] in Room 11 at a similar height to the other mortar surfaces of Building 6 and which may also have been part of the same building. The small remnant of tessellated floor [142] which existed in Room 6

was likewise at the same height as the rest of the floor surfaces. However it could have been a secondary tessellated floor laid on top of the original mortar. Another tessellated area [143] appeared to respect wall [130] of Room 10 and was thought to be contemporary with Building 6. The floors stood at a height of +2.42m OD.

Situated to the north of the rooms just described was a hypocaust (Room 2) 2.5m square which had been cut into debris dumped over Building 5 (Pl 5). The base of the hypocaust was laid over a backfilled drain and cess pit [125 and 126] which had been cut into Building 5.

It is difficult to ascertain how the hypocaust was constructed and where the construction cut was placed. Its walls appear to have been built in two portions—an inner portion [144] of 0.15m-width clay wall and an outer portion [145] with 0.50m-width clay walls. The outer walls appear to be positioned over existing walls, for example the north wall was built up over the masonry foundation [80] of Building 4. Similarly the south wall was built against and possibly over the top of a wall-stub of Building 5 [105], and the outer west and east walls were similarly built over existing dumps [122 and 124]. The outer walls therefore were little more than 0.20m deep whereas the inner walls were 0.40m deep. It would appear that the construction cut of the hypocaust was cut down where the inner walls and the mortar base were to be placed. The outer walls by and large had been added to existing walls or dumps, perhaps without the aid of a construction cut.

Between the inner and outer walls of the hypocaust was a vertical lining of broken tiles which may have been used to bond the inner with the outer walls and thus indicates that the inner walls may have been added later. The inner walls, like the *pilae*, were positioned on a base of white mortar [146], perhaps another indication that they were being added later. It is possible however that the inner walls and the tiles served as a lining to protect the walls from heat, though there was no indication of burning on the inside. Many of the tiles were flue tiles which had diamond or square lattice, or straight combed keying, and two circular vent holes. Many fragments join and have mortar on the keyed surfaces so it is likely that these tiles were remnants of flues carrying hot air from under the floor up inside the walls. There was no evidence for a timber framework.

Four by four rows of incomplete *lydion* bricks were placed on the mortar base [146]. Normally *pedalis* bricks were used as the base brick, but the *lydion* bricks incorporated in this hypocaust had an average width of 0.31m though the lengths were broken, leaving them squared. On top of the *lydion* bricks were placed circular bricks or *bessales* mortared together with *opus signinum* to



Plate 5. Hypocaust from Building 6

form the *pilae* on which the suspended floor would rest. The *pilae* are unusual as *bessales* found on other London sites are normally square. It is likely that each *pila* would have been capped with a *pedalis* brick. The distance between the *lydion* bricks of each *pila* was between 0.20 and 0.22m, which would mean that the *pilae* would have to be bridged with *sesquipedales*, large 1.5 Roman feet square bricks, to form a suspended floor. Within the demolition debris of the hypocaust [148] were several fragments of brick 0.06m thick and with impressed marks forming a patterned border. These appear to have been made with a triangular pointed tool and could have been for keying. Their thickness and unusual keying suggest the possibility that these are fragments of *sesquipedales*. The top surviving height of the *pilae* would indicate that the suspended floor was at least +2.56m OD high, comparing favourably with the height of other floor surfaces.

On the north side of the hypocaust was a passage built of clay which connected the room to a furnace. The sides of the passage were constructed of a lining of tiles six courses high laid horizontally in the clay. The furnace was cut into surfaces of the previous building [89] and was 0.26m deep. Leading from the furnace through the passage and down the centre of the room between the *pilae* was a scoured out area 0.06m deep filled with ash [147]. This area probably took the brunt of the heat as the sides

of the passage were scorched red. Over this ash [147] were layers 0.07m deep of ash, grey sand and charcoal [147] which were spread thinly within the room and the furnace. It was often not possible to separate usage from demolition debris. Some layers [147] may have been usage material raked out from the hypocaust during its use and spread around the furnace area, or they may have been demolition debris since they contained silt and sand. The raking out may account for the scour down the centre of the hypocaust, though this may have been caused by the heat.

Demolition debris within the hypocaust [158] contained much wall plaster, probably from a collapsed wall in the room above. It was painted with a linear design involving large areas of white and red ochre which had been fairly crudely applied and embellished with black stripes.

There were remnants of wall plaster [148] between Rooms 1 and 2 which had a pink background and was painted with random splashes of maroon, black and white, divided by black vertical lines. Similarly, a pit [160], which had been cut through the west wall of the hypocaust [145] contained wall plaster fragments of pink dado design similar to that of wall plaster [148] situated on the outside of the wall of the hypocaust. Two parallel alignments of wall plaster [149] were positioned within and against the outer south wall [145] of the hypocaust between Rooms 2 and 3. The plaster within the wall indicates either that this wall must have reused clay from another wall or that it had been remodelled when the hypocaust was added to it. Some of the plaster may have been the original plaster on wall [105] perhaps contemporary with Building 5.

Remnants of a drain [150] between Rooms 3 and 4, cut into the floor make-ups. It consisted of a cut lined with clay and broken tiles which were laid flat on the base of the cut and on edge along the sides, where they overlapped. It was 0.11m deep and sloped from +2.46m OD at the west end down to +2.38m OD at its east end, where an inlet/outlet hole had been made in the wall of a tank [151] below ground surface. This hole was made of an *imbrex* tile used as the channel with part of a *tegula* capping it.

Three iron water pipe junctions, used to join wooden water pipes together, were found around and in the floor make-ups [128] immediately to

the south of the drains but not actually within the drain channels.

The relationship of the south wall of Room 3 [131] to a feature interpreted as a tank (Pl 6) was unclear. The tank [151] was constructed on the clay surface of Building 5 [112] and consisted of three walls 0.20m wide of roughly coursed tiles mortared together with a white mortar. The interior was lined with *opus signinum*, but not the base. It was 0.30m deep with a base at +2.18m OD. The fourth side of the tank was not in evidence but coincided with a north-south gully [153] which may have been linked in some way to the tank as a drain. There appeared to be another inlet /outlet hole in the tank where another north-south gully [154] was positioned. It appeared to truncate gully [153] which had a base at a height of +2.38m OD in the north sloping down to +2.15m OD in the south where it coincided with the tank. Levels were not recorded in gully [154].

Three other north-south gullies which can be less confidently interpreted as drains were found [155, 156, 157]. All were filled with silty clay, were 0.30m deep and were just to the east of gullies [153–4]. Although they also sloped to the south from +2.32m OD down to +2.13m OD, one [153], was situated over a clay wall [96] of the previous building (Building 5) and may perhaps be part of the robbing or demolition of that building.

It is not known whether these gullies are later than Building 6 or how the drainage system related to that building—that is whether the drains represent an external area or whether they lay under floors. It is probable that gullies



Plate 6. A possible tank from Building 6, lined with *opus signinum* and showing an inlet/outlet hole constructed from an *imbrex* tile with part of a *tegula* capping it

[155–157] may have been of a later phase than Building 6.

Pottery from the make-up layers [128] of Building 6 dated from AD 120–160. The flue tile and *bessales* from Building 6 have a date of manufacture AD 50/70–120+, and the sealed pits from under the floors [124–127] contained pottery dating AD 90–120, so that an early 2nd century date might be envisaged for Building 6. It may have had a short life-span as pottery from the backfill of the hypocaust [158] dated from AD 120–160, and that from the backfills of gullies [153, 155 and 156] dated from AD 140/150–200.

Discussion

Building 6 was of similar construction to Building 5, measuring at least 15m by 15m, and consisted of many rooms. The character of the areas to the north and west of the hypocaust was unclear. The northern area where the furnace was situated may still have been external (see Buildings 4 and 5). Wall plaster on the west face of Room 2 would indicate that another room (Room 1) existed to the west of the hypocaust. However this area was heavily truncated.

The hypocaust, Room 2, was of similar construction to Building 6 with inner walls of the same width as the walls, but it need not necessarily have been part of Building 6. The hypocaust could represent an addition to Building 5 but separated from it by the cess pit [125] which had been cut into dumps [124] over the floors and walls. It is thus more likely that the hypocaust was part of Building 6.

The relationship between Rooms 1 and 3 was destroyed by truncation, but wall plaster on the south side of Room 2 indicates the existence of a room (Room 3). There was no evidence of floor surfaces. The presence of a tank and drain [150–151] within Room 3 may indicate an external area but they could have been within a building.

It is likely that more than one phase was represented in Room 3 as its south wall [131] was located adjacent, and parallel, to another [152] situated immediately to the north of [131].

The south wall of Room 4 [134] was painted with white, blue and red ochre on a red ochre background and may have shown a candelabra design. The east side of Room 4 was truncated so that it is not known whether it was subdivided into small rooms or whether it represents a corridor.

Room 5 was represented by a mortar surface [138] which was at a similar height to the other mortar surfaces of Building 6 and may have been part of it; the walls associated with it having been destroyed by Building 7.

To the west, remnants of a tessellated floor [142] indicate a further room, Room 6, beyond the limits of the excavation.

There were two large rooms (7/8 and 9) which measured about 3m across with floors of mortar. Room 7/8 appeared to have been subdivided by two remnants of a slot [133 and 137] but this was problematic: the two slot remnants do not appear to have been on the same alignment and, if projected, would not only have failed to meet in the centre, but would also have been covered by a later mortar floor [140]. It appeared that this room had undergone renewal or change and had perhaps originated as two rooms (7 and 8) and was then resurfaced with [140] and the subdivision [133 and 137] removed to make one large room. Room 9 may also have been subdivided originally, but there was no evidence for this. Room 9 had no east wall and therefore may have been larger than postulated. Both rooms had plaster walls.

Two more rooms (10 and 11), were positioned to the south, on either side of the wall [130]. Both these rooms were plastered. Room 10 had a tessellated floor [143]: red with some white tesserae set in a pure lime mortar above an *opus signinum* layer and grouted with a fine red crushed tile mortar.

It is unclear whether the gullies [153–154] drains and tank were contemporary with Building 6. Both the hypocaust and the gullies were sealed by Building 7, which suggests they belonged with Building 6.

The presence of a hypocaust in a clay-walled structure is most unusual, as are the round *bessales*. Both the *pilae* and the flues within the clay walls were in the same fabric group and were manufactured at a tiler in Radlett, Hertfordshire. It would appear that they were part of a special order for Building 6. The hypocaust and its special *bessales* indicate a degree of wealth and status on the part of the occupants of Building 6 (see Building materials report below). The fact that some of the floors may have been tessellated, and that painted wall plaster was positioned within most of the rooms, further confirms the high status of the building.

It is possible that Building 6 represents a refurbishment of Building 5. Although much of

Building 5 was sealed, some could still have been intact and one of the clay walls [105] showed evidence of reuse. The masonry foundations [117–120] mentioned in the discussion of Building 5 may have been re-used in Building 6, or may even have been part of the original construction of Building 6. The masonry foundations of Building 4, left unsealed after the construction of Building 5 [80 and 81], would now appear to have been built over by the clay-walled hypocaust.

There was no counterpart to Building 6 in Area I and it is probable that Building 4 was still in use here as it did not appear to have been robbed until the 4th century.

Robbing of Building 6

The hypocaust of Building 6 was infilled with debris [158] of interleaving layers of charcoal, silt and ash from 0.02m to 0.16m thick. Some of these layers [158] were spread around and within the furnace.

More debris [158] of clay, plaster, tile and mortar was spread over the infilled hypocaust and its walls. Some of these layers were indistinguishable from the clay walls and perhaps they represent the demolished walls spread around over the area of the hypocaust. Some of these debris layers contained brick and roof tile and fragments of combed flue tile similar to those found in the walls of the hypocausted room.

Dumping over Building 6 appeared to be limited. Silty clay layers [159] were dumped over the walls, also over surfaces and the infilled tank. Pits [160] were cut into the surfaces of Rooms 2 and 5.

Pottery from the backfill of the hypocaust [158] dated from AD 120–160, and that from the backfills of the possible later gullies [153, 155 and 156] from AD 140–200.

AREA I (Fig 12)

In Area I there was, as mentioned above, no counterpart to Building 5 or 6. There was also scant evidence for any activity throughout the late 1st/early 2nd century AD, although there were some small remnants of clay make-up layers [161–162] which were not well recorded but overlay walls [76 and 77] of Building 3. Pottery from these layers dated to AD 130–150.

It is possible, however, that the courtyard was partially built over at this time to coincide with

the construction of Building 6 in Area II. In Area I, Rooms 9–14 may have been added as a reorganisation of the existing rooms of Building 4. There was no evidence for the date of these rooms as they were represented only by robber trenches. Room 14 appeared to contain a small remnant of tessellated floor.

It was not a total rebuilding, as Building 6 appeared to have been, since much of Building 4 was retained in Area I. The wall alignment (the west wall of the ambulatory of Building 4) represented by the robber trench [208] was probably retained, since Rooms 10 and 13 were built against it, although there were probably doorways inserted through it.

It is unclear whether the rest of the ambulatory (that is the east wall) of Building 4 was reused, although Rooms 10 and 13 were built over it into the courtyard. This must have meant that the east ambulatory wall was partially dismantled before the construction of these rooms. It need not however have been fully removed until much later, perhaps with the robbing of Building 7.

Building 7 (Figs 13 and 14)

The last Roman building to be constructed on the site was of masonry. It is unlikely, however, that all the elements which make up Building 7 as shown on the plan are contemporary. Unfortunately not enough evidence was available to ascertain the relationships between each phase, although it appeared that some of the hypocausts were later additions and are thus shown on a separate plan (Fig 14). Although much of Building 4 was still in use in Area I, the rebuilding in Area II necessitated its renumbering as Building 7.

AREA II (Fig 13)

A north-south foundation [168] was cut through part of the floor of Building 6 [138] and consisted of a layer of loosely mortared broken tile and rubble foundation, 0.60m deep, over which was part of the wall proper, constructed of slanted tiles and ragstone in a white mortar 0.17m high. This foundation did not completely fill the width of the construction trench, as a narrow ridge of construction backfill survived along the east side of the foundation.

To the east of this wall several rooms had survived (Rooms 16–20). The south wall of Room 20 was represented by a robber trench

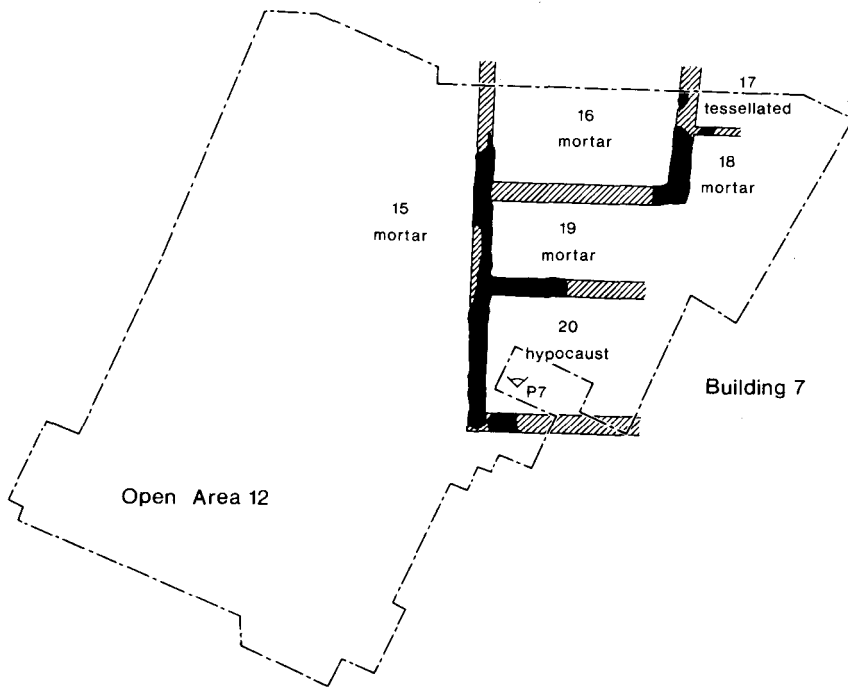
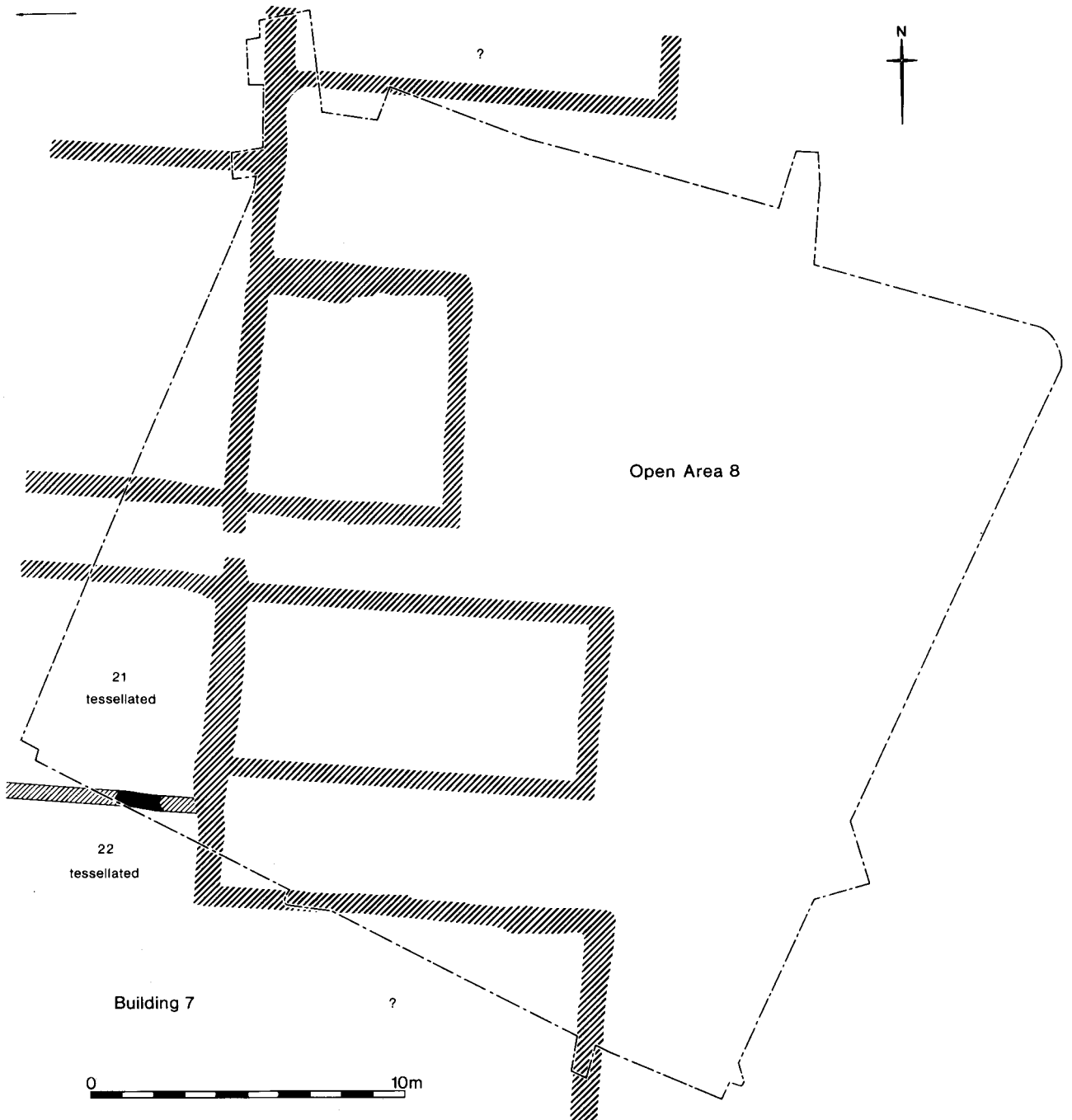


Fig 13. Building 7, first phase (modifications to Building 4) (1:200).

0.41m deep [167] situated at right angles, but not connected, to the north-south wall [168]. Both these walls appear to have been built in separate portions. Their bases were at a height of +2m OD.

Situated to the east of, and parallel to wall [168], was a similar north-south foundation [169] which was constructed over a backfilled robber trench [121] used to rob an earlier masonry wall foundation [118], perhaps that of Building 5.



There was no evidence of a construction backfill on the east side of the foundation [169], as encountered with the wall [168]. Wall foundation [169] had been more heavily truncated, being only 0.47m deep. Its base was at a height of

+2.07m OD. It is probable that [169] once connected with [168] to form Room 16.

There was also a west-east wall trench [170] to the east of wall foundation [169] between Rooms 17 and 18. This consisted of a slot filled



Plate 7. Hypocaust wall [174] of Room 20, Building 7; looking north with the mortar floor of Room 19 in the background

with grey clay and sand only 0.18m deep, and may have been either the base of a truncated wall trench or a clay wall partition. There was a quarter-round moulding in Room 18 between the wall slot [170] and a mortar floor surface on its south side [182], which demonstrates contemporaneity of use. To the north in Room 17, a tessellated floor [184] also appeared to be contemporary with slot [170].

There were remains of a hypocaust [174] (Room 20, Plate 7) adjacent to the main north-south wall [168]. The base of the hypocaust lay directly over part of the floor of Building 6 [138] and an infilled pit [160]. The base was made up of sandy clay 0.06m thick [174] over which was a rubble layer of Kentish rag and broken tile 0.15m deep. Above the rubble was a layer of gravel at a height of +2.50m OD [174] on which were the remains of two of the *pilae* represented only by tile bases [174]. The *pilae* were fixed to the base with *opus signinum*. The wall of the hypocaust [174] between Rooms 19 and 20 was unlike the other walls of Building 7 in that it was built of clay. It had been constructed on the hypocaust base and showed no evidence of a timber baseplate or posts, but

the clay had been faced with horizontally laid *lydion* bricks, presumably to protect the clay wall against heat from the hypocaust. The wall, which stood to a height of +2.73m OD, was in use with the mortar floor of Room 19, as demonstrated by a quarter-round moulding of *opus signinum* placed over floor [180] and against the north side of the clay wall [174].

The relationship of the hypocaust [174] to the north-south foundation [168] was uncertain but it is likely that [168] formed the west side of the hypocaust. It is possible that the robbed out wall [167] may have originally formed the south side of Room 20. The suspended floor of this hypocaust would appear to have been at a height of at least 2.90m OD. A skim of ash and charcoal was present over the gravel base and this probably represented usage. The hypocaust [174] may have had a ceiling painted with brightly coloured roundels on a white background as evidenced by plaster fragments found in the robbing backfill.

Situated over the floor [138] of Building 6 were clay make-up layers [175] for the floor surfaces for Building 7. They were situated over dumps of debris [158] and a pit [160] sealing the

hypocaust [144–146] of Building 6, as well as backfilled gullies [153 and 156] associated with Building 6.

Over the make-up layers, lay the floor surfaces of Building 7 [176–183] which were of white mortar, 0.07m deep, with a skim of *opus signinum* over the top and a height of +2.80m OD. Remnants of tessellated floor survived [184] in Room 17 over an *opus signinum* skim, and this may suggest that the some of the mortar floors of Building 7 were originally covered with tessellation that did not survive.

The evidence for construction in Room 15 was limited as a mortar surface was present, but there was no indication of how this area was divided into rooms.

AREA I

A small remnant of clay wall [195] associated with portions of a tessellated floor [198–201] was present in the south-west corner of Building 7 and may have served as an internal partition similar to slot [170] in Area II. The clay wall had been truncated by later foundations and robber trenches. It separated Rooms 21 and 22. The clay wall [195] was 0.48m deep and constructed over a charred timber baseplate. There was no evidence of a construction slot. The wall contained a line of four stakeholes which may have been internal strengthening or the uprights for the wattles as there were traces of wattling on its north side. On its south side the wall was faced with two phases of plaster, one over the other. The first phase plaster [196] was of marbled design of yellow, white and pink; the second phase was a pink and yellow background splashed with black and white. The plaster [197] from the north side of the wall had collapsed and lay flat: it featured a foliate design on a white background.

A quarter-round moulding was present between the south side of the wall [195] and the tessellated floor [198] in Room 22. The tessellated floor lay over a base of *opus signinum* and white mortar over a clay make-up. It was made up of red *tesserae* and stood at a height of +2.07m OD. The floor was cut away by robber trenches of Building 7. To the north, in Room 21, were similar remnants of tessellated floor [199–201] which had been truncated by later foundations [188 and 189].

As with Building 3, evidence for the relationship of the clay wall [195] and floors had been removed by the robbing of Building 7. Their

date indicates that they were later than Building 4 but they appear to have been added before walls [188 and 189] were added for Building 7.

Additions to Building 7 (Fig 14)

AREA II

Cut through the walls and floors of the two easternmost rooms of Building 6 (9 and 10) were the remains of a heavily robbed wall foundation [163] situated to the south of Area II. It was trench-built with a mortar layer foundation (0.40m deep) topped with a layer of rammed chalk surviving to a height of 0.50m. Above the foundation were remnants of mixed clay which were interpreted as construction backfills [164]. These had survived the robbing and appeared to be laid between the foundation and the sides of the construction trench—a gap of some 0.20m. However, they did not reach the base of the foundation, stopping 0.40m above it. The base of the foundation was at a height of +1.60m OD. The foundation forms an unusual pattern: both the north-south portions butt end, and there was no west-east crosswall joining these butt ends. It separated Rooms 24, 25 and 26.

To the east of the foundation [163] were two robbed out walls [165 and 167] which formed a junction and were cut away to the west by the robbing [206] of wall foundation [163] and to the north by the robber trench [167]. There was therefore no surviving relationship to [163] or [167].

The junction was covered with a rubble base [166], possibly for a hypocaust (Room 26), built of a layer of rag, chalk and flint with some tile 0.16m deep. It stood at a height of +2.16m OD. It appears that two phases of building were recorded here but it is not possible to interpret them, nor to assign them to specific buildings. It is probable, however, that the hypocaust of Room 26 was a later insertion to the building represented by the walls shown on Fig 13 and contemporary with the massive foundations [163]. The insertion of this hypocaust may have been contemporary with another hypocaust [171] (Room 23).

The hypocaust of Room 23 (Plate 8) was situated against the foundations [168] mentioned above and was of the same construction, although relationships between the two had been removed by later robbing.

The hypocaust appeared to truncate wall [169], which may have originally joined [168], and must therefore have been a later addition.

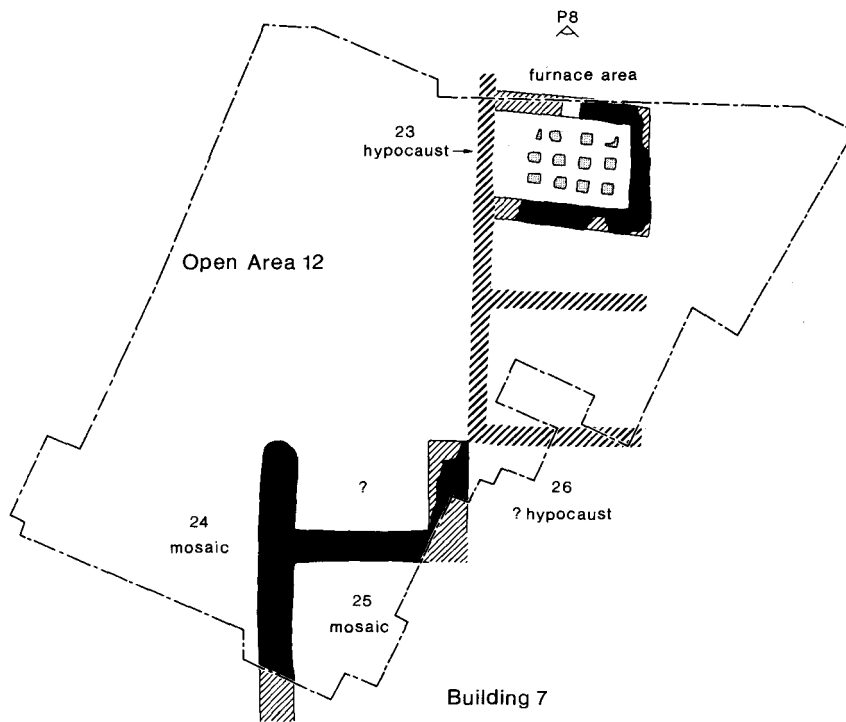
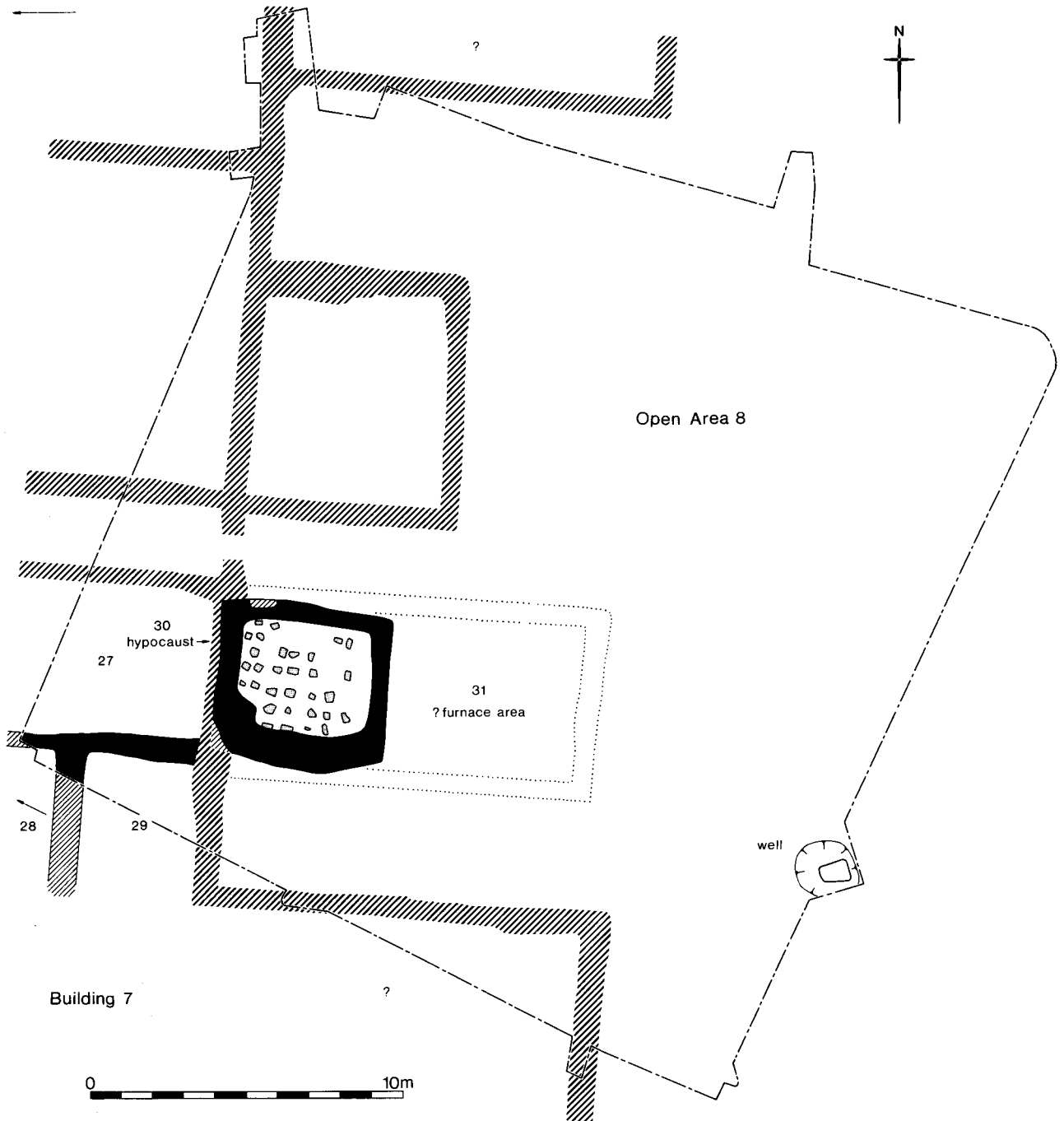


Fig 14. Structural additions to Building 7 (1:200).

The construction cut for hypocaust [171] was 0.65m deep. It had been cut down to the masonry wall foundation [118] and part of the walls and floor make-ups of Building 5, as well as part of the floor [138] of Building 6. Within the construction cut was the wall foundation of

the hypocaust [171], constructed of gravel and tile in mortar 0.41m deep. The wall proper was constructed of roughly cut blocks of Kentish rag overlaid by two courses of tile, diagonally laid. It had a facing skim of mortar on its inner face, and survived to a height of +2.65m OD.



The base of the hypocaust was composed of make-up layers of sand mortar and gravel [171], 0.18m deep, over which lay an *opus signinum* surface 0.20m thick standing at a height of 2.36m OD. Upon the floor stood bases of tile for the *pilae* with *opus signinum* adhering to them. Only five bases remained but the locations of others in rows four by three were indicated by surviving

patches of *opus signinum* on which the tiles would have been placed. The base tiles were not retained or were subsequently lost. The distance between the *pilae* bases was between 0.10m and 0.15m. This means that the size of the tiles needed to bridge the *pilae* would have been 0.40m to 0.45m. This equates with the Roman *sesquipedalis* brick, although there was no evidence

of them. Comparing the heights with the hypocaust of Building 6, it is estimated that the suspended floor would have stood at least +2.76m OD.

There appeared to be no ash or debris left on the floor. Part of the base and the east side of a flue or furnace was found within the north wall of the hypocaust. It was built of *opus signinum* and tiles and filled with charcoal debris and ash. It was 0.31m deep. Hypocaust, Room 23 [171] also appeared to have another possible furnace [172] which had been cut through the south wall of the hypocaust and was not quite in alignment with it. It was 0.20m deep and lined with broken tiles and clay and filled with ash and debris. It is probable that this furnace was a later insertion to the hypocaust.

Associated with the furnace [172] was a rectangular rubble foundation of clay, crushed mortar and pebbles 0.16m deep [173]. It was adjacent and parallel to the south wall of the hypocaust, and the excavator suggests that it may have been a foundation for a supporting arch over the furnace.

Remnants of floor surfaces survived. A rather disturbed remnant of mosaic [186] (see Building materials report, Fig 47) in Room 25 may have belonged to Building 7 as it was situated partly over the walls of Building 6. It consisted of two fragments; one a guilloche border design made up of white, cream, buff, grey red and black *tesserae*, and the other part of a human head.

A small remnant of mosaic [187] (see Fig 47) in Room 24 was laid on an *opus signinum* base and was situated to the west of the wall [163]. It was from a border design consisting of squares made up of red and black triangles possibly within Greek key pattern. However, the mosaic had been disturbed by a modern intrusion and it was not clear to which room, or indeed which building, it belonged. There was also a remnant of mortar floor [183] close to it but unrelated to the mosaic. This mosaic design was more common in the 3rd/4th centuries, so the fragment may have belonged perhaps to Building 7.

The evidence for construction in Rooms 24 and 25 was limited: though floor surfaces were present there was no indication of how they were divided into rooms. The mosaics were situated at a height of +2.70m OD.

A pit [216] adjacent to the north-south chalk foundation [163] in Room 24, was filled with



Plate 8. Hypocaust (Room 23) of Building 7, looking south and showing the probable furnace [172] in the background

wall plaster fragments depicting a candelabra design which may have come from the wall.

AREA I (Fig 14)

To the east of the site, the masonry Building 7 was more heavily robbed and only small remnants of foundation remained. Constructed of limestone and flints [188 and 189], the foundation survived to a height of +1.54m OD. Situated between Rooms 27 and 29, it appeared to cut through the clay wall [195] and tessellated floor [198–201].

A heavily robbed hypocaust (Room 30) was partly situated over a pile foundation from Building 4 [78]. It was not possible to ascertain how the hypocaust was constructed as only some of its base [193] and very little of the wall foundations had survived the robbing. The base was constructed of a layer of clay make-up on top of which was a rubble and gravel base for a floor of *opus signinum* which stood at a height of +1.46m OD. Enough of the foundations remained to show that they were constructed of mortared Kentish rag and flints. Evidence of *pilae* bases in rows of seven by seven was marked by patches of mortar on the base but no actual *pilae* survived. A furnace may have existed immediately to the east (Room 31), but all that remained was a base made of brick fragments [194], many showing blackened surfaces with an accumulation of sandy clay and ash, 0.45m deep.

A well [203], situated to the east of the robber trenches in Area I, may have been in use at the same time as the buildings—it contained sherds of pottery in its construction backfill dating to AD 150+. It had a timber box lining and was 2.30m deep.

Discussion

AREA II

The contemporaneity of the different elements described above is not clear as each wall foundation appears to have been constructed in separate trenches—[167] and [168]), for example—and relationships, such as that between hypocaust [171] (Room 23) and wall [168], have been destroyed by later robbing.

The massive chalk foundation to the south of Area II [163], dividing Rooms 24–26, may have belonged to a different phase as it was of a different construction and its base stood some 1m lower than the other foundations. It may however have been intended to carry more weight. Pottery from the construction backfills [164] of the large chalk and mortar foundation was dated from AD 140–200. A small amount of roof tile was dated to AD 140+.

Hypocaust [171] (Room 23) was of very similar slanting tile construction to the north-south foundations [168 and 169]. However, the plan shows that foundation [169] was not on the same alignment as the hypocaust, and would not appear to belong to the same phase, since only a very small room with a width of less than 0.80m would have existed between them. It is likely that the hypocaust was added later.

It is possible that, except for an intervening pit [160], the clay walled hypocaust [174] (Room 20) and the mortar floors [180] of Rooms 16, 18 and 19 could have been part of Building 6, though the mortar floors generally stood at the same height—some 0.40m above that of Building 6—and pottery from the construction raft of hypocaust [174] was dated AD 150–200.

As Building 6 may have been demolished sometime in the period AD 120–160, it appears likely that much of Building 7 in Area II was constructed from the mid 2nd to early 3rd century.

A coin from a floor surface [183] in Room 24 dated to AD 206–210. Unfortunately the floor surface [183] was unrelated to the rest of Building 7. It is also possible that the coin was contemporary with the use of the building rather than with its construction.

AREA I

As noted above it is likely that both tessellated floors [198–201] and the clay wall [195] were

truncated by the insertion of later walls such as that represented by [188].

Pottery from the mortar base below the tessellated floor [199] dated AD 140+ and the wall plaster was thought to be more common in the mid 2nd century AD. The wall foundation of Building 7 [188] contained a sherd of pottery, dated AD 200+. Some burnt debris over floor [202] contained three sherds of pot dated AD 240+ and may indicate that the floor was out of use by this time.

The hypocaust must have been added in the 3rd century since it was partly situated over a masonry base [190] which contained pottery dating to AD 200+.

As much of the area was truncated, there was little information about the other rooms or any indication of what was external or internal. The well [203] may have been in use with both Building 4 and Building 7. It was likely to have been situated in an external area, but it may be that part of the courtyard was still in use. The contemporary ground surface was at least +2.08m OD, the height of the tessellated floor [198–201].

Only small remnants of tessellated floor were uncovered in this part of Building 7 but it is likely, judging by the number of *tesserae* from the robbing backfills, that some of the floors of Building 7 were tessellated. A range of *tesserae* was found, including red tile, pink-yellow tile, white clunch, black Wealden shale, grey Purbeck marble and grey greensand. Some blue, green and turquoise glass *tesserae* were found in the robbing backfills. These indicate high quality flooring or wall mosaics.

Sections of collapsed mortared wall in the robbing backfills show that the walls of Building 7 may have been constructed of Kentish ragstone and flint with tile courses, while wall plaster fragments indicate walls painted with foliate or marbled designs. Small fragments of Purbeck marble from the robbing backfills may have been used as wall veneers and two pieces may have been used as paving. There was also one fragment of marble from the Aegean and one fragment of stone inlay (gabbro-diorite) from Egypt which would have been used as wall veneers. The amount of tile in the robbing shows that the roof may have been tiled.

Four fragments of brick, three of which are combed, two fragments of scored flue tile and a fragment of *tegula* were found within the robbing trenches, all in fabric 3200, which is the fabric

associated with the *Classis Britannica*. Although some of these fragments have mortar on the broken edges the presence of this fabric here may suggest a military connection. It is rarely found in London and has been dated, for example, from Pevensy, Lympe, Folkestone and Dover, to the mid 2nd/early 3rd century, including examples with *Classis Britannica* stamps (Crowley & Betts 1992, 218–222).

AREAS I AND II

Building 7 consisted of separate elements in Areas I and II. In Area I the clay wall and tessellated floor, which may have been constructed in the mid 2nd century, was superseded by additions in the 3rd century. In Area II, much of Building 7 could have been constructed during the 2nd century AD, but a coin from a floor would indicate an early 3rd-century date.

Building 7 may have comprised separate buildings, but it is more likely that the remains in both areas were part of the same complex and represent several phases of alterations and rebuilding of the original Building 4 from the mid 2nd century through to the 4th century. However, it is not known how long the building continued to be occupied until its robbing began at the latter date.

It is not possible to distinguish the different phases, but the descriptions above show how additions were made to Building 4 throughout the later Roman period.

Period 4: Dating evidence for buildings 6 and 7 (2nd and 3rd centuries) [122–203]

Building material

[146] Tile, AD 50/70–120 +
[163, 168, 169] tile fabric 3019, AD 100–120; 3054
AD75–100; 2453/2457, AD 140–3rd century

Decorated samian

[125] AD 70–80, SG Dr 29; AD 70s, Stamped Dr 29
[127] Flavian, SG Dr 37
[128] Neronian, SG Dr 29; Flavian, SG Dr 29 or 37;
AD 70–90, Stamped Dr 33a; AD 80–110, Stamped Dr 29
[132] AD 85–110, Stamped Dr 27
[152] Flavian, SG Dr 37
[153] Antonine, CG Dr 37
[158] Early to mid-Flavian, SG Dr 29

[161] Pre-Flavian, SG Dr 29; AD 50–70, SG Dr 29;
AD 55–70, Stamped Dr 15/17; AD 55–75, SG Dr 29; Nero-
early Flavian, SG Dr 29; Nero-mid Flavian, SG Dr 29;
AD 60–75, Stamped Dr 27g; AD 65–80, SG Dr 29; AD 65–85,
SG Dr 29; AD 70–85, SG Dr 29; AD 70–90, SG Dr 37; Early-
mid Flavian, SG Dr 29; Flavian, SG Dech 67; 1st/early 2nd
C, Stamped Dr 15/17
[174] Neronian or early Flavian, SG Dr 29 or 37
[175] AD 135–165, CG Dr 37
[190] Pre or early Flavian, SG Dr 29
[202] AD 160–190, Stamped Wa 80
[203] AD 50–65, Stamped Dr 29; AD 70–90, SG Dr 37;
AD 80–100, SG 37; AD 80–100, Stamped Dr 15/17;
AD 100–125, CG Dr 37

Coins

[123] AD 64–8, Coin report No. 27
[126] AD 72–3, Coin report No. 43
[128] AD 72–3, Coin report No. 42
[128] AD 85, Coin report No. 50
[148] AD 81–96, Coin report No. 55
[153] AD 90, Coin report No. 54
[156] AD 64–8, Coin report No. 26
[158–160] AD 71, coin report No. 39
[161] AD 45–65, Coin report No. 23
[161] AD 71, Coin report No. 35 [161–2] AD 45–65, Coin
report No. 16 [161–2] AD 64–8, Coin report No. 32
[183] AD 206–210, Coin report No. 60
[203] AD 45–65, Coin report No. 17

Pottery

[126] AHSU, DR20, ERMS, FINE, GROG, KOAN, LYON,
OXID IID, VRG, VRW, AD 70–100
[127] AHSU IIA, C186, DR20, GROG, HWC IIIF, KOAN,
LOMI IVA, LYON, RHOD, SAM Dr 27, SAM Dr 36,
SAND IVF, SAND IIA, SAND IIC/D, SAND IIIF, SHEL
IIA, TNIM, VRG, VRW, AD 90–120
[128] AHSU IIC/D, AHSU IIA, AHSU IIC, AHSU IVF,
BB2 IIF, C186, C189, DR20, EGGS, FINE, GROG, HWC
IIF, HWC IVF, HWC IIIF, KOAN, LONW, PE47, SAM
Dr 15/17, SAM Dr 22, SAM Dr36, SAND IIA, SAND IIC,
SAND IIC/D, SAND IVA, SAND IVF, SAND IIIF, SHEL,
TNIM, VRG IVA, VRW IF, VRW IB, AD 120–160
[131] AHSU IIC/D, FMIC, HWC, NKSH, PE47, SHEL,
VRW TZ, AD 70–150
[145] AHSU, DR20, GROG, PE 47, SAM Dr 36, VRW,
AD 60–100
[146] C186, VRW, AD 60–100
[150] AHSU IIA, HWC, VRG, AD 70–150
[151] FMIC, VRW, AD 60–200
[152] AHSU IIC, AHSU IID, BB1 IIF, DR20, GROG IIA,
HWC IIIF, HWC IVF, LOMI, LONW VC, PE47, SAM,
SAND IIA, SAND IIC, SAND IID, SAND IIE, SAND IIIE,
SAND IIIF, SHEL, VRG, VRW, AD 120–200
[153] AHSU, BB2 IIF, BB1 IIF, BB2 IVH, DR20, GROG,
HWC IIE, H70, PE 47, SAM Dr 37, SAM Dr 36, SHEL,
VRG, VRW, VRW IVA, AD 140–200
[155] BB2 IVH, BB2 IIF, HWC IIIF, HWC IVF, PE47,
SAM Dr 33, SAM WA 81, VRW, AD 150–200

- [156] AHSU, BB₁ IIF, BB₂ IIF, BB₂ IVH, BBS IIF, C189, DR₂₀, IVF, FINE, HWC IVF, KOLN, NKSH IIM, LOMI, PE₄₇, VRW IVA, VRG, VRR, SAM, SAND IIC, SAND IIC/D, SHEL, VRG, VRR, VRW IVA, AD 140–200
- [158] AHSU, BB₂, BB₁ IIF, BB₁ IVH, GROG, HWC IVA, HWC IIF, HWC IVF, LOMI, OXID IVF, SAM, SAND IIE, SHEL, VRG, VRR, VRW IB₂, VRW IVA, AD 120–160
- [161] AHSU IIA, AHSU IID, AHSU IVH, C189, CGGW, CGOF, DR₂₀, EGGS VIC, FINE, FLIN IIA?, FMIC IIB, FMIC IIC, G₂₃₈, GBWW, GROG, HWC IIB, HWC IIF, KOAN, LOEG IIG, LOMI VA, LYON, OXID IIA, OXID IIB, OXID IVA, PE₄₇, PRW_{2V}, R₅₂₇, RDBK IIB, RHOD, SAM Dr 18, SAM Dr 18/31, SAM Dr 27, SAM Dr 29, SAM Dr 37, SAM Dr 15/17, SAM Dr 18R, SAM CG Dr 33, SAM DECH 67, SAM Dr 23, SAND IIF, SAND IVH, SAND IIB, SAND IVF, SAND VA, SHEL IIA, VRG, VRW IA, VRW IV₁, VRW M, VRW IB₂, VRW IB₅, AD 120–150
- [161–162] AHSU IIC, BB₁ IIF, BB₂ IIF, DR₂₀, FMIC, HWB IVF₁, LOMI, LYON, RDBK IIB, SAM Dr 18/31R, SAM Dr 27, SAM Dr 15/17, SAM Dr 29, SEAL, VRW IB₄, AD 130–150
- [164] AHSU IIC, BB₂ IVH, BBS, C186, DR₂₀, FINE, GROG, HWC? IIF, HWC IVF, SAM Dr 36, SAND IIA, SAND IVF, VRR, VRW, AD 140–200
- [168] AHSU, BB₂ IVH, DR₂₀, HWC, SAND IVF, SAND IIF, VRW, AD 120–160
- [171] AHSU IIA, AHSU IIC, AHSU IID, BB₂, FMIC, HWC IIE, KOAN, SAM, SAND IVF, SAND IIF, FMIC, SHEL, VRG, VRW, AD 120–200
- [174] AHSU IIA, AHSU IIC/D, BBI, BB₂ IIF, BBS IIF, BB₂ IVH, BB₂ IVJ, C186, DR₂₀, HWC IIF, HWC IVF, KOLN, OXID IB, SAND IIF, SHEL, VRG IVA, VRW, AD 150–200
- [175] BB₂ IIF, FMIC, HWC IIF, SAM Dr 27, VRG, VRW, AD 120–200
- [188] DR₂₀, NVCC III, VRW, AD 200–300
- [190] DR₂₀, GROG, NVCC V, SAM Dr 29, SAND IIA, SAND IVJ, VRW M, AD 200+
- [191] BB₁ IIF, AD 200–400
- [193] BB₂ IIA, BB₂ IVJ, BB₂ IVH, DR₂₀, SAM Dr 18, AD 130–200
- [195] HWC IIE, SAND IIB, VRW, AD 90–140
- [199] BB₂ IVH, LONW, VRW, VRW IVA, AD 140–200
- [202] BB₂ II F 6, BB₂ IV H, BBS I F 6, OXCC III, OXID I, OXRC IV, AD 240–400
- [203] AHSU IIA, BB₂ IIF, BB₂ IVH, DR₂₀, DR₂₈, GROG, HWC IIE, HWC IIE, HWC IVF, LOMI IVJ₃, MOSL, NVCC, OXID IVF, PE₄₇, SAM Dr 18/31, SAM Dr 27?, SAM Dr 33, SAM Dr 36, SAND IIA, SAND IIB, SAND IIC, SAND IIC/E, SAND IIG, SAND IVF, SAND TAZ, SAND VA, SHEL, VRW IC, VRW IVA, VRW M, AD 150–250

Discussion: the later Roman buildings

During the mid to late 2nd century there appears to have been a decline in activity in London. Desertion occurred on most sites in Southwark and in the City between AD 150–200 (Perring 1991a, 77). In Southwark there was little evidence of activity from the later 2nd century to the mid

3rd century (Sheldon 1978, 36) on most sites, eg Bonded Warehouse and 88 Borough High Street (Fig 15, Nos 2 and 3), (Swain 1988, 479–488). However, most of the presumed public buildings in the City continued to be occupied throughout the 2nd century AD, although there are exceptions such as the Huggin Hill baths (Perring 1991a, 81).

The possible public/official buildings of Winchester Palace (Fig 15, No. 16) and buildings on the present site support this theory, as they appear to have remained in use during the 2nd century into the later Roman period. Although it is possible that there could have been a hiatus in occupation at 15–23 Southwark Street, in as much as Building 6 could have gone out of use in the period AD 150–200, there is some evidence for activity in Area I at this time with the construction of a tessellated floor [198–201] and clay wall.

Reasons for the decline in activity in the mid 2nd century are unclear. Agencies which produce decay or destruction such as civil or military unrest or barbarian raids may have been responsible (Sheldon 1978, 37). Both Sheldon (1978, 36) and Perring (1991a, 88–9) also suggest that the decline may have been due to an alteration in the pattern of trade at this time; Perring in particular singles out a fall in military trade as the province became more Romanised and the frontiers more secure.

During the first half of the 3rd century the City wall was built and other urban renewal was carried out (Perring 1991a, 90–8), indicating a revival in construction. Along the City waterfront many of the earlier buildings were refurbished and show a move towards stone-built, winged and courtyard buildings with hypocausts, mosaic floors and painted wall plaster (*ibid*, 100). The revival can also be seen in the available excavation evidence from Southwark.

Late masonry buildings have been found on many sites in Southwark (Fig 15) but only fragmentary remains were revealed in small areas of excavation, as for example at 1A Bedale Street (Fig 15, No. 1), Bonded Warehouse (No. 2), 88 Borough High Street (No. 3), Cathedral Choir (No. 4), Kings Head Yard (No. 7), 28 Park Street (No. 8), 4 Southwark Street (No. 9), 4–26 St Thomas Street (No. 13), 11–15 St Thomas Street (No. 14) and 10–14 Union Street (No. 15) (Swain 1988, 479–488). By and large these consist of heavily robbed ragstone foundations associated with mortar floors, although a few sites included tessellated floors, and a building at 201–211

Borough High Street (not shown on Fig 15) contained a few glass tesserae in its robbing backfills (Townend & Hinton 1978, 153).

However, more substantial remains of later Roman Southwark have been found at four sites close to 15–23 Southwark Street. Excavations at the Courage Brewery sites (Fig 15, No. 5) revealed a large robbed stone building measuring 30m by 12m, with a corridor to the south and consisting of at least eight rooms with mortar floors. Its date is as yet unclear but it succeeded phases of earlier clay and timber structures and is therefore likely to be of later Roman date. It may be contemporary with a robbed building situated to the north-west with piled foundations and rooms fronting a road. The whole complex may perhaps represent the wings of a courtyard building (Dillon *et al* 1991, 261).

Excavations at 1–7 St Thomas Street (Fig 15, No. 12) produced evidence for phases of a late 3rd-century building with ragstone foundations, a tessellated floor and hypocaust base (Dennis 1978, 291). The District Heating Scheme site (Fig 15, No. 6) also revealed evidence of ragstone and chalk footings of a hypocaust base dating from the mid 2nd century onwards (Graham 1988b, 49).

At Winchester Palace (Fig 15, No. 16) a large masonry building of 2nd to 4th century date was constructed with a river frontage of at least 30m. It contained at least seven rooms of which five were hypocausted. It had mosaic floors and a tiled roof, and one ceiling may have been vaulted. One room was decorated with a very high quality and elaborate painted wall plaster (Yule 1989, 33–4).

The change from the predominantly clay and timber buildings of earlier centuries to large stone buildings in the later Roman period occurs elsewhere in Britain, for example at Caerwent and Silchester. Building in stone where there was no ready supply would have represented a considerable investment, and shows a degree of permanence and confidence not represented by earlier buildings (Perring 1987, 152–3), as well as a change in the character of the later Roman settlement (Sheldon 1978, 40). Yet clay and timber houses with suitable decoration such as mosaics could also have provided excellent accommodation, and should not be regarded as unsophisticated (John Wachter, *pers comm*).

The masonry town houses reveal similarities in size and planning to villa houses (Walthew 1975, 205). Frere (1987, 293) suggests that the

curiales or *decurions*, who were members of the town council and were responsible for local implementation of central government decisions, may have been compelled to live in the cities and leave their estates, perhaps to the care of bailiffs. He cites the scarcity of large villas in the neighbourhood of Verulamium which may indicate that the curial class were living in the town. Walthew (1975, 204) suggests other reasons for a move into towns, such as the desire for greater security and the increased prestige of living there. However, this may not necessarily mean an abandonment of the rural areas, and villas around London show no signs of decline in this period (Dominic Perring, *pers comm*).

Perring notes the coincidence between sites in Southwark with a possible previous military presence—as at both Winchester Palace and 15–23 Southwark Street—and those where occupation continued throughout the 2nd century AD in the form of stone buildings (Perring 1991a, 118).

Building 7 of 15–23 Southwark Street is typical of the later Roman settlement in that it is a masonry building with hypocaust systems and tessellated and mosaic floors which superseded the less grand clay and timber predecessors. However, both Buildings 6 and 7 indicate a continuation of the special status they had enjoyed in the 1st century. This status can be demonstrated by the hypocausted room of Building 6 where a special order had been placed for circular *bessales* and large flue tiles—extremely rare in London—from a tilery in Radlett, Hertfordshire. Hypocausted rooms and mosaics also demonstrate the wealth and status of the occupants. Building 7 had at least three hypocausts and tessellated floors, some incorporating mosaics. Glass *tesserae* found in the robbing of Building 7 are rare in London and indicate very high quality mosaics. Fragments of Purbeck marble (from the robber trenches of Building 7), used as wall veneer, are found only in buildings of some pretension, and only wealthy occupants could have afforded marble from the eastern Mediterranean.

Whether this special status was similar to that of the earlier centuries, and whether the building continued to be used for official purposes, is unknown. It is likely that Buildings 6 and 7 represent several phases of alterations and rebuilding of the original Building 4 as neither Building 4 or 7—at least in Area I—was robbed until the 4th century.

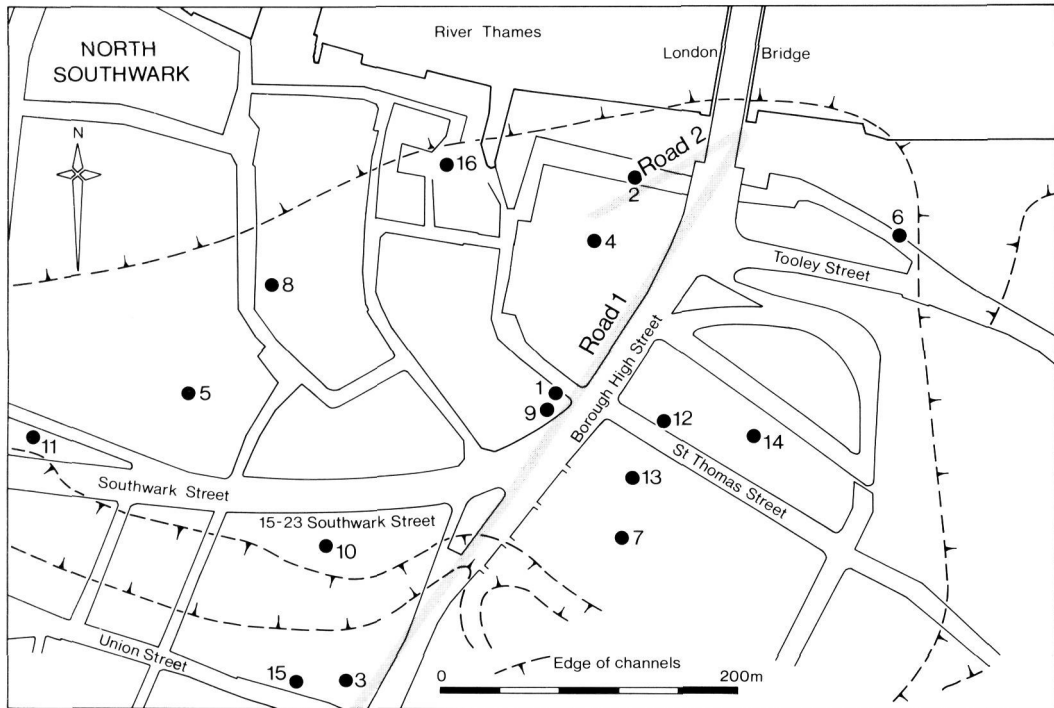


Fig 15. Masonry buildings and roads of the 2nd–4th centuries AD in north Southwark, mentioned in the text (1:5000). Key: 1 1a Bedale Street; 2 Bonded Warehouse; 3 88 Borough High Street; 4 Cathedral Choir; 5 Courage Brewery sites; 6 District Heating Scheme, Tooley Street; 7 Kings Head Yard; 8 28 Park Street; 9 4 Southwark Street; 10 15–23 Southwark Street; 11 52–4 Southwark Street; 12 1–7 St Thomas Street; 13 4–26 St Thomas Street; 14 11–15 St Thomas Street; 15 10–14 Union Street; 16 Winchester Palace.

The *mansio* at Chelmsford was in use in the 3rd century (Drury 1975, 170); the Godmanchester *mansio* was destroyed by fire in the late 3rd century, although the baths continued in use until the end of the Roman period (Green 1975, 207).

Robbing of Building 7

AREAS I AND II

Building 7 was robbed and the trenches and hypocausts were subsequently backfilled.

In Area II the hypocausts [171 and 174] were robbed [204 and 205] and infilled with debris up to a height of +2.97m OD. The robber trenches contained pottery dating from AD 250+ and a coin which dated to AD 223 (Coin report No. 64). Pottery from robber trenches [206] in Area II was dated AD 250+, two coins were dated AD 315 and AD 340–6 (Coin report Nos 92 and 95).

The hypocaust in Area I [193] was robbed

[207] and infilled with building debris from which pottery was dated AD 350+ and two coins, AD 270–85 and AD 293–6 (Coin report, Nos 86 and 89). The remaining robber trenches in Area I [208–215] were filled with building rubble. There appears to be no apparent difference in the dating of the individual robbing backfills or of the robbing backfills [208–210] of the 1st-century courtyard building (Building 4) and the robbing backfills [211–215] of the later Building 7, although, as noted above, some of the wall alignments [209] had been built over by the mid 3rd century.

Pottery from the robbing backfills [208–210] of Area I courtyard building (Building 4) dated AD 270+, and a coin from robber trench [209], AD 388–402; while another coin from robber trench [208] was dated AD 270–3 (Coin report, Nos 73 and 106). Pottery from the robbing [211–215] of Building 7 was also dated AD 270+. Coins from the robber trenches gave a date of AD 225 and AD 347–8 (Coin report, Nos 65 and 100).

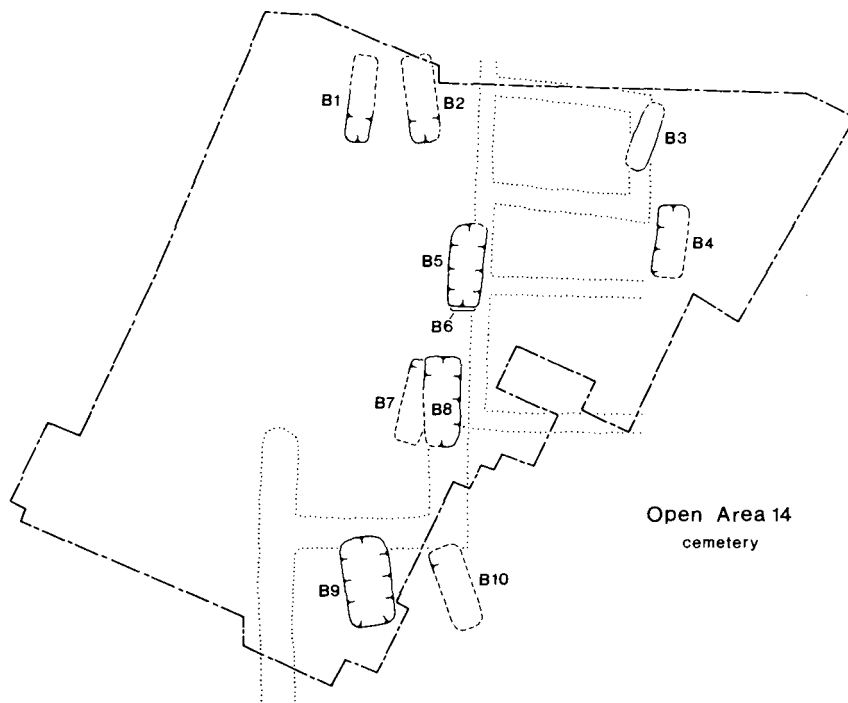
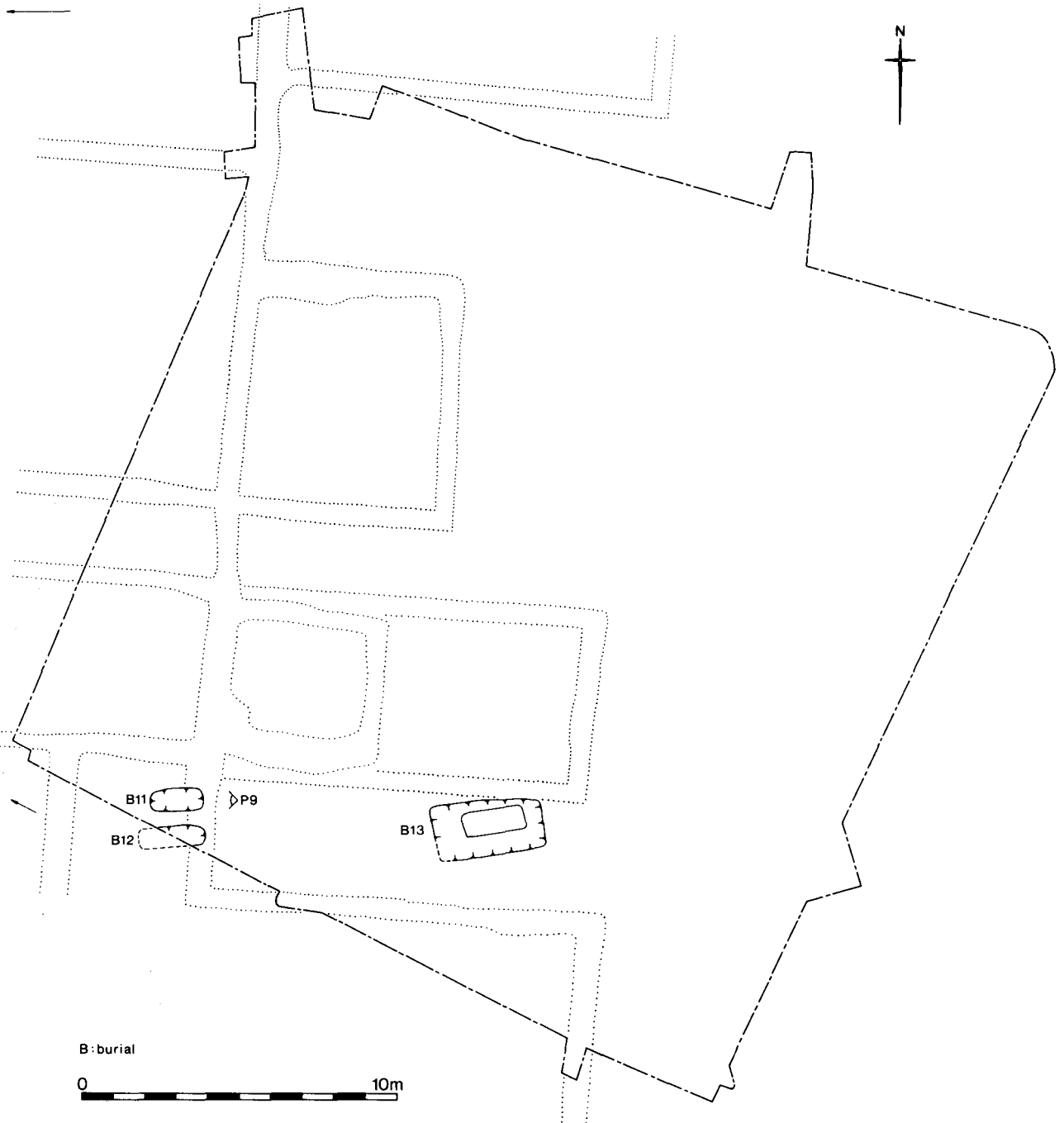


Fig 16. *Distribution of late Roman Burials in relation to the final building layout (1:200).*

A number of pits were dug in both Areas I and II [216]. They were filled with similar material to the robber trenches, to which most of the pits were unrelated except for a square well [216] which was cut into robber trench [209]. There was apparently no dumping over

much of the floors of Building 6 and 7. The pits in Area II were not dated except for three coins dated AD 259–63, AD 270–85 and AD 330–35 (Coin report, Nos 68, 78 and 93). Only some pits in Area I were dated. They contained pottery dated AD 250+, and coins of AD 76, AD 85,



AD 120 and AD 253-8 (Coin report, Nos 44, 51, 57 and 67).

The sparse dating evidence for the robber trenches and pits is due to the unavailability of some of the pot fabrics, which consequently do not appear in the pottery tables.

The robbing may have started as early as the

late 3rd/early 4th century, as the site was used as a burial ground sometime in the 4th century. At the Courage Brewery site burials were inserted before all the building stone had been robbed (Dillon *et al* 1991, 262). It appears that the robbing at 15-23 Southwark Street was not a single event but continued for some time. The



Plate 9. Grave of a young female with grave goods (Burial 11)

presence of some medieval sherds in the robber trench fills may indicate that the robbing persisted into the medieval period, although it is not clear how this was carried out since dark earth deposits may have covered most of the robber trenches (see Period 6). At Winchester Palace also parts of the late Roman building were apparently not robbed until the medieval period (Brian Yule, forthcoming).

Period 5: late Roman burials (Fig 16)

AREAS I AND II

Thirteen inhumation burials which had cut through the robbing of the previous buildings were excavated in Areas I and II.

The graves consisted of a simple rectangular cut. Most appeared to be truncated, as their top fills had become indistinguishable from the overlying dark earth deposit. It was not clear, therefore, from what level they were originally cut, though most were excavated at a level of

+2.60m to +2.80m OD. The deepest grave cut was 1.70m.

Five burials had cut through backfilled robber trenches: two, Burials, 8 and 9, had cut robber trench [206]; Burials 11 and 12, robber trench [208]; Burial 3, trench [204]. Parts of the masonry walls of Building 7 [168 and 163] had been removed to accommodate Burials 5 and 8, but most of the burials were placed along the alignments of the Roman buildings, alongside robber trenches.

The burials in Area I were aligned west-east with heads to the west but those in Area II were aligned north-south with heads to the north. All the graves except Burials 6 and 12, which were very truncated, contained evidence of coffins in the form of iron coffin nails or wood stains. Small lead strips from the fill of Burial 5 may originally have been nailed along the joints of coffin base planks. Burial 13 also contained some iron strips which may have been used for a similar purpose.

Burials 1, 4, 5, 7, 9, 11 and 13 contained

articulated, near complete skeletons. Burial 1 was an adult female; Burial 11 was a young female and the rest were adult male. Two of the skeletons from Burials 11 and 13, an adult male and a young female, are now lost so could not be studied. The remaining burials contained only remnants of skeletons, as the graves were disturbed by later features. All the skeletons were supine with legs extended.

Five of the burials were in 'chalk' or 'plaster' (Burials 1, 5, 8, 11 and 13). Burials 2 and 4 contained pieces of calcite in the fill around the skeleton. None of the 'plaster' material has been analysed. Samples taken from the Roman cemeteries of East London show that the 'chalk' may have been quick- or slaked lime for hastening the decay of soft tissue or absorbing moisture as the body began to decay (Barber *et al* 1990, 9).

Five of the burials contained grave goods. Burial 1 contained a coin dated AD 41-54 (Coin report, No. 8) which appeared to be associated with the body and may have been an heirloom or keepsake. Coins accompanying burials are quite common and may demonstrate a pagan belief in the journey to the underworld by way of Charon's ferry. Burial 1 was buried with chicken bones between the legs, and Burial 11 with a complete pot at the head which may have been intended for food in the afterlife. Burials 1, 2 and 11 contained hobnails from boots, and pieces of two bootplates were also recovered

from Burial 11 (Iron objects, No. 87): it is not known if these were worn at the time of interment. Food offerings and hobnailed boots may connote the journey from this life to the next (Barber *et al* 1990, 10). Burial 1 contained a copper stud which may originally have been part of the grave goods. It was inlaid with green glass (Copper alloy objects, Nos 75-8). Burial 8 contained an iron hook (Iron object No. 43) which may have been fastened onto a belt from which small objects would have been suspended. It was unclear whether this hook was worn at the time of interment. Burial 7 contained a water pipe junction collar within the coffin, but this was no doubt intrusive as the grave had been truncated by another. In a skeleton from Burial 4 a pottery sherd and a flint had been placed on each eye.

Burial 11, a young female, was particularly rich in grave goods (Pl 9). These included a bone armlet, a copper stud or cap, two plain copper wire bracelets, a twisted wire bracelet, a strip bracelet and an iron bracelet. There were also two bone pins, two jet pins and one glass pin. One of the jet pins was of cantharus form—a motif probably linked with the god Bacchus. There were also some unidentified iron objects (Copper alloy objects, Nos 26-28, 32, 102; Iron objects, Nos 4, 19, 86, 87; Miscellaneous objects, No. 2; Bone objects, Nos 4, 25, 27; Jet and Shale objects, Nos 1 and 2.) Burial 9 contained a bone pin (Bone objects, No. 12). These jewellery items

Table 1. Tabulation of burial details

Burial No.	Coffin	Skeleton	Grave goods	Plaster	Dating
1	Y	adult female	coin, food, boots, stud	Y	pot AD 250+
2	Y	—	boots	—	pot AD 250+ coin AD 270+
3	Y	—	—	—	—
4	Y	adult male	—	—	pot AD 120+
5	Y	adult male	—	Y	pot AD 250+
6	—	—	—	—	pot AD 60-160
7	Y	adult male	—	—	pot AD 250+
8	—	—	iron hook	Y	coin AD 259-68 pot AD 250+
9	Y	adult male	bone pin	—	pot AD 250+
10	Y	—	—	—	—
11	Y	young female	jewellery, boots, food	Y	pot AD 300-75
12	—	—	—	—	pot AD 250+
13	Y	adult male	—	Y	pot AD 250+ coin AD 293-6

(Y = present)

did not appear to be worn at the time of interment. Other objects were found in the graves but these appeared to come from the graves' backfilling.

All the burials were probably deposited during the 4th century. Burial 9 had cut a robber trench [206], the backfilling of which was dated by a coin to AD 315 (Coin report, No. 92). Burials 11 and 12 had cut robber trenches [208], pottery in the backfilling dated to AD 270+; Burial 13 had cut a robber trench [211–215] dated by a coin to AD 347–8 (Coin report, No. 100).

Pottery from the upper fills of the graves was dated AD 250–400. The skeleton of Burial 11 was buried with a broken pot dating from AD 300–375; coins found in the upper fills of Burial 8 were dated AD 259–68 (Coin report, No. 68); Burial 2 dated AD 270–365 (Coin report, No. 108). A coin from the fill around the coffin in Burial 13 dated AD 293–6 (Coin report, No. 90).

In summary, Burials 2, 9 and 12 probably date to at least the early 4th century and Burials 11 and 13 to the mid 4th century at least. It is difficult to assign a terminal date to the burials, but they were of Roman character with Roman grave goods and pottery in the backfills, and contained no Saxon items (Barber *et al* 1990, 11) or items dating to the early 5th century. It is probable that they were all of 4th century date.

Period 5: dating evidence for the late Roman burials

Coins

[Burial 1] AD 41–54, Coin report, No. 8

[B2] AD 270–365, Coin report, No. 108

[B8] AD 259–68, Coin report, No. 70

[B13] AD 293–96, Coin report, No. 90

Decorated samian

[B8] AD 125–150, CG Dr 37

[B13] Neronian-mid Flavian, SG Dr 29

Pottery

[B1] AHFA, AHSU, BB1 IIF, BB1 IVJ, BB1 IVFB, BB2 IIF, BB2 IVH, BBS IIF, C306, FINE, GROG, HWC IIF, KOAN, LOMI, NVCC, OXCC, OXID VA, OXPA, SAM Dr 31, SAND IIF, VRW IVA, AD 270–400

[B2] AHFA, BB1 IVFB, BB1 IVG, BB2 IIF, BB2 IVH, C189, DR20, GROG, HWC IIF, LYON, MOSL, NVCC, SAM, SHEL, VRW, AD 270–400

[B4] AHFA, BB1 IIF, BB2 IVH, HWC, MICA, MOSL, NVCC, SAM, VRW, AD 200–400

[B5] AHFA, BB1 IVFB, BB2 IVH, HWC, MICA, NVCC, OXCC, SAM, VRW TZ, AD 270–400

[B6] VRW IVA, AD 60–160

[B8] AHFA, AHSU IIA, BB1 IIF, BB1 IVFB, BB2 IIF, BB2 IVH, BBS IIF, C186, CGWH, DR20, GROG, HWC IIE, HWC IIF, KOLN, LOMI, MOSL, NVCC, OXCC, SAM Dr 27, SAND IIB, SHEL, TNIM VA, VRW IVA, AD 270–400

[B9] AHFA, BB1, C186, MHAD, SAM, SAND IIF, VRW, AD 250–400

[B12] AHFA, FMIC IIIG, GROG, OXCC, OXPA, SAM, SAND IVJ, AD 240+

[B13] AHFA, AHSU IID, AHSU IIE, AHSU IIF, BB1 IVJ, BB2 IIF, BB2 IVH, DR20, GROG IIA, HWC IIE, HWB IVF, LOMI IVJ3, NVCC, MOSL, OXCC, OXPA M, PE47, RDBK IIIB, RDBK IIIF, SAM, Dr 27, SAND IIIF, SHEL IIA, VRW, AD 250+

Discussion

There appear to be two distinct groups of burials: In Area I three burials were aligned west-east; in Area II ten burials were aligned north-south.

In Area II, two burials had been truncated by the insertion of another: Burial 6 was cut by Burial 5 and Burial 8 by 7. Some burials contained plaster and grave goods (see Table 1). From such a small sample it is not possible to measure the significance of the two separate burial groups in terms of religious belief as neither orientation, use of chalk or plaster or the presence or absence of grave goods indicates whether the burials were pagan or Christian.

The reason for two groups may have little to do with religious belief; it may be indicative of isolated family or funeral society groups, a possibility suggested for burial groups in the East London cemetery (Barber *et al* 1990, 5). In Rome the cemeteries originated in the private burial plots of rich influential families (Green 1977, 47).

Heard *et al* (1990, 618) mention the possibility that burials were grouped around surviving parts of the buildings serving as religious foci. At 15–23 Southwark Street backfilled robber trenches and surviving wall foundations had been truncated by the insertion of the burials, and there was little indication of ritual activity or votive deposits. However, it is possible that Rooms 9–12 of Building 4 could have survived and served this purpose as they appeared to be surrounded by the burials.

More burials have been excavated some 125m north of 15–23 Southwark Street, at the Courage Brewery site. Three inhumations were aligned north-south and four east-west but they did not

appear to be separated into distinct groups (John Dillon: pers comm). As at 15–23 Southwark Street, the Courage Brewery burials also appeared to respect the alignment of the robbed buildings on the site. The reasons for this are unclear. Whether parts of walls were still visible is unknown, as when excavated the walls were found to be covered with dark earth deposits, but in at least one case at the Courage Brewery site a grave was inserted before a foundation was robbed of its stone. Presumably some robbing of the buildings continued while the burial ground was already in operation. The presence of medieval sherds in some of the robber trenches may indicate that some walls were still standing as late as the medieval period. Perring (1987, 154) mentions how property boundaries were maintained with care and were sometimes re-established after demolition had obliterated all traces of earlier buildings; this implies that detailed records must have been kept.

The majority of Roman burials in the area appear to have been located south of the Southwark settlement, south of the junction between Stane Street and Watling Street and alongside and between them (Dean & Hammerson 1980, 20). Many were antiquarian finds and are poorly recorded. The other burials were once thought to coincide with the course of the road from the Southwark bridgehead to Lambeth (*ibid.*, 1980, 20), although there is now some doubt whether this road extended further than 150m south west of the bridgehead (Heard *et al* 1990, 611). These are the burials from 15–23 Southwark Street, seven burials from the Courage Brewery site (Dillon *et al* 1990, 262), three from Guys Hospital Area 7 site (Brian Yule, pers comm), five from Redcross Way (John Moore, pers comm), and others mentioned in 19th century sources—a burial from Union Street, one from Park Street and two from Ewer Street (Brian Yule, pers comm).

Heard *et al* (1990, 618) refer to the rarity of objects among the north Southwark graves but about half the burials in the group contained grave goods. As only a quarter of the 575 inhumation burials from the East London cemetery included grave goods (Barber *et al* 1990, 9), the Southwark group should not perhaps be considered unusual.

It is not known whether the north Southwark burials form part of one large cemetery area or represent isolated groups. The presence of the burials within the former settlement area may

mean that the settlement had contracted to a surviving enclave around the bridgehead.

At present however there is little evidence of buildings continuing into the 4th century to support the argument for a surviving enclave. Only buildings at Winchester Palace (Yule 1989, 35) and 1–7 St Thomas Street (Dennis 1978, 291) are known to have survived into the 4th century, the latter not being robbed until the end of that century. Many other sites, such as 1a Bedale Street, the Courage Brewery sites and 11–15 St Thomas Street (Swain 1988, 479–488), have not yet been fully analysed.

Activity as indicated by wells and pits at sites further from the bridgehead, such as at 10–14 Union Street (Heard 1989a, 130) and 201–211 Borough High Street (Ferretti & Graham 1978, 68), appears to have continued into the mid 4th century and may indicate that the contraction of the settlement took place later in the century. The 15–23 Southwark Street burials were probably deposited during the 4th century: three of them probably date to at least the early part of the century, and two of them to at least the middle. One burial from the Courage Brewery excavations was dated to at least the AD 340s by a coin, and two burials from Ewer Street were dated to at least the second half of the 3rd century by coins. The other burials in the area are not dated.

Period 6: the dark earth deposits

AREA II

The dark earth deposit on Area I was largely removed by modern disturbance.

The late Roman levels of Area II, as at many other sites in London, were sealed by dark earth deposits (see below). The phenomenon of dark earth deposits, and the significance of their possible origins for the interpretation of late Roman towns in Britain has been discussed by Yule (1990), making use of evidence from the present site among others (Yule 1990, 625).

Yule contends that dark earth deposits seal features of different date. He infers that this reflects truncation processes which may well be the result of the same agencies responsible for forming dark earth deposits. The fact that truncation occurs at a lower absolute height over soft horizontal strata than it does over more solid deposits, such as masonry wall stubs and tessellated floors, indicates that the cause of the

truncation is probably biological in origin. Yule also argues (1990, 625–6) that following the abandonment of the settlement (Building 7 in the case of 15–23 Southwark Street), the uppermost levels were subjected to biological reworking to a depth limited either by the presence of solid obstacles or the depth limitation of the organism responsible. Any subsequent deposits were presumably reworked in a similar fashion, the lower limit of bioperturbation rising in step with the contemporary ground level. Several agencies, such as weathering and disturbance by roots of shrubs and trees to fauna, including a maggot-like worm, *Enchytraeidae*, as well as slugs and earthworms, may have been involved (Brian Yule, pers comm).

This argument contrasts with that discussed elsewhere, for example in connexion with the Newgate Street and Milk Street excavations in the City, where it has been suggested that the dark earth was deliberately dumped in the late 2nd century. The conclusion here is that there was a marked change of land use, perhaps to cultivation (Roskams 1991, 65).

The hypothesis of truncation resulting from the same process responsible for creating dark earth deposits is supported by evidence from 15–23 Southwark Street.

Dark earth deposits [217] covered Area II except where it was truncated by post-medieval features. It comprised a dark grey/black sandy clayey silt recorded between +2.55m and +3.20m OD. The upper levels were less pebbled and more silty than those below, where the strata were lighter brown, with yellow patches of sandy clay in the lower 0.25m where they merged with the underlying deposits.

The interface between dark earth deposits and the Roman material beneath was often indistinct, especially over backfilled pits, robber trenches and graves. When more compacted or substantial surfaces were reached, for example a tessellated floor [143] and a mortar and gravel surface [183], the interface with dark earth deposits was obvious. Where softer deposits had been present, the dark earth interface could be seen to be 0.20m+ lower than that of the compacted surfaces, but by and large the base level of the dark earth deposit was uniform across Area II.

This level was at a height of around +2.55m OD, at which the dark earth deposit sealed backfilled robber trenches of the early 4th century [206] and a number of later pits and robbing/demolition spreads [216]. Remnants of 2nd-

century floors [143, 177–179, 183–185] and 4th-century graves [Burials 3, 5 and 7] were also sealed directly by dark earth deposits. It appears therefore that across Area II the dark earth deposit did not seal a consistent chronological horizon, which points to truncation of the structural sequence.

The dark earth deposits were sampled for micromorphological analysis. Samples taken from above the tessellated floor [143] showed that of the coarse fragments, pieces of mortar were abundant alongside pieces of brick, pottery and rounded coarse sands. The latter may have been inherited from the disaggregation of the mortar. Thus the dark earth deposit above the tessellated floor appears to have been related to the disruption of building materials on the site, perhaps from the *in situ* collapse or destruction of insubstantial structures; minor biological reworking being sufficient to obscure any obvious layering (Macphail & Courty 1985, 78, 81).

There were indications within Area II of the original layering: seven pits of varying size were seen within the dark earth deposit. Nevertheless the level from which each pit was cut was indistinct, as the pits were only just visible and were filled with grey sandy clay and silt almost identical to the dark earth deposit. Within the lowest levels of the dark earth deposit (that is, from +2.60 to 2.90m OD) was a line of pebbles, no more than 0.01 to 0.03m thick but ill-defined, which was thought to represent the remnants of a surface. It is also worth noting that within the dark earth deposits at 15–23 Southwark Street were ten late 3rd-century and two mid 4th-century coins, perhaps derived from reworked late Roman strata. The Roman pottery was not dated, and there was very little post-Roman pottery or other finds from the the dark earth deposits.

If Yule is correct, some of the late Roman stratigraphy has been lost. This has wide implications for the interpretation of the later Roman occupation on the site. It could mean that much of the later Roman occupation, especially any clay and timber buildings or other 'soft' stratigraphy, may have been destroyed by reworking.

Period 7: Post-Roman summary

AREA I

Modern cellars truncated the post Roman features down to c. +2.50m OD. Several

medieval pits filled with sandy clay and debris of wood and charcoal cut through the Roman levels. These were dated to *c.* AD 950–1500. A few pits and a brick cellar both dating from 1600–1800 were also present. They were cut by 18th/19th-century red brick cellar foundations, probably once part of a warehouse.

In the south-east corner of Area I were the remains of a clay pipe kiln of rectangular shape with an apsidal east end measuring 2.60m by 1.20m. Waste material from inside the kiln, consisting of ash and charcoal, white pipe clay and fragments of clay pipe, dated from 1650–1900.

AREA II

Area II was less truncated than Area I and some modern debris makeup at a height of +4m OD was removed by machine down to *c.* +3.20m OD, the top of the dark earth deposits.

In Area II no medieval features were found. The earliest features cutting the dark earth deposit were 17th-century pits and brick sewers of unknown date.

The pits in this area, and in Area I, probably represent some backland activity from tenements situated along Borough High Street.

AREA III (NOT ILLUSTRATED)

Area III was situated to the extreme east of Area I. Only its medieval and post-medieval stratigraphy was investigated so the finds for Area III are not included in this report.

Modern material was removed from a height of +4m OD down to +3.72m OD.

Post-Roman features consisted of the truncated walls of a building constructed of Kentish rag and chalk and measuring at least 7m by 9m. No floor surfaces survived, but two tiled hearths were present within the building. The building itself was undated but later rubbish pits inserted through it dated to the late 16th/early 17th century.

Detailed documentary research has been not been carried out, but the building may have been part of an inn called 'The Goat'.

A cobbled area of flint, dated to the mid 17th century, sealed most of the earlier features in the area. A small brick outhouse, measuring at least

2m by 7m, appeared to respect the cobbled surface and may have been contemporary with it.

3. THE FINDS

Introduction

Hedley Swain

The long duration and disjointed nature of excavation and post-excavation at 15–23 Southwark Street have complicated the archiving and study of the different finds categories, and have resulted in a very traditional and somewhat restricted approach to their publication. They are presented here chronologically by category, as has been the approach with previous Southwark excavations (Bird & Graham 1978; Hinton 1988): prehistoric flint and pottery; Roman pottery; ceramic building material; wall plaster; registered finds; coins.

This material, placed alongside that from previous projects, should serve as a firm basis of finds information for Roman Southwark. Future projects can now concentrate on filling gaps in our knowledge and addressing specific research questions.

Although of no direct significance for the Roman sequence, the discovery of domestic Beaker remains amongst the prehistoric finds is of some interest since it is the first such evidence for central London. As more of the Southwark excavations are studied the exact nature of prehistoric activity and its subsequent bearing on later occupation may become more clear.

The majority of the finds reports reflect the long sequence of Roman occupation and its character on this particular site. Although a very great amount of pottery was recovered (over 300 boxes of material are held in the archive), the vast majority was recovered from small contexts and is of a very fragmentary nature. This reflects the primarily occupational use of the site throughout the Roman period: contexts traditionally associated with large pottery assemblages such as large negative features and dumps are not present. Thus the study of the Roman pottery has proved very frustrating. Its main contribution has been in helping to date constructional phases and in further confirming the form and fabric typologies already developed in previous publications (Hammerson 1988).

For the same reasons that the pottery has

proved disappointing, the study of building material has been very rewarding. As would be expected from the building sequence described above, a wide range of material, some of the highest quality, has been recovered. Wherever possible this evidence has been related directly to the constructional sequence in the text. The reports presented here serve mainly to provide the necessary background evidence and illustration for this material. This includes details of the range of tile forms and fabrics used; the range of mosaics, and a detailed discussion of the painted wall plaster.

The very large assemblage of small finds or accessioned finds presented here also reflects the importance of the Roman building sequence on the site. The constraints of the project have allowed only an expanded catalogue to be published, and many of the objects listed demand fuller study. The assemblage includes notable military objects as well as jewellery and more mundane items.

Full credit should be given to the finds researchers who have undertaken these reports under the difficult circumstances already outlined. It is their achievement that finds information has been able to contribute so substantially to an understanding of this important site.

At the time of writing the finds archives are held with the Museum of London Archaeology Service, prior to permanent archiving with the Museum of London Early London History and Collections department. All finds have been retained with the exception of recorded ceramic building material.

CONTEXT CONCORDANCE

[2-18] <i>Period 1: Prehistoric and early Roman features</i>
[19-70] <i>Period 2: the pre-Flavian buildings</i>
[19-35] <i>pre-Flavian features</i>
[36-61] <i>Building 1</i>
[62-70] <i>Building 2</i>
[71-121] <i>Period 3: the Flavian buildings</i>
[71-3] <i>demolition of Buildings 1 and 2</i>
[74-7] <i>Building 3</i>
[78-89] <i>Building 4</i>
[90-121] <i>Building 5</i>
[122-203] <i>Period 4: the 2nd/3rd-century buildings</i>
[122-127] <i>demolition of Building 5</i>
[128-157] <i>Building 6</i>
[158-160] <i>robbing of Building 6</i>
[161-203] <i>Building 7</i>
[204-216] <i>robbing of Building 7</i>
[Burials 1-13] <i>late Roman burials</i>
[217] <i>dark earth deposits</i>

The struck flint

Jonathan Cotton

Introduction

A combined total of 360 pieces of struck flint was recovered from Areas I and II.

The flintwork derives from three main context groups: (i) features cutting natural sands, (ii) areas of 'weathered natural' overlying the natural sands, and (iii) Roman, post Roman and unstratified contexts.

With the exception of a small Beaker assemblage recovered from two features cut into the natural sands in Area I, much of the flintwork appears to be chronologically mixed and incorporates elements of Mesolithic, Neolithic and probably later prehistoric date. It stands comparison with other similar collections of lithic material recovered from excavations conducted elsewhere in central London (*eg* Merriman 1987, 322-4).

The flintwork is summarised in Table 2 (with the Beaker material shown separately) and discussed briefly below. Further details are lodged in the site archive.

Raw material

Almost without exception this was of a poor quality, comprising rolled and frost-shattered pebbles obtained from the local gravels. The number of cortical pieces, 243 out of 360, suggests that the parent pebbles were of small

Table 2. Summary of flintwork

	Cut features	Beaker	W Nat	RB	Totals
<i>Contexts</i>	12	2	14	59	87
<i>Cores/frags</i>	1	—	3	2	6
<i>Flakes</i>	42	19	64	69	194
<i>Spalls</i>	16	—	11	18	45
<i>Blades</i>	1	1	20	19	41
<i>Flakes/blades</i>	1	—	2	3	6
<i>Shattered pieces</i>	8	1	8	14	31
<i>Utilised pieces</i>	—	1	1	3	5
<i>Scrapers</i>	3	3	9	6	21
<i>Knives</i>	—	1	1	3	5
<i>Microoliths</i>	—	—	1	2	3
<i>Borer</i>	—	—	1	—	1
<i>Leaf arrowhead</i>	—	—	—	1	1
<i>Axe sharpening flake</i>	—	—	1	—	1
Totals	72	26	122	140	360

size. The colour of the flint is variable and ranges from orange through umber to grey-brown. To judge from their unweathered cortex, two or three pieces were detached from nodules of 'chalk' flint, while five pieces utilised the attractively-banded Bull Head Bed flint found at the base of the Thanet Sand or Reading Beds. In terms of condition the majority of the collection is sharp and unweathered though 15 pieces have been patinated to varying degrees and four burnt.

Features cutting natural sands

In all, 98 pieces of struck flint were recovered from 13 separate features cut into the natural sands, principally in Area I. Most noteworthy is a small assemblage of 26 pieces: 20 pieces from context [3], a post hole; and six pieces from [2], a truncated slot associated with small abraded sherds of Beaker pottery (see prehistoric pottery report). A further 31 pieces of probably later prehistoric flintwork were recovered with a few scraps of pottery from feature [10]. None of the remaining features produced much in the way of significant or diagnostic material.

The Beaker flint assemblage is dominated by small squat flakes which presumably reflect the poor quality of the available raw material; one bears traces of utilisation along both lateral edges (Fig 17, No. 12). Although the 16 non-utilised flakes complete enough to measure are too few for meaningful metrical analysis, with one exception none are longer than 24mm (average 20.8mm), and none narrower than 13mm (average 17.5mm).

The Beaker flintwork also includes four recognisable tools, all from [3]: a small knife on a narrow flake/blade with shallow retouch along one edge (Fig 17, No. 13), and three diminutive end and end/side scrapers (Fig 17, Nos 14–16) characteristic of domestic Beaker assemblages (eg Bamford 1982, 27). This concentration of tools within [3] is worthy of note, and is a point returned to briefly below (see Discussion).

The 31 pieces of probably later prehistoric struck flint from [10] include a single end scraper fashioned from a small pebble, but otherwise comprise knapping waste in the form of squat flakes, spalls and shattered pieces.

Weathered natural

The majority of the 122 pieces of struck flint recovered from the weathered natural comprise

knapping waste in the form of flakes and spalls. More diagnostic, however, is the large axe sharpening flake (Fig 17, No. 1) and a microlith of ?scalene form (Fig 17, No. 4) which, together with the blades and single pyramidal bladelet core (Fig 17, No. 5), have clear Mesolithic affinities. Less easily dated are the borer (Fig 17, No. 6), blade knife (Fig 17, No. 9) and nine scrapers also recovered, though the diminutive size of many of the latter is reminiscent of the Beaker material considered above.

Roman and other contexts

One hundred and forty struck flints were recovered as residual finds from Roman and some post Roman and unstratified contexts, the majority comprising knapping waste. Diagnostic pieces include two microliths, a convex backed piece (Fig 17, No. 3 [27]) and a rod (Fig 17, No. 2, [u/s]), which, like the ?scalene example noted above, are later Mesolithic forms, and a fine bi-facially worked leaf-shaped arrowhead (Fig 17, No. 7, [26]) of early Neolithic date.

Discussion

15–23 Southwark Street is similar to many other sites in North Southwark and Lambeth in producing a number of stray pieces of struck flint best described as 'lithic litter'—the result of seven or eight millennia of sporadic post-glacial exploitation of the area. This is complemented by flintwork recovered from a handful of cut features, some at least of which—like the Beaker contexts [2 and 3]—are of definite prehistoric date.

Mesolithic activity is represented by the axe sharpening flake, three microliths, pyramidal bladelet core and a number of blades and fragments recovered from the weathered natural and a few Roman contexts. The microliths in particular appear to belong to a later Mesolithic narrow blade tradition, and may be compared with others from sites close to the present Thames in central London (Merriman 1987, 323–4).

Early Neolithic activity is only certainly attested by the fine leaf-shaped arrowhead found in a Roman context and is here presumably indicative of an isolated foray rather than settlement. Such arrowheads are relatively common in the valley bottom, but are so far

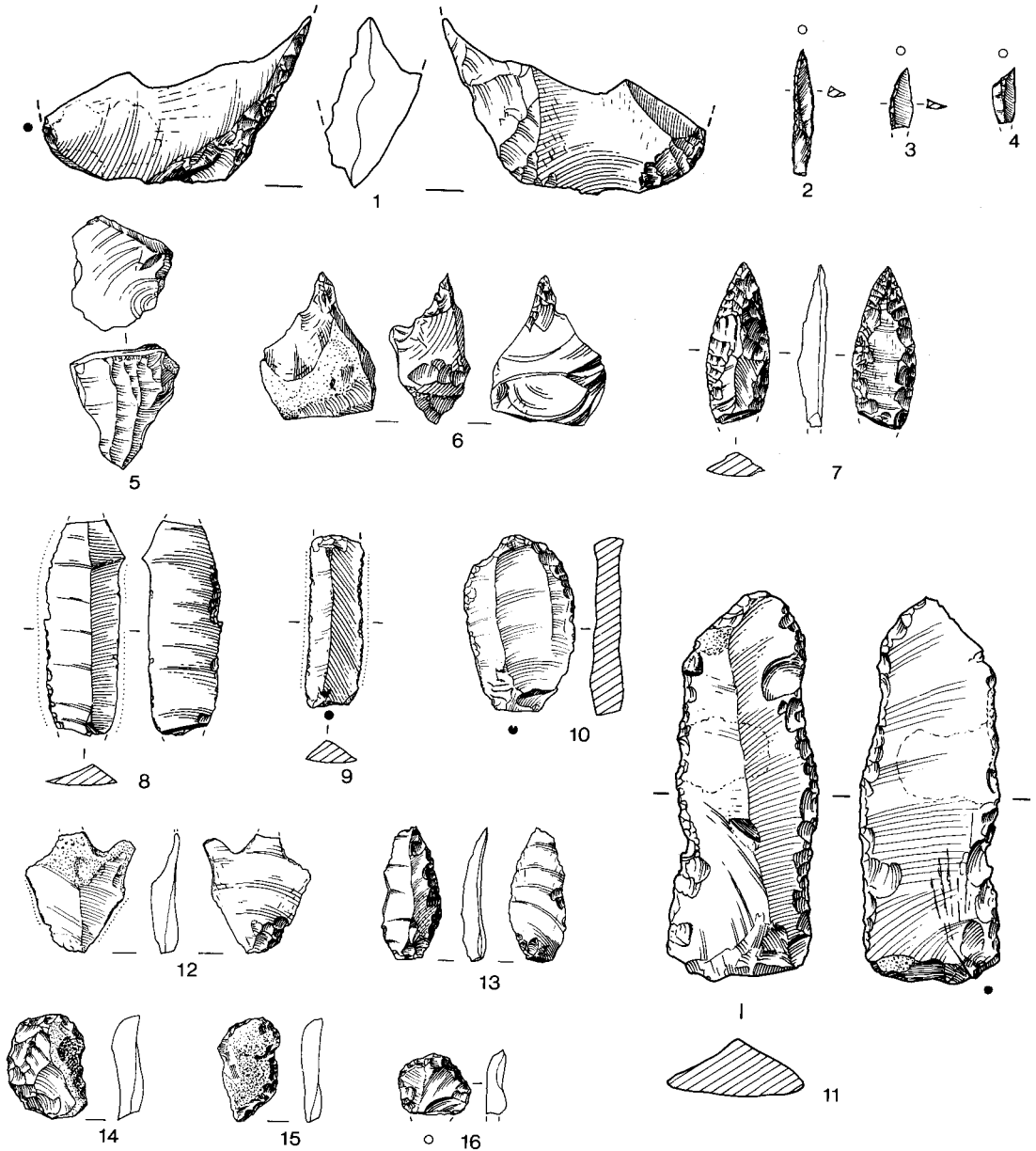


Fig 17. *Flints, Nos 1-16 (1:1).*

much scarcer on the gravel terraces away from the river where later Neolithic transverse types predominate.

Later Neolithic/early Bronze Age activity is represented by the Beaker material recovered from a group of features located on the eastern edge of Area I, though its nature and full extent remain unclear. The importance of the Beaker assemblage itself is not in doubt, however, for it

is the first such to have been found in central London. Finds from the river apart, Beaker material is generally scarce in the London area, although stray sherds have been located during excavations at Cromwell Green, Westminster and at 106-114 Borough High Street (Needham 1987, 101), the latter only 150 metres to the south of the present site.

The diminutive size of the three scrapers in

the present assemblage is consistent with domestic Beaker flintwork recorded elsewhere, though in this instance it may also reflect the poor quality of the available flint. Attention can be drawn too to the number of pieces of flintwork (and pottery) recovered from post hole [3]. Given the incorporation of all four recognisable tools and the utilised flake within the feature, it is possible that its contents comprise a special 'structured' deposit—rather than a random disposal of domestic refuse.

The probably later prehistoric flintwork, represented by the material from [10], is typically undistinguished and can be compared with that recovered from other sites in the lower Thames valley (*eg* North Ring, Mucking (Bond 1988, 23–5)).

Illustrated flintwork (Fig 17)

1. Axe sharpening flake of pale milky grey-brown flint. From the weathered natural. [15].
2. Rod microlith of translucent yellow-brown flint [u/s context].
3. Convex backed microlith of patinated milky-blue flint. From Roman context [27].
4. ?Scalene microlith of light grey-brown flint. From the weathered natural [15].
5. Pyramidal bladelet core of opaque grey-brown flint with faint traces of milky patination on the high points. From the weathered natural [15].
6. Robust borer fashioned on a cortical pebble of dark brown-black flint. From the weathered natural [15].
7. Broken leaf-shaped arrowhead of opaque grey-brown flint. From Roman context [26].
8. Blade knife of grey-brown flint with traces of utilisation along both long edges. From Roman context [158].
9. Blade knife of grey-brown flint with traces of utilisation and localised glossing along both long edges. From the weathered natural [15].
10. End/side scraper of opaque yellow-brown flint. From the weathered natural [15].
11. Robust blade knife of opaque cherty grey-brown flint with much evidence of heavy use [u/s].
12. Broad cortical flake of orange-brown flint, with traces of utilisation along both lateral edges. From Beaker context [3].
13. Narrow flake/blade knife of orange-brown flint with shallow retouch along one lateral edge. From Beaker context [3].
14. Diminutive end/side scraper of cortical, orange-brown flint. From Beaker context [3].
15. Diminutive end/side scraper of cortical, yellow-brown flint. From Beaker context [3].
16. Broken end scraper of orange-brown flint. From Beaker context [3].

Flint catalogue

The flint catalogue is arranged by the context groups defined above. Flints are therefore listed in the following order, from: (i) features cutting natural sands (Beaker contexts first), (ii) areas of weathered natural overlying the natural sands, and (iii) Roman and other contexts.

The following abbreviations have been used: b—burnt; c—cortical; frag—fragment; nat—natural; g—ground; u—utilised.

Context	Accession Number	Quantity	Description
Features cutting natural sands			
2	2239	1	blade c
2	2240	5	5 flakes, all c
2–7	–	1	spall c
3	2220	18	3 scrapers 2c; 15 flakes 14c, 1u (+ 1 nat)
3	2221	1	knife on narrow flake/blade
3	–	1	shattered piece c
6	2228	11	10 flakes 7c (1 broken); 1 spall c (+ 4 b/nat)
7	2212	5	1 scraper c; 2 flakes 1c; 1 plunging flake/blade c; 1 shattered piece
8	1985	5	2 flakes 2c; 2 spalls 1c; 1 broken blade (+ 7 nat 2b)
9	2355	4	1 flake c; 2 spalls 2c; 1 shattered piece c
10	1980	31	1 scraper c; 16 flakes 11c; 1 flake frag c/b 8spalls 7c; 5 shattered pieces 5c
10	2208	3	3 flakes 3c
10	2354	1	spall c
11	2350	2	1 flake c; 1 shattered piece c/b
12	1986	6	4 flakes 4c; 1 spall; 1 keeled core c
13	2351	1	1 scraper c (broken)
17	4376	1	flake frag

Context	Accession Number	Quantity	Description
17	4377	1	flake c
Weathered natural			
15	1979	3	1 scraper c; 2 broken blades 1c
15	2192	1	blade
15	2195	11	1 scraper c; 1 borer c; 9 flakes 7c
15	2198	15	1 scraper; 9 flakes 8c; 2 spalls; 2 blades 1c; 1 shattered piece c
15	2199	7	1 microlith; 3 flakes 2c; 2 blades; 1 pebble core
15	2200	1	blade
15	2204	11	6 flakes 6c; 2 spalls 1c; 2 blades; 1 shattered piece c
15	2205	1	broken blade/narrow flake
15	2206	1	pyramidal core c
15	2243	7	1 scraper c; 4 flakes 4c; 1 blade segment c; 1 shattered piece
15	2247	4	1 flake c; 2 spalls 2c; 1 blade c
15	2249	1	blade frag
15	2211	7	1 scraper c; 6 flakes 4c;
15	2353	1	spall c
15	2216	5	2 flake frags 2c; 1 spall c; 2 shattered pieces 2c
15	2217	1	blade u
15	2207	1	blade
15	2213	4	1 scraper c; 1 flake c; 1 spall; 1 shattered piece c
15	2214	5	blades 1g
15	2248	11	3 scrapers 3c; 1 core frag c; 6 flakes 6c; 1 spall
15	4204	4	3 flakes 1c; 1 shattered piece c (+ 1 b/nat)
15	4355	6	flakes 5c (+ 1 b/nat)
15	4356	2	1 flake; 1 flake/blade segment
15	4371	6	1 axe sharpening flake; 2 flakes 1c; 1 blade segment; 1 spall; 1 shattered piece (+ 2 nat)
15	4365	1	blade knife
15	4375	1	flake frag
15	4378	3	2 flakes 2c; 1 flake frag c
15	4351	1	flake (+ 1 b/nat)
Roman + contexts			
19-20	1907	1	flake
20	2210	7	4 flakes 3c; 1 flake frag c; 1 spall; 1 shattered piece
22	2193	1	blade
25	4374	4	2 flakes 2c; 1 blade; 1 spall b
25	4369	3	1 flake c; 1 blade c; 1 shattered piece c
26	4206	3	2 flakes 2c; 1 flake frag c
26	2938	1	leaf-shaped arrowhead
26-32	4353	3	1 scraper c; 1 flake; 1 blade (+ 1 nat)
27	4367	1	microlith
27	4372	5	2 flakes 2c; 1 blade; 2 spalls 2c (+ 1 b/nat)
29	4368	2	1 flake c/u; 1 spall
30	4361	1	flake c/u
33	4352	2	flakes (1 broken)
33	4370	10	2 scrapers 1c; 7 flakes 5c; 1 two-platform core
35	4379	1	flake
46	2209	2	1 flake; 1 blade segment
49	4357	2	1 blade c; 1 shattered piece
52	4360	1	scraper
53	4366	1	flake c
55	4359	1	flake c
60	4350	1	flake c
62	4364	1	blade (broken)
71	4417	1	blade
71	1903	2	1 blade c; 1 shattered piece c
71	2201	10	8 flakes 7c; 1 blade c; 1 shattered piece c
71	2352	6	3 flakes 3c (1 broken); 3 spalls 3c
73	4346	1	flake c
73	4354	1	flake/blade

Context	Accession Number	Quantity	Description
73	4358	1	blade frag b
73	4207	1	flake c
87	4362	2	1 flake c; 1 narrow flake/blade c
95	2739	1	spall
112	2801	1	flake c
128-157	2618	1	flake c
158	2637	1	blade knife u
161	1543	7	3 flakes 2c; 2 blades 1c; 1 blade frag; 1 spall
206	2252	1	scraper c
208	4209	1	flake c
208	4248	1	scraper
216		1	flake
216	4170		1 nat
217	2052	1	flake frag c
217	4147	1	flake c
217	4202	1	flake frag c
B2	2272	1	flake c
B3	2246	2	1 flake; 1 shattered piece c
B7	4192	1	narrow flake/blade
B7	4413	1	blade frag
M	4412	1	spall
M	398	1	blade
PM	523	1	flake
u/s	1906		1 nat
u/s	2196	1	blade knife
u/s	2197	3	2 flakes 1c (+ 1 b/nat); 1 blade
u/s	2202	4	1 flake c; 1 blade; 2 shattered pieces 2c
u/s	2215	6	2 flakes 2c; 3 spalls 1c; 1 blade frag u
u/s	2512	3	1 microlith; 1 flake c; 1 shattered piece c
u/s	2539	3	3 flakes 3c (+ 2 nat)
u/s	2542	12	1 two-platform core c; 3 flakes 3c; 4 spalls 4c; 4 shattered pieces 2c
u/s	4373	2	1 flake c; 1 shattered piece c
u/s	2712	1	blade knife u

Prehistoric pottery

Hedley Swain

Introduction

From the assemblage studied, 1,330gms of pottery from 31 contexts have been identified as pre-Roman. The vast majority of this is in non-diagnostic coarse fabrics probably dating to the middle to late Iron Age, and in some cases to after AD 43. In addition there is a small group (115gms) of early Bronze Age Beaker pottery, significant due to its scarcity in the London region and in this case apparently coming from a domestic context. There are also a few sherds that may date to the late Bronze Age.

The material is summarised below; a full catalogue is held in the archive.

The Beaker assemblage (Fig 18, Nos 1–4)

Fifty-five sherds of Beaker pottery (115gms) were recovered from three contexts [2–4]. All were small and abraded, although at least 11 sherds showed clear evidence of the decorative motif used. Other sherds were identified either from fragmentary decoration or similarity of fabric.

Decoration and differences in fabric suggest a minimum of six vessels present. All decoration was of parallel horizontal lines interspersed with diagonals; of a similar design and fabric to the Beaker sherd from 106 Borough High Street (Barrett 1978, 197–9); one exception was decorated by horizontal bands of chord imprint.

All sherds had relatively fine fabrics with oxidised surfaces and non-oxidised interiors—in some cases the exterior surface had been scrubbed away. Inclusions were of crushed quartz and sand.

Context [3] also contained a single recognisable sherd of non-Beaker, possibly from a small collared urn (Jon Cotton, pers comm).

The Beaker sherds appear exclusively, and exclusive of other pottery, in contexts [2-4], assumedly dating this phase to the early Bronze Age.

See Nos 1-5 in the catalogue below.

The Iron Age assemblage (Fig 18, Nos 5-16)

No complete profiles survived and only a small number of rims and bases; the assemblage is in a mixture of fabrics. The lack of diagnostic features makes it very difficult to offer clear indications of date or provenance. A range of undecorated coarse ware pottery, often with sand or quartz filler, is common in the London area for the middle Iron Age period. Flint tempering which is diagnostic of the later Bronze Age (Barrett 1978, 191) and early Iron Age is absent. It is likely that the majority of this assemblage therefore belongs to the middle Iron Age. However its distribution throughout the Roman layers renders impossible any interpretation of its

significance, other than to confirm native settlement in the area.

Fabric and inclusions

The most common inclusions were coarse quartz, sand and a mix of sand and grog (fired clay). Also present was calcite and voids, presumably left from where calcite had been burned out (see Table 3). The majority of vessels were in a coarse but dense fabric. As would be expected, vessels with quartz inclusions tended to have uneven surfaces whereas those with sand or grog were normally smooth.

All vessels had been fired in open bonfires characterised by unevenly coloured but normally oxidised surfaces and un-oxidised interiors. Several vessels showed evidence of having had their surfaces wiped. There was little or no evidence for re-firing or concretions associated with cooking.

Form and decoration

Few sherds showed any evidence for vessel form. Four base sherds survive: Nos 10, 13, 15 and 17,

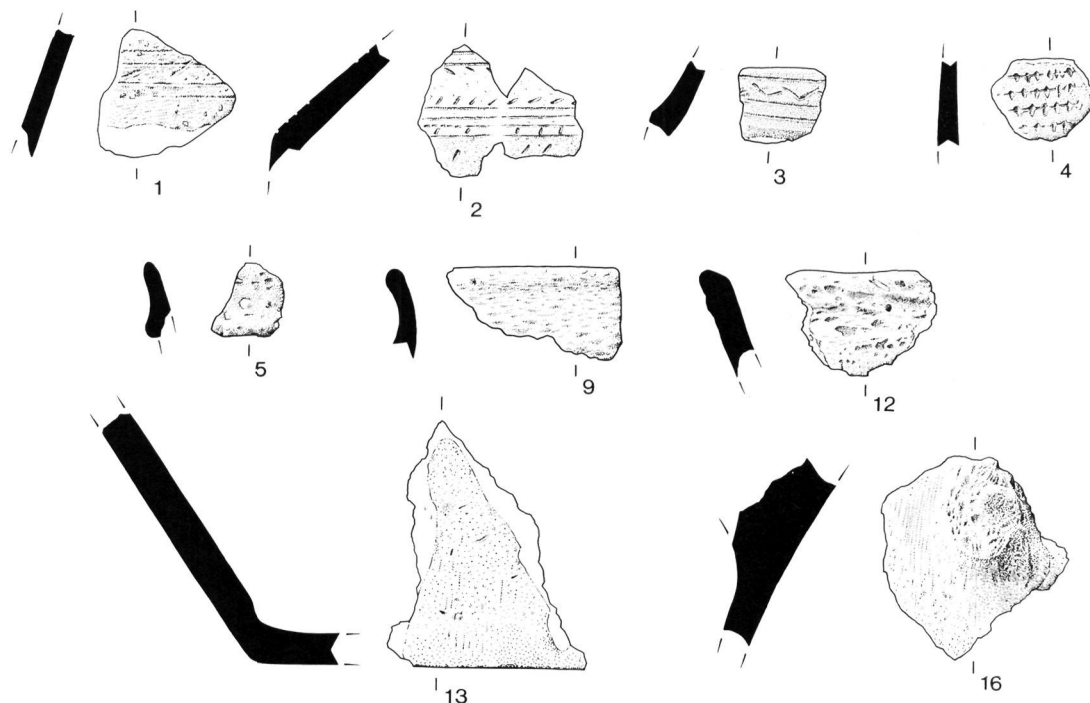


Fig 18. Prehistoric pottery, Nos 1-16 (1:2).

Table 3. Prehistoric pottery: amounts in grammes by period, context and inclusion number

Period	Context	Beaker	Quartz	Sand	S/Cera	Calcite	Voids	Other	Total	
Period 1	2	11							11	
	3	98							98	
	4	6							6	
	5			6				1	7	
	7			17					17	
	8				2	13			15	
	9			4	217			43	276	
	10			17				29	46	
	11			5					5	
	12			15			38		53	
	15			109	18	194	14	34	12	381
	Total		115	167	243	194	65	106	25	915
	Period 2	19-20				10				10
		22				161				161
		41		6				44		50
Total			6		171		44		221	
Period 3	71			6					6	
	74			9					9	
Total				15					15	
Period 4	161				14				14	
	216		67	7					34	
Total			67	7	14				88	
Unphased			33	10		29			72	
			33	10		29			72	
Total		115	273	275	379	94	150	25	1311	

which all have flat bases and suggest wide-bodied jar-shaped vessels, except 17, where the angle of the body suggests a low dish or even plate. Four rims survive; Nos 14, 8, 9 and 12 are all upright and rounded, none showing any evidence of a marked shoulder to the vessel. One example, No. 11, has an internal bevel—possibly to take a simple lid. One sherd, No. 16, appears to include the base for a handle.

Four sherds, other than the Beaker fragments, showed evidence of decoration. Three had finger-tipping, either in a single row (No. 6); in a single row but double spaced (No. 11); or two rows (No. 18). In all cases the sherds were too small to confirm the degree of decoration for the whole vessel. Although the same method of decoration was used for all three sherds, and in each case appeared to have been applied to the external shoulder or waist, all three were in different fabrics.

One sherd (No. 7) had a single line of thin cord impressed decoration.

Catalogue of diagnostic sherds

1. Sherd of Beaker pottery; fine fabric with oxidised surfaces and crushed flint filler. 5mm thick. Decorated with double parallel lines interspersed with diagonal hatching. [4]. Fig 18.
2. One of seven sherds of Beaker pottery. Fine fabric with oxidised surfaces and sand inclusions. 6mm thick. Decorated as 1 but with empty horizontal bands. No base or rim to identify area of pot, however, kink in profile suggests carinated form. [3]. Fig 18.
3. One of two Beaker sherds of similar design but different thickness (the other being 4mm). Fine fabric with oxidised surface and quartz inclusions. 8mm thick. Decorated with parallel horizontal lines and diagonal hatches. [3]. Fig 18.
4. Sherd of Beaker pottery. Fine surface with oxidised surface and sand and pottery inclusions. 5mm thick. Decorated all over with horizontal bands of cord impressions. [3]. Fig 18.
5. Sherd of possible small collared urn. Very thin walled vessel, upright, rounded rim and external collar at shoulder. Coarse, abraded fabric, quartz filler. 4mm thick. [3]. Fig 18.
6. Sherd of Iron Age pottery. Smoothed surface with finger tipped decoration, extent unclear. Fine fabric with ceramic temper, exterior surface oxidised. Concretions on interior surface [u/s].

7. Prehistoric sherd. Fine oxidised fabric with crushed quartz and sand inclusions. Incised cord-type decoration on surface. No evidence for form. 7mm thick. [7].
8. Rim fragment with fine fabric with large quartz and sand inclusions projecting from surface. Out-turned simple rounded rim, no shoulder present. 4mm thick. [7].
9. Iron Age rim fragment. Fine fabric with oxidised surfaces and sand inclusions. Simple rounded, out-turned rim, no shoulder present. 4mm thick. [5]. Fig 18.
10. Iron Age sherds in fine fabric containing voids suggestive of calcite inclusions. Base with flat bottom and no heel. Body angle suggests barrel shaped vessel. [15].
11. Iron Age sherd in coarse fabric with ceramic and sand filler. Decoration of double inverted finger-tipping on oxidised exterior, extent unclear. 8mm thick. [15].
12. Iron Age rim sherd. Coarse fabric voids in fabric suggest burnt out calcite inclusions. Rim upright with internal angle and bevel, possibly acting as lid seat. 9mm thick. [41]. Fig 18.
13. Seven sherds from large Iron Age barrel shaped vessel. Fine fabric with sand inclusions and smooth surfaces. Base flat with no heel. 13mm thick. [u/s]. Fig 18.
14. Iron Age sherds in coarse fabric with oxidised surfaces and sand inclusions. Simple upright tapered rim. 7mm thick. [u/s].
15. Sherds from Iron Age large barrel shaped vessel similar to 12 above. Coarse fabric with smoothed oxidised surfaces and sand and ceramic filler. Flat bottomed base with no heel. [22].
16. Sherd in coarse Iron Age fabric. All surfaces very dark grey. Quartz and sand inclusions, 9mm thick. Appears to mark the base of a circular protrusion—presumably a handle. This sherd could fall into the same category as late Bronze Age vessels from Queen Mary's Hospital, Carshalton (Adkins & Needham 1985, 25–28). [216]. Fig 18.
17. Sherd in coarse fabric with fine surfaces and ceramic and sand filler. 8mm thick. Flat base with no heel and low angled body, possibly from a dish or plate. [161].
18. Iron Age sherd in fine fabric with oxidised surfaces and sand inclusions. No rim or base but angle of profile suggests carinated profile. Double row of finger-tipping on exterior. 6mm thick. [216].

Roman pottery

Michael Hammerson

Quantification and methodology

A large quantity of pottery (over 300 boxes being held in the archive) was recovered. However, much of the pottery was associated with construction, demolition and deposition levels; few closed features were found which might produce useful contemporary groups of pottery for analysis, such as pits, wells, and areas where dumping of refuse would have been concentrated.

This was because much of the site lay within the area of the buildings themselves, the areas where contemporary occupational debris would have been discarded presumably lying beyond the buildings, outside the boundary of the excavations. Given this, the quantity of pottery recovered is very great, and it is debatable whether it represents peripheral debris from the main assemblages, in which case the original quantity in use must have been extremely large; or it derives from levelling and dumping operations associated with the building phases and includes earlier refuse deposits disturbed for the purpose of subsequent building operations.

The pottery assemblages from Areas I and II were initially assessed separately. That from Area I was quantified in its entirety, whilst only a limited number of contexts from Area II were studied. Owing to the limited time available, quantification of the smaller amount of pottery from Area II was by weight and EVEs (estimated vessel equivalents), but that of Area I was by sherd count only; for consistency in this report, therefore, only sherd count is used, though the limitations of using only that method should be borne in mind. A total of *c.* 35,800 sherds were examined, of which *c.* 20,950 were from contexts selected for publication, representing 58.5% of the whole.

The pottery reported on here is divided into groups based on the stratigraphic phases identified on the site (see Table 4).

As Table 4 shows, the dating of groups 1 to 7 is very close and, indeed, the pottery evidence alone might suggest that they succeeded each other very closely. Study of the fabric quantification table (Table 5) supports the likelihood that the 1st-century building sequence may have occurred within a narrow date range, as there seems to be little evidence of the gradual chronological arrival and disappearance of closer-dated wares, or of the replacement of obsolete types by contemporary types, in the 1st-century groups. Indeed, most 1st-century fabrics present appear to be present in quantity from the earliest Roman phases. Within such a series of 1st-century phases, all probably post-Boudiccan and apparently succeeding each other so closely in date, ceramic evidence is of limited value in providing an accurate chronology for the sequence of occupation; the only sharply identifiable division in fabrics—though not in the chronological sequence, as Table 5 shows—being that of pre-Flavian and Flavian (pre- and post-

Table 4. Roman pottery summary, by phase

Pottery group	Site period	Phase details	No. of sherds	Approx. % Intrusive	Residual	Phase dating
1	2	pre-Flavian	2128	0.3	—	60-80
2	2	Building 1	861	1.5	—	60-80
3	2	Building 2	510	—	—	60-80
4	3	Levelling	2073	0.1	—	60-80
5	3	Building 3	199	0.5	—	70-100+
6	3	Building 4	139	—	—	70-100
7	3	Building 5	561	—	—	78-100
8	4	Pits	18	—	—	
9	4	Building 6	3543	—	0.1	90-150
10	4	Building 7	999	—	4.5	200+
11	4	Robbing	8615	—	59.0	250+
12	5	Burials	1135	—	39.4	250+
			20947			

c. AD 70), and, in the later phases, the appearance of Black-burnished wares in *c.* AD 120/130.

The difficulty of interpreting the ceramic evidence is compounded by the occurrence within the early groups of forms and/or fabrics of undoubtedly later date, suggesting some disturbance of the earlier levels by later activity not readily discernible in excavation and leaving the exact level of intrusiveness unclear. For example:

Pottery group 1 (dated AD 60-80): This contained a number of sherds of AD 70+ (RDBK and Trier Rouletted Beakers), AD 85-90+ (HWC, LOMI, LONW, EGGS, VRW IV.F.3), AD 100+ (SAM, SAND, II.H), and AD 120+ (VRW I.B.5,7 and 8; OXID I.B.6, IV.A.5).

Pottery group 2 (dated AD 60-80): Several sherds of AD 70+ (RDBK, VRW I.B.3, IJ); AD 90+ (LONW, HWC) and AD 120/130+ (BB1 IV.G.1; BB2 IV.H; SAND IV.A.6).

Pottery group 4 (dated AD 60-80): Several sherds of AD 80+ (SAM 33); AD 90+ (HWC); AD 100+ (SAM 18/31 and 35); and AD 120/130+ (VRW I.C.BB2). Sherds of OXCC (AD 240+) and one of medieval date were also included in this group.

Pottery group 5 (dated AD 70-100+): One sherd of BB2 (AD 130+).

Pottery group 7 (AD 78-100): One sherd VRW I.B.5.

Pottery group 8, the late 1st/early 2nd century drain/cesspit, contained only a small amount of pottery, mainly of 1st century date, though two sherds of LOMI (AD 90-130) and a SAND III.F (AD 90-150) also occurred.

Pottery Group 9, dating to the first half of the second century, was the second largest group

from the site, with over 3,500 sherds. Most of the fabrics found in this group fit its date range, though a number of the forms were earlier and thus residual. However, this group also contained a small number of sherds of later date: a SAND/II of 3rd century date; NVCC (AD 150-200); and an AHFA 'Flanged Bowl' of *c.* AD 270+.

Table 5 is laid out in an attempt to present the Roman pottery fabrics in order of approximately what might be expected to be their earliest to latest appearance on the site, but no such gradual progression is apparent in either the 1st or 2nd centuries, except for such 'key-dated' fabrics as BBS, KOLN, MOSL, NVCC and BB1, none of which would be found here prior to the AD 120s/130s, and some not until later. Elimination of the inevitable small number of intrusive sherds has a negligible effect on this picture, and, given the date range of the contexts, the intrusiveness of LOEG, LONW and LOMI in groups 1 and 2 may only be marginal.

Pottery from the dark earth deposits normally includes the greater proportion of late Roman fabrics on Southwark sites. However, these deposits are normally mixed, including quantities of residual earlier wares, and frequently containing pottery of medieval and later date. The pottery from these contexts has therefore been omitted from this report.

Residuality was also assessed. Note that the only pottery counted as intrusive or residual is that which can be definitely attributed to a date-bracket. The 8,325 sherds of SAND and OXID form 39.8% of the total wares presented here, but cannot be closely dated. Therefore the figures for intrusiveness and residuality are minima and

HWC	2.54	.46	.77	.50	.36	2.16	3.92	6.10	6.56	2.29	873	4.17
AHSU	2.07	1.28	1.69	1.51			5.19	6.90	2.75	.96	594	2.84
DR20	3.05	7.78	6.03	7.04	1.60	2.16	2.68	4.70	2.48	.10	738	3.62
NKSH	.14						.08	2.60	.83		210	1.00
RWS	2.26	3.14	2.99	2.51			5.08	2.40	2.86	4.49	644	3.07
RC									.01		1	
BBS							.28	.70	.09	1.14	38	.18
KOLN							.02	.10	.33	.08	32	.15
BB2		1.16	.10	.50			3.18	5.00	4.21	2.99	573	2.74
SOLL									.03		3	.01
PE47	.75	1.16	.43	.50	.71		1.29	1.10	.65	.35	157	.75
AMPH	5.64	4.76	2.85	7.04	.89	.54	2.51	4.00	5.97	5.02	942	4.50
SEAL				.50			.05		.04		7	.03
SAM	6.25	4.30	6.03	.72		3.24	2.82	5.90	4.64	3.43	928	4.48
MOSL								.30	.26	.79	35	.16
C306	.05								.09	.08	10	.05
NVCC							.05	1.30	1.11	1.58	129	.62
AHEA	.05							.10	1.07	3.61	136	.65
BB1							.25	.70	2.10	5.20	257	1.23
MHAD								.10	.05	.08	7	.03
EIFL									.09		8	.04
EPON									.02		2	.01
HOEA									.01		1	
LRMA									.01		1	
NARS									.01		1	
NVMO									.01		1	
COLC									.08	.17	9	.04
OXCC				.05				.40	1.31	1.41	134	.64
OXRC								.10	.08		8	.04
OXPA									.35	.17	33	.16
PORD									.03		3	.01
CALC	.05	.35					.11	.40	.02	1.14	42	.20
CC	.05							.30	.22		30	.14
MORT	.05					1.62			.01		1	
MISC												
OXID	10.90	18.23	13.70	12.06	15.69	11.89	5.61	9.30	5.85	14.09	1822	8.70
SAND	37.22	24.74	31.64	37.69	36.19	22.16	34.46	29.52	29.23	34.71	6443	30.76
COMO								.60	.01		7	.03
TOTAL	2128	861	2073	199	561	185	3543	999	8615	1135	20947	

could be somewhat higher (though of course that of residual fabrics, in later 2nd century phases and beyond, may of course be somewhat higher).

It may be significant that, with the exception of five sherds in group 9 (*c.* AD 90–140), there appears to be no residuality in the fabrics from any of the contexts studied up to the mid 2nd century, and very little for those in group 10 (mid-late 2nd century). This suggests that the pottery incorporated into the various 1st, mid 2nd-century building phases derives generally from near-contemporary use, though within the fabric groups themselves the presence of individual, more closely datable, forms may suggest a greater degree of residuality, or at least succession of pottery usage on the site, than a study of the fabrics alone would indicate (for example, whilst VRW fabric occurs from *c.* AD 60 to 160, individual forms will normally have a narrower life-span within that period). However, in view of the nature of the 15–23 Southwark Street pottery deposits, it was not considered worthwhile to carry out a detailed assessment of that nature.

What cannot be determined is whether the pottery represents closed domestic groups of pottery (*eg* wells, cesspits, refuse pits) associated with the use of the buildings, and disturbed within a short time of deposition by succeeding building phases—in which case they may be a representative sample of the pottery associated with use of the 1st-2nd century buildings; or whether it is pottery from other non-closed deposits, either on the site or beyond its limits, which were used in the various 1st-2nd-century construction phases, in which case it cannot be determined whether it is a representative sample of fabrics actually used in the buildings excavated. The only certainty is that there are no extensive closed contemporary pit groups of pottery from within the areas of excavation which would enable us to make a study of the ceramic assemblage associated with the 1st-2nd-century Roman structures.

Fabrics (Table 5)

(See opposite page for pottery fabric codes)

The range of fabrics examined for the purposes of this study—79 different types—and the quantities in which they were present is shown in Table 5.

Beside the categories SAND, OXID and RWS, which refer to wares not otherwise attributable

and which comprise 30.76%, 8.70% and 3.07% respectively of the report assemblage (together comprising 42.53% of the total), the most frequently found wares from the excavation were, as a percentage of the sherd total, as follows:

VRW	15.23%
GROG	6.49%
AMPH	4.50%
SAM	4.48%
HWC	4.17%
DR20	3.62%

These nine fabrics, commonly found in Southwark and other London excavations, therefore comprise 81.02% of the assemblage from 15–23 Southwark Street, with a further 70 fabrics accounting for the remaining 18.98%. Of these, the most frequent were:

AHSU	2.84%
BB2	2.74%
SHEL	1.32%
BB1	1.23%
NKSH	1.00%

leaving 65 rarer fabrics, including most imported wares and most fine wares, represented by only 12.59% of the sherds present. The great majority of wares present were therefore utilitarian, mainly locally or regionally produced fabrics, and representing a limited range of those commonly found in the London region. This would normally occasion little comment on domestic sites in the Southwark settlement. However, the 1st- and 2nd-century sequence of buildings excavated at 15–23 Southwark Street appears to have been a structure of some importance. The absence, therefore of other than small and fragmentary quantities of the early fine wares (which, excluding samian ware (SAM), comprise only 3.83% of the sherds present) that might be expected on sites of this nature therefore increases the possibility that the pottery excavated does not represent the refuse deposits associated with the early buildings, and that these were located beyond the excavated area.

Table 5 shows the proportions of Roman pottery fabrics present at each phase, and in total. The horizontal axis shows pottery groups (see Table 4), and the vertical axis shows fabrics (see below), listed as far as practicable in approximate chronological order of first appearance or date of manufacture. The columns of figures give, for each group, the fabric as a percentage of the total for that group (thus, C185B comprises 0.5% of the sherds of pottery period 1). The figure at the bottom of each

group column is the total of sherds from that period (the figures are tabulated in the level III archive, but not repeated here in a second table). The two right-hand columns of the table ('Total sherds' and 'total%') give, respectively, the total number sherds of each fabric analysed in this report, and the same figure expressed as a percentage of the total number of sherds.

The Vessel from Burial 11 (Fig 19, No.20)

One firmly sealed vessel from the site was that accompanying Burial 11. It lay in pieces, though virtually complete (except for six small fragments), at the head (western) end of the burial.

The vessel is in a hard, smooth, brittle, steel-grey fabric, the core a slightly lighter grey, with sparse larger rounded dark grey quartz inclusions. The upright curving neck bulges outward slightly, and is delineated at its base by a shallow groove, rising to an everted hooked rim. The exterior surface is lightly smoothed, except for the lower part where it is fairly rough, and shows traces of a light grey self-coloured slip. Evidence for turning still remains on the exterior and interior of the body, and the base retains marks of the 'cheese-wire' method of removal from the potter's wheel.

A small abraded area was noted on the exterior of the vessel, sub-oval in shape and *c.* 3 × 2.5 cm in diameter, which appears to have been lightly and deliberately rubbed into its surface. It is quite fresh in appearance, the effect perhaps emphasised by exposure of the subsurface layers of the lighter grey core. The abrasion extends across a break between two sherds and was therefore done prior to washing and processing. It cannot at this stage be determined whether it occurred prior to burial—the ascribing of a 'ritual' purpose to it perhaps being the stock interpretation for such features—but neither, of course, can the possibility be ruled out that it was the result of trowelling while being uncovered, the two broken sherds having lain next to each other as broken. The freshness of the abrasion suggests to the writer that it was caused in this latter way; however, this in itself would then suggest that the vessel was probably broken by being crushed as a result of the eventual collapse of the grave fill into the decayed coffin. Had it been deliberately broken prior to burial, as part of a ritual or from earlier use, even within the grave, it is unlikely that the two joining

sherds with a common abrasion would have remained together; the slow crushing *in situ* from earth pressure could well have ensured that the sherds remained together, though cracked, until scraped by the trowel during excavation. It may therefore be proposed that the vessel was placed intact into the grave at the time of burial, and was not ritually (or accidentally) smashed at the time.

The vessel is of a general coarse ware jar type and form typical of the later Roman period, and particularly of the 4th century. Parallels may be noted from the early 4th century at Lockleys Villa, Herts (Ward Perkins 1938, fig 12:2); late 4th-century contexts at Lefevre, Parnell and Appian Roads, Old Ford (Sheldon 1971), the latter including a base with 'cheese-wire' marks.

Though a typical late Roman form, close dating is, as with most coarse ware forms of this period, very difficult. The fabric itself is not readily attributable to any provenance, though it resembles Alice Holt (AHFA) fabrics of the later Roman period and may derive from that industry; however, Alice Holt is only a coarse ware type site, and manufacture at a 'local' kiln anywhere within the south-east is quite possible. The dating is likely to be 4th century, though closer dating within the bracket 300–375 would be difficult.

The other graves at 15–23 Southwark Street contained greater or lesser quantities of pottery, randomly incorporated into their backfill and consisting of individual sherds, sometimes heavily abraded or fragmented. The greater proportion was of residual 1st-2nd century pottery, though seven graves contained small numbers of sherds datable to *c.* AD 240/250+ and three of sherds datable *c.* AD 200+.

POTTERY FABRIC CODES

AHFA	Alice Holt/Farnham later wares
AHSU	Alice Holt/Surrey earlier wares
AMPH	Miscellaneous unidentified amphorae
BB1	Black Burnished ware, Category 1
BB2	Black Burnished ware, Category 2
BBS	Black Burnished style wares
BLEG	Black eggshell ware
C185B	Camulodunum 185B amphora
C186	Camulodunum 186 amphora
C189	Camulodunum 189 amphora
C306	Camulodunum 306 bowl
CALC	Late calcite-gritted ware
CC	Misc unidentified colour-coated wares

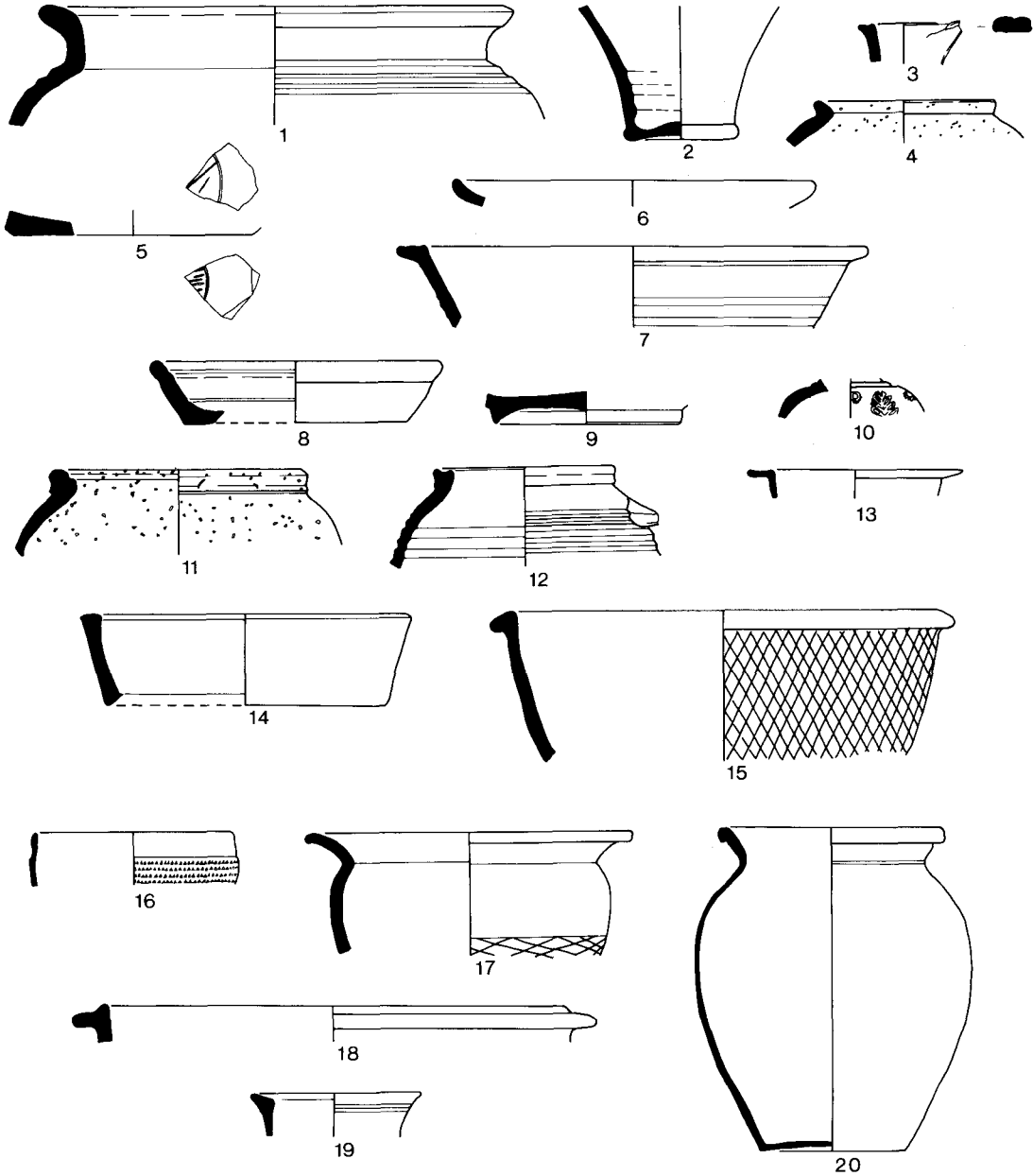


Fig 19. Roman pottery, Nos 1–19 (1:4); No 20 (1:8). 1. GROG II S \bar{J} (70) Pottery group 3; 2. GROG III (73) Pottery group 4; 3. OXID I (73) Pottery group 4; 4. SHEL II (73) Pottery group 4; 5. GROG II (92) Pottery group 7; 6. LOMI IV/V (114) Pottery group 7; 7. LOMI IV.A (127) Pottery group 8; 8. GROG/TNIM IV/V (127) Pottery group 8; 9. GROG/TNIM V (127) Pottery group 8; 10. CCGW III (128) Pottery group 9; 11. SHEL II (128) Pottery group 9; 12. C189 AMPH (128) Pottery group 9; 13. OXID IV (128) Pottery group 9; 14. LOMI IV (147) Pottery group 9; 15. BB2 IV.H4 (155) Pottery group 9; 16. FLNE IV (164) Pottery group 10; 17. BB1 II.F (204) Pottery group 11; 18. BB1 IV FB (204) Pottery group 11; 19. MICA II/III (216) Pottery group 11; 20. ?AHFA (Burial 11) Pottery group 12.

CCGW Misc Gaulish white colour-coated wares
 CCGW Central Gaulish Glazed ware
 CGOF Misc Central Gaulish fine wares
 CGWH Central Gaulish white wares

COLC Colchester colour-coated ware
 COMO Colchester mortaria
 DR20 Dressel 20 Amphora
 DR28 Dressel 28 Amphora

EGGS	Eggshell wares
EIPL	'Eifelkeramik'
EPON	Ceramique a l'eponge
FINE	Misc fine wares, all periods
FLIN	Flint-tempered ware
FMIC	Fine micaceous wares
G238	Gillam form 238 Mortaria
GBWW	Misc Gallo-Belgic style white wares
GROG	early grog-tempered wares
H70	Haltern 70 Amphora
HOFA	later 'Hollow-foot' amphora
HWB	Highgate Wood grogged fabric
HWC	Highgate Wood sandy fabric
KOAN	'Koan'-type Amphora
KOLN	Cologne colour-coated ware
LOEG	London eggshell ware
LOMA	London marbled ware
LOMI	London micaceous ware
LONW	Black 'London' ware
LRMA	Late Roman marbled ware
LYON	Lyons colour-coated ware
MARB	Misc. marbled wares
MHAD	Much Hadham ware
MICA	Misc micaceous wares
MISC	Misc unidentifiable wares
MLEZ	Lezoux micaceous ware
MORT	Misc unidentifiable mortaria
MOSL	'Moselle' colour-coated ware
NARS	North African Red-Slipped ware
NKSH	North Kent shelly ware
NVCC	Nene Valley colour-coated ware
NVMO	Nene Valley mortaria
OXGC	Oxfordshire colour-coated ware
OXID	Misc oxidised wares
OXPA	Oxfordshire Parchent ware
OXRC	Oxfordshire red-slipped ware
PE47	Pelichet 47 Amphora
PORD	'Portchester D'-type ware
PRW	Misc Pompeian red wares
PRW2	Pompeian red ware, London type 2
PRW3	Pompeian red ware, London type 3
R527	Richborough 527 Amphora
RC	Misc rough-cast wares
RDBK	'Ring-and-dot' beakers
RHOD	'Rhodian'-style amphorae
RWS	Misc red white-slipped wares
SAM	Samian ware
SAND	Misc 'sandy' wares
SEAL	'Amphora-seals' or lids
SHEL	Misc Shell-tempered wares
SOLL	Soller mortaria
TN	Terra nigra
TNIM	Copies of Terra nigra types
TR	Terra rubra
VRG	Verulamium region grey ware
VRMI	Verulamium region mica-dusted ware
VRR	Verulamium region red ware
VRW	Verulamium region white granular ware

The samian wares

Joanna Bird

The samian from 15–23 Southwark Street follows the same pattern as that from earlier excavations

in Southwark (Bird & Marsh 1978), with a very high proportion of Neronian to early Flavian material; a fall in the early 2nd century; a second, lower, peak in the early to mid Antonine period; and a small amount of later East Gaulish wares taking the samian into the first half of the 3rd century. Marsh (1981) has shown that this is the normal pattern for Romano-British urban sites in continuous occupation.

The 1st-century material recovered all comes from South Gaul, and, with the exception of one or two Montans sherds (including an early stamp of Salvetus i), probably all from La Graufesenque. There is rather more early samian here than has been usual on Southwark sites: a bowl in the style stamped by Bilicatus (*c.* AD 35–50), and at least one more of Claudio-Neronian date. The earliest plain-ware stamps are of Albinus ii and Licinus, and date *c.* AD 45–65. Early plain forms include Ritt 1 (three sherds), Ritt 8 (one or two), a rouletted variant of Ritt 8, Ritt 9 (six or seven), Ritt 12 (twelve) and Dr 24/25 (fourteen), though some of these are likely to be of Neronian date rather than earlier.

Most of the 1st-century samian is of Neronian to early Flavian date. It includes stamped decorated bowls by Crestio, Melainus and Montanus i, and others which have stylistic links with bowls stamped by such potters as Albus, Niger, Bassus-Coelus, Modestus, Murranus, Celadus, Melus and Aquitanus. There are three Dr 30s with an ovolo recorded for Masclinus. Neronian to early Flavian plain wares include stamps of Bassus ii, Masc(u)lus i, Murranus (two) and Passienus.

Bowls of the early to mid-Flavian period include several attributed to the Calvus-Patricius group, and others in styles associated with stamps of Iucundus, Germanus, Meddillus, Rufinus and Passienus. The plain-ware stamps of this period include dies of Calvus i, Mommo, Rufus iii, Sarrutus and Virthus. There are a few later Flavian decorated vessels: one in the style of the M Crestio-Crucuro group, and two in the styles characteristic of the period *c.* AD 80–110. There are also four later Flavian plain ware stamps, of Cotio, Fuscus ii, Iucundus iii and Memor.

There is a relatively high proportion of Les Martres-de-Veyre products of early 2nd-century date; they include three bowls each of X-13 and Drusus I, and single pots of X-2 and X-11, with plain-ware stamps of Balbinus (two), Donnaucus, Ioenalis and Paterclus. The stamp of Iarillus may be Hadrianic. Later Central Gaulish ware from

Lezoux is mainly of Antonine date, and includes decorated bowls of Criciro, Divixtus, the Cinnamus group (two or three), Paternus II, Iullinus and Banvos (two); there is also a Dech 68 jar by a potter of the Paternus II group. There are four Antonine plain-ware stamps, of Genitor ii, Mossius ii, Peculiaris i and Primanus iii. Although some of the potters could date into the late Antonine period, such definitely late plain forms as Walters 79 and 80 and Dr 45 are scarce, indicating a decline in samian use in the late 2nd century.

The East Gaulish wares are almost exclusively later products of Trier and Rheinzabern, and show that some samian was in use here towards the middle of the 3rd century. The late material includes a decorated bowl of Primanus of Trier, probably after *c.* AD 235, a deep flanged bowl of Huld-Zetsche (1971) type 16, and Dr 37 bowls with thick and heavy footings.

Finally, mention should be made of the unusual number of sherds of the inkwell form

Ritt 13; there are 15 individual sherds, including a trimmed top, all of South Gaulish origin, which may indicate some clerical or similar activity on the site in the second half of the 1st century.

Decorated samian

The decorated samian has been tabulated below from the full report by Joanna Bird, which is housed with the Archive. The following abbreviations have been used: SG *South Gaul*; CG *Central Gaul*; EG *East Gaul*; Dr *Dragendorff*; Dech *Dechelette*; Les Martres *Les Martres-de-Veyre*; M *Medieval*; PM *Post-Medieval*; Ritt *Ritterling*; u/s *unstratified*; Wa *Walters*. Numbers in round brackets following form type refer to the number of vessels; numbers in square brackets refer to contexts. When a single vessel is dispersed between several contexts it listed in its primary (*ie* earliest) context on the table. Vessels which are shared and therefore cross-indexed with the stamped sherds are indicated by an asterisk (*).

Date	Production area	Form	No. of vessels	Context
Period 1				
<i>Weathered natural</i>				
AD 50-65	SG	Dr 29		[15,20,37-48, PM, u/s]
AD 50-70	SG	Dr 29		[15]
Period 2				
<i>Assorted features</i>				
Pre- or early Flavian	SG	Dr 29		[22]
Neronian	SG	Dr 29	(2)	[22, 21, PM]
Neroni	SG	Dr 30		[19-20, 71]
Neronian-early Flavian	SG	Dr 29		[22]
Early to mid-Flavian	SG	Dr 29 or 37		[22]
AD 50-65	SG	Dr 29*		[20,37-8,216, u/s]
AD 55-70	SG	Dr 29		[24, 216]
AD 60-80	SG	Dr 30	(2)	[23]
AD 100-125	CG	Dr 37	(2)	[22]
<i>Building 1</i>				
AD 50-70	SG	Dr 29		[40,161,161-62]
Period 3				
<i>Demolition layers</i>				
Pre-Flavian	SG	Dr 29	(2)	[71,73]
	SG	Dr 30		[71]
Claudio-Neronian	SG	Dr 29		[73]
Neronian-early Flavian	SG	Dr 29		[71]
Flavian	SG	Dech 67		[71]
AD 50-70	SG	Dr 30		[72,114]
<i>Building 5</i>				
Neronian	SG	Dr 29		[109]
AD 35-50	SG	Dr 29		[93]

Date	Production area	Form	No. of vessels	Context
Period 4				
<i>Assorted layers/features</i>				
Pre-Flavian	SG	Dr 29		[161]
Neronian or early Flavian	SG	Dr 29		[161]
	SG	Dr 30		[161]
Neronian to mid-Flavian	SG	Dr 29		[161]
Early to mid-Flavian	SG	Dr 29		[161]
Flavian	SG	Dech 67		[161]
	SG	Dr 37		[127]
AD 50–70	SG	Dr 29		[161, 162]
AD 55–75	SG	Dr 29		[161]
AD 65–80	SG	Dr 29		[161]
AD 65–85	SG	Dr 30		[161]
AD 70–80	SG	Dr 29*		[125, 138]
AD 70–85	SG	Dr 29		[161]
	SG	Dr 37	(2)	[161]
AD 70–90	SG	Dr 37		[161]
<i>Building 6</i>				
Neronian	SG	Dr 29		[128]
Early to mid-Flavian	SG	Dr 29		[158]
Flavian	SG	Dr 29 or 37		[128]
	SG	Dr 37		[152]
Antonine	CG	Dr 37		[153]
<i>Building 7</i>				
Pre- or early Flavian	SG	Dr 29		[190]
Neronian or early Flavian	SG	Dr 29 or 37		[174]
AD 70–90	SG	Dr 37		[203]
AD 80–100	SG	Dr 37		[203, u/s]
AD 100–125	CG	Dr 37		[203]
AD 135–165	CG	Dr 37		[175]
<i>Building 7 robbing</i>				
AD 50–65	SG	Dr 29*		[208, M, PM]
AD 60–80	SG	Dr 30		[208]
AD 100–125	CG	Dr 37		[208]
Late 2nd to mid-3rd	EG	Dr 37		[206]
<i>Pits and robbing</i>				
Neronian-early Flavian	SG	Dr 29		[216]
Pre- or early Flavian	SG	Dr 29*	(2)	[216]
Flavian	SG	Dr 37	(3)	[216]
Mid- to late Flavian	SG	Dr 37		[216]
Hadrianic-Antonine	CG	Dr 37		[216]
AD 50–65	SG	Dr 29*		[216]
AD 55–70	SG	Dr 29		[216]
AD 65–80	SG	Dr 29		[216]
AD 70–90	SG	Dr 37		[216]
	SG	Dech 67		[216]
AD 75–95	SG	Dr 37		[216]
AD 80–100	SG	Dr 37		[216]
AD 100–125	CG	Dr 37	(4)	[216]
AD 145–175	CG	Dr 37	(2)	[216]
AD 150–180	CG	Dr 37		[216]
Period 5				
<i>Burials</i>				
Neronian to mid-Flavian	SG	Dr 29		[B13]
AD 125–150	CG	Dr 37		[B8]
Medieval, post-Medieval, unstratified				
Pre-Flavian	SG	Dr 29		[u/s]
Neronian	SG	Dr 29	(3)	[u/s, PM]
	SG	Dr 30		[u/s]

Date	Production area	Form	No. of vessels	Context
Neronian-early Flavian	SG	Dr 29		[u/s]
Early to mid Flavian	SG	Dr 29	(3)	[PM,u/s]
Flavian	SG	Dr 29		[PM]
	SG	Dr 37	(4)	[M,PM,u/s]
Hadrianic-early Antonine	CG	Dr 37	(3)	[M,PM,u/s]
Mid-late Antonine	CG	Dr 37	(2)	[PM]
	CG	Dech 68		[PM]
Antonine	CG	Dr 37	(3)	[M,PM,u/s]
	CG	Dech 72	(2)	[PM]
AD 55-70	SG	Dr 29		[M]
AD 70-85	SG	Dr 29	(2)	[u/s]
AD 70-90	SG	Dr 37		[PM]
AD 150-180	CG	Dr 37		[PM]
AD 160-190	CG	Dr 37		[M]
AD 160-195	CG	Dr 37		[PM]
AD 165-200	CG	Dr 37		[PM]
Later 2nd early 3rd	EG	Dr 37		[M]
Later 2nd first half 3rd	EG	Dr 37	(2)	[PM]
Mid 3rd	EG	Dr 37		[PM]

Stamped samian

Brenda Dickinson

The same conventions are used here as above for the decorated sherds. Vessels which are shared and therefore cross-indexed with the decorated vessels are indicated by an asterisk (*).

Date	Potter's stamp	Form	Production area	Context
Period 2				
<i>Assorted features</i>				
Pre-Flavian	Incomplete	Dr 24	SG	[19-20]
AD 45-65	Albinus ii	Dr 15/17 or 18		La Graufesenque [24]
AD 50-65	Melainus		Dr 29*	La Graufesenque [20, 37-48, 216, u/s]
AD 55-75	Bassus ii		Dr 18	La Graufesenque [24]
<i>Building 1</i>				
Pre-Flavian	Incomplete	Dr 27g	SG	[40]
AD 65-75	Virthus		Dr 15/17R or 18R	La Graufesenque [37-48]
Period 3				
<i>Demolition layers</i>				
Neronian/early Flavian	Illiterate	Dr 27g	SG	[71]
AD 70-85	Calvus i		Dr 27g	La Graufesenque [71]
<i>Building 5</i>				
Neronian/Flavian	Secundus i or ii?		-	La Graufesenque [115]
	Illiterate	Dr 27g	SG	[109]
AD 70-95	Rufus iii		Dr 27g	La Graufesenque [97]
Period 4				
<i>Assorted layers/features</i>				
1st or early 2nd c.	Incomplete	Dr 15/17 or 18	SG	[161]

Date	Potter's stamp	Form	Production area	Context
AD 55–70	Masc(u)lus i		Dr 15/17	La Graufesenque [161]
AD 60–75	Mommo	or 18		
AD 70s	Montanus i	Dr 27g Dr 29*		La Graufesenque [161,u/s] La Graufesenque [125,138]
<i>Building 6</i>				
AD 70–90	Sarrutus		Dr 33a	La Graufesenque [128]
AD 80–110	Cotio		Dr 29	La Graufesenque [128]
AD 85–110	Fuscus ii		Dr 27	La Graufesenque [132]
<i>Building 7</i>				
AD 50–65	Pass(i)enus	Dr 27g		La Graufesenque [203]
AD 80–100	Iucundus iii		Dr 15/17 or 18	La Graufesenque [203]
AD 160–190	Mossius ii	Wa 80	Lezoux	[202]
<i>Building 7 robbing and pits</i>				
AD 50–65	Crestio		Dr 29*	La Graufesenque [208, M, PM]
Hadrianic	Iarillus		Dr 18/31	Les Martres
First half of 2nd c.	Incomplete	Dr 27	Les Martres?	
AD 50–65	Murranus Incomplete	Dr 27g Dr 29*	SG	La Graufesenque [216] [216]
Pre c AD 85	Incomplete	Dr 29*	SG	[216]
AD 100–115	Paterclos/Paterclus?	Dr 18/31	Les Martres [216]	
AD 100–120	Balbinus		Dr 18/31	Les Martres [216]
Period 6				
<i>Dark earth deposits</i>				
AD 160–200	Genitor ii	Dr 33	Lezoux	[217]
Medieval, post-Medieval, unstratified				
Claudian or early Neronian	Salvetus i	Dr 15/17	Montans [u/s]	
First half of the 2nd c.	Incomplete	Dr 18/31	Les Martres? [PM]	
Hadrianic/Antonine	Incomplete	Dr 31	CG	[PM]
AD 45–65	Licinus		Ritt 8/9	La Graufesenque [u/s]
AD 80–100	Memor		Dr 27g	La Graufesenque [u/s]
AD 100–120	Donnaucus		Dr 27	Les Martres [M]
	Ioenalis		Dr 27	Les Martres [u/s]
AD 150–170	Peculiaris i		Dr 31	Lezoux [u/s]
AD 160–200	Primanus iii		Dr 33	Lezoux [M]

The registered finds

Judith Stevenson

Introduction

Over 3,650 registered (small) finds were recovered from the excavations at 15–23 Southwark Street, comprising material of Roman, late medieval and post-medieval date. This report, produced during 1989–90, covers the metals, worked bone, jet and shale, marble and stone, ceramic objects, and the smaller number of objects of wood, glass,

and miscellaneous items from Roman contexts, also Roman artefacts from post-medieval and unstratified contexts. No post-Roman objects have been included.

The following report consists of a *basic* catalogue, produced under time constraints, with no interpretative or analytical study. The material has not been examined in as much depth as it merits. Consequently there is no correlation and analysis of the material in the context of the site and of other finds, or overviews of groups of objects or noteworthy individual items. It is hoped that the material will be reviewed at a

later date, perhaps when a broader assessment of Roman Southwark is undertaken.

The criterion for selecting finds for publication was positive identification, however badly they were preserved. Object groups omitted include plain metal mounts, studs, rivets and nails, some of which are covered by a brief summary of quantity and (where applicable) types represented, as well as straps, strips, shanks, plating, wire, fragments and indistinguishable corroded items. The condition of the copper alloy material, overall, was fairly good thus a large number of objects were identifiable and so included in the catalogue. In contrast to the copper alloy, the 36 standard Stewart boxes of ironwork from the site were in a poor state of preservation. Some 60% of identification was done with x-radiographs alone, and only six items were conserved. Twenty-two boxes of nails and probable nail shanks (including three boxes of coffin nails) are dealt with in summary, although a count and some descriptive cataloguing is available in the archive (undertaken on a voluntary basis by Duncan Pugh). One box consists of iron slags, and of the 13 boxes of other iron objects a large proportion were too badly corroded for identification. Most of the identifiable Roman pieces have been included in the report.

The worked bone is fully represented, if only by count for the shanks, and the items of lead are similarly treated. Jet and shale are catalogued in full, as are the few objects of other metals, wood, stone, marble and miscellaneous materials. The ceramic objects posed a greater problem, since most of the pieces of lamp, crucible etc only came to light at a late stage in the pottery analysis, which ended in mid 1991. The study of this material was therefore not completed by the author; the lamps have since been studied by Angela Wardle.

The number of illustrations was limited by time constraints, and illustration of the ironwork was hampered by the small quantity of items conserved (six) and by the condition of the other items. The few illustrations are therefore mostly sketched from the x-radiographs, presenting an outline in one dimension only.

The catalogue is divided by material type and subdivided into object type. The first number of each entry is the catalogue number; the second number, in triangular brackets, the finds number; the last number, in square brackets, the site context number.

Copper alloy objects

Judith Stevenson

Military and associated items

1. <1950> Lorica segmentata buckle. Concentric ring decoration around the rivet holes. Full length 50mm. [19–20]. Fig 20; Pl 10.
2. <2904> Lobate hinge plate from lorica segmentata. Blackened copper alloy. Five domed rivets each with incised concentric rings. Parallels for lobate hinges are many: an example from Verulamium with the common concentric ring decoration around the rivets came from a 2nd century context, an upper filling of a Flavian gully (Goodburn 1984, 35, fig 11, no. 77). 32mm long, 31mm wide. [34]. Fig 20; Pl 10.
3. <1992 and 1993> Dolabra sheath guard. One of a pair of hooked guards which were attached to either end of a military pickaxe (*dolabra*) in its leather sheath. 77mm max. length. [13]. Fig 20; Pl 11.
4. <1657> Auxiliary cavalry horse pendant—*phalera*. Possibly a *dona militaria*, that is, a *phalera* awarded as *dona* (a military decoration) and worn on the chest. Winged pendant with raised floral decoration and suspension loop. A central oak leaf is flanked by twisted leaves each terminating in an acorn. The side leaves are adorned with floral designs, now rather indistinct. The pendant would originally have been attached to an upper roundel by means of a hinge passing through the suspension hole. Formed by casting, then tinning or silvering, followed by detailing of the decoration by hand tooled incising and punch, probably also carried out before the tinning was applied as well as after. Traces of niello are evident in parts of the surface decoration, usually used for tonal contrast within the depressions on these military pendants. The pendant is remarkably similar to those from the Xanten horse-trappings, the lesser roundel and pendant Group B (Jenkins, 1985, 147, fig 7). Fig 20; Pl 12 and cover illustration.

The 15–23 Southwark Street example is smaller, about three quarters the size, of the Xanten lesser pendants, but it appears almost identical in style. Differences in design occur in the amount of openwork at the base of the suspension loop and details in the floral decoration. The Xanten horse-trappings probably pre-date AD 69–70, and are comparable with a number of representations on military gravestones

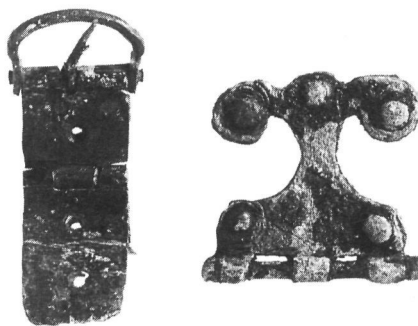


Plate 10. Lorica buckle and hinge plate (Copper alloy objects, Nos 1 and 2)

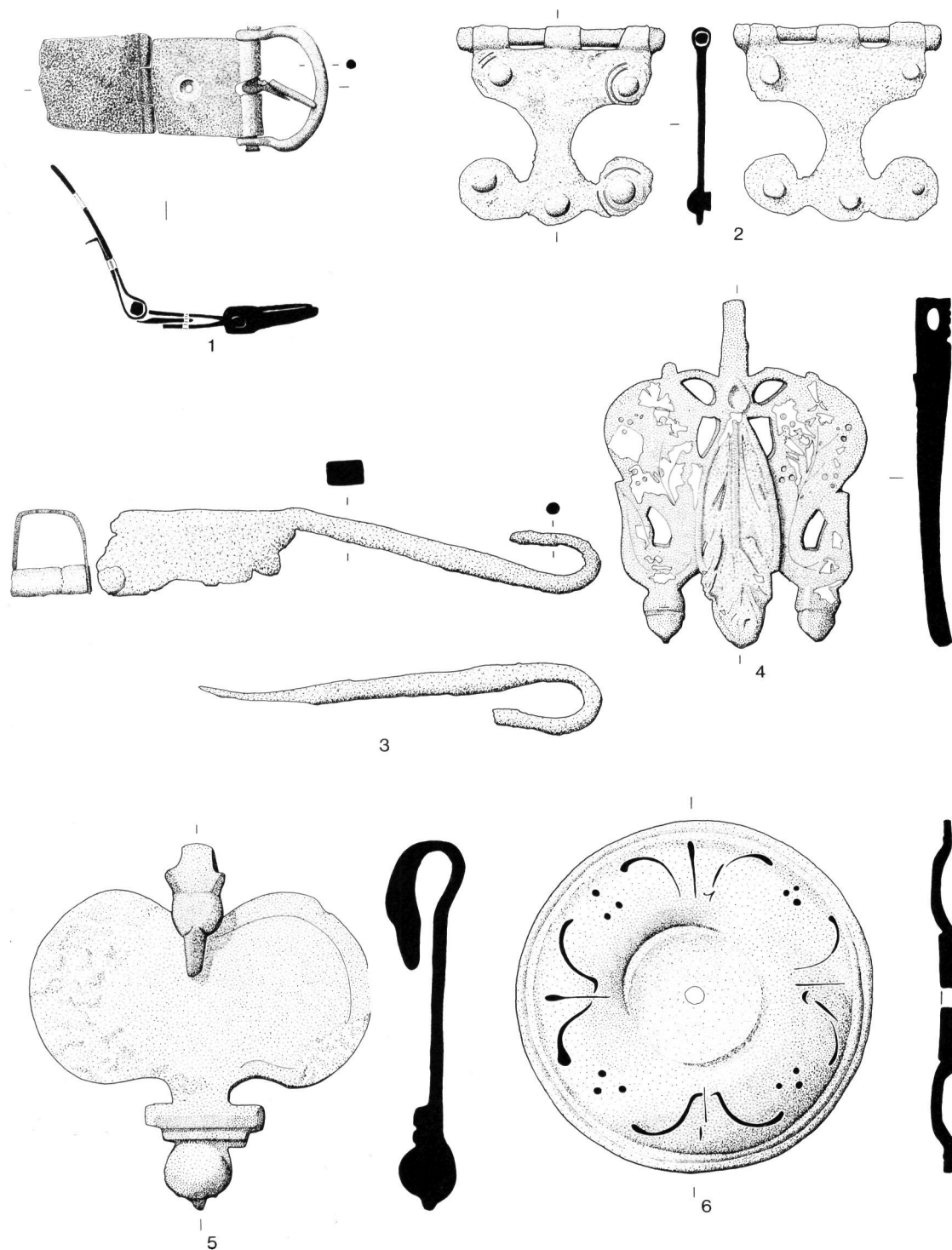


Fig 20. Copper alloy objects, Nos 1-6 (1:1).



Plate 11. *Dolabra sheath guard (Copper alloy object, No. 3)*

dating to the 1st century AD. The 15–23 Southwark Street find is on the whole smaller than most illustrated examples. 55mm full length, 41mm wide. 1st century AD. [22]. Fig 20.

5. <2778> Military horse harness pendant. Lobate oval shape pendant with bird-headed suspension hook. The forward looping suspension hook is probably a representation of a swan's head. The lobate body has a single incised line around its perimeter with no sign of other decoration.

The terminal is in the form of a spherical knob extending from raised and stepped bars, with a small tail projection at the end of the ball. Longthorpe has a similar bird-headed pendant of roughly equal size, described as heart-shaped with a swan's head suspension loop (Frere & St Joseph, 1974, 57, fig 30, no.62). Frere and St Joseph cite several parallels for the Longthorpe pendant, including Hawkes & Hull 1947, pl ciii, 12; Ritterling (1913, Taf.xiv, 7–10); and Brailsford (1962, 2f, fig 3, no. A40). 58mm long, 53mm wide. [127]. Fig 20; Pl 12.

6. <2847> Cavalry horse harness roundel. Saucer shape roundel with niello decoration in triple leaf and triple berry design. No relief design, and no indication of silvering or tinning, which was a common practice with horse trappings. Roundels were positioned above a pendant on a horse harness. The pendant was usually affixed by a hinge to the back of the roundel so that the base perimeter overlapped the pendant suspension loop. The roundel was then secured to the leather by a central rivet and often by some form of

loops on the back. However, none of the usual attachments are retained on the back of the 15–23 Southwark Street roundel; only the central perforation which held an ornamental rivet for attaching the roundel to the harness strap. Several scars may indicate the absence of previous attachments; alternatively the roundel was an isolated mount with no pendant and no need for back attachment loops. The size of the roundel matches that of the lesser roundels Group B from the Xanten horse-trappings, dated to *c.* pre-AD 70 (Jenkins 1985, 147, fig 7). Two larger roundels from the Fremington Hagg hoard also appear to have a central rivet attachment (Craddock *et al* 1990, figs 10, 12, nos 5 and 24) and are probably of pre-Flavian date.

As with pendant No.5, there is uncertainty as to whether the 15–23 Southwark Street roundel was a horse-trapping, rather than a *dona* worn on a soldier's chest. 55mm diameter. 1st century AD. [89]. Fig 20; Pl 13.

7. <2905> Corroded ring with stud fastener. The ring has two grooves on its external edge and a slightly oval section. The stud is in the form of a plain flat-topped disc.

Such fasteners have been found on at least nine sites associated with the Roman military, and further similar forms

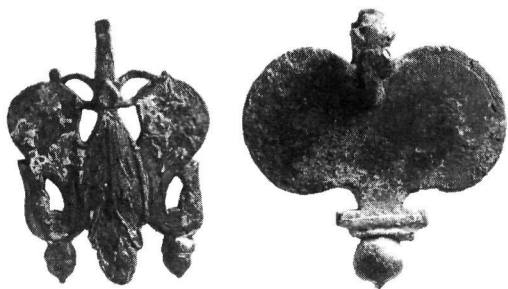


Plate 12. *Military horse harness pendant (Copper alloy objects, Nos 4 and 5)*



Plate 13. *Horse harness roundel (Copper alloy object, No. 6) and two button fasteners (Worked bone objects, Nos 2 and 3)*

come from at least three late Iron Age sites in this country with many more found on the Continent (the Iron Age examples are frequently winged). They have often been referred to as harness rings although this function is currently in dispute. An example found in a late Celtic warrior burial at Coleford, Glos, was probably used as a sword belt fastener, as similar finds from warrior burials on the Continent would imply (Webster 1990, 294, fig 10). Dr Webster suggests that the Roman army may have adopted these ring-with-stud fasteners from the Celtic auxiliary units and that the decorated examples may be a native form that evolve into the plain examples of the 1st-century Roman military, for example those from Wanborough, Wilts (Anderson & Wachter 1980, 123, fig 4, no. 3), Hod Hill (Brailsford 1962, 197, pl xi), Broxtowe, Nottingham (Webster 1958, 71, fig 3, no. 14). More recently Nicholas Fuentes has furthered the discussion by suggesting that those found in Roman military contexts may indeed be the belt rings of Celtic auxiliaries and, noted another possible use as satchel fasteners (Fuentes 1991, 93–9). Their similarity in form and function to button-and-loop fasteners should be noted, since they perform in much the same way and accordingly may have served to fasten a variety of objects, straps and belts (for further information on button-and-loop fasteners, see No. 2 in the Worked Bone report). The example from Broxtowe (see reference above) is most like the ring from 15–23 Southwark Street in terms of the size of the stud in relation to that of the ring and the similar flat-topped nature of the stud. It does not however have the groove and cordon decoration of the 15–23 Southwark Street example. External ring diameter: 37mm; stud diameter: 18mm. [34]. Fig 21.

8. <644> Decorated copper alloy strip, similar to part of a horse harness toggle. Band/strip with bevelled edges and transverse incised line decoration. One end broken; no method of attachment is retained. Toggles are mid-late 1st-century military horse harness fastenings, probably for leather straps; they come in two parts, a strip with a keyhole shaped hole and a T-shaped hook. The 15–23 Southwark Street piece is not unlike part of the toggle strip from Newstead (Curle 1911, 300, pl 73, no. 5). Other possible functions are a belt stiffener, or a mount adhered to a box or other similar object. 38 × 13 × 1mm. Possibly mid-late 1st century. [208]. Fig 21.

9. <1108> Phallus pendant. Small phallus with suspension ring positioned in the centre and weighted by the testicle end allowing the pendant to tilt at an erect angle. Phallus representations were used as fertility symbols and to ward off the 'evil eye'. A second phallus amulet found at the site is of fist-and-phallus form, and made of bone (see Worked Bone, No. 1). Pendants of this type occur commonly in military contexts in the 1st century AD, for example at Colchester (Crummy 1983, 139, figs 163, 165). Published in Murdoch 1991, 82, cat no. 63. 27mm long. [PM context]. Fig 21; Pl 18.

10. <1698> Suspension ring and strap. Looped strip pierced at the top forming attachment plate with a ring passing through the loop. The attachment plate broadens towards the pierced end. Ring shows signs of wear. Belt mount? Possibly related to the late Roman often military belt rings with a rosetted design. (Hawkes & Dunning 1961 illustrate many examples of these; 65–6, fig 1, nos 5–10; fig 2, b–c; fig 24, b–g). Ring diameter: 15mm; attachment plate length: 22mm; maximum width: 9mm. [71].

11. <1411> Rectangular plating mount, with looped strap attachment. ?Military fitting. The open loop is fixed at one point only, at the centre on the back. Plate dimensions: 20 × 25mm. [161].

Jewellery

Brooches—bow brooches

Three bow brooches of iron: a pair of trumpet brooches and a Camulodunum Type III are catalogued under iron objects below (Nos 1–3).

12. <1785> Bow brooch, Colchester Type Series XII, reeded Langton Down. Square ended ribbon, three sets of three vertical ridges. Tubular hood. Pin and corner of catchplate missing. A Gaulish type brooch, 50 BC–AD 50, introduced to Southern Britain by pre-conquest trade and further by the conquest. The Langton Down group dates to AD 20–50. Similar example found in London Wall (London Museum 1930, 89, fig 24, no. 4, acc no. A13824). 39mm long, 19mm wide. Pre-Flavian. [37–48]. Fig 21.

13. <4346> Bow brooch, 'Aucissa' style, but with lateral lugs. The flat bow has notched lateral ridges and three central ridges, of which the two outer are knurled and the central ridge is decorated with a zig-zag design. Four lateral lugs run down each side of the bow. Forward curving hinge plate. Foot of bow, catchplate and pin are missing, cf. Harlow Roman temple (France & Gobel 1985, no. 25, fig 39, and pl 77), described as a Bagendon C type brooch. The Bagendon brooch type predates AD 43 on the Continent, and possibly also in Britain although the type is more common in the Claudian period. 31mm long (incomplete); 17.5mm wide. Pre-AD 54? [73]. Fig 21.

14. <1534> Bow brooch. Winged bow, Hod Hill form. Date range: AD 43–68 in Britain (some Flavian appearances). Christine Jones notes: 'Essentially a continental form: possibly made in the Moselle region. Practically all examples of this short-lived form are found in southern Yorkshire. Curled over hinge mechanism—pin and part of the catchplate is missing. Side knobs at top of bow are cast in one piece. Typical decoration of grooves and ribs down the bow which tapers towards the foot, separated by transverse mouldings. Probably tinned surface.' 49mm long; 30mm wide. AD 43–68. [128]. Fig 21.

15. <4208> Bow brooch. Nauheim derivative. Wire bow and part of the catchplate which is positioned centrally on the back of the wire. Hinge and pin missing. Similarities with a Nauheim derivative no. 5 from Richborough but with a catchplate rather more like no. 6 (Cunliffe 1968, 78, pl 26, no. 5). 31mm long. Pre-Flavian. [34]. Fig 21.

16. <1999> Bow brooch. Colchester Type series XVIII, simplest and commonest of the Hod Hill series. Hood folded over towards the front of the brooch as in the Aucissae hinge arrangements. Groove on either side of central ridge down the bow, demarcated from the foot half way along by four horizontal ridges; the foot has two narrow grooves running to a horizontal ridge and terminal knob. Solid catchplate. Pin missing. These originate on the Continent in the second half of the 1st century BC, but Hod Hill brooches probably arrived in Britain with the army in AD 43, and went out of use c. AD 60–65. 42mm long. [20].

17. <2848> Small bow brooch. Colchester B type. A ridge runs down the bow from the forward hook, and is flanged by cavetto moulding. The pin and tip of the catchplate and bow are missing. The catchplate is pierced once and has a thickened top edge with a semicircular groove for the pin, and a slight pin groove runs the length of the catchplate. 34mm long; 23mm wide. Date range: AD 50–70. [113].

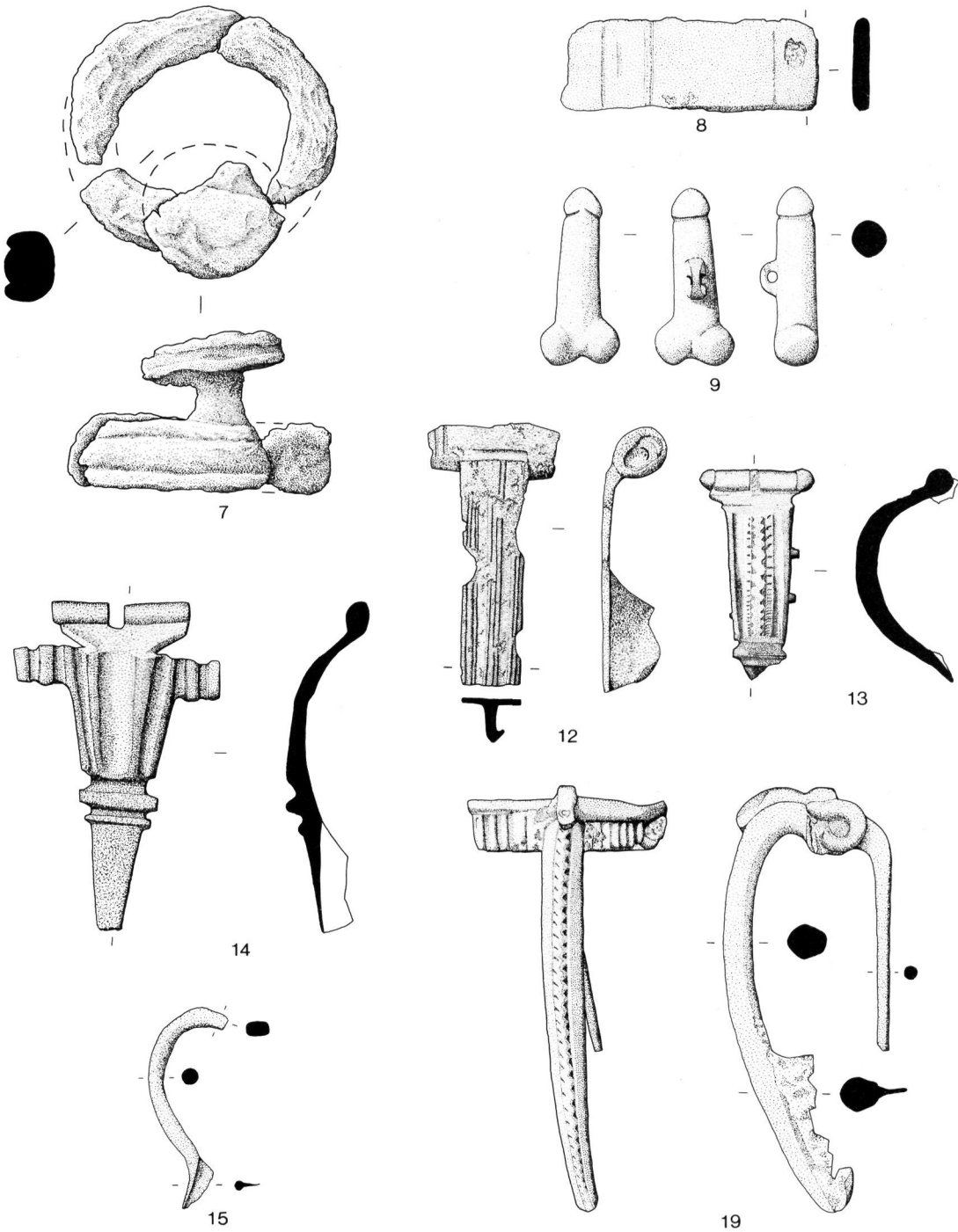


Fig 21. Copper alloy objects, Nos 7-19 (1:1).

18. <2850> Small bow brooch. Colchester B. As No. 17 above, but with narrower wings. The wings have two grooves on each side. Half of spring, pin and top of catchplate missing. The catchplate has a groove for the pin. 34mm long; 17mm wide. Date range: AD 50-70. [97].

19. <2933> Bow brooch. Headstud brooch. Date range is mid 1st to 2nd century AD for the group as a whole, but Christine Jones suggests a 1st century date for this example. End of pin and half the catchplate missing. Christine Jones also notes: 'Spring fitting for the pin. Although the catchplate

is damaged it would probably have been of the pierced variety. Down the crest of the bow runs a zig-zag pattern. Distinctive feature of the stud at the head of the bow is derived straight from some Colchester derivatives on which the cord of a separate spring was secured with a forward hook but with its end expanded and rivetted firmly to the bow face. The rivet head, in such a prominent position, was quickly embellished and separated into a decorative unit. This form is often highly embellished with enamel in the 2nd century AD. No traces of enamel exist on this specimen and would suggest a 1st rather than 2nd-century form.' 62mm long; 28mm wide. Probably mid-late 1st century. [35]. Fig 21.

Brooches—other

20. <2751> Circular umbonate brooch. Flange with raised knurled external edge; central two-tiered boss with a knurled ridge at its base and culminating in a knob. Hinge pin and catch-plate fastener, pin missing. No evidence for enamelling can be seen, and the flange has a convex surface suggesting that no enamelling was intended. An example from Colchester (Crummy 1983, 17, fig 14, no. 83) is similar in shape but is enamelled, and another similar one from Colchester (*ibid.*, 17, fig 14, no. 85) has a scalloped edge; however their type descriptions—Types 257 and 265 do not match the 15–23 Southwark Street example. The latter brooch probably dates to the 2nd century. Diameter: 21.5mm; height of boss above disc: 12mm. 2nd century? [159]. Fig 22.

21. <1982> Penannular brooch. Pin missing. Circular section ring with flat scolloped terminals, terminal broken. Ring section diameter: 3.5mm diam; overall diameter: 33mm. [37–48].

Pins

22. <1628> Pin. Possibly a furniture stud. Extremely large and heavy solid copper alloy spherical head attached to an iron shank. Possibly similar to an example from Richborough (Malcolm Lyne, pers comm). Head diameter: 16mm; shank width at top: 3mm; object length: 42mm. [216]. Fig 22.

23. <2145> Pin with more or less spherical head. Crummy Type 3. Biconical head. Broken shank. Head diameter: 5mm; length: 20mm. [217].

24. <1885> Pin with plain flat head. Point missing. Circular section shank, 3mm wide at the head end. Length: 88mm. [u/s].

25. <2129> As above. Length: 40mm. [217].

Bracelets

STRIP

26. <1056> Strip bracelet. Narrow strip decorated with bands of transverse lines set at alternating angles. In three pieces. Found in a girl's grave of late 4th century date, associated with two bone pins and an armband (Bone objects, Nos 4, 25, 27), two jet pins (Jet objects, Nos 1, 2), a glass pin (Miscellaneous objects, No. 2 and four copper alloy bracelets (Copper objects, Nos 26, 27, 28, 32), as well as various other iron and copper objects (Iron objects, Nos 4, 19, 86, 87; Copper alloy objects, No. 102). Strip width:

2.8mm maximum. Approximate bracelet size: 52 × 48mm. [Burial 11]. Fig 22.

PLAIN WIRE

27. <1055> Wire bracelet. Very simple single wire narrowing to the terminals. The terminals are loosely bent over and hooked through each other. Found in a girl's grave of late 4th-century date, associated with same items as in No. 26 above. Diameter: 50mm; thickest part of wire: 2mm. [Burial 11]. Fig 22.

28. <1202> Wire bracelet. Simple single wire with a coil terminal. Incomplete. Found in a girl's grave of late 4th century date, associated with same items as in No. 26 above. Length: c. 75mm; 1mm thick throughout. [Burial 11]. Fig 22.

TWISTED WIRE

29–30 <969>. Two twisted wire bracelets fragments. One is formed from three strands of twisted wire 30mm long; the other is formed from two strands of twisted wire with a coiled wire terminal and broken hook at one end, 20mm long. [162].

31. <2086> Three pieces of loosely twisted wire from a bracelet. Two pieces have the same thickness and probably belong together, while the third piece is thinner and its association with the other two less certain. The longest piece measures 35mm. [217].

32. <1058a> Twisted wire bracelet. Formed of three strands of wire twisted together. One terminal has part of an end cap or collar. Two joining pieces. Found in a girl's grave of late 4th century date, associated with same items as in No. 4 above. Diameter: c. 4.5mm. [Burial 11]. Fig 22.

Earrings

33. <1569> Earring. Ring of plain wire with overlapping, intertwined terminals. Circular section wire thinner at the terminals. Allason-Jones Type 3 earring (1984, 340–7). Wire is 2mm thick. Diameter: 22mm. [u/s]. Fig 22.

Finger rings

34. <1546> Finger-ring, with countersunk bezel for oval shaped inset. The surface of the bezel is curved, rather than flat as expected for an inset, and the ring has a very acute curve on the surviving piece. Perhaps misshapen. Most of the ring is missing, only three quarters of the bezel and shoulder survive, and one fragment. Length: 12mm. Inset: 4.5mm wide. [216]. Fig 22.

35. <2174> Wire finger-ring, with looped wire bezel. Six loops. Broken and bent. Cf Colchester (Crummy 1983, fig 50, no. 1757); Boxmoor (Neal 1976, 78, fig xlv, no. 6); St Oswald's Priory, Glos: '... the bezel being formed by twisting the ends of a wire three times, in opposing directions, and wrapping the free ends round the shank. The resulting bezel appears as a rectangle of flattened coils, with spiral binding on the shoulders' (Heighway & Parker 1982, 59, fig 11). The latter example is dated by coins to mid to late 4th century. A

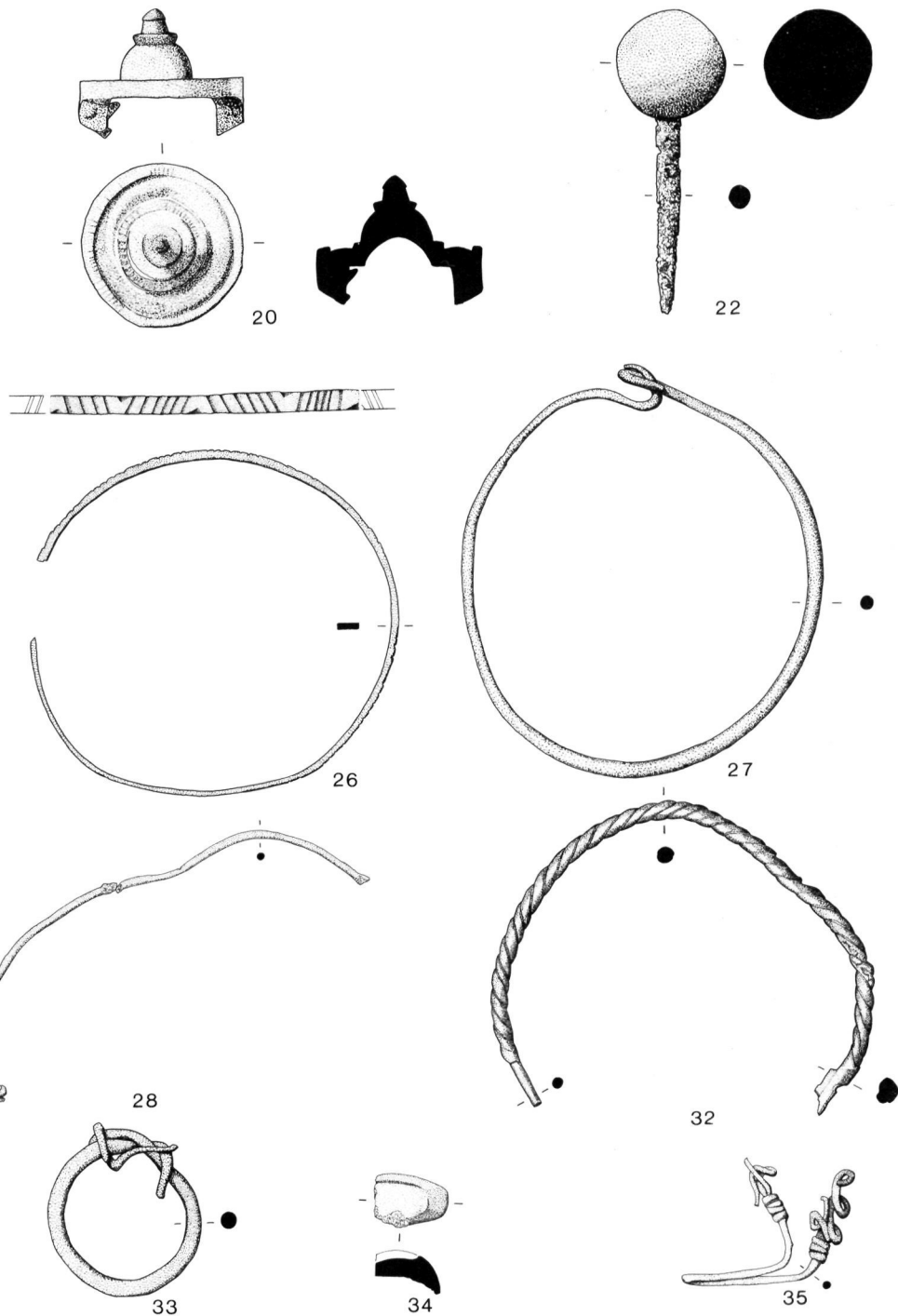


Fig 22. Copper alloy objects, Nos 20–35 (1:1).

further example is in the Museum of London's collections (Murdoch 1991, 105, cat no. 180, acc no. 29.51/2; London Museum Catalogue 1930, 100, fig 30, no. 15). Original diameter estimated as 20–22mm. [217]. Fig 22.

36. <2616> Finger-ring. Plain ring with fine D-shape section, the flat side facing inwards. Possibly tinned. Section: 1.5 × 2.5mm; diameter: 17mm; internal diameter: 14mm. [158–160].

Dressfittings

Buckle or brooch pins

37. <1981> Brooch/buckle pin. Probably from a penannular brooch or buckle. Circular section with broadened flat upper portion broken at the point of curvature. Length: 32mm. [37–48].

38. <1561> Buckle or brooch pin? Circular section rod, one end with very slight curve and the other end slightly tapered to a blunt point. Length: 35mm; diameter: 3mm. [216].

Separate belt or strap fittings

39. <1807> Strap mount. Plain rectangular plate with two attachment shanks set at either end on the back and bent in towards each other. 20 × 16mm. [71].

40. <1533> Rectangular bar mount, probably from a strap. Straight edges, rounded end, one rivet, one end broken. 30 × 8 × 2mm. [216].

41. <1411> Rectangular plating mount, with looped strap attachment. The open loop is fixed at one point only, at the centre on the back. ?Military fitting. Plate: 20 × 25mm. [161].

Functional items

Toiletry items

42. <2724> Toilet set of three items: 1. Nail cleaner. Incised perimeter grooves on both sides of the main body. Ribbed handle ending in a suspension ring positioned perpendicular to the body with groove running along the top of the ring, cf Verulamium (Goodburn 1984, 39, fig 14, no. 108). 47mm long. 2. Tweezers. Flared grips. Incised perimeter grooves; cf Verulamium (*ibid.*, 39–41, fig 14, nos 109–110). 50mm long. 3. Ear scoop. The bowl has a straight edge, which may be indicative of a different function such as a cutical pusher or cosmetic implement. Pierced at the broadened flattened terminal for suspension. Length: 53mm. [148]. Fig 23.

43. <1603> Ligula. Round spatulate head. The shaft is faceted with a hexagonal section and expands at one third along its length. Tail end bent. In three pieces. Length (conserved): 140mm. [216].

44. <2521> Ligula. Corroded. Shank bent at right angle. Length: c. 115mm; incomplete, bent at 75mm from scoop. [160].

45. <2545> Small rounded spatulate end of a ligula or ear scoop. Length: 18mm. [175].

46. <2732> Surgical/toilet probe head. Shank missing; only the head survives. Length: 31mm; diameter: 2mm to 5mm. [163–187].

47. <1788> Probable fragment of strigil. The convex exterior surface has parallel groove and ridge decoration. Strip bent into a longitudinal arch to produce an open semicircular cross-section, also curved on the plane. This may be the sharp angled juncture between the handle and the blade of a strigil. Plain strigils made from copper alloy

have been found on several sites; a set of four still attached to the wrist loop were found at Pompeii (Royal Academy 1976, no. 230). Width: 16mm; length (fragmentary): 45mm. [22]. Fig 23.

48. <4035> Tweezers. Plain and parallel sided. Fragmentary. Length: 48mm. [128].

Spoons

49. <1872> Spoon with simple round bowl and rod handle. This type of spoon has been described as having a variety of functions, from eating eggs, shellfish and snails (Martial, in *Epigrams* 16, 121, noted in Colchester (Crummy 1983, 69 no. 2008, fig 73) to a medical function (Jackson 1986, fig 4, no. 32). This type of spoon dates from the second half of the 1st century and the 2nd century. Length: 70mm; bowl diameter: 21mm; handle circular section diameter: 2mm. [u/s]. Fig 23.

Needles

50. <2340> Needle with flat spatulate head and rectangular eye. Complete apart from the point. Circular section shank. Length: 97mm. [155].

51. <2826> Needle as above. Length: 90mm. [109].

52. <2926> Fine needle with flat fairly straight head with rectangular eye. Circular section shank. Complete. Length: 72mm. [128].

53. <1719> Needle. Broken at the eye and point. Head flattening and broadening, rectangular eye. Circular section shank. Length: 105mm. [71].

54. <1540> Needle. Eye and point broken. The eye was circular or figure-of-eight shaped. Circular section shank. Length: 44mm; diameter: 2mm. [216].

55. <1619> Needle. Thickens in the centre. Broken at the eye slot groove, and at the point. Circular faceted section, 3mm diameter in the centre. In two pieces. Length: 115mm. [216].

56. <1694> Needle. Broken at eye and tail. Circular section shank; diameter: 3mm; length: 79mm. [71].

57. <1855> Netting needle. Broken at the one end, the fork at the other end is almost complete. Circular section shank. (Cf London Mus Cat 1930, pl xlii, nos 11–14.) In two pieces; 93mm long. [71]. Fig 23.

Writing, measuring and gaming

58. <2771> Seal-box. Design on lid is a half-seated ?lion with head turned back, hostile pose. Almost complete, broken on one of the side notches. One central and three circumferential perforations on the underside. Similar example from Richborough dated to the Flavian/early 2nd century (Malcolm Lyne, pers comm); one from Frocester Court with the beast positioned in the opposite direction (Eddie Price, pers comm), and one in the Castle Museum, Colchester, also with the beast depicted in reverse (ref no. 1937.81: Christine Jones, pers comm). 20mm diameter. 26 × 21 × 16mm. [128]. Fig 23.

59. <2557> Counter/gaming piece or possibly a weight. Disc with wide groove between the edge and central platform;

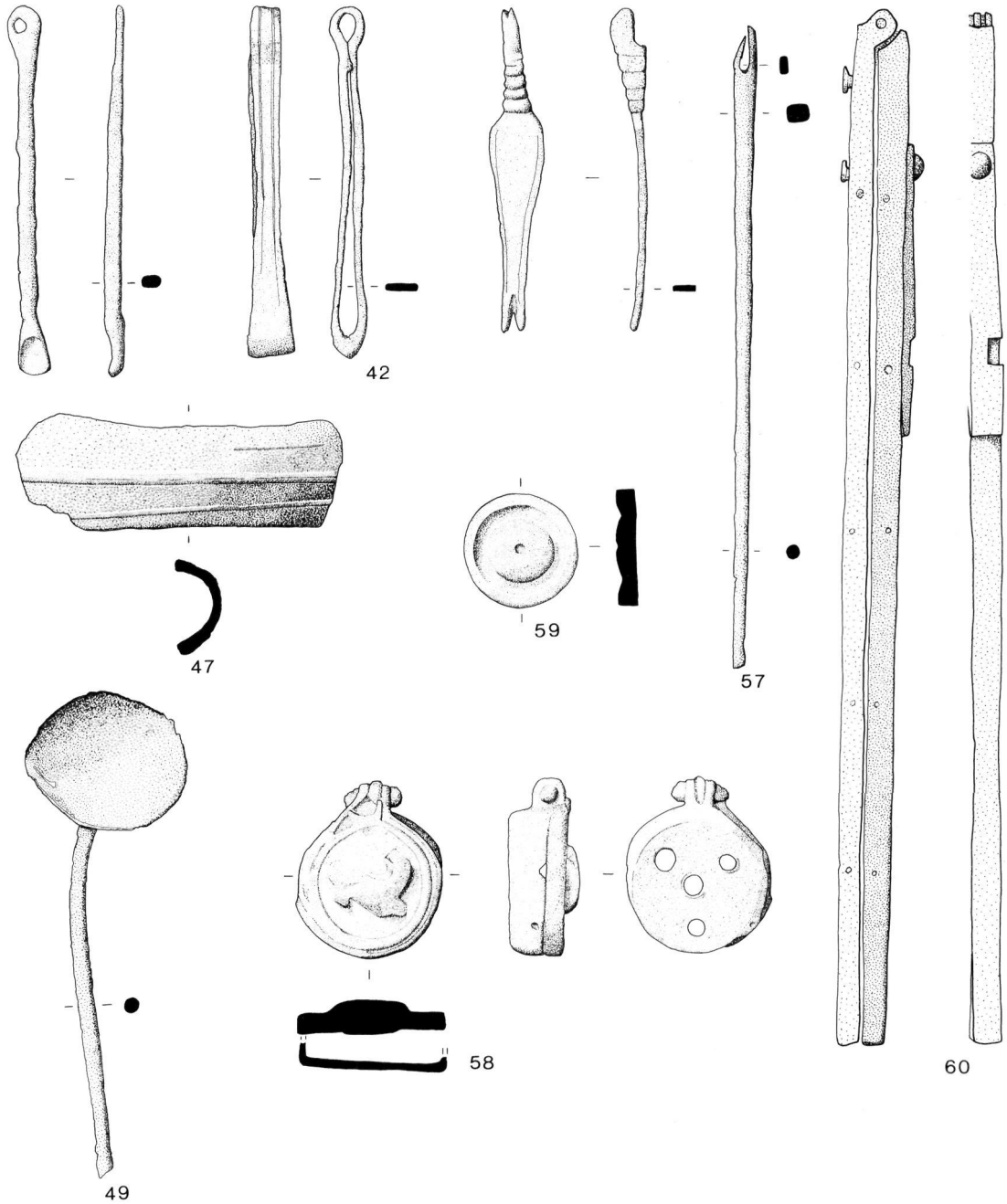


Fig 23. Copper alloy objects, Nos 42-60 (1:1).

indentation in the centre. Diameter: 16mm; thickness: 2mm. [175]. Fig 23.

60. <2705> Folding foot-rule. Two bars, each 147.5mm long, hinged at one end. When unfolded a small rotating bar is swung over the join to hook around two small studs. Punched dots spaced at 24mm intervals run along one side of the rule; these represent the Italian 'unciae', or 1/12 of a

foot, the precursor of the inch. The upper surface has the Greek 'digit', or 1/16 of a foot (*pes*), which should each measure 18.5mm, but as commonly found they are inaccurately spaced to between 17.5 and 20mm. The normal foot-rule also has a 'palmi' measure, the Greek quarter of a foot. This is probably present on the underside of the rule, but cannot be seen owing to the folded position in which the rule is stuck. The rule itself is the exact length for a Roman

foot; 295mm or 11.6 inches. A similar hinged foot-rule was found at Princes Street, London (London Museum 1930, 83–4, fig 21, no. 1). [128]. Fig 23.

Vessels

61. <1854> Copper alloy bowl handle. Flat handled type, usually seen on shallow bowls rather than the deeper bowl of military mess-tins. These delicate shallow bowls may have been used for bathing purposes, perhaps for heating washing water, rather than for cooking. This is suggested by an example strung with strigils and an oil flask from the smaller baths at Pompeii. The handle, broken halfway along its length, has a keyhole suspension slot and straight fairly angular edges. It expands in width towards the end which is decorated with a line of four arches terminating in a projecting step and knob. Several parallels can be noted for this handle type: two, considered to be officer's tableware, were found at The Lunt, Warwicks (Hobley 1972, 68–71, fig 20, no. 1 and fig 21, no. 8); a bowlless handle of this type from Westbury is on display at Deveses Museum. Width at terminal is 24mm and at break 13mm. Object length: 55mm; thickness: 2.5mm. Slot: 16mm long. [71]. Fig 24.

62. <1946> Patera/skillet/saucepan base, half of. Slightly concave circular base with concentric ridges and bands within the concavity. c. 70mm diameter; fragment size: 80 × 45mm. [19–20].

63. <4345> Flagon handle. Length of object: 100mm. Broken at the top. [90].

64. <405> Flagon handle fragment. Serpent head shape attachment plate with rivet at the base of the rod handle. Existing length: approximately 50mm. [PM context].

Keys and locks

65. <923> Lever key with plain tubular shank and round bow. The bit has one slit in the front and four teeth on the outer edge. D-shaped bow section with straight internal edge. The bow and the bit lie on the same plane. Length: 40mm; bow diameter: 18mm. [207].

66. <2534> Tumbler lock. Four triangular holes. Complete. Length: 78mm; maximum width: 16mm; thickness: 7mm. [171]. Fig 24.

Bell

67. <2627> Bell. Rectangular, with a ball at each corner, and a lozenge-shaped suspension ring (*cf* Bushe-Fox 1932, 79, no. 18). Bells are not uncommon on Roman sites and other examples are from Jewry Wall, Leicester (Kenyon 1948, 259–260, fig 87, no. 7) and Colchester (Crummy 1983, 127, fig 143, nos 4165–4172). Crummy noted that... 'most of these bells were probably attached to the halters or collars of cows, sheep, goats, or possibly domestic pets, though some may have been used as personal ornaments'. Height: 50mm; bell base diameter: 38mm. [128]. Fig 24.

Fittings

BOX FITTINGS

68. <1644> Ornamental box fitting. Copper alloy double loop-in-loop chain attached to an iron split pin loop fastener.



Plate 14. Animal head mount (Copper alloy object, No. 69)

The copper chain is in two pieces. A well shaft at Richborough (Bushe-Fox 1928, 30, pl xv, fig 1, no. 10 and Malcolm Lyne, pers comm) produced a collapsed wooden and iron box of early Claudian period, complete with its contents and fittings including chain and loop fasteners as with the 15–23 Southwark Street example. The Richborough spike loop fasteners were made of copper alloy in contrast to the iron fastener from 15–23 Southwark Street. The function of the chains and fasteners appears to be purely decorative. Similar chains were found at Colchester (Crummy 1983, 161, fig 198, nos 4441 and 4444). Two other pieces of cable wire chains from 15–23 Southwark Street are listed below, Nos 91 and 92). Iron fastener: 27mm long, copper chain: c. 30mm long. Total length: 55mm. Possibly Early Claudian. [203]. Fig 24.

DECORATIVE MOUNTS AND FITTINGS

69. <1002> Animal head mount or terminal, probably representing a lioness (or dog?). Open socketed end for attachment to a wooden or metal shank. Possibly a key handle or a furniture mount. Other lion head terminals have come from London, two from Wanstead (London Museum 1930, 107, pl xlviia, nos 5–6, acc. nos A19206–7) and one from Lefevre Rd, Old Ford, E.3 (Sheldon 1971, 75, fig 11, no. 1). The latter has an iron shank and was found 'lying in what was considered to be the top surface of the road's southern track'. The form of the Lefevre Road mount is similar to an example from Verulamium (Goodburn 1984, fig 18, no. 165), and one from Fishbourne (Cunliffe 1971, 118, 121, fig 50, no. 144); both of which are keys but are half the size of the Lefevre Road object. The similarity in style is significant, a copper alloy lion's head emerging from a square calyx of leaves with an iron shank forced into the socket of the mount, and in the case of the Verulamium and Fishbourne examples the iron shank being the shaft of the key with remnants of the bit. The Lefevre Road example is rather too large for a key, and has no indication of a bit. The Verulamium key is dated to AD 220–240, and that from Fishbourne is from the Third Period of occupation, c. AD 100–280. The mount from 15–23 Southwark Street is in a rather different style from the examples noted above, lacking the square calyx of leaves on the socket, but is similar in size to the Fishbourne key handle. None of the shank is retained in the socket, so there is no indication of its

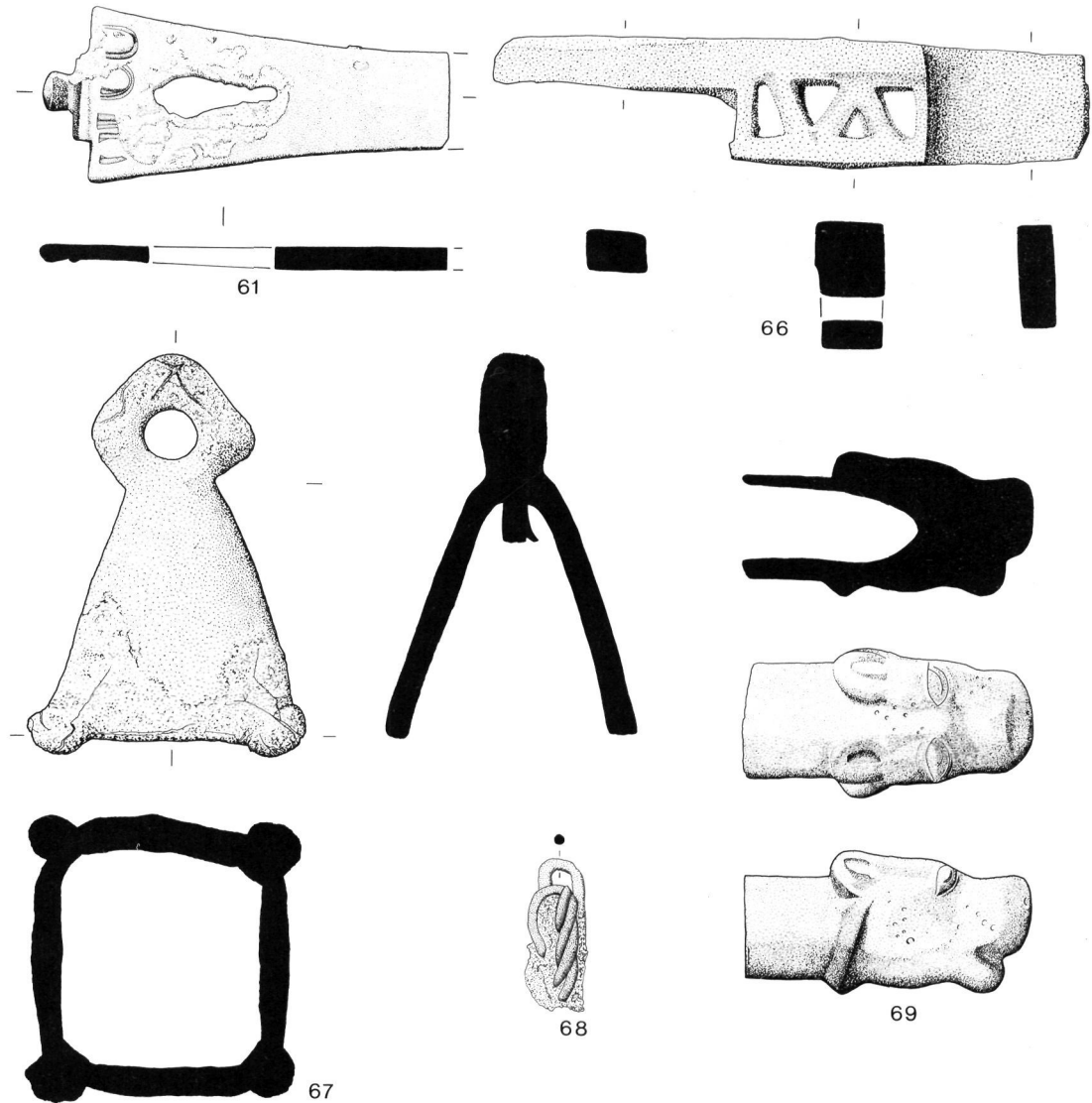


Fig 24. Copper alloy objects, Nos 61-69 (1:1).

composition. Socket diameter: 15mm. Length: 38mm; width: 19mm. [207]. Fig 24; Pl 14.

70. <1599> Dolphin mount. Possibly a furniture mount. The mount is cast with an open hollow underbelly and two projecting attachment plates. The dolphin has a beaklike nose, large angled eyes producing a doleful expression, a crest on the top of its head, two dorsal fins and a horizontal fan tail. The body is covered in incised decoration, taking the form of scales on its head and back, fin-like lines on the crest, a single groove on the fins, short slashes on its upper tail and splaying lines on the fan tail. Two points of attachment: one from below the front of the head—a 15mm long transverse rectangular plate with a pierced end; the other from the tail/body junction, a shank (20mm long) with a footplate pierced at both ends.

A similar example was found during excavations at Catterick, in a context dating AD 300-370 (Dave Beard and Anne Thompson, pers comm). It is on exhibition as a furniture fitting at St Mary's Museum, York. Another mount very similar in style but not in method of attachment was an isolated find from Great Central Street, Leicester in 1898; a circular recess on its underbelly suggests attachment to a shaft, its length is 89mm (from the Spurway Collection housed in the Jewry Wall Museum, Leicester, Acc. no. A116.1962.971, illustrated in Green 1976, 166, pl XXIX c; information supplied by Robert Rutland). Robert Rutland also brought other similar examples to my attention, one from Trier (Menzel 1966, cat no. 276), again with different attachment fittings, 104mm long; another from Vertillum in the Chatillon Museum, France, which is possibly closer in

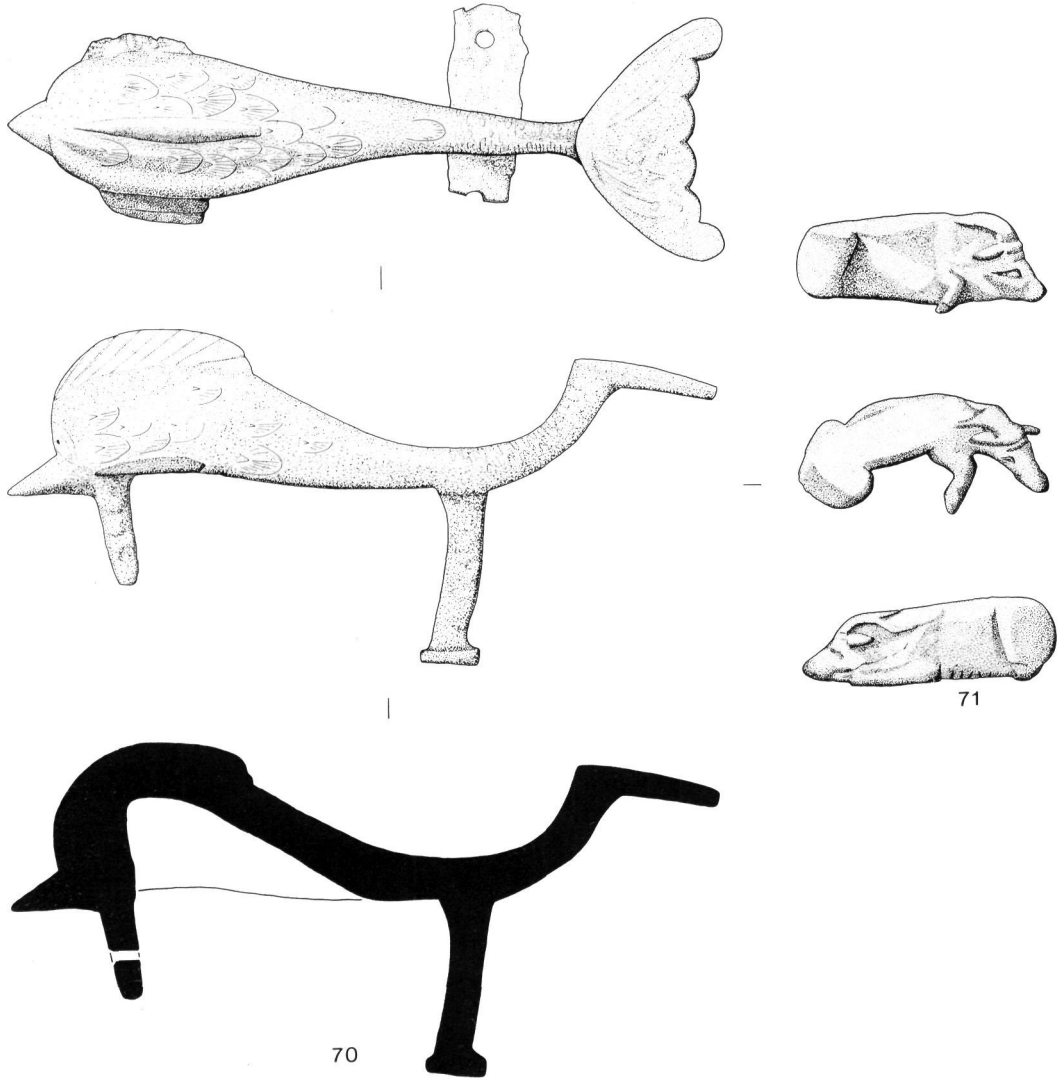


Fig 25. Copper alloy objects, Nos 70-71 (1:1).

function to the 15-23 Southwark Street item with a hollow underside. Overall length: 94mm. [71]. Fig 25.

71. <2180> Miniature animal of indeterminate type, portraying characteristics of a bovine, porcine and cervid nature. The head and thickened neck strongly suggest a bovine representation. Absence of means of attachment and flat underside imply that it was either a free-standing object or a mount that required adhesive. Beast in repose with back legs tucked in and head stretched out between the front legs; curved body. The cow and boar were both used as symbolic representations during the Iron Age. The boar is frequently found associated with altars and native deities, particularly the god Vitiris, having magical significance, as well as being the badge of the Twentieth Legion. Bull and cow representations are often functional and are found in 1st-century AD contexts but are Iron Age in style, and figure prominently in the early British Iron Age. For further

discussion, see MacGregor (1976, 153-154); Ross (1967, 302-21) and 1970 (169-72). Length: 34mm; width: 16mm; height: 10mm. 1st century AD. [217]. Fig 25; Pl 15.

72. <1890> Cart, door or broad strap fitting? Large fitting of button-and-loop fastener design. Disc with concentric ring decoration, attached to curved arm terminating in a heavy ring. Full length: 100mm. Diameter of disc: 53mm; of ring: 40mm. [216]. Fig 26; Pl 16.

DISC MOUNTS

Mounts with large discoid heads (ie. c. 20mm diameter or greater) have been included here. Those with flat disc heads of smaller diameter have been classified as studs or nails.

73. <2800> Disc mount. Large flat disc, with off-centre



Plate 15. *Miniature cow or boar (Copper alloy object, No. 71)*

concentric groove design. A short shank (2mm), also positioned slightly off-centre, terminates in a 9mm diameter base plate. Only half the mount face survives. Straw/grass imprints on both surfaces. Diameter of mount disc face: 36mm. [127].

74. <1243> Disc mount, with embossed perimeter. Central perforation. 30mm diameter. [216].

STUDS, NAILS, TACKS ETC.

This class of find was divided into five types for the full, multi-period archive. The division was based on the style of the heads, of which only the decorated examples (Type 1) of Roman date have been listed here. Type 1 *decorated*, 2 *domed*, 3 *embossed perimeter/sunken centre*, 4 *flat with curved down perimeter*, 5 *flat/disc*. At least 19 domed fastenings (Type 2) were recovered, from all periods of the site and from several contexts of uncertain date.

They varied from a small mushroom headed tack to large domed studs, diameters ranging from 6–28mm, height of heads from 3–8mm and shank lengths, where surviving, up to 25mm. One Roman domed stud had a flanged rim and another had a flattened apex. Those with embossed edging or sunken centres (Type 3) amounted to a minimum of four, only one of which was of probable Roman date and one also carried a basal plate. Their diameters ranged from 7–25mm. Fasteners with flat heads and curved perimeters (Type 4) also numbered four, all of which were from Roman contexts of various dates, with a maximum diameter reading of 22mm, including one with a basal plate. The flat headed nails/studs (Type 5) were at least 16 in number, from all periods, ranging in diameter from 5–16mm and in length of shank of up to 45mm. One Roman example of Type 5 also held a basal plate. Studs of discoid form with greater than c. 20mm diameter have been included in the disc mount category.

TYPE 1—DECORATED

75–78. <2173, 2685, 2711a, 2711b> Four matching inlaid studs from various contexts. Each consists of a square copper alloy setting with a square dark green glass inset, appearing black. The glass inlay has a domed surface. A long straight

shank is set off-centre towards one edge. Setting 15 × 15mm. Shank length: 15mm long. [Burial 1, 164, 138 and one u/s]. Fig 26; Pl 17.

79. <1736> Decorated stud. Solid domed head with flat top and fluted sides. One or two grooves running around the head above the fluting. Incomplete. Head diameter: 9mm; length: 32mm. Length of shaft: 25mm, end broken. [22].

80. <2564> Very small stud. Lightly domed head with concentric ring ridge and groove. Head diameter: 5mm. <175>.

81. <2662> Stud with flat head, curved perimeter with concentric grooves. Light shank, c. 8mm long. Diameter: 13mm. [128].

OTHER FASTENERS

82. <2123> Ring-headed pin fastener, bent at right angles. Flattened disc head with perforation, short circular-section rod shank with pointed end. Full length: 40mm. [217]. Fig 26.

83. <1408> Small 'cotter' type pin. Narrow bolt with perforated terminal and low conical nail head. Shank diameter: 4–5mm; length: 47mm. [161]. Fig 26.

WASHERS

84. <2632> Washer? Disc, 17mm diameter, with large central hole 5mm diameter. [157].

85. <2781> Washer, slightly bent. 11mm diameter. [157].

COLLARS

86. <2776> Small decorative collar. Circular ring band with groove and ridge decoration. Band width: 11.5mm; internal diameter: 9.5mm; external diameter: 12.5mm. [89]. Fig 26.

87. <4426> Small collar, slightly tapering, with strip suspended internally from the narrower closed end. Exterior diameter of collar: 7–8mm; internal diameter: 5mm. Collar length: 8mm. [128].

88. <2186> Decorated collar band. Strip decorated with a single row of punched dots along the centre-line, totalling seven, and joined at the back with a small rivetted bridging plate. Diameter: 15mm. Band width: 5.5mm. [217].

BINDING AND EDGING

89. <1686> Perimeter edging from circular item; flange with one or two rivets. Inside edge and ends broken. Incomplete. Length: 45mm; width: 15mm; thickness: 0.75mm. [216].

90. <1701> Possible binding strip. Band curved longitudinally into semicircular section. Length: 30mm; width: 18mm. [71].

CHAINS AND LINKS

91. <4142> Cable wire piece, possibly from a box fitting. Badly corroded. Formed from ? eight interlocking wires. Length: 17mm. [113].

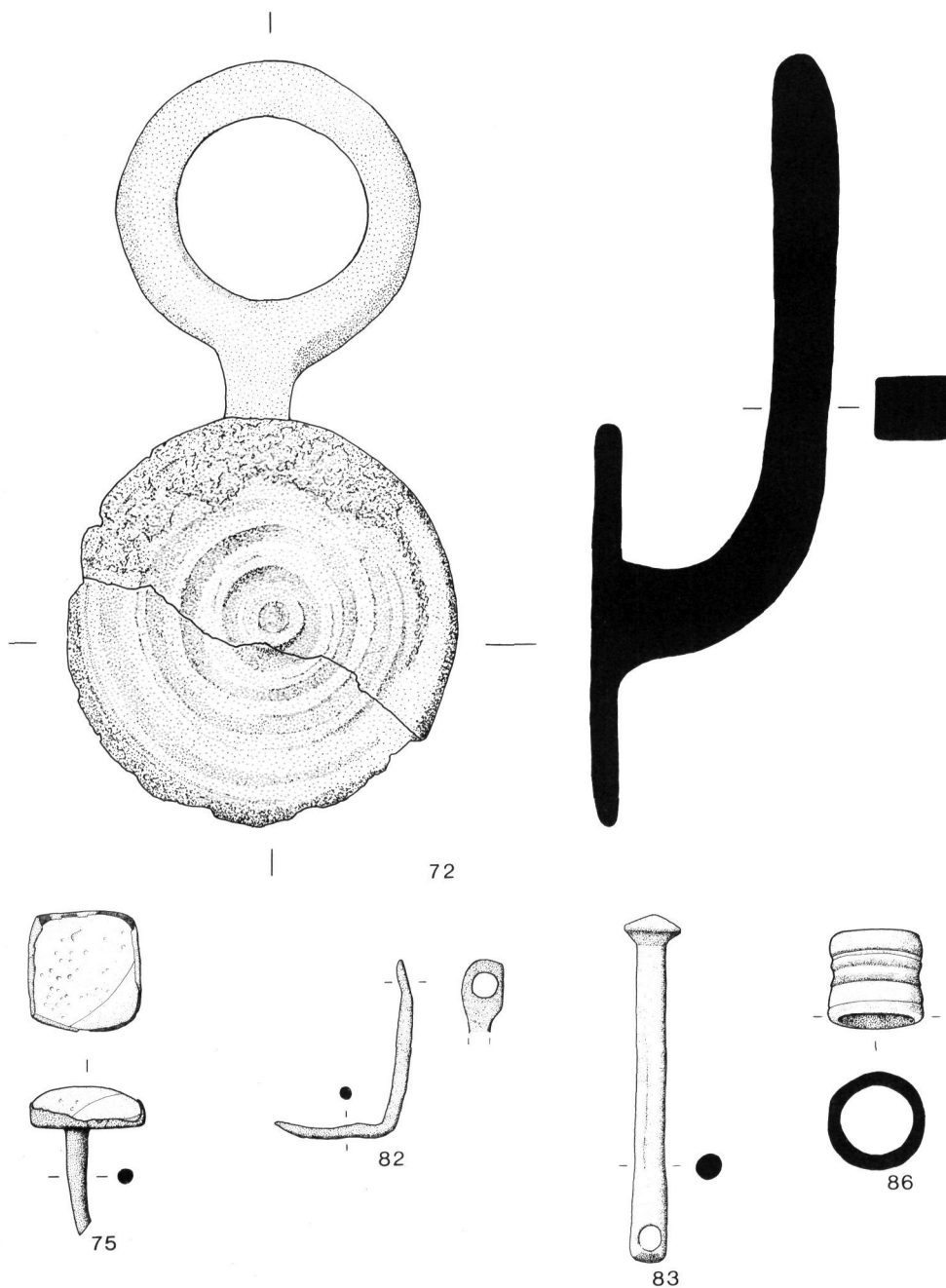


Fig 26. Copper alloy objects, Nos 72-86 (1:1).

92. <4424> Cable wire fragment. Possibly from a box fitting. Six or more intertwined wires. Poor condition. Length: 11mm. [72].

93. <2597> Large chain of nine links. Each link is of two perpendicular loops. Formed from a ring of square-sectioned

wire, pinched in the centre, the ends then forced together. Each link is c. 23mm long, and full length of the chain is 155mm. [175]. Fig 27.

94. <2122> Link fragments. Small vertical semicircular section ring. Diameter: c. 8-9mm. [216].



Plate 16. Cart fitting (Copper alloy object, No. 72)

95. <1545> Open link fitting. Looped, square-sectioned wire. One end forms an almost complete loop, the other end is looped but broken. Object length: 24mm. 1.5mm section. [161].

RINGS

96 & 97. <2480 and 2519> Two similar ring fittings from Roman contexts. Square section ring with deep groove running around the exterior edge (as a small pulley ring). Incomplete. Cf Fishbourne (Cunliffe 1971, fig 41, no. 54). Diameter of No. 96 [128]: c. 21mm; of No. 97: 25mm. [158]. Fig 27.

98. <2803> Strong ring, with D-shaped section. Diameter: 35mm. [109].

99. <2649> Ring of wire with the start of a twist at the broken terminals. Square sectioned wire. Unlikely to be a jewellery item as it is crudely fashioned. (This kind of object is a common post-medieval find which often has its twisted ends flattened.) Diameter: 16mm. [128].

100. <4420> Ring, decorative fitting. Lozenge section with two grooves on one outer facet and one groove on the other. Diameter: 20mm; section width: 3mm. [72].

MISCELLANEOUS FITTINGS

101. <271> Part of fitting or handle terminal. Disc with central rivet and small broken curved arm extending from the edge. Disc diameter: 11mm. [216].

Unidentified objects

102. <1021> Cylindrical cover or ferrule. Hollow cylinder, slightly tapering from an open end with a flat flange to a closed flat top with one small off-centre hole. A large hole in

the side of the cylinder is obviously torn and accidentally produced, although there is some evidence to suggest that part of the hole may be original to the object, possibly in the form of a horizontal slot. Slightly similar unidentified objects have come from Colchester; no. 4602 (Crummy 1983, fig 200) is the most similar, apart from a recessed base. Found in a girl's grave of late 4th century date, associated with two bone pins and an armlet (Bone objects, Nos 4, 25, 27), two jet pins (Jet objects, Nos 1, 2), a glass pin (Miscellaneous objects, No. 2) and four copper alloy bracelets (Copper objects, Nos 26–28, 32) as well as various other iron and copper objects (Iron objects, Nos 4, 19, 86, 87). Height: 30mm. Diameter of external edge of flat rim: 30mm. [Burial 11]. Fig 27.

103. <2703> Unidentified tool. Rod with tapering square section shank at one end and circular section at the other. The square sectioned end is almost complete, tapering to a broken tip. The circular sectioned shank has broken 15mm along its length. Either end may have been used as a tool: the square sectioned end with a handle hafted onto the circular section tang, or the circular sectioned end with a square sectioned tang, 8 × 8mm at the widest point where the sections change shape. Length: 68mm, incomplete. [128]. Fig 27.

104. <2832> Mechanical object, and small flat disc. Recessed disc ring with rivetted internal tag and two holes in the side of the walls, set upon an offcentre thick disc base. Separate flat disc. An almost identical object was found at Colchester (Crummy 1983, 165, fig 204, no. 4642). Diameter: 15mm; height: 8mm. [113]. Fig 27.

105. <1244> Unidentified object, complete. Curved bar with V-shaped notches carved in each end. 53 × 11 × 2mm. [216]. Fig 27.

106. <2918> Unidentified rectangular object with raised edges on one side; other side corroded. Possibly part of a box; width: 13–14mm; depth: 4mm; length: 21mm. [92]. Fig 27.

Unidentified bars

107. <1486> Unidentified rectangular object. Slightly twisted or curved. Length: 15mm; width: 9mm; thickness: c. 4mm. [216].

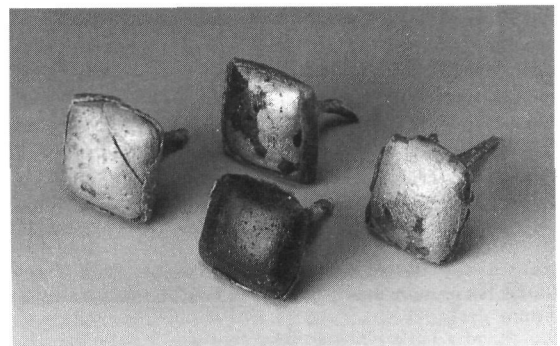


Plate 17. Inlaid studs (Copper alloy objects, Nos 75–78)

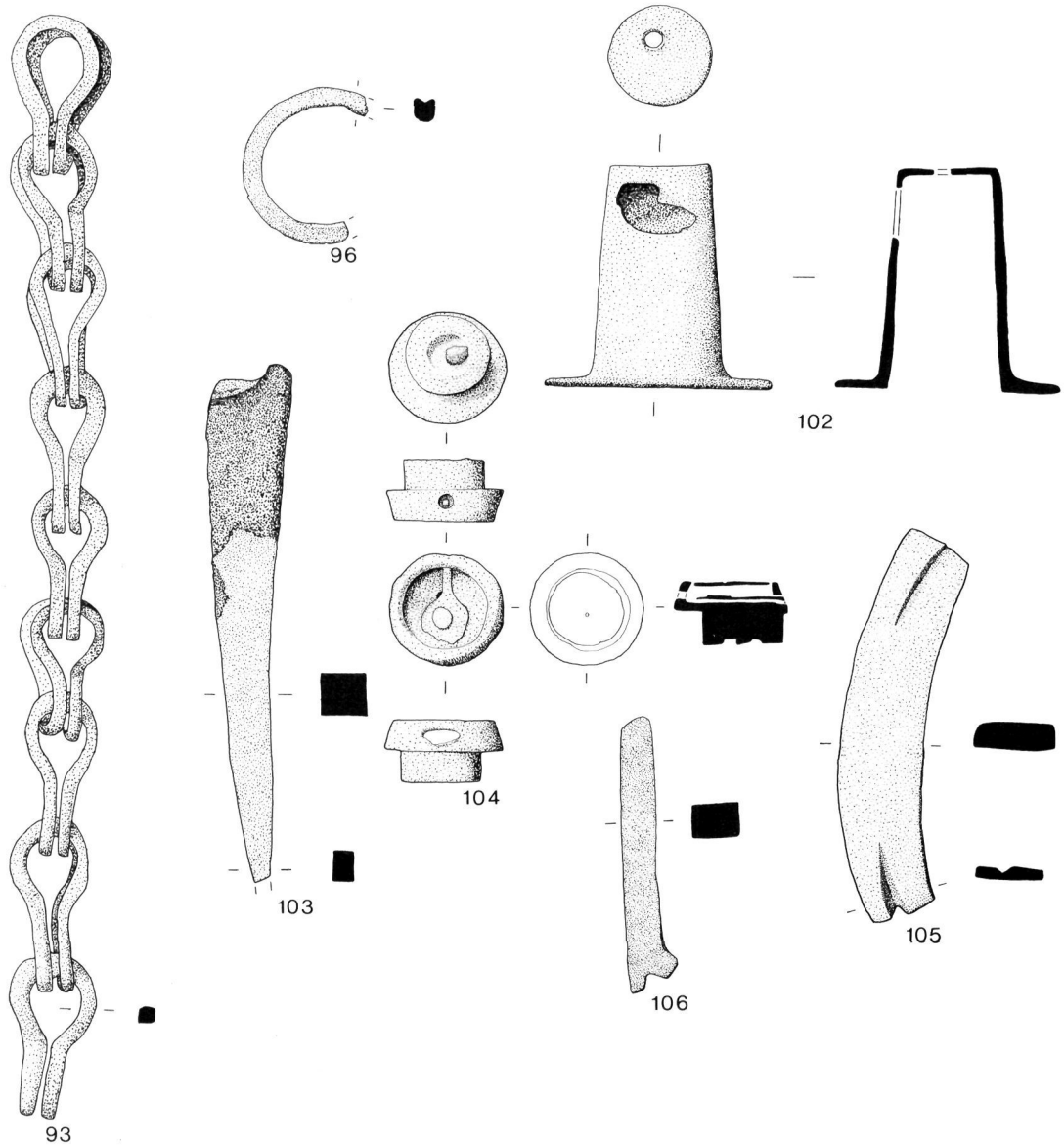


Fig 27. Copper alloy objects, Nos 93-105 (1:1).

The following three very small bars or rods are similar in size and shape. Several have broken at a junction where the bar either splits into two arms or is pierced.

108. <1535> Unidentified bar. Rectangular/square sectioned bar, narrowing slightly at one end? In two pieces, one end corroded. Length: 70mm; width: 5-4mm wide; thickness: 3mm. [216].

109. <4342> Bar. One side curving slightly. Width: 7mm; thickness: 4mm thick; length: 30mm, both ends broken. [117].

110. <2034> Narrow bar, cut. One end begins to divide. $36 \times 5 \times 3.5$ mm. [PM].

Iron objects

Judith Stevenson

Brooches

1-2. <1876 and 1886> Two bow brooches. Early trumpet brooches, bow and catchplate formed from tinned iron; the spring from copper alloy. Each brooch has an attachment chain, and one brooch is a little smaller than the other. The bow has a pronounced button or ring, which is slightly

flattened at the back, above which was some type of light moulding now deteriorated. The neck narrows and then widens into a circular plate the top of which, unlike most trumpet brooches, has been curved over the spring, forced by the attachment chain, creating a flat top rather than the characteristic circular trumpet-like plate. The suspension loop has been formed by extending an iron wire through the spring, and over the top of the plate to form a loop, constricted by a band of wound wire. A ring links the suspension loop to a second link, also constricted in the centre by wound wire. The copper alloy pin and the iron foot and catchplate is absent in both cases. Both have a six-coil spring. The style of the brooches is that of an early trumpet brooch or its precursor. They have the simple single ring moulding on the bow which characterises 'Pannonian' and certain early German and German-type brooches, as illustrated in a note by Hildyard (1945, 154-158). London Wall and the Thames have produced several examples of these German brooches (illustrated in the London Museum Catalogue 1930, 92-3, nos 12-13, fig 26). The 15-23 Southwark Street brooches have a trumpet style head, spring, and suspension loops formed in a similar way to other

examples from London (*ibid*, 94, nos 28-30, fig 28). Wing width: 20mm; lengths: 50 and 40mm. [37-48]. Fig 28.

3. <553a> Bow brooch. Bow and hinge; possibly remnants of spring and upper part of pin; catchplate missing. Preservation is not good; identification from x-ray. Forward hook to secure the cord, probably a Colchester-type brooch, Camulodunum Type III. (Originally classified as one of five nails). Length: 42mm. [211].

Bracelets

4. <1058b> Fragments, probably from a bracelet. Iron wire core with lead-tin alloy ribbon wound around the wire. The best preserved piece retains part of a copper alloy terminal collar band. Eight pieces. Found in a girl's grave of late 4th century date, associated with two bone pins and an armlet (Bone objects, Nos 4, 25, 27), two jet pins (Jet objects, Nos 1-2), a glass pin (Miscellaneous objects, No. 2) and four copper alloy bracelets (Copper alloy objects, Nos 26-8, 32)

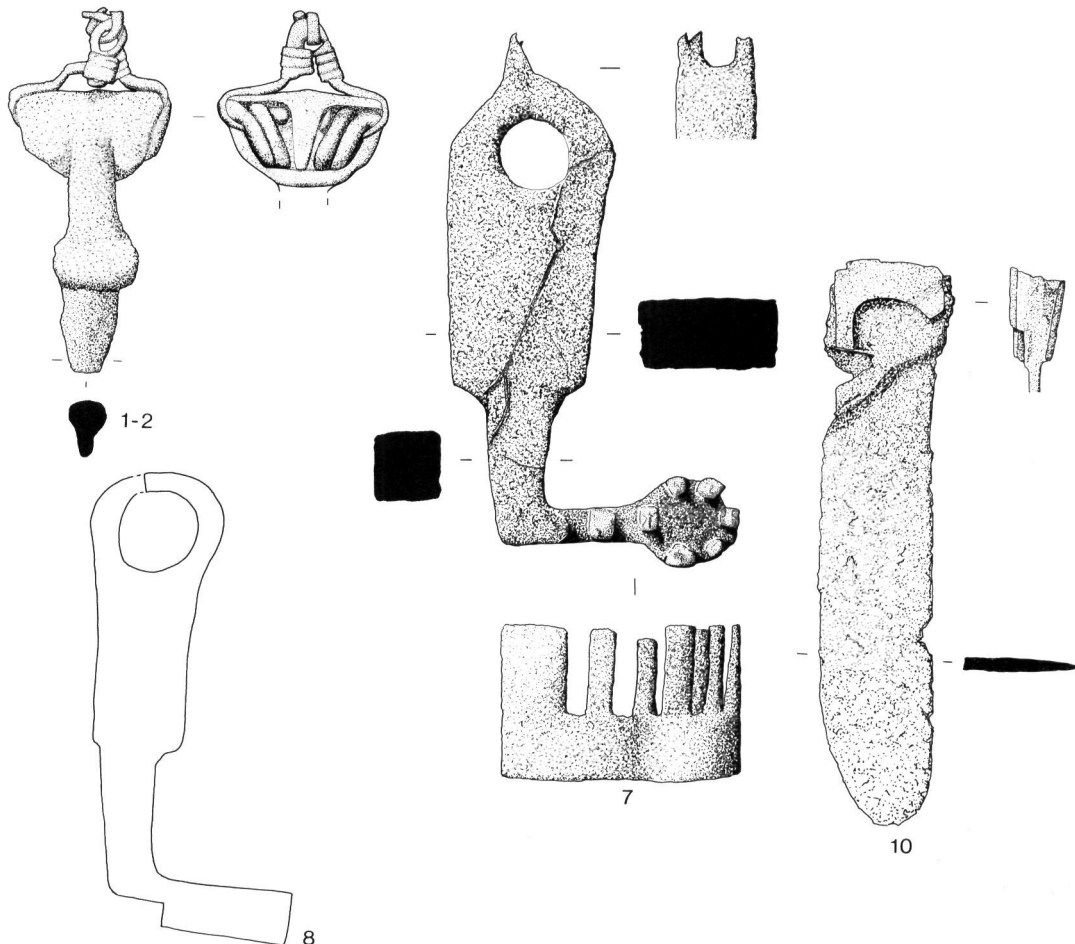


Fig 28. Iron objects, Nos 1-10 (1:1).

as well as various other iron and copper objects (Iron objects, Nos 19, 86, 87; Copper alloy objects, No. 102). [Burial 11].

Keys

Four Roman slide keys came from the site; No. 7 has an unusual bit set back from the body with the teeth positioned in a ring. The bit lengths recorded in the catalogue include the body shank.

5. <1672> Slide key. (Manning 1985, Type 1, 4–6, fig 25), with curved bit. Four prongs set perpendicular to the body. Small suspension hole within a rounded bow, with a small protrusion at the top. Length of key handle: 65mm; length of bit: 40mm. Length of prongs: 16mm. [Burial 13].

6. <2851b> Slide key. (*Ibid*, Type 1 slide key, 4–6, fig 25) L-shaped bit. In two pieces. Thin suspension ring, broken and mostly missing, above a tapering rectangular handle and shank. The bit is perpendicular to the shank with at least four teeth. Bit length: 30mm. Incomplete 65mm long; originally *c.* 75mm. [Burial 9].

7. <1957> Slide key of unusual type. Rectangular handle, broadening at the angular bow with a round suspension hole, at the top of the bow is a small second suspension ring perpendicular to the body. The bit is set back from the body, with the teeth positioned in a circle and along the shank preceding the circle. Seven teeth in total. The bit is similar to one illustrated in the London Museum Catalogue (1930, 74, pl xxx, B.2.; acc. no. A16841). Length: 70mm; bit length: 30mm. [41]. Fig 28.

8. <2619> Slide key. Rectangular handle with eye at the top. Key bit positioned perpendicular to the handle. Similar in shape but with a different bit to an unprovenanced key in Manning 1985 (93, no. 50, pl 41). 65mm long. [133]. Fig 28.

9. <4587> Key. Narrow bar with a flat pierced disc head and a bent perpendicular end now broken. This may be a small L-shaped lift key or a padlock key. Without a definitive bit, it is difficult to identify this object. Manning illustrates various L-shaped lift keys (*ibid*, 90–2, nos 26–38, pl 40, nos 2 and 3, fig 25). [PM].

Knives

10. <1629> Iron knife blade with decorative copper alloy shoulder and traces of bone handle. The blade is parallel-sided with the back edge turning at the tip to join the cutting edge. The copper alloy decoration, unfortunately incomplete, is that of a diagonal openwork design, similar on both sides. The decorative shoulder plates, bone handle and central scale tang are joined with copper alloy rivets. The handle is missing. This form of knife blade is an early Roman type, most common in the first century. It has parallels from Newstead (Curle 1911, 12, pl lx), and London, including one from the bed of the Wallbrook (illustrated in Manning 1985, 110, Q2, pl 53). Manning describes these knives, Type 1c (*ibid*, 108, fig 28), as having solid bone or bronze handles with a slit in one end into which a short scale-tang was inserted; the bone handles were bound on the shoulder with elaborate decorative bronze plates. As Manning notes, this type of knife is shown in the cutler's shop scene on the altar

of L.Cornelius Atimctus from Rome. Blade length: 74mm; width: 14mm; thickness: 1.5mm. Early Roman. [216]. Fig 28.

11. <1894> A knife blade with tang set at the back edge of the blade. Whittle-tang. Broken blade tip and tang. Length: 85mm (blade: 72mm); width: *c.* 13mm wide. [40].

12. <1717>. Knife blade with centrally placed whittle-tang. The blade tip is broken, as is the tang. Triangular blade, length: 38mm; width: 15mm. Tang length: 20mm. Overall length: 58mm long. [75].

13. <2773> Wooden scale-tang handle. Traces of wood attached to iron scale tang with copper alloy rivets. Only the end of the handle has survived. Length: 34mm; width: 20mm. [128].

There is also a probable knife handle (see No. 85 below)

Miscellaneous blades

14. <1767> Blade. Possibly from a knife. In two pieces. Triangular section with angled back edge. Length: 280mm; width: 25–35mm. [194].

Weapons

15. <1779> Spearhead. Leaf-shaped blade with sloping shoulders and open socket. In two pieces. Probable rivet hole at the socket base, *cf* a Hod Hill spearhead illustrated in Manning 1985 (no. 87, pl 78 and categorised on p. 166 as a Type IIa, mid-1st century). Full length: 150mm; socket length: 50mm. Blade width: *c.* 25mm; thickness: 5mm. Diameter of socket opening: 16mm, diameter at top: 9–10mm. [22]. Fig 29 (X-ray outline only).

16. <1864> Socketted spear. Tip broken showing an even narrow section with double edge. Length: 155mm; width at break: 17mm. Socket termination is 24mm in diameter. [37–48].

Joiners dogs and other staples

17. <1347> Joiner's dog. Type of dog with broad central bar. Both ends broken, *cf* an unprovenanced example in Manning (1985, 131, R52, pl 61). Length: 33mm; central bar width: 9mm. [161].

18. <1544a> Joiner's dog fragment. Rectangular sectioned upper bar, broken, and one projecting arm. Projecting arm length: 30mm; upper bar: 42mm, incomplete. [216].

19. <1176> Part of staple? Angular U-shaped. One end broken, the other with a pointed terminal. Found in a girl's grave of late 4th-century date, associated with other objects (see 4 above). 40 × 35mm. [Burial 11].

Other tools

20. <1771a> Possible wedge or broken chisel. Tapering rectangular bar with thickened slightly rounded head. Head 25 × 18mm, tail end 20 × 11mm at break. Length: 95mm. [194].

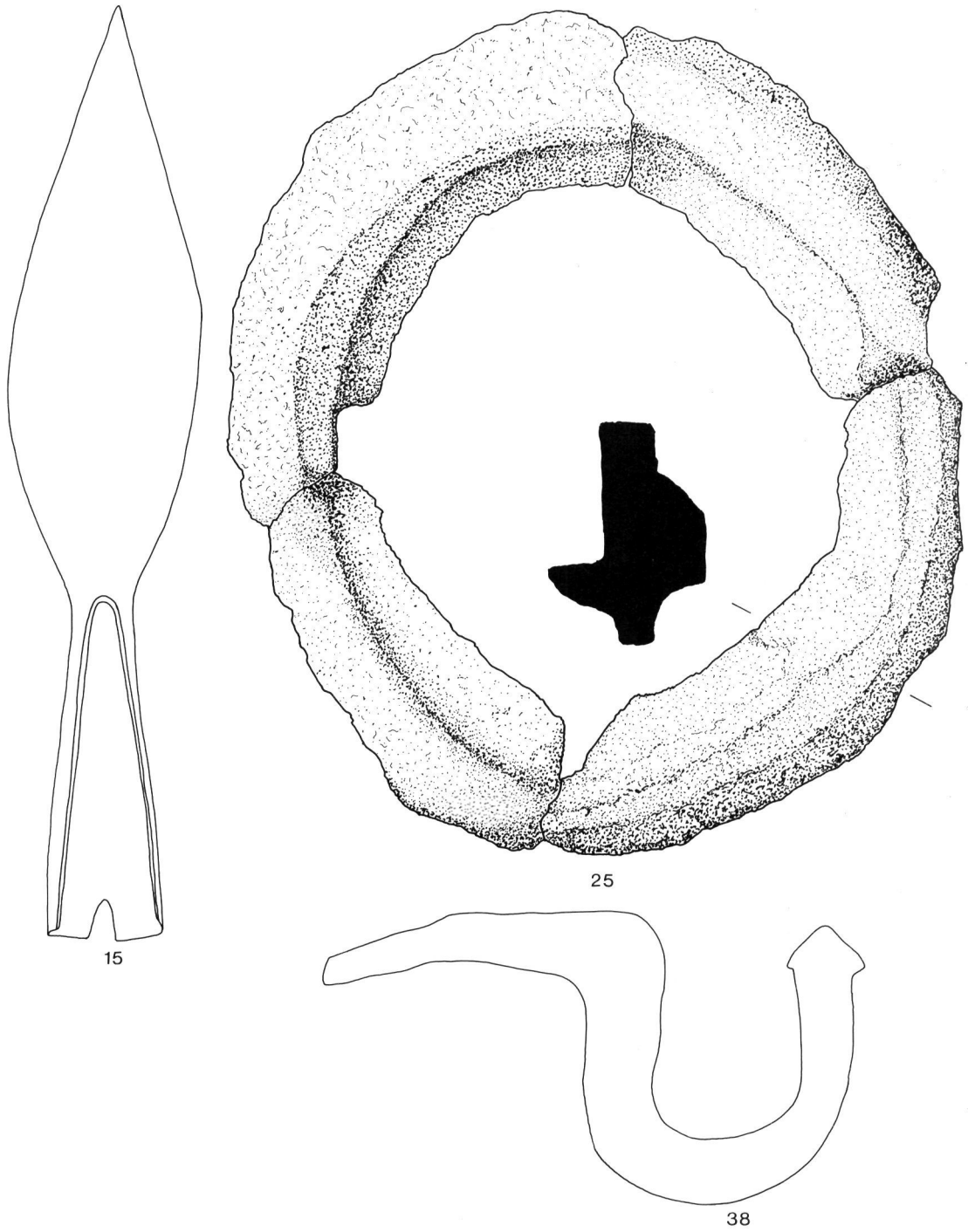


Fig 29. Iron objects, Nos 15-38 (1:1).

Iron fittings

Waterpipe junctions

Eight separate finds of waterpipe junctions were made. Three of them have external median ridges only; another three have both internal and external ridges. These junction collars were used to join two wooden water-pipes, formed from lengths of squared oak bored through the centre with a hole of less than two inches diameter. The pipes were driven onto the collars and the median ridge provided a buffer. Examples of these collars are numerous, being used in towns, forts and villas. Manning illustrates one from London (1985, 128, pl 59, R19).

21. <1424> Waterpipe junction. Fragmentary. External median ridge only, projecting for 12mm, and 4mm thick. Wood evident on external surface. Four pieces. [208].

22. <2229> Waterpipe junction. Complete. External separating ridge. Wood on internal and external surfaces. Band width: 48mm; diameter: 115mm. [216].

23. <2265> Two joining pieces of waterpipe junction. Median ridge is only on the external surface, 30mm below one edge. No wood evident on this half of the dividing band, but wood coats the lower half on both pieces. Width: 50mm; combined length: 120mm. [Burial 7].

24. <2554> Fragment of waterpipe junction. Median ridges both inside and outside, although positioned one slightly above the other. Wood remnants also on the inner and outer surface. Length: 40mm; width: 30mm wide, incomplete. [128].

25. <2556> Complete waterpipe junction. Slightly distorted. Internal and external median ridges. Wood remains all over. Diameter: 95–105mm. [150]. Fig 29.

26. <2925> Six pieces of waterpipe junction. Internal and external median ridges. Wood traces inside and outside. Collar band width: 45mm. Diameter uncertain. [128].

27. <1425> Waterpipe junction fragments. Seven small pieces. One has several layers of corroded lead laying adjacent to the collar. Wood present on inside and outside surfaces. [208].

28. <107> Plating fragments, four pieces. Wood on interior. Label states: 'Fe pipe remains, approx. 100mms diam'. [PM].

Furniture, box and other decorative mounts

29. <1386> Hollow domed headed stud. Probably for upholstery. For an example from Rushall Down, *cf* Manning (1985, 136, nail type 8, pl 63, R102). Shank broken. Diameter 23mm; height: 5mm. [161].

30. <1656b> A domed stud head, ?furniture stud. Length: 15mm; head diameter: 13mm. [21].

Box fittings

31. <1790b> Coffin fitting. Tapering strip, nail at broad end. Length: 55mm; width (rivetted end): 30mm, (opposite end): 25mm; thickness: *c.* 3–4mm. [Burial 13].

32. <2620> Box fitting. Rectangular strip with nail hole.

Incomplete. Wood on one side. Length: 50mm; width: 15mm. [174].

33. <1547> Box corner fitting. Right-angled strip with one pierced rounded end, other end broken. Loose rivet/nail positioned near the centre of the strap. 70mm × 29mm max. [216].

34. <1838> Box corner fitting. Right-angled strip tapering towards both ends. One arm is 83mm long, the other 73mm. At the bend the strip is 25mm wide, narrowing down to 7mm at the terminals. [71].

35. <1796b> Box corner fitting. Length: 37mm long; maximum width: 19mm. [19–20].

36. <1149> Box corner fitting. Strip tapers towards each end. 80 degrees angle. One arm is 35mm long, the other 30mm. [207].

Hooks and hooked shanks

The first two hooks are Roman wallhooks; the remainder were probably mostly used for suspension. A variety of objects would require suspending from hooks and links (listed below), from utilitarian objects to smaller personal items suspended from the dress belt. The small hook found in the late Roman grave (No. 43) may be an example of the latter.

37. <2432> U-shaped wallhook, with terminal knob, *cf* an example from London and two from mid-1st century contexts at Hod Hill illustrated in Manning (1985, 129, pl 59, R23-R25). Overall length: 80mm; hook: 40mm. [140].

38. <4054> Wallhook. Wide flat straight backed plate, gradually tapering towards the hooked pointed end. Pierced at the broad plate end. Length: 110mm. Plate width at top: 40mm. Hook projects 35mm. [128]. Fig 29 (x-ray outline only).

39. <1878> Hooked shank. Question-mark shape, end broken. Similar to No. 40. Length: 65mm. [71].

40. <2673> Hooked shank, similar to No. 39. Length: 65mm. [125].

41. <1434> S-shaped shank, both ends taper; 78mm end to end. [216].

42. <2296> Hooked rod. Uncertain section, possibly partially circular. Wood traces. Full length: 170mm; object length: 125mm. Shank diameter: 15mm, tapering to 9mm at the hook. [203].

43. <2467> Small hooked object with unidentifiable attachments. Complete length: 32mm. [Burial 8].

Links and rings

44. <2779a> Iron ring. Plain. Wood or leather attached. ?Circular section, 9mm wide. Complete exterior ring diameter: 56mm. [127].

45. <1771b> Figure-of-eight loop attached to ring. The figure-of-eight link is formed from a ring partially constricted in the centre. *cf* examples from Hod Hill (Manning 1985, 139, pl 64, S10, S14-S17). [194].

46. <1933a> As above, ring with figure-of-eight link attached. *Cf* examples from Hod Hill (*ibid*, 139, pl 64,

S14-S17). External ring diameter: 30mm. Figure-of-eight link c. 33mm long, formed by constricting a ring in the centre. [19-20].

47. <4405> Half a ring, external diameter: 35mm. Square section, 10 × 10mm. [158].

48. <1664c> Large rectangular link. Opening or broken at one corner. The section is rectangular, 18 × 6mm. Full dimensions: 45 × 30mm. [22].

49. <1511> Open ended ring. Pointed terminals. Diameter: 33-36mm; circular section diameter in centre: 7mm. [216].

Binding

50. <1480b> Fragment of iron strip, open fold. Width: 30mm; thickness: 2mm. Possibly small section of original edge remaining, otherwise broken along both edges. Existing maximum length: 22mm. [216].

51. <4409> Tapering band, open fold. Both ends broken. Full length: 65mm; width: 12mm, narrowing to 5mm. [34].

Ferrules

52. <1902> Open socketed conical ferrule (*cf* Manning 1985, 141, pl 66, S78, S81-S82). Partially corroded. Length: 55mm, (split) 40mm. Diameter at the open end: 17mm. [71]. Fig 30 (X-ray outline only).

53. <1751a> Ferrule. Split-end socket, end broken. Length: 54mm. [22].

Hinges

DROP-HINGES

None of the hinges themselves, whether consisting of a U-shaped strip or of a plain bar with a pierced or looped end, have been identified, since they are hard to distinguish when incomplete and when not found in association with the pintle. The pintles are more easily recognisable and are the only record of this type of hinge found at 15-23 Southwark Street. Pintles are L-shaped rods/bars, often with a longer pointed ended arm that was forced into the door jamb, and a shorter circular section arm acting as the pivot. This type of hinge staple was in use from the Roman through the medieval period. Roman finds are common, *cf* an example from Verulamium (Manning 1972, 180, fig 66, no. 58); and from Hod Hill (Manning 1985, 127, R12).

54. <1494> L-shaped drop-hinge staple. Circular section arm of 10mm. Rectangular bar 18 × 8mm, broken at 95mm length. [216]. Fig 30 (X-ray outline only).

55. <1496> L-shaped drop-hinge staple. Circular section tapering from 8mm diameter at the short arm end to 4mm at the end of the long arm. Length (long arm): 72mm; (short arm): 35mm, bending slightly at the end. [216].

56. <1519c> Possible L-shaped drop-hinge staple or a corner fitting. A probable nail hole (8mm diameter) 35mm from the bend on the long arm. Long arm: 80 × 20 × 7mm; short arm 45 × 12 × 12mm. [216].

57. <1774> Possible L-shaped drop-hinge pintle. Rod with right angle bend. Long arm 70mm long and 9-12mm thick; short arm 45mm long with thin section of 4mm. [194].

58. <1126> L-shaped drop hinge staple. One arm with rectangular section, 33 × 8 × 6mm, ?broken. The other arm has a more rounded section, 32 × 6 × 5mm, and is broken. [207].

STRAP-HINGES

Strap-hinges are formed from two straps placed end to end and hinged at the join by pierced circular plates and a pivot. There are several examples of this hinge type from the Roman period, including Fishbourne (Cunliffe 1971, 128, fig 56, nos 12-16; Manning 1985, 125, fig 31, Type 3 hinge; and an example from London also illustrated *ibid*, 127, pl 59, R13).

59. <2218> Strap hinge, half of. 100 × 20 × 4mm. [6].

60. <1495b> Strap-hinge. Rectangular bar with circular hinge joint. Joint diameter: 18mm; strap length: 30mm. [216].

61. <2699a and b> Strap-hinge. Tapering arms, one with two perforations, the other apparently with three. The arms are each 55mm long, 18mm wide near the junction. Full length of object: 140mm. [160].

LOOP-HINGES

Loop-hinges are formed with two bars: either one bar with an eye and the other with a hooked loop that passes through the eye, or both bars with linked hooked loops.

62. <2628b> Loop-hinge. Hook and eye type (as illustrated in Manning 1985, 126, fig 31, no. 2). The hooked strip is in two pieces and measures c. 60mm for the main body, with a width of 23mm. The attached plate is broken, 30mm long and 23mm wide. Full length: 105mm. [128]. Fig 30 (X-ray outline only).

63. <595> Loop hinge. Possibly from a box. Two nails on the strap. Similar to box loop-hinge from Colchester (Crummy 1983, 85, 2199, fig 90). Width: c. 10mm; length: 105mm. [211-215].

Miscellaneous fittings

64. <1279> Small iron juncture? with four sockets. The object is roughly triangular with a socket at each point and one in the centre. Length: 30mm. One socket 15mm long and 8mm wide, narrowing to a point. Badly corroded. [193].

Nails and fasteners

The excavations produced 24 boxes (32 × 32 × 16cms) of nails and five boxes of coffin nails. They represent a range of nail types, covering the Roman, medieval and post-medieval periods. The vast majority of the nails were square-sectioned with circular flat or low conical heads. None of the nails have been reported in this catalogue except for the very large coffin nails, which were found with several of the Roman burials. These 'nails', the size of which suggests a different

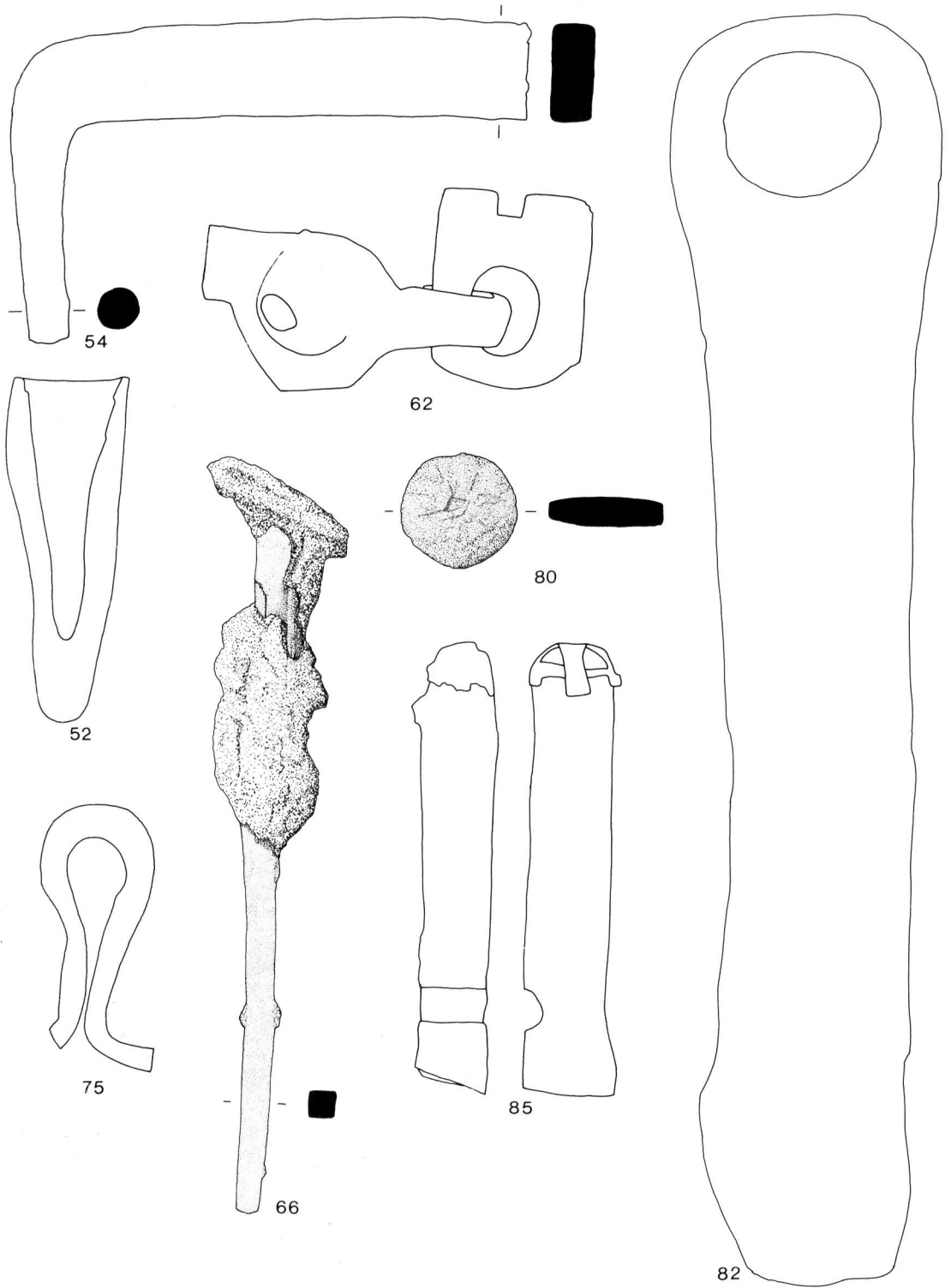


Fig 30. Iron objects, Nos 52-85 (1:1); Nos 66-82 (1:2).

term such as 'spikes' or 'stakes', were positioned one at each corner of the coffin. Their length fell within a range of 15 to 30cms, with large square sectioned shanks (10–20cms across) and heads either of pyramidal form or, less commonly, large biconical form. The pyramidal heads average 3–3.5cms in width and 2.5cms in height, and the biconical (spherical) heads 5cms in diameter. Nails of this size are known from other cemeteries, such as Lankhills Cemetery, Winchester, where 20cm nails were found from the 4th-century graves (Clarke 1979, 335, fig 42, no. 19). Their size would be suitable for extremely large timbers and, as would be expected, several nails were found with wood grain traces running transversely across the nail. Manning classifies these nails as Type 1A, ranging from 15 to 30cms in length (Manning 1985, 135, pl 63, R84-R87), and the antiquary John Stow recorded such large coffin nails from 'Spittle field', Bishopsgate Ward, London, found in 1576 during digging for brick clay. These he describes as '...a quarter of a yard long, the head two inches over; those nails were more wondered at than the rest of things there found...' (Kingsford 1971, 168). Other forms of fastenings found include nails with holdfasts, ring-headed fasteners, double-spike loops and spikes.

COFFIN NAILS

Only two of the large nail forms are catalogued here; the other examples from the site have similar characteristics to one or both of these and have therefore been omitted. The smaller nail forms are not included.

65. <1739> Very large coffin nail. Spherical head, square section shank. Found in NW corner of grave. Conserved. Head diameter: 50mm; length: 300mm. [Burial 13].

66. <1743 and 1744> Very large coffin nail. Hemispherical or pyramidal head, square section. ?Complete. Found on SW edge of grave. Head thickness: 25mm; length: 230mm. [Burial 13]. Fig 30.

Holdfasts/roves

67. <1124> Nail with circular washer. The washer has a large opening. The nail is 34mm long with flat round head. [216].

68. <1280. Part of rove. Square plate, broken at the perforation. Surviving length: 15mm; fitting width: 17mm; thickness: c. 1.5mm. [162].

69. <1512> Disc with large central hole. Washer? Similar to No. 70. Diameter: 32mm. [216].

70. <1635b> Disc with large central hole. Washer? One third of the ring survives. Similar to No. 69. Diameter: 30mm. [21].

Ring headed fasteners

71. <884> Ring headed fastener. Square section. Length: 85mm; diameter of internal ring: 9mm. Cf Braughing (Partridge 1977, 35, fig 8, no. 19) and an example from

Borough Hill, Daventry (Manning 1985, 130, pl 59, R32). [216].

72. <1544b> Possible ring headed fastener. Shank with ring head. Length (incomplete): 50mm; head width: 15mm. [216].

73. <2628a> Ring-headed fastener, with end bent at right angles. Rectangular section head end, tapering to circular section shank. Object length: 60mm. [128].

74. <1585> Type of ring headed spike? Rod with flat top perforated by a square hole. Head width: 10mm, narrowing to a circular section shaft with a pointed end. Length: 65mm. [203].

Double-spike loops

Double-spike loops, or splayed split pins, consist of an iron shank looped over and constricted below the loop with the pointed terminals usually splayed; cf Hod Hill (Manning 1985, 130, pl 61, R39–46).

75. <1656a> Double-spike loop. Object length: 40mm. [21]. Fig 30 (X-ray outline only).

Spikes

76. <4391> Spike. Bent. Circular section diameter: 6mm; length: 100mm. [35].

77. <4403> Spike. Rectangular sectioned shank, tapering to a blunted point at one end. 65 × 10 × 7mm. [175].

78. <4404> Spike. Short square sectioned shank tapering to a point. 13 × 13mm section at the top. Length: 35mm. [158].

79. <4419> Spike, square sectioned. Length: 100mm; c. 6 × 6mm section narrowing to a point. [72].

Miscellaneous iron objects

80. <1206> Iron disc/counter. Small disc with slight lenticular section, one side a little flatter than the other, straight-sided circumference edge c. 2mm high. Apparently plain, although an inevitable corrosion of the outer surface may have removed any existing detail. Diameter: 17.5mm; thickness: 4.5mm. [193]. Fig 30.

81. <1667a> Perforated tapering bar. Perforation (15mm diam.) at wide end. Possibly a second, smaller perforation 1cm in from the first. Narrow end broken. Length: 75mm long; width: 35–20mm; thickness: 6.5mm. [Burial 13].

82. <1587> Bar with perforation at one end and blunt squared terminal. Rectangular section. The bar narrows from the circular perforation to the blunt end. Similar to No. 83, but broader and heavier. Length: 190mm, width: 41mm at the perforated end and 28mm at the terminal. Smaller and thinner perforated strip with one end bent at right angles, found with the bar but possibly a box fitting. Length: 70mm; width: 24mm. [216]. Fig 30 (X-ray outline only).

83. <1571> Bar with oval perforation at one end and blunt squared terminal. Rectangular section. Bar narrows from the perforated to the blunt end. Similar to No. 82. Width: 20mm–14mm; length: 195mm. [216].

84. <2175> Perforated bar. Rectangular section, straight sided, perforation 10mm from the top. Length: 95mm (end broken); width: 20mm; thickness: *c.* 7mm. [216].

85. <2541> Probable knife handle with solid iron handle and chape. Rectangular sectioned bar with tin, lead or copper alloy rounded end-cap at one end. The opposite end is broken. The cap has a single central rivet through the end of the bar, also made from a denser metal than iron. Towards the broken end there is a square notch in the bar, which may be a result of deterioration rather than a function of the object itself. Length: 70mm; section: 9 × 12mm. [158]. Fig 30 (X-ray outline only).

86. <1034> Unidentified curved strip object. Possibly a blade. Strip with sharp curve narrowing at one end; possibly a tang? Not well preserved. Found in a girl's grave of late 4th-century date, associated with other objects (see Iron object No.4 for details). Length: 85mm; width: 15mm. [Burial 11].

87. <1099> *a:* one boot plate. Three joining pieces. Strip 55 × 10mm with rivet at each end. *b:* one boot plate. Rectangular strip, 35 × 22mm, with projections in two of the corners; rivets in the other two and on one narrow edge. Found in a girl's grave of late 4th-century date, associated with the same miscellaneous items as Iron object No. 4. [Burial 11].

88. <4385> Unidentified T-shaped object. One arm longer than the other. Uncertain sections, but possibly circular all through, *c.* 10mm diameter. T-bar is 80mm long, and the upright is 30mm long, positioned off-centre at 50mm along the T-bar. [72].

Lead and lead alloys

Judith Stevenson

Objects of lead and lead alloys

1. <1559> Very large jointed lead waterpipe. Two pieces of pipe, each with a diameter of approximately two inches (50mm), joined in the middle by a wiped lead-tin? solder. The ends of both pipes are flattened and one is cut, suggesting that the rest of the piping was being scrapped for re-use. This joint portion would be unsuitable for recycling due to the impurities within the solder (S A Mackenna, pers comm). [216].

2. <1731> Cylindrical lead object, formed by rolling a large strip over at least 10 times. Purpose unknown but possibly used as a weight. 77mm long (also the width of the original unrolled strip), 25mm diameter. [22].

3. <1646> Spatulate lead object. Square-section rod handle broadening into a lozenge-shaped spatulate end. Object is 72mm long, handle has 2.5mm section. Spatulate end. 24mm long, 9mm maximum width, 2mm thick. [216].

4. <1337> Tag? Made from a lead alloy. Triangular sheet, apex of triangle is rounded. 23mm long, 15mm wide at base. [161].

5. <1804> Pierced lead disc. Flat disc, perforation off-centre. Diameter: 38–42mm. Perforation diameter: 6mm. [74].

6. <642> Large lead disc, possibly originally perforated in the centre. Scratched on one side. Object now slightly crumpled. Original diameter: *c.* 70mm. [208].

Binding/edging

7. <1591> Large lead binding strip with iron nails. Strip is 270mm long and 15–20mm wide; one end thickens in part and has a second strip of plating (80 × 45mm) attached, which is pierced by two iron nails, one at each end. The main strip has square-section iron nails placed at 15–20mm apart along its length; 14 are visible. [71].

8. <2742> Lead binding sheet and iron fragment, irregular shape and one edge curved. 32 × 23mm. [128–157].

9. <4042> Lead edging fragment. Thin square piece of sheeting which gradually thickens into a rounded edge, similar appearance to a pottery rim sherd. 2mm thick thickening to 10mm at the edge. 35 × 32mm fragment size. [159].

Sheeting

Five additional pieces of sheeting came from Roman contexts.

10. <1891> Large pieces of lead sheet, ?off-cuts. Two large pieces, one with a cut edge (115 × 75 × 5mm) and a diagonal scratch mark, the other (97 × 63 × 3mm) with all edges broken. One smaller scrap 50 × 30mm. [216].

Bars/rods

11. <1900> U-shaped lead rod with square section. Section is 5 × 4mm at one end and 3 × 2mm at the other end. [216].

Offcuts

12. <1690> Lead off-cut strip, with several splicings along the length of the strip. 85mm long, and 15 × 3mm. [22].

13. <1865> Lead off-cut, large serrated sheet piece. 85 × 35mm; sheet 6mm thick. [216].

14. <2260> Twisted narrow strip, ?off-cut. 35mm long. [Burial 5].

15. <2878> Lead scrap, off-cuts and melted items totalling 2,025g. Included in this lead chunk pile is a solid rectangular lead block 40 × 25 × 25mm. [111].

Melted, other scrap pieces and corroded lead

Fifteen melted pieces of lead came mostly from Roman contexts as did two of the four other scrap lead items. Two pieces of lead were found to be corroded, and no form was identifiable.

Worked bone

Judith Stevenson

Bone objects of military association

1. Fist-and-phallus amulet. Characteristic form with central perforation, phallus at one end and clenched fist with protruding thumb at the other, cf Colchester (Crummy 1983, 139, fig 164), and Fishbourne (Cunliffe 1971, 148, fig 67, no. 11), for example. Phallus and fist-and-phallus pendants are usually found in military contexts of the 1st century in Britain and the Rhineland. They are obvious symbols of fertility and also served to ward off the evil eye. Two other bone fist-and-phallus amulets have been found in Southwark (Kenyon 1959, 102-3, fig 31, no. 6) in a pre-Flavian context at 199

Borough High Street; and an example was recently discovered by workmen digging a GPO tunnel on Borough High Street (Brian Yule, pers comm); a further example was found in the City of London at Africa House on Leadenhall Street (Woods *et al* 1975, fig 3, no. 24). The excavations at 15-23 Southwark Street have also produced a small copper alloy phallus pendant (see Copper alloy objects, No. 9). [37-48]. Fig 31; Pl 18.

2. <2843> Button part of a bone button-and-loop fastener. Flat underside, lightly domed upper surface with a raised perimeter and a cordon around the copper pin. The pin head is raised above the surface of the disc. Button and loop fasteners made of bone are classified as Class X in Wild 1970 (143-4, fig 2) and those formed of separate pieces of bone, such as the 15-23 Southwark Street item, are Class X (b). Examples of the latter include one from Hofheim of Claudian-early Flavian date, six from the Trajanic fort at

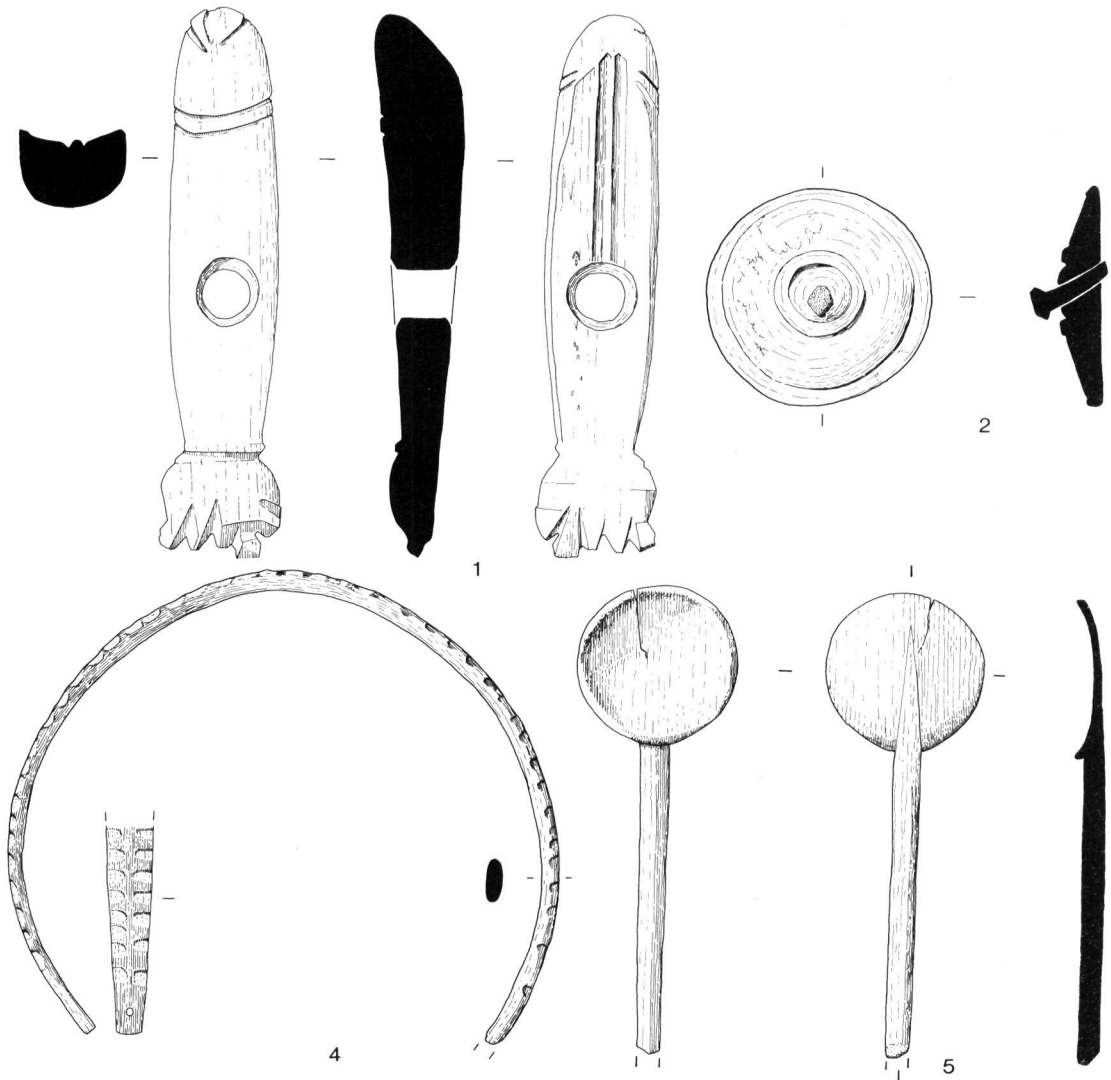


Fig 31. Worked bone, Nos 1-5 (1:1).



Plate 18. *Phallus* pendants (Worked bone object, No. 1 and Copper alloy object, No. 9)

Weisboden and one 1st century example from Vindonissa (Wild 1970, 154–155). A further example can be seen with its trapezoidal loop attachment on display in the Gloucester museum (Malcolm Watkins, pers comm). They may have served different functions as fasteners dependent on size and strength, such as for harness fittings or as frogs for dagger and later sword belts (a discussion and catalogue of frogs from pre-Flavian dagger-belts can be found in Grew & Griffiths 1991, 50 and 75–8, figs 15–16). 28–29mm diameter. [113]. Fig 31; Pl 13.

3. <425> Button part of bone button and loop fastener. As above. Raised perimeter and a cord around the copper shank with grooves between the two. The diameter is slightly less and the pinnacle of the dome is more pronounced than that of No. 2. Unfortunately the shank has broken at the top of the disc, but the tail comes to a short point on the underside apparently complete. 26mm diameter. [u/s]. Pl 13.

Miscellaneous objects of bone

4. <1026> ?An armband. Five pieces of armband decorated with notching around the upper and lower edges. Two terminal pieces with a small perforation bored into a square end. The five pieces do not join exactly, but would seem to come from a single coiled armband, *ie* the terminals overlap. External diameter: 75–80mm. Found in a girl's grave of late 4th century date, associated with two bone pins and an armband (Bone objects, Nos 25, 27), two jet pins (Jet, objects Nos 1, 2) a glass pin (Miscellaneous objects, No. 2) and four copper alloy bracelets (Copper alloy objects, Nos 26, 27, 28, 32) as well as various other iron and copper objects (Iron objects, Nos 4, 19, 86, 87; Copper objects, No. 102). [Burial 11]. Fig 31.

5. <1392> Spoon. End of handle missing. Circular spoon bowl, 21mm diameter, *cf* Verulamium (Goodburn & Grew 1984a, 73, no. 283, fig 31). [161]. Fig 31.

6. <1245> ?Spindle shaft fragment. 7mm diameter. Spiral thread/groove, broken. Both ends broken. 33mm long. [216].

7. <1604> Spatulate instrument? Narrow end broken. 140mm long; spatulate end 12.5mm wide. [216].

Pins

The pins have been catalogued according to the Colchester types set out by Crummy (1983, 19–27).

Crummy Type 1

8. <973> Pin with plain conical head. Broken shank. 58mm long, 4.5mm thick. [216].

9. <1062> Pin with plain conical head. Shank broken. 55mm long, 4.4mm diameter. [208–210].

10. <1081> Pin with plain conical head. Point broken. 67mm long, 3mm diameter. [208–210]. Fig 32.

11. <1563> Pin with plain conical head. Point missing, *cf* Colchester (Crummy 1983, 20, no. 113, fig 17). 67mm long, 3.5mm thick. [216].

Crummy Type 2

12. <2395> Pin with two transverse grooves beneath a conical head. One side of the head area is slightly flattened. Almost complete; only the tip missing. 92mm long; 3.4mm thick. [Burial 9]. Fig 32.

13. <2479> Pin with one transverse groove beneath a conical head. Complete. 97.5mm long, 3.4mm thick. [153–157]. Fig 32.

Crummy Type 3

14. <7> Pin with spherical head, *cf* Colchester (Crummy 1983, 22, no. 276). Faceted cutting on head. Broken. Head diameter 4mm; shank width 3mm; 34mm long. [PM].

15. <892> Pin with more or less spherical head. The head is crudely made and is almost cylindrical, very similar to Colchester (Crummy 1983, 22, no. 300). Pin point may have been recut after breakage. Complete. 68mm long; head diameter: 8mm; shank width: 4.5mm. [202].

16. <922> Pin with more or less spherical head. Slightly conical shape. Broken shank. Head diameter: 7mm; shank width: 4mm; 51mm long. [207].

17. <1109> Pin with more or less spherical head. Sharp angle conical top. Broken shank. Head diameter: 6mm; shank thickness: 3.5mm; 60mm long. [207].

18. <2156> Pin with sub-round head. Crudely formed head, elongated sphere with instepped base to shank, *cf* Colchester (Crummy 1983, 22, no. 276 and no. 300 cross, fig 19). Point broken. 59mm long, head diameter: 3.5mm, shank thickness: *c.* 3.5mm. [163–187].

19. <2241> Pin with sub-round head. Elongated sphere with instepped base to shank. Better version of No. 18. Point broken. Head and shank diameter: 3.5mm; 80mm long. [217]. Fig 32.

20. <2278> Pin with spherical head, *cf* Colchester (Crummy 1983, 22, no. 276 and no. 221 cross, fig 19). Point broken.

Head diameter: 5mm; shank thickness: 3.5mm; 50mm long. [216].

21. <2281> Pin with small spherical head, cf Colchester (Crummy 1983, 22, no. 221, fig 19). Complete, 82mm long. Head diameter: 3.8mm; shank thickness: 3.2mm. [216]. Fig 32.

22. <2318> Pin with biconical head, cf Colchester (Crummy 1983, 22, no. 326, fig 19). Short pin, originally c. 55–60mm long. Point broken. 49mm long; head diameter: 7mm; shank width: 4mm. [Burial 2].

Crummy Type 5 or 6

23. <1282> Pin with one reel, and upper part of head missing. Broken upper head and shank point. Head diameter: 4.5mm; shank diameter: 4.5mm; 55mm long. [216].

Crummy Type 6

24. <1023> Pin with small flat head. Head shape is a reel with a slight conical point. Similar to Colchester (Crummy 1983, 25, no. 423). See No. 25. Broken shank. Head diameter: 4.5mm; 3.5mm thick, 56mm long. [207].

25. <1083> Pin with small flat head. Shaped like a reel with a slight conical point. Similar to Colchester (Crummy 1983, 25, no. 423, p. 25). See No. 24. Broken shank. Head diameter: 5mm; shank width: 2.5mm; 46mm long. Found in a girl's grave of late 4th-century date, associated with other objects (see Worked bone object No.4 for details). [Burial 11]. Fig 32.

26. <1283> Pin with very small flat reel head. Crummy Type 6. Crude execution with section of reel almost flush with shank. Complete (found in two pieces). Head diameter: 3mm; shank thickness: 3.25mm; 69mm long. [216]. Fig 32.

Crummy Type 7

27. <1171 and 1178> Pin with poppy-head style head. Crummy Type 7—individually styled heads. Complete. Head diameter: 5mm; shank thickness: 2.5mm; length 84mm. Found in a girl's grave of late 4th-century date, associated with various items as in No. 4 above. [Burial 11]. Fig 32; Pl 19.

28. <1805> Gold headed bone pin. Bone shank with incised groove on a cylindrical head over which has been applied a strip of gold foil, through which the incised decoration can be seen. Elaborately decorated hairpins are usually of late 1st-early 2nd century AD. Two similar pins from London are in the Museum of London's collections (acc. nos 84.272/1 and 24267). All three are catalogued in Murdoch 1991, 174–5, cat. no. 489). The gold band is 7.5mm long; maximum diameter 3mm. 123mm long. Late 1st-early 2nd? [211–215]. Fig 32; Pl 19.

Bone shanks of uncertain use

Shanks which could not be attributed with certainty to any of the pin categories, and which may be identified as alternative forms such as pegs or awls, are listed below.



Plate 19. Selection of pins (Worked bone objects, Nos 27 and 28; Jet objects, Nos 1 and 2; Miscellaneous object, No. 2)

29. <1574> Pin? with incised single line at the top of the shank and a notch/groove cut into the top of an elliptical section head. The groove on the head may be a female fertility representation or, taken with the incised line below the head, the symbolism may rather be interpreted as a phallus. Broken shank. 47mm long, 7mm thick. [216]. Fig 32.

30. <2509> Shank with plain flat elliptical section head. Head damaged on one side. Complete; 95.5mm long, 4mm thick. [159].

31. <1283a> Shank with flat cut head. 2.5mm thick, 54mm long. [216].

32. <1283b> Shank with flat cut head. 54mm long, 4.5mm thick. [216]

33. <1287a> Shank with flat cut head. 2mm thick, 21mm long. [216].

Broken shanks

Shanks from pins, needles, spindles or from any other fine shafted objects numbered 41 items, from Roman, medieval and post-medieval contexts. One or two, such as Nos 34–35, showed signs of wear at a broken end, possibly indicating re-use of the item:

34. <2406> [216]

35. <1630> [21]

Needles

Crummy Type 2

36. <1107> Needle, with flat and slightly spatulate head and rectangular eye. Crummy Type 2, cf Colchester (Crummy 1983, no. 1982, fig 70). Complete; 80mm long. [216].

37. <2126> Needle with flat spatulate head and a rectangular eye. Colchester Type 2. The eye has inverse

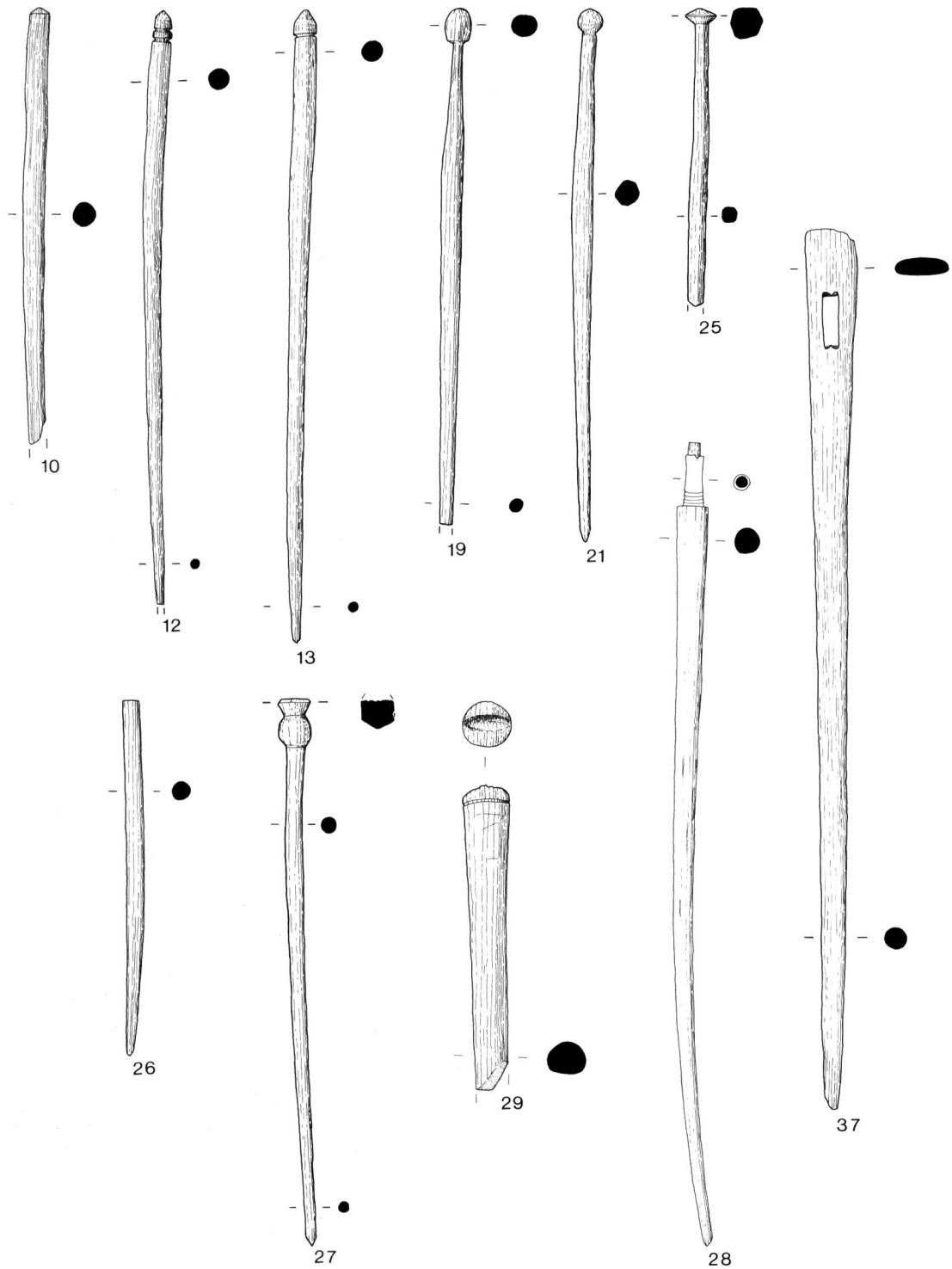


Fig 32. Worked bone, Nos 10-37 (1:1).

V-shape at the top and bottom. Point slightly damaged. 135mm long. [216]. Fig 32.

Other types and indistinguishable needles

38. <620> Needle with part of straight-sided rectangular eye-hole, broken both ends. [211–215].

39. <2256> Needle. Broken at the groove of the eye. [216].

40. <2481> Needle with one circular eye and another circular or oval eye above. Broken at the top eye-hole and splintered along the lower shank. [128].

41. <2484> Needle with (at least one) circular eye, broken at both ends. [153].

Handles

42. <927> Knife handle piece. Chamfered at the blade end. Decorated with median rib. Unpierced, so probably part of a complete bone handle which would have been secured to the tang by a metal strip at the terminal, cf Verulamium (Goodburn & Grew 1984a, 69, fig 29, no. 259) dated to AD 61. Length: 48mm; width: 16mm. [203].

43. <4159> Handle fillet? Very thin flat strip of bone with one end rounded, the other end broken. Perforation near the complete end. All edges are smoothed. Surviving length: 40mm; width: 21mm; thickness: 1.5mm thick. [217].

44. <1972> Handle fillet? or decorative mount/inlay. Decorated with four centrally placed longitudinal grooves. Broken at the rivet holes. Semi-circular section. Cf Verulamium (Goodburn & Grew 1984a, 68, no. 258, fig 29). Length: 24mm; width: 13mm; depth: 4mm. [19–20].

Hinges

45. <878> Hinge fragment. Single unit, 30mm long, with one central peg hole, 5.5mm diameter. [u/s].

46. <2485> Hinge, single. Cylindrical section of bone 27mm long, with one centrally placed 7mm diameter peg hole, cf Colchester (Crummy 1983, no. 4096, fig 131). [153]. Fig 33.

Counters

47. <703> Counter. Plain with concave interior and small lathe hole. [207].

48. <1248> Counter. Bevelled edge, lathe hole in centre. [216].

49. <1598> Counter with grafitti on underside. Five-groove decoration around the lathe hole and with a raised edge. Grafitti looks like a '4' underlined with what resembles 'JGE' beneath the line. 22mm diameter. [203]. Fig 33.

50. <1669> Counter. Bevelled underside edge, rounded (crudely) upper edge, central lathe hole. 16mm diameter. [Burial 13].

51. <1760> Counter. Bevelled underside, rounded upper edge, central lathe hole. 18mm diameter. [71].

52. <1927> Counter. Bevelled upper and lower edges, central lathe hole. 12mm diameter. [24].

53. <2319> Counter with three concentric rings around the central lathe hole. 15mm diameter. [Burial 1].

54. <2644> Counter, plain with smooth bevelled edges and central lathe hole. 17mm diameter. [120].

55. <2663> Counter with four concentric groove decoration around the central lathe hole. Bevelled underside edge. 18mm diameter. [128].

56. <2740> Counter with domed upper surface and lathe hole. Smoothed bevelled underside edge. 18mm diameter. [128–157].

57. <2752> Counter. Thick smoothed bevelled underside edge, lightly double bevelled edge on flat upper surface. Lathe hole. 19mm diameter. [126].

58. <459> Counter with grafitti on underside. Vertical edge, concavity near the centre and lathe hole on the upper surface. Underside has incised 8-spoke (4-line) grafitti forming a star. 22mm diameter. Fig 33. [u/s].

Dice

59. <1185> Die. 12.5mm cube. [207].

60. <1631> Die. 15mm cube. [216].

61. <1803> Large die formed from a long bone with two bone insets in the hollows. The bone insets, on the 4 and the 3 sides, are smaller than the holes and must have been fixed in place by using a resin or other adhesive. The 3 side is missing one of its digits; the digits themselves consist of two concentric rings around a dot. 21mm cube. [74]. Fig 33.

62. <1967> ?Die waster. Unfinished/wasted artefact. Cuboid block of bone 19 × 15 × 18mm, with broken projecting edge, and one off-angle side cutting. [23].

63. <2719> Die, crudely made cuboid. The 6 and 1 sides are almost square, the 1 side has not been marked by a digit, and the other sides are all rectangular with the digits squeezed into the rectangular surface area. 13 × 12 × 9mm. [113].

Other worked bone

64. <630> Bone block? Sawed ends and three worked sides. Other side probably worked but now worn/weathered. [211–215].

65. <4172> Leg bone (deer) with longitudinal incision running one on each side, and transverse cut marks towards one end. 110mm long. [216].

66. <4349> Fragment of ?ring. Possibly from bone working. Flat underside, smooth bevelled upper outer edge. Ring section is 6mm high and 5mm thick. Maximum diameter ? 25–30mm. [62].

67. <4600> a. Long bone probably worked to a point. Point now absent. c. 120mm long. b. Bone with one large and several smaller notches. 75mm long. [15].

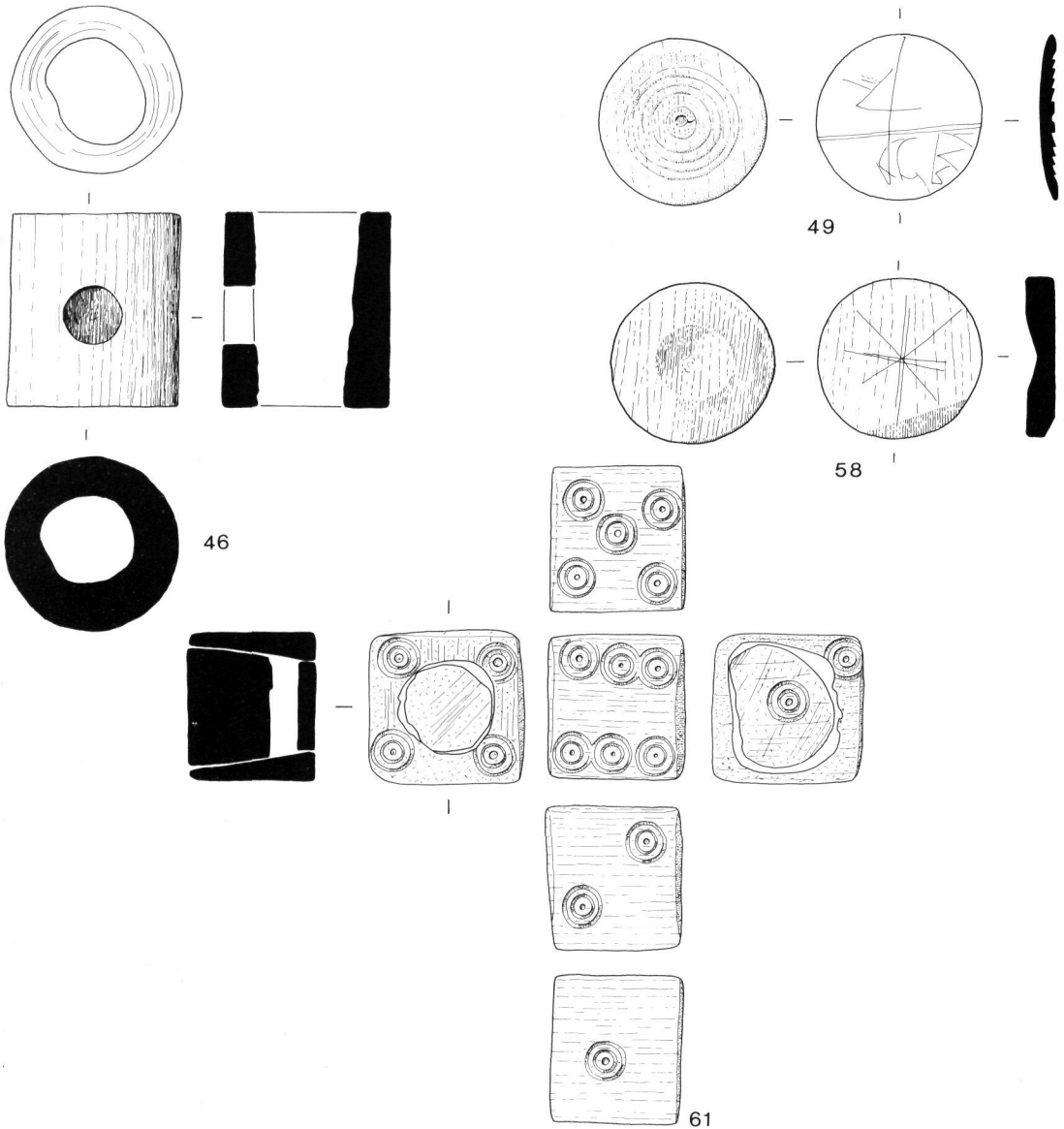


Fig 33. Worked bone, Nos 46-61 (1:1).

Objects of jet and shale

Judith Stevenson

Pins

1. <1024> Jet pin with cuboid faceted head. Crummy Type 4 (Crummy 1983), true type with five lozenge-shaped and eight triangular facets. Type 4 pins are thought to have a date range of AD 250 to late 4th/early 5th century. 65mm long. Found in a girl's grave of late 4th-century date, associated with two bone pins and an armlet (Bone objects,

Nos 4, 25, 27), jet pin No.2, a glass pin (Miscellaneous objects, No. 2) and four copper alloy bracelets (Copper alloy objects, Nos 26, 27, 28, 32 as well as various other iron and copper objects (Iron objects, Nos 4, 19, 86, 87; Copper alloy objects, No. 102). [Burial 11]. Fig 34; Pl 19.

2. <1025> Jet pin of cantharus form. No handles on the cup. A motif probably linked with the saviour god Bacchus, cf Silchester (Lawson 1976, no. 66, fig 7) described thus: 'The cylindrical body of the "cup" is decorated by a lattice of incised lines and the "handles" are represented by three angular projections. The development of this form of head from a simple vase-shaped pin-head has been outlined by

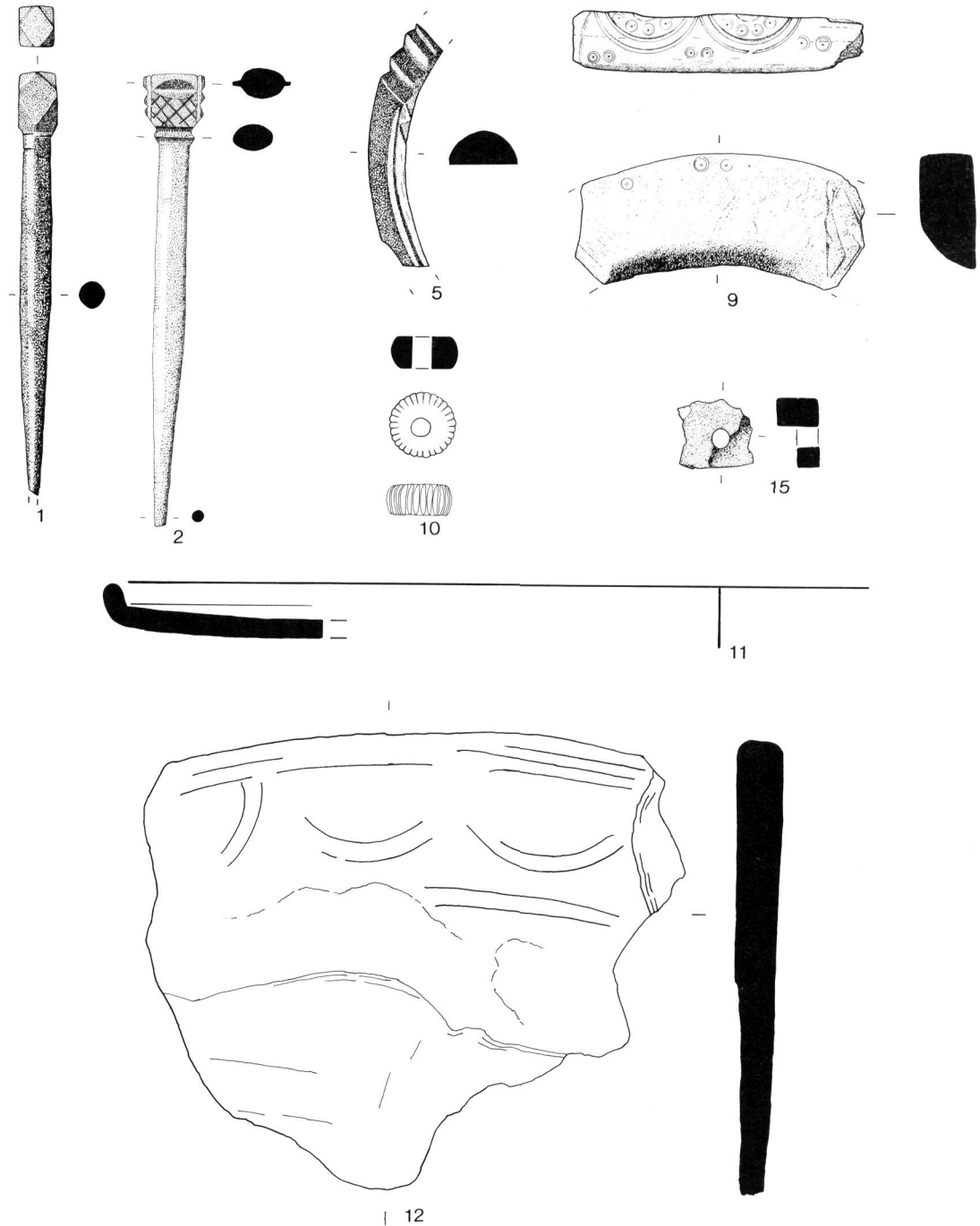


Fig 34. Jet and shale objects, Nos 1-15 (1:1).

Hagen, using finds from the Rhineland (Hagen 1937, Taf. 32, F6.1 and 2; Taf 34, G10 and 11), but a similar development can be shown from British finds. Exact parallels for the Silchester pin-head are known from York (Rosser 1961, 93, fig 103; and RCHM York 1962, pl 69), and another

similar pin-head was found at Fishbourne in a late rubble layer (Cunliffe 1971, 150, fig 69, no. 12).⁷ Published in Murdoch 1991, 176-7, no. 503). Found in a girl's grave of late 4th century date, associated with items as detailed in No.1 above. [Burial 11]. Fig 34; Pl 19.

3. <2151> Jet pin shank section. 35mm long; maximum diameter 5mm [217].
4. <1325> Jet pin shank piece. 36mm long. maximum diameter 4.5mm [PM context].

Armlets

5. <2147> Decorated jet bracelet. D-shaped section; the flat of the 'D' is the interior surface which is unpolished. Decoration consists of an area of diagonal rounded-edge grooves on the exterior face only. Exterior diameter: 80mm; interior diameter: 70mm. [217]. Fig 34; Pl 20.
6. <518> Large shale bracelet. One third survives. Undecorated. Chunky D-shaped with flat surface facing the interior. External diameter: 97mm; internal diameter: 72mm. [211–215].
7. <950> Thin shale bracelet. Circular section (6mm diameter) with the internal central ridge retained in part. External diameter: 77mm; internal diameter: 65mm. [207].
8. <4593> Fragment of thin shale bracelet. Flat internal face, curved upper surface, presumably D-shaped section. Existing width 7mm (not complete but very little missing); 23mm long. [PM context].
9. <4594> Decorated shale bracelet. Incomplete. Compass incised concentric circles with a band of ring and dots between, around the exterior edge. It is likely that the pattern originally consisted of complete circles, although the bracelet has broken horizontally, cutting off c. two thirds of the design. Small single rings with dots appear in areas around the perimeter on one, badly worn, side; the other side is absent. Compass incised. Flattish external face, curved internal face, possibly D-shape section. External diameter: 11cm; existing width: 16mm. 42mm long, incomplete. [PM context]. Fig 34.

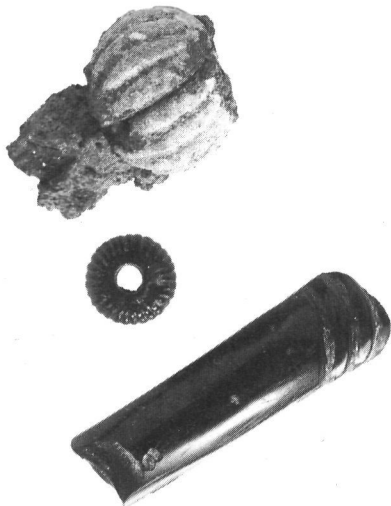


Plate 20. Part of a jet bracelet (Jet object, No. 5) and two beads (Jet objects, No. 10; Miscellaneous object, No. 3)

Beads

10. <2305> Jet melon bead. Flat type. 9mm diameter, cf Leicester (Hebditch & Mellor 1973, 49–50, fig 20, no. 22). [217]. Fig 34; Pl 20.

Vessels, trays and palettes

11. <158> Two pieces of shale shallow-dish rims, possibly from the same vessel. Vertical beaded rims with lightly sloping body. 35cm diameter. [PM context]. Fig 34.
12. <4427> Decorated shale circular tray fragment. 32cm diameter. Maximum thickness is 10mm, thinning towards the edge. Plain underside. Upper surface decorated with a zone of adjacent semi-circles bounded by three grooves on the outside and two on the inside. Cf Silchester (Lawson 1976, 265, no. 90, fig 12). Trays are usually dated to late 1st or early 2nd century. [128–157]. Fig 34.
13. <614> Corner fragment of rectangular shale mixing palette. 45 × 40mm, 10mm thick. Deep bevelled edge on one side, surfaces flat. One edge at the corner worn, probably by the sharpening of scalpels. These palettes were used to mix cosmetics or medicines (Milne 1970, 171), and it was the broader, un-bevelled surface that was used for mixing, as shown by the examples from Colchester (Crummy 1983, 57, nos 1865–1868, fig 61) [208]. Fig 35.

Miscellaneous

14. <1911> Jet ring of flat section. Jewellery item, possibly a brooch or for the hair. External diameter: 42mm; internal: 27mm. [24]. Fig 35.
15. <293> Shale ?bead fragment. Pierced shale piece, one straight edge, one wavy edge, two edges broken, at least one other perforation. 11 × 10mm; 6mm thick. [PM context]. Fig 34.
16. <2115> Small shale disc, probably a waster/cut-out from the production of a perforated object. 9–8mm diameter; 2mm thick. [217].

Stone and marble

Judy Stevenson

Quernstones

1. <813> Quernstone fragment, small. Niedermendig or Mayan Lavastone from the Eifel Mountains in the Rhineland. 60 × 55 × 15mm. [161].
2. <1939> Quernstone fragment, large. [24].
3. <1995> Quernstone fragment, large. [20].

Whetstones

4. <645> Whetstone. Incomplete length. Length 39mm; width 22mm, depth 15mm. [208].

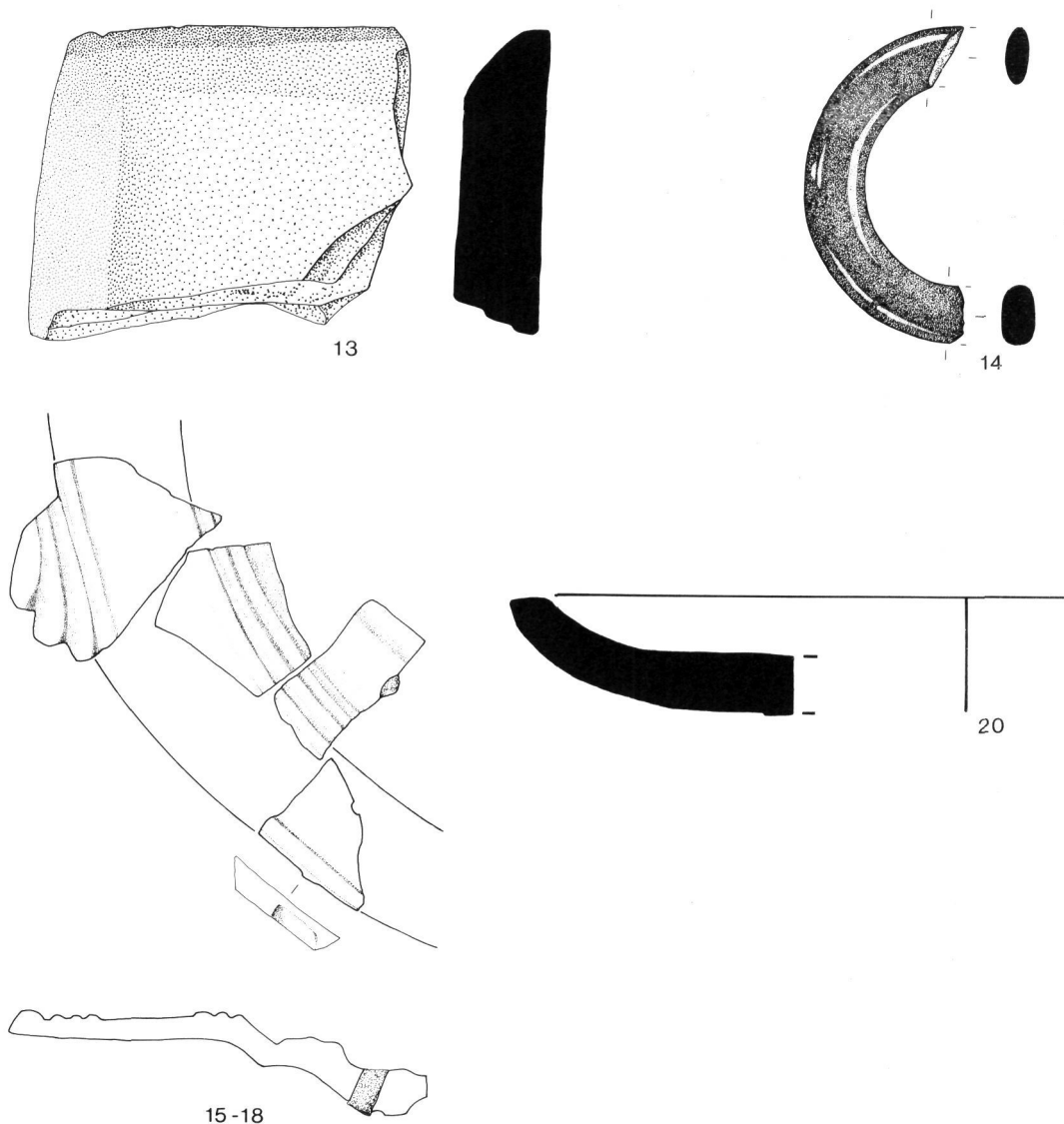


Fig 35. Jet and shale objects, Nos 13-14; Stone and marble objects, Nos 15-18 (1:1), No 20 (1:2).

- 5. <1684> Whetstone. Incomplete length. Length 85mm, width 40mm, depth 22mm. [193].
- 6. <1823> Whetstone fragment. Broken along sharpening groove. Length 87mm, width 40mm, depth 29mm. [71].
- 7. <2357> Whetstone fragment. Length 71mm, width 21mm, depth 12mm. [169].
- 8. <4197> Sliver of whetstone. Broken in half lengthways and across the middle. Bevelled rounded edges. Maximum dimensions: 43 x 27 x 6mm. [160].
- 9. <2648> Whetstone. Incomplete length. Length 64mm, width 28mm, depth 20mm. [127].
- 10. <2821> Whetstone. Incomplete length. Length 87mm, width 35mm, depth 24mm. [109].

Miscellaneous worked stone objects

- 11. <427> Fragment of slate cutting surface. Small portion of a cutting surface perpendicular to a larger piece of surface used for sharpening blades. Length 69mm, width 71mm, depth 19mm. [211].
- 12. <618> Rectangular piece of chalk or pure lime plaster. Groove running through the centre and one edge was possibly beaded. 16mm wide, 7mm thick, raised edge at least 9mm thick. Surviving length: 21mm. [211-215].
- 13. <1912> Polished pebble. Circular with a flat and worn underside. Probably used as a gaming piece or counter. Diameter 30mm, depth 14mm. [38].

14. <1930> Small polished pebble. Oval with flat underside. Possibly used as a gaming piece or counter. Length 18mm, Width 12.5mm, depth 7mm. [15].

Marble vessels

15–18. Four pieces of a large platter or shallow basin, probably of Carrara marble according to analysis by the Department of Scientific Research, British Museum. Highly polished, including the underside. The four pieces form only a small part of the rim and the edge of the bowl. The largest piece of rim (No. 15) has a moulded extension, flat on the underside, and possibly forming a lip handle. Another piece of rim (No. 16) has a small break where an extension, unlike the above has become detached. One ridge on the upper surface forms the external rim line, and two ridges form the inner rim line. The bowl has a further step near the edge, none of the inner bowl remains. A shallow footing is positioned close to the edge of the base of the bowl. Although the platter appears to be circular the pieces are too small for certainty. One piece (No. 18) has retained a small lead nail/plug, probably representing a mend, through a perforation on the side of the bowl just above the footing. The diameter is estimated as between 340 and 380mm. The pieces were found in different contexts and areas of the site, but indicate a pre-Flavian date for the object. The piece (No. 16) found in the latest context (a late Roman robber trench of a 2nd century stone building) is the most worn, having lost most of its polished surface, in contrast to the moulded rim fragment, No. 15, found in the pre-Flavian Building 1 which has retained much of its polish lustre. Fig 35.

15. <1908> 59 × 53 × 7mm; moulded rim; [37].

16. <1650> 34 × 28 × 7mm; rim, broken extension; [216].

17. <1661> 43 × 38 × 4mm; [22].

18. <670> 44 × 20 × 12mm; lead plug, worn surfaces; [211].

19. <910> Bowl rim formed from white Thasos marble. Plain even-sided curved rim. Diameter c. 220–260mm. 38 × 29 × 11mm. [207].

20. <4014> Shallow dish/platter in white marble. Vertical flat-topped rim, shallow body, underside has partial grooved base. 23cm diameter. [114]. Fig 35.

Calcite

David Williams

Crystalline calcite can be commonly found in limestone regions. However, the condition and size of the crystals from 15–23 Southwark Street might suggest an origin as far away as the Jurassic in western Britain.

21. <1640> Two pieces [22].

22. <4034> Many large, medium and small pieces. [120].

23. <4169> Several small crystals. [Burial 4].

24. <4210> One small crystal. [Burial 2].

25. <4211> One piece. [128].

26. <508> One piece. [211–215].

27. <676> One piece. [213].

28. <4600> 10 pieces. [22].

29. Some pieces were also found in contexts [211, 47 and 203] during the sieving of environmental samples.

Ceramic objects

Lamps and lampstands

Angela Wardle (fabric identifications by Jo Groves)

The site produced 34 lamps and fragments from a variety of sources ranging in date from the mid 1st to the mid 2nd century AD. Twelve fragments are residual in post-medieval contexts, but include all the North Italian imports, notably the rare 2nd-century pinecone form No. 1. Five are residual in 4th-century contexts, among them the Cnidian Relief Ware lampstand (No. 34). Imports outnumber locally produced lamps, with one complete volute form (No. 17) from South Gaul. Four imported *Firmalampen* have been identified, one, from Cologne complete (No. 22), but none is stamped. Two of the British products are *Firmalampen*, the remainder are open forms made in the Verulamium region. By contrast with other Southwark sites there are no Colchester lamps (eg Winchester Palace, Pritchard in Yule forthcoming).

The catalogue is arranged by area, according to the fabric, with imports placed first. Within each fabric volute lamps precede *Firmalampen*, followed by fragments. Residual pieces are summarised.

Closed forms

NORTH ITALIAN

1. <335> First half of the 2nd century. Lamp handle, pinecone form (identified by D Bailey). For the general form see Bailey 1980b, 389. [PM]. Fig 36.

2. <no acc no.> Late 1st/2nd century *Firmalampe*, Loeschcke Type X, shoulder form IX. Fragment of side and upper part with part of nozzle channel. [u/s].

3. <324> Late 1st/2nd century *Firmalampe*. Loeschcke Type X, shoulder form IX. Fragment of shoulder with part of disc rim and trace of nozzle channel. [PM].

Two other fragments [PM], residual:

4. <337> 1st/2nd century, fragment of nozzle.

5. <339> 1st/2nd century.

LYON WARE

6. <4595> 1st century Small fragment from shoulder. Volute or Loeschcke Type VIII. 4th century pitting [216].

SOUTH GAUL (AD 40–70)

The following eight lamps in the 'South Gaulish' fabric, similar to a South Gaulish colour coat are

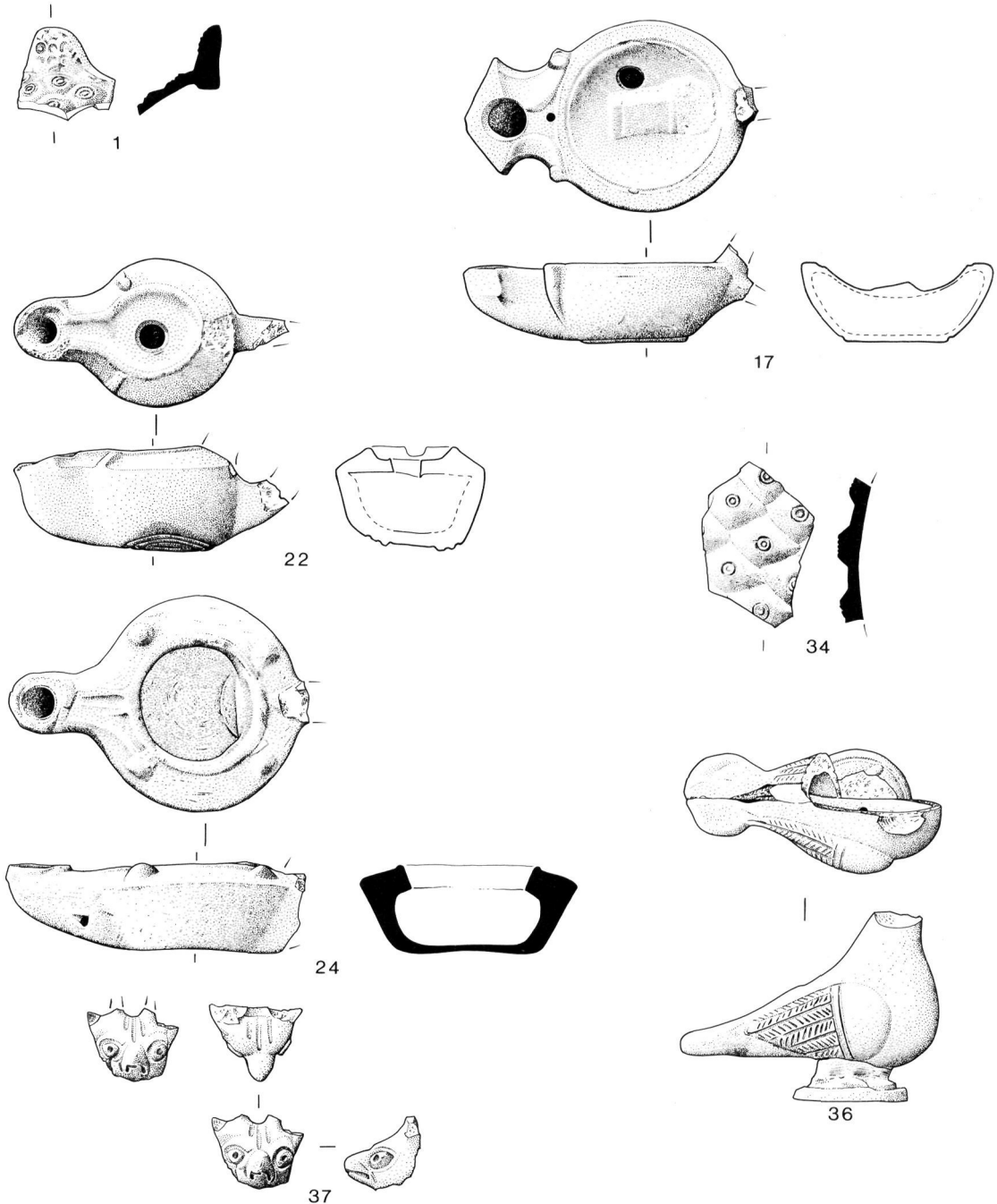


Fig 36. Lamps and figurines (Ceramic objects, Nos 1-37) (1:2).

either from volute lamps or Loeschcke Type VIII, but are too fragmentary for precise identification of the type.

7. <2657> AD 40-70 Fragment of disc, surrounded by three concentric ribs, with the foreparts of a running lion,

facing left. The lion was a popular subject, found on lamps from many sources (cf Bailey 1988, 66, Q 1528, Q 2403 etc). [71].

8. <4657> Second half of the 1st century Edge of disc, encircled by two ribs, with two hoofs of a ?horse remaining,

possibly a circus scene. Perhaps from a lamp of Bailey Type G (1980b, 233; eg Bailey 1988, 163, Q1567), as there is a trace of ?a decorative ear handle on the shoulder. [71].

9. <4652> 1st century. Fragment of discus, with the popular design of a chariot race; a biga or quadriga to left, the charioteer whipping up his team. Very abraded. [u/s].

10. <2191>, <2003> 1st century Two fragments of discus, probably from a volute lamp, with a well known rosette design, (Bailey 1988, 89); beading on incomplete shoulder. [24]. Context date Neronian/AD70+.

11. <4656> 1st century South Gaul? Volute lamp, two fragments of side wall. [Building 1] [37–48].

12. <no acc no.> 1st century South Gaul? Three fragments of base. [188 201].

13. <100> 1st century South Gaul? Fragment of base. [PM].

14. <4650> 1st century. South Gaul? Volute, fragment of base and side. [u/s].

CENTRAL GAULISH WHITE WARE (CGGW) AD 60–100/130

15. <4647> 1st century Fragment of discus with rosette design flanked by two ribs. Context Neronian/AD 70 [22].

16. <no acc no.> 1st century. Two fragments from base and side [161].

CENTRAL GAULISH OTHER FABRICS (CGOF) AD 60–100/130

17. <1889> (Late 1st/early 2nd century) Volute, Loeschcke Type Ib, with altar on the discus, poorly moulded. Air hole on nozzle, applied handle missing, body slightly sooted. Length 85.5mm, width 55.7mm. 4th-century robbing [216]. Fig 36.

18. <4649> Fragment of shoulder, probably form IIIa, small studs on outer rib. 4th-century robbing [216].

19. <4658> Fragment from edge of discus. ?Neronian fill [23].

20. <4599> Handle fragment. ?Neronian/AD 70 [22].

21. <4651> Fabric uncertain, possibly CG. Handle, loop form. ?Neronian [23].

COLOGNE (KOLN) C. AD 120–160

22. <2491> Second century *Firmalampe*, Loeschcke Type X, ring handle broken. Two unpierced lugs on the shoulder; double base ring, no stamp. Length 80.5mm, width 43.5mm. Gully backfill, AD 140–200 [153]. Fig 36.

EAST GAUL (FABRIC UNCERTAIN)

23. <259> 2nd century *Firmalampe*, Loeschcke Type X. Fragment of shoulder with unpierced lug and trace of the nozzle moulding. [PM].

LOCAL MICA DUSTED WARE (LOMI) AD 70–120/140

24. <1568> First half 2nd century AD *Firmalampe*, Loeschcke Type IXb, with four shoulder studs, pierced nozzle, plain base; handle and discus missing. Surviving length 88mm, width 63.5mm. Moulds have been found in London and there is evidence for the production of mica-dusted lamps (Arthur & Marsh 1978, 192; Bailey 1988, 154). For a variety of forms from London (see London Museum 1930, pls. 27–8). 4th-century robbing. [216]. Fig 36.

25. <444> *Firmalampe*, handle and part of body, sooted. [PM]. Residual.

LOCAL OXIDISED WARE (FABRIC 2685)

26. <1080> *Firmalampe*, handle. 4th-century robbing [207].

Open forms (Loeschcke Type XI)

The function of these objects has been discussed previously (eg Bailey 1980a, 84) and their general use as open lamps is not in question. The seven open lamps from the site came from the Verulamium region, six in Verulamium Region White ware (VRW). Lamps in this fabric are commonly found in London which the industry supplied between c. AD 60 and the mid 2nd century. The following lamps are all wheel made, with an applied handle and nozzle, which is frequently heavily sooted.

VERULAMIUM REGION WHITE WARE (VRW)

27. <2940a> Fragment of body, sooted externally. [117–120]. Debris layer, AD 80–120.

28. <4069>, <4114> Two joining fragments from a nozzle. [128, 112]. Context dates AD 70–AD 120+, floor surface and dump over the buildings.

29. <4134> Nozzle, sooted, with part of the flat base and side wall. [138]. Context date AD 120–150.

30. <4648> Nozzle, sooted. 4th-century robbing [216].

31. <no acc no.> Complete nozzle, sooted around the rim with fragment of body. The nozzle is exceptionally shallow, 10mm. Pre-Flavian pit [19–20].

32. <4597> Fragment of nozzle, sooted. [u/s]

VERULAMIUM COARSE WHITE SLIPPED WARE (VCWS) AD 70–200

33. <no acc no.> Fragment of handle and side wall. [PM].

Lampstand

34. <1609> Pine-cone lampstand in Cnidian Relief Ware, made at Cnidus, on the south-west coast of Asia Minor, previously published by Bailey (1983). Such stands generally took the form of two lamps on decorative supports, flanking an incense burner, often in the shape of a pine-cone, the whole supported on a rectangular plinth (*ibid* 375, fig 5). This fragment comes from the central incense burner. Lampstands of this type were usually for votive use, especially in *lararia*. Cnidian Relief Wares were exported throughout the Empire but Dr Bailey notes that the Southwark fragment is the first to be found in Britain (*ibid*). For further examples of the type in the British Museum, see Bailey 1988 (340, Q2727–8, pl. 82 and refs). [216]. Fig 36.

Figurines

Angela Wardle

35. <1552> Venus figurine, upper body only, facial features very blurred. The goddess is naked, holding discarded drapery or clothing in her left hand (missing). The type, discussed by Jenkins (1958), was manufactured in Central Gaul during the 2nd century AD and numerous figurines

and fragments have been found in London and Southwark (eg New Fresh Wharf, Jenkins 1986, 205; Mansell Street, Barber *et al* 1990, pl. II). For other representations of the type see Rouvier-Jeanlin 1972, figs 1–211. Surviving height 88mm. 4th-century robbing. [216].

36. <1613> Pigeon. The body is moulded in two halves and attached to a circular plinth in which there is a small circular vent hole which allowed the gases to escape during firing (cf Jenkins 1986, 206). The body of the bird is plain with only the wing feathers indicated. Broken along the mould division, head missing. The type is close to published examples from the Allier region (Rouvier-Jeanlin 1972, nos 1151, 1149), but also bears similarities to a duck (*ibid*, no. 1210). The form of the tail feathers makes identification as a pigeon more probable but in the absence of a beak or bill some uncertainty remains. Length 76 mm. 4th century robbing [216]. Fig 36.

37. <2000> Dog, head only, broken below the muzzle. The animal has pricked ears (damaged), a pointed nose and large protuberant eyes. This is another of the many types of pipe-clay figurines made in the Allier region of Central Gaul. The dog would have been sitting on his haunches, as on examples shown by Rouvier-Jeanlin (1972, nos 1051–1060). Another dog figurine from Southwark is published by Jenkins (1978, 470), where the few examples from Britain are noted. Early Roman pit [20]. Fig 36.

Other objects

Weights

38. <1671> Large ceramic pyramidal weight. Probably a loomweight, or possibly a net weight. Pierced through the apex which is flat topped and marked with a scoured cross. Square section throughout. It appears to be unused as the perforation shows no signs of wear. The fabric is made from local brick clay (I.Betts, pers comm). The British Museum has a similar object on display described as 'terracotta pyramidal loomweight, Roman or Celtic, 1st century BC said to have been found near Geneva'. Ceramic weights of sub-triangular form have been found in numerous river locations, including the Thames at London where they were originally believed to be of Roman date. More recently they have been placed in the medieval period (Steane & Forreman 1988, 156–70, figs 17–20). The majority of these medieval net weights have a rectangular section and many have grooves running from the suspension hole to the apex, sometimes with the groove on the apex formed during manufacture. The weight from 15–23 Southwark Street has neither of these features, but rather parallels the plain and square-sectioned British Museum example considered at present to be a loomweight. Complete. 135mm long, c. 65 × 65mm base and 23 × 25mm top. [216].

Pottery discs/counters

39. <1564> Pottery disc. Crude, angular unpolished edge. Verulamium fabric. 29–25mm diam. [161].

Crucibles

40. <1064> Vitrified crucible fragment. [207].
 41. <4653> Crucible. Complete profile. 6cm girth, 5.7cm high. [203].
 42. <4655> Crucible sherd with vitreous exterior. [22].
 43. <no acc no.> Two crucible pieces: one upright rim, fine fabric; one coarser fabric sherd with red vitreous coating on exterior. [161].
 44. <no acc no.> Crucible fragment. Vitreous coating on interior. [161–162].
 45. <no acc no.> Crucible rim. [76].

Miscellaneous objects

Judith Stevenson

Silver object

1. <4194> Small silver penannular ring fitting. Possibly an item of jewellery or a small decorative box fitting. Small ring with circular section, tapering towards the terminals. The terminals have been decorated with two pellets, one on either side of each terminal. Directly opposite the terminals is a broken attachment, presumably a loop or hook, soldered onto the ring and decorated with two raised knobs. The decoration of the terminals on the penannular ring may imply that the ring itself is the terminal of an object. Similar miniature rings were found amongst the jewellery from late 2nd to 4th-century graves at Mansell Street, London, where it is possible that they were once part of the fittings on the jewellery boxes themselves (Christine Jones, pers comm). External diameter: 11mm; greatest dimension: 12mm; ring thickness: 1.3mm. [158]. Fig 37.

Glass objects

2. <1057> Glass pin. Bluish-green translucent glass. Globular head. Glass pulled and twisted to form the shank.

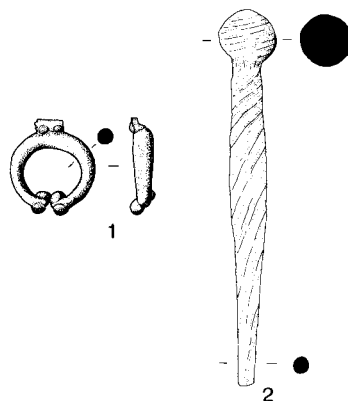


Fig 37. Miscellaneous objects, Nos 1–2 (1:1).

Point broken. 50mm long. *cf.* an example from Colchester (Crummy 1983, 28, No. 462, fig 25). Published in Murdoch 1991, 169, cat no. 468). Length 50mm. Found in a girl's grave of late 4th century date, associated with two bone pins and an armet (Bone objects, Nos 4, 25, 27), two jet pins (Jet objects, Nos 1, 2), four copper alloy bracelets (Copper alloy objects, Nos 26, 27, 28, 32) as well as various other iron and copper objects (Iron objects, Nos 4, 19, 86, 87; Copper alloy object, No. 102). [Burial 11]. Fig 37; Pl 19.

3. <1737> Blue glass melon bead attached to an iron shank. The iron shank is square-sectioned. Possibly used as a pin. Melon bead diameter: 16mm, existing shank length: 24mm. [75]. Pl 20.

Wooden objects

4. <2654> Cast of a stake made from wooden moulding, and four pieces from the wall of the stake hole. Right-angled backing, front of moulding has a flat external edge separated from an internal bead ridge, by a groove. The beading slopes steeply inwards to a fine groove and finally a thin, possibly rounded edge. A stake was cut from this moulding piece. Width of moulding: 50–55mm, thickness of the corner edge: 28mm, and at the thin edge: 5mm. The cut stake is 220mm long. A nail fragment has been incorporated into the plaster at the top of the cast. The original stake has rotted away leaving a perfect mould and also leaving paint from the original moulding adhered to the wall of the hole. From parts of the wall that were retained, it is clear that the original moulding had several layers of paint, at least four layers can be identified. The undercoat was white followed by layers of buff, black then buff. [114].

Pigments

Balls or large pellets of blue frit in a granular vitreous form are frequently found on Roman sites, *eg* at Verulamium (Goodburn & Grew 1984b, 79, no. 312). They are often referred to as 'Egyptian Blue'. It is generally assumed that they are the raw pigment of blue colouring for paints used on painted wall plaster or possibly for enamelling or even cosmetics. 15–23 Southwark Street produced four of these balls of frit from post-medieval contexts and half a ball from a Roman context.

5. <170> Ball of blue frit 13mm diameter. [PM].

6. <358> Ball of blue frit. 17 × 13mm. [PM].

7. <704> Two balls of blue frit 15mm diameter and 16 × 13mm. [PM].

8. <1841> Half a ball of blue frit. 22mm long. [216].

Other

9. <1592> Small green fragment, possibly pigment. [216].

Intaglios

Martin Henig

1. <921> Glass intaglio with blue upper face and dark ground, imitative of blue onyx (*nico*); the sides bevel outwards (Henig 1978a, fig 1, shape F2).

The moulded device is of two satyrs, one seated, the other standing in front of him, raising one foot so that his companion can remove a thorn. There is a short ground line. Upper face, 11 by 8mm; lower face, 12 by 9mm; the gem is *c.* 2mm thick.

There is a close parallel on a purple glass intaglio now in Copenhagen (Fossing 1929, no. 840); also note the cut *nico* gem in Berlin (Furtwangler 1896, no. 8220).

For the composition of two satyrs, one seated and the other standing, compare an intaglio, moulded in brown glass (Furtwangler 1896, no. 3960); also an engraved gem in Brunswick, cut on a *nico* (Scherf 1970, no. 100) with the same theme. They both show a seated middle-aged satyr with a more youthful one before him, and the subject has been taken for Marsyas instructing Olympos in playing the flute. The intaglio evokes the carefree life of the countryside where satyrs dance (Henig 1978a, no. 161, Slay Hill Saltings, Kent; 1978b, no. 6, London), sit beneath trees (*ibid.*, no. 157, Charterhouse on Mendip, Somerset), raise their families (*ibid.*, no. 156, Ruxox Farm, Bedfordshire) or play boisterously with each other (Zienkiewicz 1986, 138 no. 65, Caerleon).

It is difficult to date moulded gems, as their prototypes often go back to the Republic or early Empire. *Nico* glass intaglios such as this, however, were produced in some quantity in the second century AD. [PM].

2. <1349> Cornelian intaglio with flat upper face, set in the remains of an iron ring, now badly corroded; it seems to have a hoop of circular section expanding towards the bezel (Henig 1978a, fig 1, ringtype II, citing no. 397 from the Walbrook; ringtype III, see Henig 1978b, no. 2 is similar but has a broader hoop). Dimensions: gem: 11 by 9 mm. External diameter of ring: 23 mm; internal diameter: 15 mm; width across bezel: 12 mm, all of these dimensions distorted by corrosion.

The subject is a *putto* (presumably intended for Cupid but he is wingless) seated upon the ground and stretching out his arms towards a large butterfly, perched upon an altar. There is a groundline. For a little Cupid seated upon the ground and apparently playing with a butterfly see the *nico* in Copenhagen (Fossing 1929, no. 774). A cornelian in Berlin figures Cupid, again seated, playing with a butterfly which has alighted upon a wheel, (Furtwangler 1896, no. 7476). Two ideas are present, the relationship between

the body and the soul (Psyche was represented by the butterfly), and the transience of life, seen in the association of the butterfly with the wheel of fortune.

Cupid is often shown with butterflies which he harnesses to his chariot (Sena Chiesa 1966, no. 294), chases (*ibid.*, no. 293), shoots (Maaskant-Kleibrink 1978, no. 442) or burns (*ibid.*, no. 443; Henig 1978a, nos 119–123; *idem* in Cunliffe 1988, 30–31, no. 8). These are all comments on the uneasy relationship between body and soul. The idea of our gem, perhaps the longing of the body for the soul which it also burns upon the altar of the passions is also present on a sard in the British Museum depicting a seated Cupid proffering grapes to a Silenus head (indicative of true wisdom) upon an altar (Walters 1926, no. 1517, see pl xx, wrongly labelled 1507); this also appears to have been the subject of a gem from Newcastle (Henig 1978a, no. 118).

The ring-type and the style of cutting of the gem with its simple detailing (Maaskant-Kleibrink 1978, 251, 'Small Grooves Style') assigns it to the 1st or early 2nd century. I would suggest a Flavian dating. General stylistic comparisons may be made with the gems, including some showing Cupids from Bath (Henig in Cunliffe 1988, 27–35). [76].

3. <2700> Intaglio of translucent green glass, imitative of emerald. It has a convex upper face and the sides are bevelled (Henig 1978a, fig 1, shape A4). The surface of the glass is now very pitted but the device is clearly a standing female figure in profile to the left on the glass, probably the Lydian queen Omphale to whom Hercules was enslaved as an act of purification to free him from madness. Dimensions: 13 by 9 by 1.5 mm.

The elongated sinuous form of the figure is identical to that of Omphale on a dark brown glass intaglio in Munich (Schmidt 1972; no. 3120), and on a violet glass intaglio in Hanover (Zazoff 1975, no. 314). Unfortunately, Hercules' club and lion-pelt are not preserved on the 15–23 Southwark Street intaglio, but the identification is hardly in doubt; Methe, goddess of inebriation has a similar figure but she holds a cup closer to her lips (see Gercke 1970, no. 203). Brightly coloured, translucent glass intaglios such as this are most likely to date before the middle of the 1st century AD. [128].

The glass

John Shepherd

Introduction

The 15–23 Southwark Street site produced a total of 1,708 fragments. There were 1,546 vessel fragments, 145 window fragments, six pieces of *tesserae* and 11 examples of counters. The catalogue and discussion below covers all those from dated Roman contexts. These are 409 fragments which can be identified by form, 856

indeterminate vessel fragments, 134 window glass fragments, five *tesserae* and 10 counters.

The vessel glass contains a wide cross-section of vessels dating primarily to the late 1st and 2nd centuries. Some examples date to the mid 1st century, and a few can be identified as belonging to the late-Roman glassworking tradition. This cross-section covers the entire spectrum of glass vessel types in terms of manufacturing technique, metal colour and function. By far the largest number come from utilitarian vessels such as phials and bottles, but also includes a range of fine tablewares.

The assemblage as a whole is very fragmentary and possible residuality factors prevent a detailed discussion of the function of particular groups found within the buildings on this site. The mixture of coarse utilitarian vessels with finer vessels emphasises this point.

The following report includes a complete catalogue with discussions where appropriate of all 409 diagnostic vessel fragments. Indeterminate vessel fragments, window glass, *tesserae* and counters are listed separately in Miscellaneous glass (below); four important fragments of Roman date from post-Roman contexts are catalogued in Miscellaneous Glass.

Catalogue

This catalogue includes all the fragments of glass vessels and objects in glass (*eg* window-glass, *tesserae*, counters) which come from contexts dated to the Roman period. Isings (1957) form numbers are given whenever possible.

The catalogue has been arranged according to metal colour and technique of manufacture:— *eg* cast polychrome, monochrome and naturally coloured, cast and blown colourless, decorated mould-blown naturally coloured and blown naturally coloured (including optic blown jars and flasks and mould-blown prismatic bottles). An attempt has been made to order the individual fragments in these colour groups into approximate chronological order but unfortunately this is not always possible. The majority of the diagnostic fragments come from forms which cannot be properly identified or from vessel types which were made and used over many generations.

Polychrome glass

This section contains those vessels made up of a number of monochrome metals in marbled, millefiori and cased designs.

1. <2731> Fragment from the rim and side of a small shallow cup or bowl (Isings form 1). Cast and sagged;

marbled purple and white glass. Rim ground and polished. Early to mid-1st century. [138].

2–5. Four fragments of cast and sagged millefiori glass, all from indeterminate forms and dating to the early to mid-1st century:

2. <1476> green and yellow. [216]
3. <1840a> blue, white, yellow and brown. [216].
4. <2183> green and yellow. [Building 4].
5. <2733> green, yellow and red. [138–157]. Fig 38

One of the oldest glass bowl shapes in the glassworker's repertoire is represented by No. 1—Isings form 1—a small, upright rim fragment in a marbled purple and white metal. Four other vessels in millefiori glass are represented by Nos 2–5 but, unfortunately, their precise forms cannot be identified. It is probable that they come from similar shallow bowls or cups. No. 5, a very flat piece, might be a piece of furniture or wall/floor veneer.

These vessels were made from a simply fashioned slab, sagged over a mammiform mould in the furnace (for sagging techniques for this and other forms from 15–23 Southwark Street, such as the pillar-moulded bowls, see Cummings 1980). The surfaces and rim were then cleaned and finished on the wheel. The manufacture of vessels in marbled and millefiori polychrome glass, well-documented in the 1st century BC and the early 1st century AD, declined to a virtual halt during the middle of the 1st century AD. By the Flavian period, when vessels in colourless glass began to dominate the luxury tableware repertoires, very few marbled and millefiori glass vessels were still in circulation.

6. [216] <1941> Fragment from the rim and side of a pillar-moulded bowl (Isings form 3). Cast and sagged; marbled brown and opaque white glass. Rim ground and polished. Early to mid-1st century. [216]. Fig 38.

This pillar-moulded bowl and the twenty-five naturally-coloured fragments (Nos 23–47 including seven rim fragments from different bowls) catalogued below is one of the most common forms to be recorded amongst 1st-century assemblages (Price 1978, 71–2).

The abundant survival of this form in the archaeological record is due, in part, to its robust design. The thick, ribbed walls enhance its chances of survival. Furthermore, the special technical and decorative details of these bowls, such as the ribs, grinding and polishing of the rim and interior and an interior ground band, also permit easy identification, however small the fragment may be. But irrespective of these design factors there can be little doubt that during the late 1st century, at least, the pillar-moulded bowl must have been produced in very great numbers, making it commonplace throughout the Empire.

The places where these vessels were made in such great quantities have still not been positively determined but it can be assumed with safety that they come from those glasshouses in north Italy, southern France and Spain, perhaps even Germany, which were well established before glassworking, and in particular

glassblowing, spread into the north-western provinces during the second half of the 1st century AD.

Polychrome pillar-moulded bowls such as No. 6 and monochrome vessels (none of which, incidentally, were recorded on this site, although they are known in Southwark and the City) do not appear to have been made after the middle of the 1st century AD, in keeping with the general decline in favour of brightly coloured glass. Pillar-moulded bowls in common naturally-coloured metals, such as those in greenish-blue and similar tints (eg Nos 23–47), gained in popularity as the polychrome vessels declined and large numbers continued in circulation until the end of the 1st century. Some, by then old vessels or heirlooms, appear in early 2nd-century assemblages. The abundance of these vessels in late 1st-century assemblages would suggest that their manufacture continued throughout the third quarter of the 1st century at least.

7. <1880> Fragment from the side of a cup or bowl of indeterminate form. Free-blown; cased blue and white. Early to mid 1st century. [15].

This cased fragment is particularly interesting. Unfortunately it is too small to permit a precise identification of its form but two-handled cups (*cantharoi*—Isings form 38) and small hemispherical cups (Isings form 12) were made in this fashion. Such early to mid 1st century vessels are well known although, this is probably the result of their distinctive finish—a cased fragment from the body of, for instance, a *cantharus* would be more conspicuous than a plain fragment from a similar form.

Such vessels were not common in antiquity. The more elaborate examples of this class of vessel, comparatively thick-walled with opaque white on the exterior, are represented by those which were handed over by the glassworker to the glass-cutter to produce vessels collectively known as 'cameo glasses'. The Portland vase and Auldjo jug are just two of this exceedingly rare group. A fragment from a cameo vessel decorated with a vine in fruit comes from 199 Borough High Street Southwark (Lightfoot 1988, 374–8, fig 167).

This fragment from 15–23 Southwark Street belongs to the group which has two colours cased and blown thinly together, thus allowing the opaque colour on the interior to enhance the other and, of course, resulting in a vessel with an internal colour different from that of the exterior.

Examples come, for instance, from Xanten (Charlesworth 1984, 285). Fragments from three vessels are known there: a chalice in amber glass on white, a similar chalice in blue on white and a 'Hofheim' cup (Isings 12, see below Nos 124–130) in green on white. Three fragments from Colchester, one dark blue on white and two amber on white, come from contexts dated up to 65 AD. Another fragment from Colchester, pink on dark blue, comes from a context dated AD 10–43 (Harden 1947, 297, no. 37; see also nos.

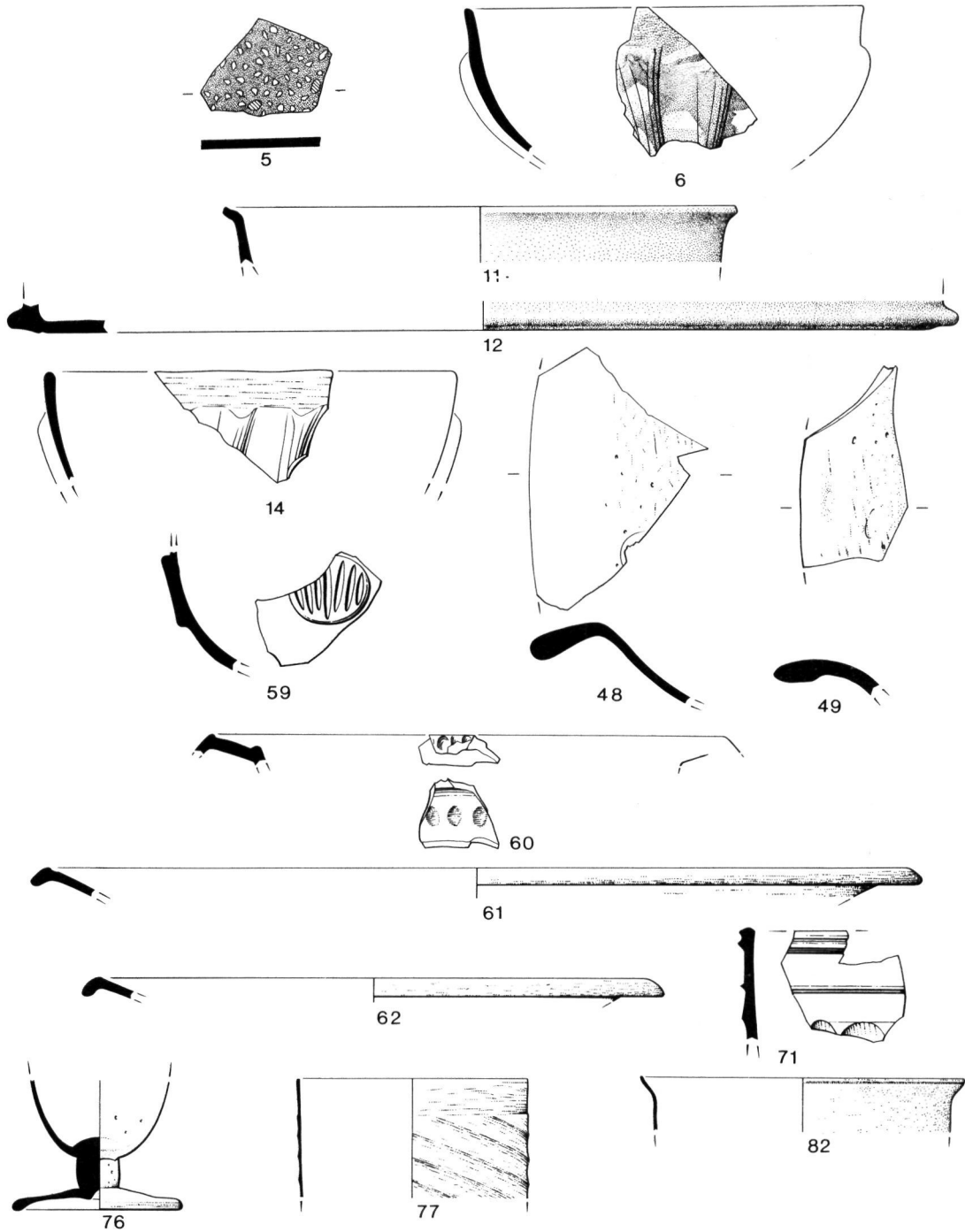


Fig 38. Glass objects, Nos 5-82 (1:2).

34-6). This is similar to a dark pink, almost purple fragment with blue from Leadenhall Court in the City of London which, unfortunately, comes from a much later layer (c. AD 80-100; Shepherd (a) forthcoming).

Other cased fragments from London come from 25 Lombard Street, a green on white fragment, unfortunately unstratified (MoL acc. no. 2533), an unprovoked brown/amber on white fragment (MoL acc.

no. 17492) and a blue on white fragment from Pudding Lane (site code PDN81, acc. no. 2162).

8–9. <1198>; <1400> Two fragments from an indeterminate free-blown vessel in natural blue glass decorated with an opaque white spiral trail. Mid to late 1st century. [216]; [161].

Two fragments of natural blue glass decorated with an opaque white thread, probably a spiral which covered the whole body, are present. Unfortunately both are too small to permit a precise identification of the form but since such vessels are not common, it is most likely that they come from the same vessel. The use of monochrome threads to decorate vessels is known during the late 1st century and also, in a much more spectacular fashion in the form of rigareed snake-threads and trails, in the 3rd century. Nos 8–9, however, belong to the earlier period.

10. <1478> Fragment from the neck of a phial in natural green glass decorated with marvered blobs of opaque white glass. Mid to late 1st century. [209].

This phial belongs to the second half of the 1st century. Opaque white chips of glass were picked up on the paraison before full inflation commenced and were marvered flush with the paraison surface during subsequent reheatings as the vessel was fashioned.

Cast, monochrome glass

The following vessels are made in monochrome metals, prepared in the main as simple blanks or disks and then manipulated, generally by sagging, and finished by grinding and polishing.

11. <1754b> Fragment from the rim and side of a shallow plate (Isings form 5). Cast; emerald green glass. Overhanging ground and polished rim. Mid 1st century. [71]. Fig 38.

12. <1723c> Fragment from the lower part of a cylindrical dish (Isings form 22) or pyxis. Cast; emerald-green glass. Ground and polished with a wide, flat base extending beyond the wall of the vessel. Base decorated with a wheel-cut groove. Mid 1st century. [75]. Fig 38.

13–21. Other fragments of cast, ground and polished emerald green glass:

- 13. <1725a> [191]
- 14. <1375> [161–2] Fig 38
- 15. [37–48]
- 16. <1735b> [37–48]
- 17. <1835> [74]
- 18. <1808b> [71]
- 19. <1867a> [71]
- 20. <1884a> [71]
- 21. <1884b> [71]

22. <1578> Fragment from the side of a bowl (Isings form 5). Cast, sagged and ground and polished; brown glass. [161].

Of these twelve fragments of cast translucent monochrome glass eleven were green and one brown. Only three (Nos 11, 12 and 22) can be identified by form and date to the early to mid 1st century AD.

No. 11, in emerald green glass, comes from the rim and part of the side of a shallow bowl or dish (Isings Form 5 copied from Arretine or plain ceramic forms).

The rim of this form was ground out in such a way that it slightly overhangs the body. Similar examples come from periods III–IV at Camulodunum (*ie* Claudian–Neronian, cf Harden 1947, 300f) where emerald green is noted as predominating.

A recent study of this class of vessel by David Grose (1991, 1–11, where he describes these vessels as ‘cast, translucent fine wares’) shows that their distribution is centred on Italy, with a scatter throughout the northern provinces (Switzerland, France, Germany, Britain and Spain). He suggests an Italian place of manufacture with an emphasis on date of production between the second and sixth decades inclusive of the 1st century AD. Parallels are numerous including many from Magdalensburg, Austria (Czurda–Ruth 1979, 65–91. The camp at Magdalensburg was abandoned c. AD45), those from Camulodunum cited above come from Cosa, Italy (Grose 1991, 10, with examples from contexts dated c. AD 22–55), and Tarragona, Spain (Price 1987a, 66–72). That examples were also found at Herculaneum and Pompeii need not indicate that their production continued until AD 79 but, rather, that as valued pieces they were treasured and protected possessions.

For a wide dish similar to No. 12, see an opaque light green example, unprovenanced, in the Corning Museum (Goldstein 1979, 150, no. 317). The brown fragment (No. 22) from the body of a dish, (Isings form 2 or 5) is unusual in that such a metal is rarely used for such vessels.

Pillar-moulded bowls—naturally coloured

These naturally coloured pillar-moulded bowl fragments are discussed together with the marbled pillar-moulded fragment (No. 6) above.

23. <1952a> Fragment from the rim and side of a pillar-moulded bowl (Isings form 3). Cast and sagged; natural greenish-blue glass. Rim and lip ground smooth. Three ribs extant. Interior ground and polished and decorated with a wheel-cut band of three grooves. Mid to late 1st century. [19–20].

24. <1813> Fragment from the rim and side of a pillar-moulded bowl (Isings form 3). Cast and sagged; natural green glass. Rim and lip ground smooth. Two ribs extant. Interior ground and polished. Mid to late 1st century. [161].

25. <1809a> Small fragment from the rim and side of a pillar-moulded bowl (Isings form 3). Cast and sagged; natural green glass. Rim and interior ground. Two ribs extant. Mid to late 1st century. [74].

26. <1754a> Fragment from the rim and side of a pillar-moulded bowl (Isings form 3). Cast and sagged; natural greenish-blue glass. Rim and interior ground. One rib extant. Mid to late 1st century. [71].

27–29. Fragments from the rims of pillar-moulded bowls (Isings form 3):

- 27. <1400a> [161]
- 28. <1548> [161]
- 29. <1795a> [19–20]

30–39 Ten fragments from the bodies of an indeterminate number of pillar-moulded bowls (Isings form 3). Natural greenish-blue glass. Mid to late 1st century.

30. <192> [PM]
31. <516> [211–5]
32. <1335A> [161]
33. <1413C> [161]
34. <1375> [161–2]
35. <1812> (x2); [203]
36. <1809C> [74]
37. <1830C> [74]
38. <1808a> [71]

40. <1704H> A fragment from the body of a pillar-moulded bowl (Isings form 3). Natural green glass. Mid to late 1st century. [71].

41–47. Seven fragments from the bodies of an indeterminate number of pillar-moulded bowls (Isings form 3). Natural blue glass. Mid to late 1st century.

41. <1208> [208–10]
42. <1179> [Burial 11]
43. <1594A> [216]
44. <1612> [211–5]
45. <1668B> [Burial 13]
46. <1819A> [203]
47. <1938A> [23]

Cast and sagged plates, naturally coloured glass

48. <2330a> Fragment from the rim and side of a crudely made, wide plate. Cast and sagged; natural greenish-blue glass. The vessel appears to have been sagged and fashioned from a window pane. One can only conclude that the resulting vessel was oval or rectangular in shape (*Lanx*). The broad rim does have a very slight curve to it. Late 1st or 2nd century. [155]. Fig 38.

49–53. The following come from similar, crudely fashioned plates:

49. <1332> rim, natural blue. [161–2]. Fig 38.
50. <2599> rim, natural blue. [175].
51. <2726> rim, natural blue. [144–6].
52. <2805a> rim, natural greenish-blue. [115].
53. <2808a> body, natural blue. [126].

Fragments Nos 48–53 are most unusual and can only be interpreted as a local attempt to fashion a shallow dish or tray by sagging a pane of window glass over some sort of mould. The edges of its rim are naturally rolled, as one should expect with the edges of window panes. The underside of the final shape carries tool marks which compare with those on panes when being manipulated into their final shape while still hot. No other examples of such crude, perhaps experimental or impromptu, adaptations of window panes are known.

Mould-blown vessels—monochrome and naturally coloured glass

These vessels were made by being blown into the confines of a mould, generally multipart, in order to impart upon them a detailed high-relief decoration.

The more common mould-blown bottles are discussed below with the naturally-coloured blown vessels.

54. <1720> Small fragment from the side of a ?sports cup. Mould-blown; emerald green glass. Decorated with unidentifiable mould-blown element, possibly part of a *biga* or *quadriga*. Mid 1st century. [75].

55. <1335> Small fragment from the side of a ?sports cup. Mould-blown; emerald green glass. Decorated with unidentifiable mould-blown element. Late 1st century. [61].

56. <2219a> Small fragment from the side of a bowl or beaker. Mould-blown; natural blue glass. Decorated with a single horizontal mould-blown rib. Late 1st or 2nd century. [6].

57. <1929b> Small fragment from the side of a bowl. Mould-blown; natural blue glass. Decorated with fine mould-blown vertical ribs. Mid to late 1st century. [37–48].

Only four small fragments of mould-blown decorated cups or beakers were recorded. Nos 54–5 are in translucent emerald green glass and Nos 56–7 in natural blue glass. All are too small to allow proper identification of their forms and decoration but it is probable that the two emerald green fragments come from one or two sports cups. These small hemispherical or, more rarely, ovoid beakers were decorated with scenes showing gladiatorial contests or chariot races. These are known from late 1st century-contexts and were probably made during the Neronian or early Flavian period.

The remaining two fragments come from unidentifiable forms which, on account of their technique of manufacture and metal, belong to the large category of mould-blown decorated cups and beakers of the late 1st or early 2nd century.

Colourless glass

This section includes both cast and free-blown colourless vessels. Colourless glass here denotes metal for which there appears to have been a concerted effort on the part of the glassworker to neutralise any natural impurities which might cause a blue or green tint.

58. <1710> Fragment from the rim and side of a two-handled skyphos (Isings form 39). Cast with ground and polished surfaces; colourless glass. Rim ground and polished. Part of upper sticking-part of a handle, ground and polished, is visible. Late 1st century. [22].

This fragment comes from a very luxurious piece of late 1st-century tableware. It is too small for precision about the profile of the vessel, but it can be compared to an almost complete *skyphos* from St Swithin's House (Price 1991, 159, no. 610, fig 113). It belongs to that group of cast and blown tablewares first made after the middle of the 1st century AD, probably around AD 65–70. Their production appears to have ceased before or during the early 2nd century.

Other examples from Britain have been found at Leadenhall Court, London (Shepherd (a) forthcoming,

no. 66 [4331] <1821> from a layer dated *c.* AD 80–90), Fishbourne (Harden and Price 1971, 336, no. 32, fig 138), York (Harden 1962, 136, nos HG 222–223, fig 88) and Caernarvon (Boon 1974b, 5–6 figure).

59. <1623a> Four fragments from the side of a vessel of indeterminate form, possibly a beaker. Free-blown; thick colourless glass. The surface of the vessel has been ground away leaving a shell-like element in relief. This has been wheel-cut vertically to give the impression of the ribs of a shell. Late 1st century. [216]. Fig 38.

In a short article on relief-cut vessels of this type, von Saldern (1985) illustrates a complete conical beaker decorated with relief ovals and shells from Cologne dated to the late 1st century. Two similar vessels are known from London. One, decorated with three zones of relief-cut ovals and rosettes or flower motifs from Ironmonger Lane (MoL acc no. 21667) was associated with late 1st and early 2nd century ceramics (London Museum 1970, 8, no. 18) and the second, similarly decorated but with just one zone extant, from Leadenhall Street (MoL acc no. 21046) was associated with 3rd and 4th-century material (London Museum 1930, 122, fig 42, no. 7).

60. <4188> Fragment from the rim of a large bowl or plate. Cast; colourless glass. Overhanging rim ground and cut with egg and dart motifs. The underside of the rim is decorated with oval facets. Late 1st century. [158–60]. Fig 38.

61. <1668a> Fragment from the rim of a large plate or bowl. Cast; colourless glass. Ground and polished overhanging rim. Late 1st century. [Burial 13]. Fig 38.

62. <2096> Fragment from the rim of a large plate or bowl. Cast; colourless glass. Ground and polished overhanging rim. Late 1st century. [217]. Fig 38.

63–70. The following fragments come from the bodies of an indeterminate number of cast, ground and polished plates or bowls:

- 63. <1237a> [216]
- 64. <1406a> [161]
- 65. <1285a> [216]
- 66. <1346> [161]
- 67. <1558c> [216]
- 68. [216]
- 69. <1764a> [Burial 13]
- 70. <2333b> [206]

Nos 60–62 come from cast and ground and polished bowls of the highest quality in metal, form and technique, which occur most frequently in dated contexts from the late Flavian to the Hadrianic periods (Grose 1991, 15). Nos 63–70, all body fragments, probably come from similar bowls.

The overhanging edge on a wide rim is a distinctive feature of such vessels and only a small number are decorated in the manner of No. 60 with egg and dart motifs on the lip edge and facet cut with circles or ovals on the rim and/or body. Perhaps the best example of such a vessel comes from the Cave of Letters, Israel (Yadin 1963, fig 40—from a site abandoned in AD 132–4). Others, such as No. 40 come

from Cosa, Italy (Grose 1991, fig 4), Fishbourne, Great Britain (Harden and Price 1971, 336, nos 33–4, pl 26) and fragments from a fine example come from Hibernia Wharf, Southwark (HIB79 unpublished [21] <203> and [31] <223>).

Plain examples are widespread (see Harden and Price 1971, 331 for examples from Belgium and Portugal; Grose 1991 for a recent study of these vessels. Grose cites numerous examples from Egypt, Germany, Great Britain, Hungary, Italy, Spain, Sudan, Syria and Tunisia). When this class of vessel was first recognised as a separate type by Harden (1936, 50) few examples were then known outside Egypt and so an Alexandrian place of manufacture was proposed. The body of evidence now suggests that the production of these vessels need not be restricted to the eastern Mediterranean, but could equally be the products of western glasshouses (*eg* in Spain and Italy). Price (1987a, 79–80) suggests, quite reasonably, that they may be the products of peripatetic glassworkers.

71. <1623a> Fragment from the rim and side of a conical beaker (Isings Form 21). Free-blown; colourless glass. Rim ground and polished into a triangular section with an angular rib below. Another, similar rib is below this giving a plain ground band between. Below this second rib is another plain ground band above a zone of deep wheel-cut oval facets. Late 1st century. [216]. Fig 38.

72. <2158> Fragment from the lower part of the side of a conical beaker (Isings form 21). Free-blown, ground and polished; colourless glass. Decorated above a plain ground band with a frieze of large, oval facets. Late 1st century. [205].

73–75. Other fragments from the bodies of conical, facet-cut beakers (Isings form 21) come from the following. All are colourless glass:

- 73. <1339> [208]
- 74. <1426> [206]
- 75. <1766b> [203]

These good quality, colourless truncated conical beakers (Nos 71–75), decorated with wheel-cut facets, can be regarded as the companions of the wide plates with overhanging rims described above (Nos 60–70). They first appear in late Neronian or early Flavian contexts throughout Britain.

Oliver's recent study of such late-1st century cut beakers (Oliver 1984) divides these vessels into two specific groups, both groups with squat and tall varieties. The two groups are distinguished by the presence (Group 1) or absence (Group 2) of ground ridges above and below the facet-cut zone. This is a purely typological division since no difference in date or distribution appears to exist between the two groups. However, for the sake of completeness here, No. 71 can be assigned to Oliver's Group 2 and No. 72 to his Group 1.

76. <2328a> Fragment from the lower part and the stem of a chalice, goblet or flask (*carchesium*—Isings form 36, goblet Isings form 86 or flask Isings form 93). Applied solid stem with a separate applied blown foot. Lip of foot missing. Late 1st to early 2nd century or late 2nd to 3rd century. [216]. Fig 38.

This is a very small fragment from a stemmed drinking vessel or flask about which very little can be said with any certainty. In a colourless metal the form is more likely to belong to the later Roman period than the earlier. Later examples were often decorated with applied snake-thread decoration, a feature of the glasshouses in the Cologne region.

77. <2532b> Eleven fragments from the rim and side of a small conical beaker. Free-blown; colourless glass. Simple, rounded ground rim with a plain ground band below. Below this is a band of diagonally orientated wheel-cut grooves. Late 1st or 2nd century. [171]. Fig 38.

78-79. <1700>; <2404a> Two fragments from the bodies of indented beakers (Isings forms 32/35). Free-blown; colourless glass. Late 1st or 2nd century. [71]; 216].

Two fragments were recorded from beakers decorated with indentations in the sides (Nos 80-81). Such vessels are known with simple pushed-in bases (Isings form 32) or with tubular base rings (Isings form 35; see Nos 82 and 87-90). Indented beakers in colourless metals first appear in the Mediterranean region during the Flavian period but spread to the north-west provinces during the late 1st century and occur throughout the 2nd century. A well-dated pit group containing three indented beakers was found at Felmongers, Harlow dated to *c.* AD 160-170 (Price 1987b, 191-2, fig 2, nos 15-17).

80. <1509f> Fragment from the base of a beaker of unknown shape (Probably Isings Form 34 or 35). Free-blown; colourless glass. Base pushed-in to form a hollow-tubular base-ring. Late 1st or 2nd century. [216].

81. <4012> Fragment from the outplayed rim of a beaker or jar. Free-blown; colourless glass. Fire-rounded rim. Late 1st to 3rd century. [194].

82. <1117b> Fragment from the rim and part of the side of a small cup with walls sloping inwards towards the rim. Free-blown; thin colourless glass. Rim slightly outplayed, cracked-off and ground smooth. The lip is decorated with a single horizontal wheel-cut line. Late 1st or 2nd century. [208-10]. Fig 38.

83. <1509a> Fragment from the rim and side of a small cup with walls sloping inwards towards the rim. Free-blown; thin colourless glass. The rim has been slightly outplayed, cracked-off and ground smooth. The junction of the lip and body is decorated with two horizontal wheel-cut lines. Another band of three wheel-cut lines appears further down the body. 2nd century. [216]. Fig 39.

Nos 82-3 come from thin-walled drinking vessels. Their sides are almost straight-sided, tapering slightly inwards towards an outplayed and cracked-off rim, and are decorated with groups of fine horizontal wheel-cut lines. Unfortunately the fragments are too small for the complete profiles to be reconstructed but they would appear to match a category of biconical and carinated cup of the 2nd century. As more assemblages of the 2nd century receive proper examination such vessels are showing themselves to be important components of the repertoires of, especially, the third quarter of the 2nd century. Well dated

parallels can be found in the pit at Felmongers, Harlow (Price 1987b, fig 2, nos 8-13) and in a cellar at the Ditches villa (Shepherd (b) forthcoming) backfilled during the third quarter of the 2nd century (Steve Trew, pers comm). Others, among many, are known from Lullingstone (Cool & Price 1987, 111, nos 331-332); Park Street, Towcester (Price 1980, fig 14, no. 4) and The Grove site, Boreham, Essex (Shepherd (c) forthcoming).

No. 84 below is in a similar metal to these two fragments and is decorated and finished in the same manner. The fragment is small but the profile would appear to be more rounded than Nos 82 and 83; almost hemispherical. It is most probable, however, that it belongs to the same general category as these.

84. <1509a> Two fragments from the rim and side of a cup with walls sloping outwards towards the rim. Free-blown; thin colourless glass. Rim outplayed, cracked-off and ground smooth. Junction of lip and body decorated with two wheel-cut lines. Two bands of wheel-cut grooves, one of three and the other of two grooves, decorate the body. 2nd century. [216]. Fig 39.

85-88. Pushed-in base-rings, from vessels such as the indented beakers or the cups described above:

85. <1240> [217]

86. <1393> [161]

87. <1285b> [216]

88. <1675a> [216]

89. <1732a> Two fragments from the rim and side of a cylindrical cup (Isings form 85b). Free-blown; colourless glass. Rim thickened, fire-rounded and sloping slightly inwards. Late 2nd or 3rd century. [194]. Fig 39.

90. <1732a> Small fragment from a cylindrical cup as above (Isings form 85b) but from a different vessel. Late 2nd or 3rd century. [194].

91. <2372> A fragment from the rim and side of a cylindrical cup (Isings form 85b). Free-blown; colourless glass. Rim thickened, fire-rounded and sloping slightly inwards. Late 2nd or 3rd century. [216]. Fig 39.

92. <2328c> Two fragments from the rim and side of a cylindrical cup (Isings form 85b). Free-blown; colourless glass. Rim thickened, fire-rounded and sloping slightly inwards. Late 2nd or 3rd century. [216]. Fig 39.

93-103. Rim fragments from cylindrical cups (Isings form 85b) similar to those catalogued above. All are colourless except for No. 93 which is natural blue:

93. <854> [211-5]

94. <1183> [217]

95. <1693> [194]

96. [194]

97. <2079> [217]

98. <4157> [217]

99. <4173> [217]

100. <4176> [216]

101. <2326a> [216]

102. <4183> [141]

103. <2398> [216]

104. <2892> The base of a cylindrical cup (Isings form 85b). Free-blown; colourless glass. Hollow-tubular base-ring with an applied central ring of glass. Late 2nd or 3rd century. [73]. Fig 39.

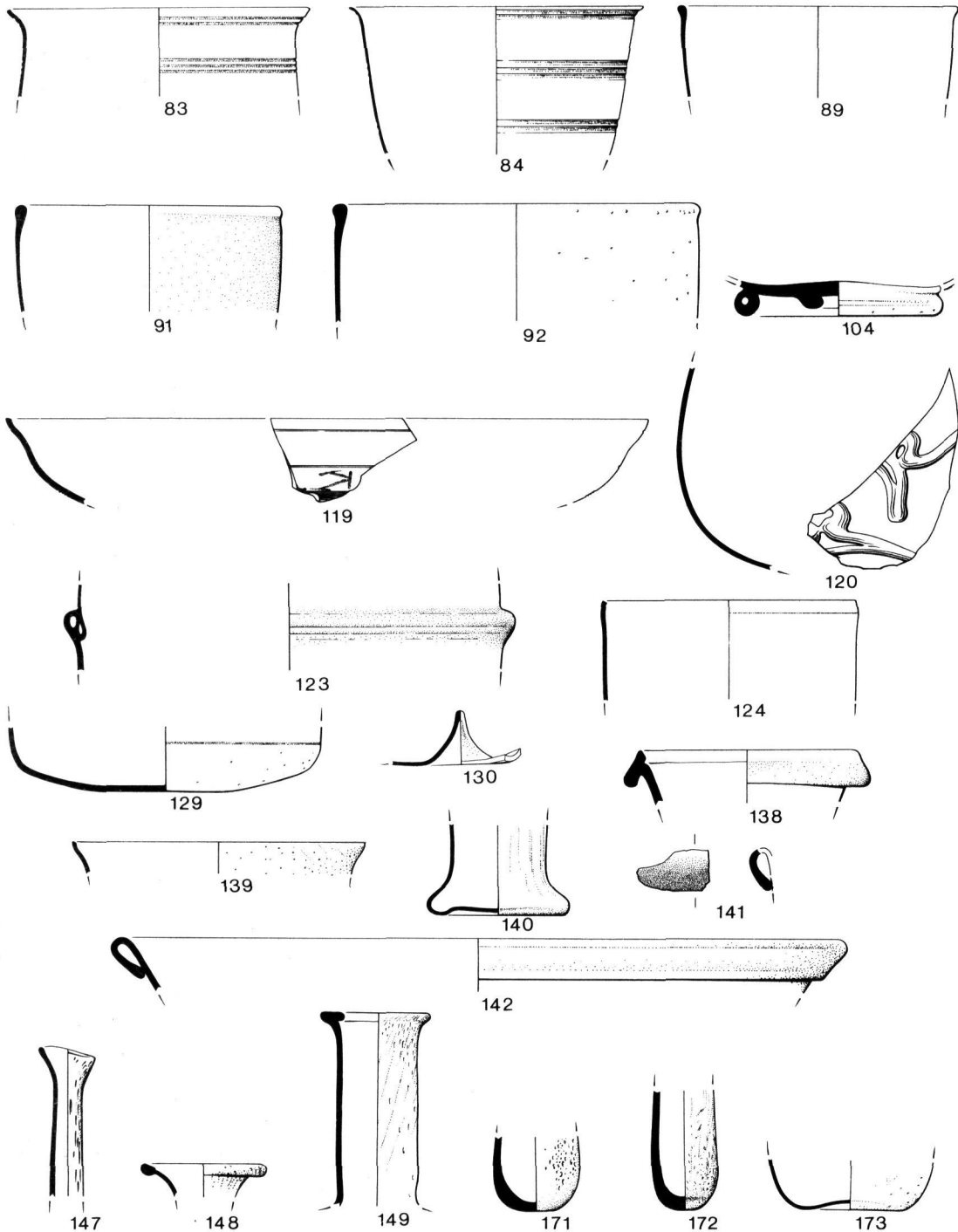


Fig 39. Glass objects, Nos 83-173 (1:2).

105-110. Base fragments similar to the above from cylindrical cups (Isings form 85b). All are colourless:

- 105. <1183a> [207]
- 106. <2144a> [217]

- 107. <2104> [217]
- 108. <2169> [217]
- 109. <2263b> [217]
- 110. <2328b> [216]

Nos 89–110 come from a type of distinctive cylindrical cup or bowl of the late 2nd and early 3rd centuries known as the 'Airlie' type bowl (Charlesworth 1959, 44–6, pl 1, 4). This type of vessel with thickened, fire-rounded and slightly sloping inwards rim, cylindrical body and a low base with a smaller, applied concentric ring in the centre of the base, is very common in the north-west provinces. The earliest example of such a cup in Britain comes from the pit at Felmongers referred to above (Price 1987b, 192, fig 2, 19), *ie* c. AD 160–170. After that date they become very common indeed. During the middle of the 3rd century, they appear to be replaced in popularity as drinking vessels by those squat, bulbous cups discussed above in connection with the two pruned fragments (Nos 111–112).

111. <931> Small fragment from the side of a cup. Free-blown; colourless glass. Decorated with applied prunts of the same metal of which just one survives. 3rd century. [216].

112. <2073> Small fragment from the side of a cup. Free-blown; colourless glass. Decorated with applied prunts of the same metal of which just two survive. 3rd-century. [217].

These two fragments come from small hemispherical drinking vessels typical of the 3rd century (Cool 1990, 170, fig 1, 2–4). Cool cites a number of such vessels as coming from Brougham, Cumbria. These were deposited as grave goods in a cemetery between AD 220/230 to 270/280.

113–117. The following fragments come from the bodies of an indeterminate number of bag-shaped beakers (Isings form 96) decorated with wheel-cut facets and lines. Late 2nd or 3rd century.

113. <1558a> [216]

114. <2231a> [216]

115. <4177> [206]

116. <2292> [216]

117. <2622a> [Burial 7]

118. <2274a> A small fragment from the body of a hemispherical cup or bowl. Free-blown; colourless glass. Decorated with a wheel-cut design consisting of a long facet alongside a circular facet. Small wheel-cut lines radiate from the top and bottom of the long facet. 3rd century. [Burial 1].

Nos 113–118, all very fragmentary, come from bag-shaped beakers decorated with all-over wheel-cut patterns consisting, in the main, of oval or circular facets separated by vertical and diagonal motifs ('wheat-sheaf' motifs). These vessels, variants of Isings form 96, are common in the 3rd-century Rhineland (*eg* Fremersdorf 1967, *taf.* 54–63) and are well known on Romano-British sites of that date. A group of seven, fragmentary vessels was found in a cellar (Building XIV, 5) at Verulamium, deposited during the late 3rd or very early 4th century (Charlesworth 1972, 208–210, fig 78, nos 48–53).

Two almost complete vessels were found in King William St, London in 1926 (MoL Acc. Nos A28278 and A28279). Both, unfortunately, come from unstratified contexts (London Museum 1930, 121–2, fig 42, nos 1 and 2).

119. <467> Fragment from the rim and part of the side of a bowl (Isings form 110). Free-blown; colourless glass. Rim outplayed and cracked-off. Body decorated with a legend of which only a retrograde K and a serif of a possible letter A remain (RIB 2419.57). Late 3rd or 4th century. [208]. Fig 39.

The form of this vessel belongs to the late 3rd or 4th century. Numerous examples, in poorer quality metals than this (*eg* natural greens), are known throughout the Empire. However, the presence of the engraved letters (possibly the Greek word *kai*) might suggest that the good quality of this particular vessel was not accidental but was intended to act as a suitable medium to carry a cut decoration. Engraved vessels of this sort, with figured scenes and an accompanying salutary legend, of the late 3rd and 4th centuries are well known, probably on account of their decoration and legends. A recent summary of such decorated vessels can be found in Harden 1987, 179–188. See also the bowls from Wint Hill, Avon (RIB.2419–45 and Harden 1960, 53–4, figs 10, 15, 30 and pl 254) and Chilgrove, West Sussex (RIB 2419.65, and Down 1979, 163, no. 7, fig 56). [208].

120. <1285> Fragment from the side of a hemispherical bowl (Isings form 96). Free-blown; colourless glass with a slight green tint. Body decorated with applied and marvered trail in the same metal laid in a gadroon design. Late 3rd or 4th century. [216]. Fig 39.

Although the application of self-coloured trails pinched into gadroons and diamond patterns was one of the most common decorative techniques during the late-medieval and post-medieval periods (*eg* 'nipped diamond waives'—a pinched zig zag pattern), it was not extensively employed during the Roman period.

No. 120, in a colourless glass with a greenish tint, appears to come from the lower part of a bulbous-bodied vessel, perhaps a bag-shaped beaker similar to Isings form 96 or a flask. Vessels decorated in a similar manner, although with variations in the actual design, and dating to the late 3rd or 4th century come from Frocester Court (Price 1979, 42–3, nos 18–19), Cirencester (Shepherd 1986a, 121, no. 654), Shakenoak (Harden 1973, 100 no. 196 and Harden 1973, nos 204–6) which, from a bowl or flask found in a late 4th century context, are decorated with trails tooled into loops at intervals which compares well with the example from 15–23 Southwark Street). Price (1979, 43) cites complete vessels from graves or pits, *eg* a jug from a well at Verulamium.

121. <622> Fragment from the neck of a small phial or flask of indeterminate form. Colourless glass. Late 1st or 2nd century. [211–5].

122. <1732a> Numerous fragments from the base, side, rim and neck of a flask (variant of Isings form 98). Free-blown; colourless glass with a faint green tint. Flared rim, fire-rounded and folded inwards. Neck decorated with a spiral trail of the same metal. Body decorated with four deep vertical indentations producing an almost square section. Simple pushed-in base with pontil scar. 3rd century. [194].

This flask or jug (no handle was noticed) decorated with four indentations on the body dates to the 3rd century. A similar example but with six indentations is known from rue de Rennes et de Vangirard, Paris in the Musée Carnavalet (Landes 1983, 47, no. 26, pl IX). This came from a 3rd-century grave. A squat example comes from Trier (Goethert-Polaschek 1977, 122, no. 669).

Naturally coloured glass

This section, by far the largest, contains all free-blown vessels and simple mould-blown forms (including optic-blown, ribbed vessels) such as prismatic bottles and ribbed jugs and jars. It also contains the few fragments of monochrome free-blown glass from the site which could be positively identified by form (Nos 180–182, 197 and 202).

123. <1873a> A small fragment from the side of a *cantharus* (Isings form 38) or one-handled cup (Isings Form 37). Free-blown; natural blue glass. Body reinforced with a figure-of-eight fold. Mid to late 1st century. [23]. Fig 39.

124. <1335d> Small fragment from the rim and part of the side of a small hemispherical cup (Isings form 12). Free-blown; natural greenish-blue glass. Rim ground smooth. Body decorated with a single wheel-cut groove just below the lip. Mid 1st century. [161]. Fig 39.

125–128. Similar fragments from other cups (Isings form 12) in natural greenish-blue glass:

125. rim [74]

126. <1884c> body [71]

127. <1929a> body [37–48]

128. <2520a> [171]

129. <2607/2608/2609/2610/2611/2612/2613> Seven fragments from the base of a beaker or hemispherical cup (probably Isings form 12). Free-blown; natural green glass. Plain, flat base. Body decorated with horizontal wheel-cut lines of which just one is extant. Late 1st century. [174]. Fig 39.

130. <1704b> Fragment from the base of a small hemispherical cup (Isings form 12). Free-blown; natural blue glass. Base simply pushed in to form a very high point. Mid 1st century. [71]. Fig 39.

No. 123 comes from an elaborately made, probably stemmed, drinking vessel of the mid to late 1st century AD (eg a *cantharus*). These vessels directly copied metal and ceramic prototypes including handle, base and decorative details such as the horizontal body rib on this fragment.

The simple hemispherical shape of Nos 124–130 (Isings form 12) was used by craftsmen working in a variety of materials throughout the Roman period. This particular form of glass cup, a squat hemispherical profile with a cracked-off rim, and decorated with horizontal wheel-cut lines or grooves on a flat base or with a high pointed kick, is a type which is particularly common during the middle of the 1st century AD up to the late Neronian and early Flavian period, but which does not appear to have been made in quantity thereafter. They are generally known as ‘Hofheim’

cups or bowls after the 30 examples found in the Claudian fort there (Ritterling 1913, 365f, fig 93, nos 2 & 4, pl xxxviii).

They are common features of Romano-British assemblages which date up to the early Flavian period. For instance, they appear in Claudian and Neronian levels at Camulodunum (Harden 1947, 302f, nos 68f, pl lxxxviii) and Period I levels at Fishbourne (AD 43–75) (Harden & Price 1971, 344–346, nos 46–51). They are also known in Pre-Flavian contexts at Vindonissa (Berger 1960, 43–5, nos 98f, pl 7).

They were made in both monochrome and naturally coloured metals. Where known, the monochrome vessels tend to be earlier (eg Tiberian-Claudian). Naturally coloured vessels were made alongside these but the absence here of any monochrome ‘Hofheim’ cups might suggest that the cups from 15–23 Southwark Street were reaching the site when there were no or few monochrome vessels in circulation.

131. <1413b> Fragment from the lower part of an indented beaker (Isings form 32). Free-blown; natural greenish blue glass. Late 1st or 2nd century. [161].

The simple indented beaker with a plain pushed-in base (Isings form 32) is most common from the late 1st century onwards and is well-known in Londinium (eg Leadenhall Court, nos 129–131 in Shepherd (a) forthcoming).

132–133. <1523>; <1623b> Two fire-rounded rims from beakers or jars of indeterminate form. Both are natural greenish-blue glass. [216].

134–137. The following are fragments from the pushed-in bases of beakers of indeterminate form. The bases have hollow tubular base-rings. All are natural greenish-blue glass:

134. <355> [211]

135. <1558e> [216]

136. <1936a> [24]

137. <2390> [Burial 1]

138. <1752> Fragment from the rim of a beaker or jar. Free-blown; natural greenish-blue glass. Rim folded inwards and folded out into an upright position. Late 1st or 2nd century. [22]. Fig 39.

139. <2103> Fragment from the rim and part of the side of a beaker or bowl (Isings form 96/110). Free-blown; natural green glass. Rim outplayed, knocked-off and left rough. Late 3rd or 4th century. [217]. Fig 39.

Fragments 132–139 come from a range of bowls and beakers which cannot be precisely identified. No. 139, in a natural green metal common in the late Roman period, is finished with a simple knocked-off and slightly outplayed rim. Such vessels are common in late-Roman assemblages throughout the Empire (see for instance Bath, Shepherd 1985, 163 where further parallels are given).

The narrow rim fragment, No. 138, probably comes from a jar (Isings form 68; see also No. 216 and a possible jar base No. 173). These vessels, used as cosmetic or pharmaceutical containers, were common from the Flavian period onwards until the end of the

2nd century. Parallels are numerous with complete London examples coming from a cremation dated c. AD 120–150 at West Tenter Street (Whytehead 1986, fig 38.4) and an early 2nd-century inhumation at Mansell Street (unpublished, MST87, [199] <67> Shepherd forthcoming e).

140. <2536> The base of a small beaker or, more probably, a small ovoid flask (Isings form 72). Free-blown; natural greenish-blue glass. Plain, slightly pushed-in base. The lower part of the body of this vessel has been constricted, giving the impression of a pedestal base. Late 1st century. [171]. Fig 39.

Vessels with bases finished in this manner are not common finds. Flasks with such bases (Isings form 72) appear to be pre-Flavian in date, coming from Claudian-Neronian deposits at Xanten, from 2nd half of the 1st century levels at Weisenau, a Claudian rubbish pit at Vindonissa and a pre-Flavian cemetery at Nijmegen (see Isings 1957, 91 for full references). Beakers with such bases are rarer and come mainly from central-European late-Roman/early-Byzantine deposits (Shepherd (d) forthcoming).

141. <2790a> Fragment from the rim of a bowl. Free-blown; natural blue glass. Rim fire-rounded and folded downwards. Mid 1st to 2nd century. [126]. Fig 39.

142. <1647a> Fragment from the rim of a bowl. Free-blown; natural green glass. Rim fire-rounded and folded downwards. Mid 1st to 2nd century. [216]. Fig 39.

Nos 141–142, come from a form of well-attested bowl with a folded lip, a rounded or slightly carinated body and a true- or folded base-ring which was standard to glass repertoires from the 1st to the 3rd century AD. Examples occur in wall-paintings at Pompeii and the Boscoreale villa (Naumann-Steckner 1991, 87f). An example has been found in a Saxon Grave at Highdown in Sussex (Charlesworth 1972, 199).

143–146. Other fragments from these standard bowls:

- 143. <1272a> rim, natural greenish-blue [216]
- 144. <1253> rim, natural greenish-blue [216]
- 145. <1681> rim, natural greenish-blue [22]
- 146. <2583> rim, natural greenish-blue [121]

147. <1413d> The rim and neck of a small unguentarium (Isings form 8). Free-blown; natural greenish-blue glass. Rim simply fire-rounded and outplayed. Late 1st or 2nd century. [161]. Fig 39.

148. <2488> The rim of a small flask or unguentarium. Free-blown; natural green glass. Rim folded inwards and folded out. Late 1st or 2nd century. [154]. Fig 39.

149. <1723a> The rim and neck of a large unguentarium. Free-blown; natural greenish-blue glass. Rim folded inwards and flattened. Slightly outplayed. Late 1st or 2nd century. [75]. Fig 39.

150–162. Thirteen rim fragments from phials of indeterminate form. All are natural greenish-blue glass:

- 150. <1413d> [161]
- 151. <1436> [193]
- 152. <1594> [216]
- 153. <1750c> [Burial 13]
- 154. <1830d> [74]

- 155. <2001> [20]
- 156. <2330b> [155]
- 157. <2359a> [169]
- 158. <2622c> [Burial 7]
- 159. <2631b> [Burial 7]
- 160. <4024> [128–157]
- 161. <2809> [137]
- 162. [137]

163–170. The following are fragments from the bodies of phials of indeterminate form. All are natural greenish-blue glass unless stated otherwise:

- 163. <1723a> [75]
- 164. <1435b> [216]
- 165. <1481> natural green [216]
- 166. <1509d> [216]
- 167. <1813c> natural blue [161]
- 168. <1647d> [216]
- 169. <1966b> [19–20]
- 170. <2670a> [128]

171. <1715b> The base of a small unguentarium (Isings form 8). Free-blown; natural-green glass. Simple, thickened and rounded base. Late 1st or 2nd century. [75]. Fig 39.

172. <1685> The base of a small unguentarium (Isings form 8). Free-blown; natural greenish-blue glass. Simple, thickened and rounded base. Late 1st or 2nd century. [194]. Fig 39.

Small phials for holding cosmetics or pharmaceuticals are well represented at 15–23 Southwark Street. The majority are very small fragments, so it is not always possible to be precise about the original form. A few examples of the simple round-bottomed variety with a slight constriction between the body and the neck can be identified (Isings form 8—Nos 147 and 171–172). These vessels, one of the simplest of blown forms, are very numerous during the 1st and 2nd centuries AD.

173. <2827> Fragment from the base of a small jar (Isings form 68) or bulbous-bodied unguentarium. Free-blown; natural greenish-blue glass. Simple pushed-in base. Late 1st or 2nd century. [128]. Fig 39.

174. <1978> Fragment from the dolphin-like handle of an oil-flask (*aryballos*—Isings form 61). Free-blown; natural greenish-blue glass. Late 1st or 2nd century. [24].

175–179. Fragments from the bodies of oil-flasks (*aryballos*—Isings form 61):

- 175. [216]
- 176. <1435> [216]
- 177. <1578a> [161]
- 178. <1945> [216]
- 179. <4205> [26–32]

These bulbous-bodied flasks, with two small dolphin-like loops for a metal or fibre handle (Isings form 61, Nos 174–179), were designed specifically for the carrying of bathing oils around the bath-house. The vessels first appear during the second half of the 1st century, none coming from pre-Flavian deposits at Camulodunum. They are, however, present at Pompeii. Their production continued during the 2nd century and into the 3rd. Plain examples, such as those found at 15–23 Southwark Street, were made throughout this long period, whereas decorated examples, with

trails or cut decoration, belong to the later period of production.

Similar plain examples are numerous from London (Smithfield MoL acc No. 2259; Southwark MoL acc No. A16055) and elsewhere *eg* Fishbourne (Harden & Price 1971, 356–7, no. 82, fig 141), Caerleon (Allen 1986, 105, nos 32–42), Trier (Goethert-Polaschek 1977, 227–230, nos 1363–1380), Paris (Landes 1983, 83, no. 1111, pl xxii) and Heddernheim (Welker 1974, 30–35, nos 30–52a, figs 3–4 with further references to examples from Vindonissa, Remagen and Xanten).

180. <1955b> Fragment from the neck and part of the body of a bulbous-bodied jug (Isings form 52). Free-blown; brown glass. Late 1st or early-2nd century. [41].

181. <1920> Fragment from the neck of a jug (Isings form 52/55). Free-blown; blue glass. [71].

182. <1934a> Fragment from the neck and part of the body of a conical-bodied jug (Isings form 55). Free-blown; blue glass. [19–20].

183. <2454> The handle from a jug (Isings form 52 or 55). Applied and drawn; natural greenish-blue glass. Face of handle decorated with five vertical ribs. Late 1st or early 2nd century. [168]. Fig 40.

184. <1802> Part of the handle and body of a conical-bodied jug (Isings form 55). Free-blown body with an applied handle; natural blue glass. Face of handle decorated with a single rib which extends onto the conical body of the vessel as a drawn out ridged spur. Late 1st or early 2nd century. [74]. Fig 40.

185. <2762> The handle from a small bulbous-bodied jug (Isings form 14 or 52a). Free-blown with an applied handle; natural blue glass. Plain strap handle with a broad lower sticking-part. Late 1st or early 2nd century. [138]. Fig 40.

186. <1675b> The pinched spur of a jug (Isings form 52/55). Applied to a free-blown vessel; natural blue glass. Late 1st or early 2nd century. [216].

187. <1558d> The pinched spur from a conical-bodied jug (Isings form 55). Applied to a free-blown vessel; natural greenish-blue glass. Late 1st or early 2nd century. [216].

188–192. Fragments from the strap handles of jugs (Isings form 52/55). All are natural greenish-blue glass:

188. <1509e> [216]

189. <1518b> [216]

190. <1526> [216]

191. [19–20]

192. <2569a> [175]

193–195. Fragments from the necks of jugs in natural greenish-blue glass (Isings form 52/55):

193. <674> [208–10]

194. <2489> [154]

195. <4137> [128]

196. <1704d> Fragment from the base of a jug (Isings form 52 or 55) or jar (Isings form 67c). Free-blown; brown glass. Pushed-in and cut-out base-ring. Late 1st or early 2nd century. [71]. Fig 40.

197. <2584> Fragment from the base of a jug (Isings form 52 or 55) or jar (Isings form 67c). Free-blown; brown glass. Pushed-in and cut-out base-ring. Late 1st or early 2nd century. [121].

198–199. <755a>; <2805b> Two fragments from the bodies of conical-bodied jugs (Isings form 55). Free-blown; natural greenish-blue glass. [M]; [115].

200. <1647c> Fragment from the body of a conical-bodied jug (Isings form 55). Mould-blown and re-inflated; natural green glass. Decorated with vertical ribs. [216].

201–202. Two fragments from the bodies of conical-bodied jugs (Isings form 55). Mould-blown and re-inflated. Decorated with low relief spiral ribbing. Late 1st or early 2nd century.

201. <1625> natural greenish-blue glass. [216].

202. <1607h> brown glass. [216].

203. <1521> Fragment from the base of a jug (Isings form 52 or 55) or jar (Isings form 67c). Free-blown; natural greenish-blue glass. Pushed-in and cut-out base-ring. Late 1st or early 2nd century. [216]. Fig 40.

204–207. Base fragments similar to those catalogued above:

204. <1752a> natural greenish blue glass [22]

205. <1687a> natural greenish-blue glass [71]

206. <2523> natural green glass [160]

207. <4074> natural greenish blue glass [114]

208. <1522> Fragment from the rim of a jar (possibly square-sectioned but more likely globular Isings form 67c). Free-blown; natural green glass. Lip folded inwards to form a thin tubular rim which has then been folded outwards to form a high flattened tubular rim. Late 1st or early 2nd century. [216]. Fig 40.

209. <1704f> Fragment from the rim of a square-sectioned (Isings form 62) or globular (Isings form 67c) jar. Free-blown; natural greenish-blue glass. Rim fire-rounded and outplayed to form a high flattened tubular rim. Late-1st or early-2nd century. [71]. Fig 40.

210–215. Fragments from the rims of globular-bodied jars (Isings 67c):

210. <1530> natural green glass [216]

211. <1558b> [216]

212. <4175> natural greenish-blue glass [216]

213. <2334a> natural greenish-blue glass [Burial 2]

214. <2334b> natural greenish-blue glass [Burial 2]

215. <2763a> [158–60]

216. <1676> A fragment from the rim of a small jar (Isings form 68). Free-blown; natural greenish-blue glass. Rim folded in and flattened outwards. Late 1st or 2nd century. [Burial 13]. Fig 40.

Fragments Nos 180–215 come from a range of bulbous-bodied jugs or flagons and jars (Isings forms 52 and 67c) and conical jugs (Isings form 55) decorated with optic blown vertical or spiral ribbing. These vessels are particular to the glass repertoires of the late 1st century and early 2nd century north of the Alps. Indeed, their profusion in the north-west provinces suggests that they were products of the glasshouses in those regions. Their place of manufacture is generally placed in the Seine/Rhine region but recent excavations at Guildhall Yard, in the City of London, revealed a 60 kilo dump of cullet and manufacturing waste. The latter included a number of distorted and failed fragments from the production of globular optic-blown vessels including, at least, the jar form Isings 67c. Future research will determine whether the flagon

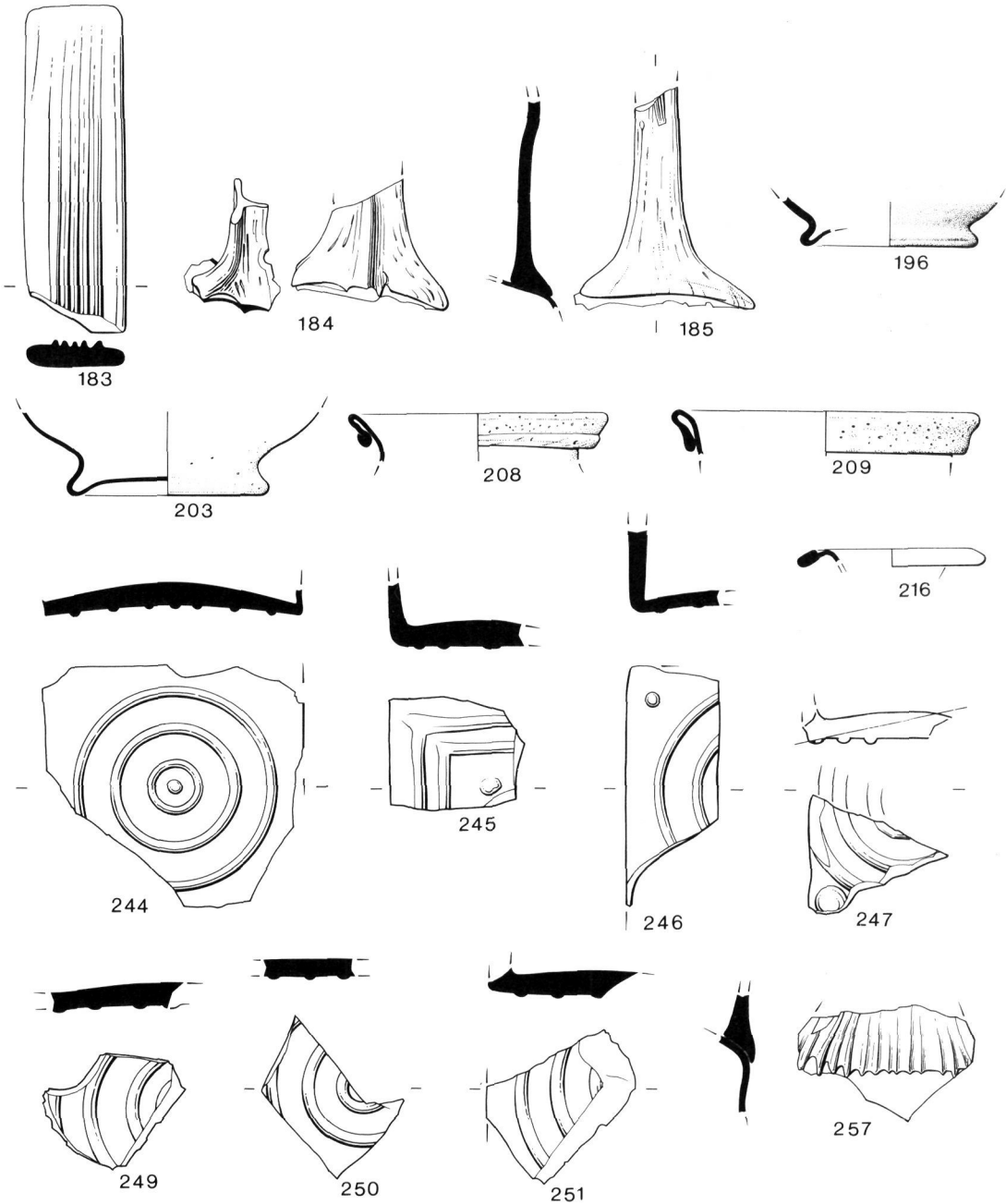


Fig 40. Glass objects, Nos 183-257 (1:2).

forms were also products of this London glasshouse, but the two forms are so closely related technically that it is safe to assume that a glassblower with the skill to produce one shape could easily produce the other.

Unlike the majority of the narrow-necked vessels from 15-23 Southwark Street, such as storage bottles

and phials, these vessels, and in particular the jugs, would have been used in dining and reception rooms. The common natural colour of many of these vessels by no means affected their attractiveness. However, some monochrome fragments from such jugs and jars are included here (Nos 180-182, 196-7, 202). These brown and blue metals are more typical of the mid to

late 1st century but they continued to be used for jugs and jars into the early 2nd century. It is probable that such vessels were the more luxurious of their class.

The jar form Isings 67c was fashioned with a thick collar rim, a finish shared with a square-sectioned prismatic jar form (Isings 62) also of the late 1st and early 2nd century. Two fragments here (Nos 208–209), being thick walled, are probably from the prismatic form but in the absence of any surviving portion of the body it is difficult to be certain. The bodies and bases of such mould-blown square shapes are quite indistinguishable from the more common square-sectioned prismatic bottle (Isings form 50. see below Nos 244–268).

217. <1625f> Fragment from the base of a cylindrical bottle (Isings form 51). Free-blown; natural greenish-blue glass. Pushed-in base. Late 1st or early 2nd century. [216].

218–230. Thirteen fragments of natural blue glass from the bodies of cylindrical bottles (Isings form 51). Late 1st or early 2nd century.

218. <1871> [71]

219–220. <1134> (x2) [207]

221–223. <1253A> [216]; <-> [216]; <1335E> [161]

224. <1852> [216]

225–228. <2714C> [160]; <2714C> [160]; <2714D> [160]; <2792C> [126]

229–230. <2783> (x2) [127]

231–241. Eleven fragments of natural greenish-blue glass from the bodies of cylindrical bottles (Isings form 51). Late 1st or early 2nd century.

231. <1131> [216]

232–233. <1261> [216]; <1371> [161]

234–235. <1648B> [21]; <1642> [22]

236. <1685> [71]

237–239. <1970a> x3 [42]

240–241. <4028> (x2) [112]

242. <2074> Fragment of natural greenish-blue glass from the body of a mould-blown hexagonal-sectioned bottle (variant of Isings form 50). Late 1st or early 2nd century. [271].

243. <1648A> A fragment of natural blue glass from the body of a mould-blown hexagonal-sectioned bottle. Late 1st or early 2nd century. [21].

244. <1132> The base of a square-sectioned bottle (Isings form 50). Mould-blown; natural blue glass. Base decorated with a high relief design consisting of three concentric circles. Late 1st or 2nd century. [216]. Fig 40.

245. <1525> Fragment from the base of a square-sectioned bottle (Isings form 50). Mould-blown; natural greenish-blue glass. Base decorated with a high relief design consisting of two concentric squares with a central cross. Late 1st or 2nd century. [216]. Fig 40.

246. <2507> Fragment from the base of a square-sectioned bottle (Isings form 50). Mould-blown; natural blue glass. Base decorated with a high relief design of which only parts of two concentric circles and a round pellet in one corner are extant. Late 1st or 2nd century. [Burial 9]. Fig 40.

247. <2259a> Fragment from the base of a square-sectioned bottle (Isings form 50). Mould-blown; natural greenish-blue glass. Base decorated with a high relief design of which only

parts of three concentric circles and a round pellet in one corner are extant. Late 1st or 2nd century. [Burial 5]. Fig 40.

248. <1750a> Fragment from the base of a square-sectioned bottle (Isings form 50). Mould-blown; natural blue glass. Base decorated with a high relief design of which three concentric circles, poorly defined, are extant. Late 1st or 2nd century. [Burial 13].

249. <1553b> Fragment from the base of a square-sectioned bottle (Isings form 50). Mould-blown; natural greenish blue glass. Base decorated with a high relief design of which four concentric circles are extant. Late 1st or 2nd century. [216]. Fig 40.

250. <1641> Fragment from the base of a square-sectioned bottle (Isings form 50). Mould-blown; natural greenish blue glass. Base decorated with a high relief design of which three concentric circles are extant. Late 1st or 2nd century. [190]. Fig 40.

251. <1607a> Fragment from the base of a square-sectioned bottle (Isings form 50). Mould-blown; natural greenish blue glass. Base decorated with a high relief design of which three concentric circles are extant. Late 1st or 2nd century. [216]. Fig 40.

252. <1193> Fragment from the base of a square-sectioned bottle (Isings form 50). Mould-blown; natural greenish blue glass. Base decorated with a high relief design of which one circle is extant. Late 1st or 2nd century. [211].

253. <4026> Fragment from the base of a square-sectioned bottle (Isings form 50). Mould-blown; natural greenish blue glass. Base decorated with a high relief design of which one circle is extant. Late 1st or 2nd century. [128].

254–256. Three fragments from the bases of square-sectioned bottles (Isings form 50). Mould-blown; natural greenish-blue glass. All are small fragments and have no design visible. Late 1st or 2nd century.

254. <596> [208–10]

255–256. <632> [208]; <662> [208]

257. <2647> Fragment from the handle and part of the side of a square-sectioned bottle (Isings form 50). Mould-blown with an applied handle; natural blue glass. Handle combed. Late 1st or 2nd century. [128]. Fig 40.

258–259. Two fragments from the handles of square-sectioned bottles (Isings form 50). Both are natural greenish-blue glass and combed. Late 1st or 2nd century.

258. <1184> [Burial 11]

259. <1272> [216]

260–313. Fifty-four fragments from the bodies of mould-blown, square-sectioned bottles (Isings form 50). Natural greenish-blue glass. Late 1st or 2nd century.

260–263. <495> [211–5]; <528> [211–5]; <?> [216]; <1031> [216]

264–265. <952> (x2) [342]

266–269. <970> [162]; <?> (x2) [216]; <1044> [208]

270–273. <1051a> [207]; <1070> [216]; <1073> [188]; <1078> [207]

274–278. <1253B> [216]; <1277> [193]; <1400C> [161]; <1459> [161]; <1285E> [216]

279–281. <1715A> (x2) [75]; <1346B> [161]

282–291. <1509G> <1509H> <1509I> <1509J> [216]; <1766D> (x2) [203]; <1558F> [216]; <1648C>

[216]; <1633B> (x2) [216]

292–296. <1755> <1787> (x2) [22]; <1754C> (x2) [216]

297. <1875A> [216]
 298. <1896> [216]
 299-305. <1936B> [24]; <1934C> [19-20]; <1947> [21]; <1966C> <1966D> <1952C> [19-20]; <1955> [33-4]
 306. <2219B> [6]
 307. <2181> [217]
 308-309. <2168> <2168D> [216]
 310. <?> [141]
 311. <2514> [156]
 312. <?> [128] 313. <2797a> [127]

314-359. Forty-six fragments from the bodies of mould-blown, square-sectioned bottles (Isings form 50). Natural blue glass. Late 1st or 2nd century.

- 314-315. <117A> [208-10]; <537> [208]
 316. <634> [208]
 317. <726> [36]
 318. <1097> [216]
 319-325. <1537D> <1237C> <1249A> [216]; <1637B> <1413E> [161]; <1321> [208]; <1320> [188-9]
 326-327. <1720A> [75]; <1548A> [161]
 328-337. <1504A> <1518D> (x2) [216]; <?> [203]; <1573> [216]; <1625A> [?]; <1795B> [19-20]; <1623C> [216]; <1668C> [Burial 13]
 338-339. <?> [22]; <1819B> [203]
 340-348. <1836> [77]; <1875B> <1899A> [216]; <1873B> [23]; <1867B> <1867C> [71]; <1881> (x3) [216]
 349-350. <1905> [40]; <1922> [216]
 351. <1960> [41]
 352. <2219C> [6]
 353. <2139> [217]
 354-355. <2226A> [216]; <2301A> [Burial 1]
 356. <4138> [118]
 357-358. <2772A> [128]; <2729B> [138]
 359. <1937> [23]

360-368. Nine fragments from the bodies of mould-blown, square-sectioned bottles (Isings form 50). Natural green glass. Late 1st or 2nd century.

- 360-362. <1091> (x3) [216]
 363. <?> [216]
 364-365. <1607F> (x2) [216]
 366. <1781B> [203]
 367. <2140> [163-87]
 368. <4196> [152]

369-378. Ten fragments from the rims of square-sectioned (Isings form 50) or cylindrical (Isings form 50) bottles. All are natural greenish blue glass. The lips have been folded inwards and flattened down. Late 1st or 2nd century.

369. <850> [211-5]
 370. <1406b> [161]
 371-373. <1430> [216]; <1490> [209]
 374-376. <1766a> [203]; <1558h> [216]; <1813b> [161]
 377. [24]
 378. <4213> [128]

379-385. Seven fragments from the necks of square-sectioned (Isings form 50) or cylindrical (Isings form 51) bottles. All are natural greenish-blue glass. Late 1st or 2nd century.

379. <1537b> [216]
 380. <1345> [190]
 381-385. <1539> [216]; <1566> [203]; <1594c> [216]; <1608> <1647e>

386-393. Eight fragments from the handles of square-sectioned (Isings form 50) or cylindrical (Isings form 51) bottles. All are natural greenish-blue glass and are combed. Late 1st or 2nd century.

386. <928> [216]
 387. <1335b> [161]
 388-390. <1723b> [75]; <1382> [161]; <1553d> [216]
 391. <1648> [21]
 392-393. <4187> [153]; <2797b> [127]

394. <4193> A fragment of natural green glass from the body of either a square-sectioned (Isings form 50) or a cylindrical (Isings form 51) bottle. Late 1st or 2nd century. [128].

395-402. Eight fragments of natural blue glass from the body of either square-sectioned (Isings form 50) or cylindrical (Isings form 51) bottles. Late 1st or 2nd century.

395. <1380A> [161-2]
 396-398. <1654B> (x2) [216]; <1668D> [Burial 13]
 399-400. <1793> (x2) [74]
 401. <2525> [171]
 402. <2744> [128-57]

403-408. Six fragments of natural greenish-blue glass from the body of either square-sectioned (Isings form 50) or cylindrical (Isings form 51) bottles. Late 1st or 2nd century.

403. <1867H> [71]
 404. <-> [24]
 405. <2642> [174]
 406-408. <2921B> [113]; <4030> (x2) [128]

409. <972> Fragment from the body of a barrel-flask (Frontinus bottle—Isings form 89). Mould-blown; natural greenish-blue glass. Decorated with horizontal ribs. 2nd or 3rd century. [216].

All the most common bottle forms are, not surprisingly, well-represented at 15-23 Southwark Street: the cylindrical bottle Isings form 51 (Nos 217-241), the hexagonal-sectioned prismatic bottle (variant of Isings form 50 (Nos 242-243) and the square-sectioned prismatic bottle Isings form 50 (Nos 244-368). As mentioned above, the square-sectioned prismatic fragments probably include fragments from the associated jar form Isings 62 (see Nos 208-9 above). It is possible that rectangular-sectioned prismatic bottles (Isings form 90) are also included among this total.

These bottle forms (and the associated jar Isings form 62) were used extensively throughout the Roman Empire from the middle of the 1st century until the end of the 2nd or early 3rd century (Shepherd 1978, *passim*). The main period of their production and use in the north-west provinces was between the late 1st century and the mid 2nd. Their function was very much the same as bottles and jars today, namely in-transit and storage containers of liquid and semi-viscous comestibles, cosmetics and other concoctions. Jars from Pompeii were found to contain pulses, olives and other foodstuffs.

The cylindrical bottle is particularly common during the late 1st century and early 2nd century. These vessels, in both the squat variety (with height to width

ratio *c.* 1:1—Isings form 51a) and the tall variety (with height to width ratio greater than 1:1, reaching up to 3:1 in a few rare cases—Isings form 51b) often have vertical scratch marks on the bodies caused as they were lifted from and placed back into wicker or wooden cases. Sculptures from the Mosel and Rhine region show such wicker cases in dining-room scenes. It is probable that they not only helped to protect the vessel and its contents but perhaps hid this bulk container from view.

The square bottle also appears in similar scenes and, together with the cylindrical and hexagonal form, appears in depictions of funeral feasts from the Rhine. In the latter, the bottles sit on the floor full, no doubt, of wine ready to replenish the finer drinking vessels seen on adjacent three-legged tables. A square bottle on a funerary monument from Igel, encased in a wooden box with small feet, has the handle of a wine ladle or syphon protruding from the neck.

The square-sectioned prismatic bottle is perhaps one of the most common glass vessels in the north-west provinces. It is no exaggeration to note that any site with a glass assemblage of the late 1st to mid 2nd century—the period when these bottles were particularly prolific—is certain to have at least one fragment of such a vessel. Indeed, their frequency can probably be likened to the English wine bottle of the mid 17th century to early 19th century. The hexagonal bottle, on the other hand, had a lifetime closer to that of the cylindrical form. It is most unlikely that they were being produced in any great quantity after the first quarter of the 2nd century (Shepherd 1982, 227–228).

The general design of these bottle forms displays considerable thought and preparation. The bottles were produced in a range of sizes related, perhaps, to standard measures. The smallest stand *c.* 60mm high with an exterior body volume of *c.* 50.25cc (unpub, Nimes, Acc no. 904.5.49), the largest 350mm high with an exterior body volume of 7612.5cc, comes from Rouen (Sennequier 1985, 1229, no. 215). Note that it has not been possible to calculate the interior volumes for the majority of these vessels. The exterior volume measurement naturally includes the volume of the glass body but, as a guide to the range of sizes, it is an adequate guide). The base width to body height ratio varies between 1:1 to 2:1 for the box-like form, and is 3:1 or more for the elongated box form.

The solid form, with robust handles and rims, ensured that they provided a stout package for their contents. The handles were attached so that they would not extend above the maximum height of the finished vessel or beyond its maximum width, thus preventing it from clashing with others placed on top or alongside. Furthermore, the most common square shape enabled vessels to be easily crated together. A large storage case in the House of Menander, Pompeii, had four square bottles and three cylindrical bottles neatly packed into it. A small wooden box with four

square vessels, two bottles and two jars, was found at Fayum, Egypt (British Museum).

The prismatic forms were also marked with a pattern on the bases. These designs, imparted during the mould-blowing process, are most commonly concentric circles, as with Nos 244–253. Additional elements such as corner or central pellets were added. The example with two concentric squares and a central cross is rare (No. 245). This is the only example of such a design amongst *c.* 2,500 individual examples known to the author. The complete design with three concentric circles and a central dot (Shepherd 1978, 14, type III.3) has a number of parallel types from the western provinces including one from New Fresh Wharf (Shepherd 1986b, 209, 6.1). Because these vessels were made in moulds it is possible to mould-link examples. Unfortunately, even with a large number of parallel types, in particular with concentric circle designs, mould-linking is difficult. This is made all the more so with fragmentary examples where the full design is not known.

This problem, however, only serves to show just how numerous such vessels were in antiquity. A mould could be used for many hundreds of vessels and yet, even with many hundreds of examples still in existence, finding mould-linked examples is still not easy.

The function of these designs is not certain. Their addition as strengtheners to the bases can readily be discounted as the bases are an integral part of the vessel. It is probable that the circles, an elaborate design for a square-sectioned vessel, were at first cut into the bases of the moulds to prolong their lives. A ball of hot glass hitting a flat wooden surface would cause concentric scorch rings which, after subsequent blowings, would eventually crack and cause hollows and pitting. The cutting of circles would concentrate these heat stresses around the grooves and thus prolong the life of the mould. It is probable that the opportunity was then taken to elaborate upon these concentric circle designs, resulting in the large range of geometric and personalised patterns and legends. Who commissioned and owned these designs is not certain. However, it can be suggested that as trademarks they were very obscure and likely to be uninterpretable by the layman. It is probable, therefore, that they were eventually used as identifying marks for those engaged in their bottling, stopping and transporting. It is tempting to suggest that they could be used as multi-trip containers in much the same way as more recent glass beer, soft-drink and milk bottles. The more elaborate marks, especially the personalised ones, were therefore the means by which the purveyor of the bottles was able to re-identify his or her stock.

Finally, there was a single fragment from a barrel-like flask or bottle (No. 409). These vessels, almost certainly the products of the late 2nd and 3rd century glasshouses in the Seine/Somme/Rhine region may have replaced many of the square vessels in function. Their mould-blown forms imitated wooden barrels

with hoops around the upper and lower parts of the body. They too have base designs, often concentric circles but with names such as *Frontinus* and *Felix* and other abbreviations of names with *FEC* or *FECIT*. Once again, whether this alludes to the bottle itself or the contents cannot be positively stated. These bottles were not very common in Britain although a great many examples have been found in northern France and Germany. Among the few from Britain are complete examples from a 2nd-century grave in the cemetery at Mansell Street, London (Barber *et al* 1990, 9, pl iva), *Faversham, Kent and Colchester, Essex*. A few small fragments are known from large towns such as London, Canterbury, Colchester, Silchester and Wroxeter.

Miscellaneous glass

In addition to the 409 stratified diagnostic Roman fragments recorded above, there are 856 fragments (Nos 410–1265) of Roman date which cannot be assigned to any particular form. These are in all metals.

In addition, 134 fragments (Nos 1266–1399) of matt/glossy window glass (the cast variety) were recorded. This variety of glass was used throughout the Roman period. It is interesting to note that no fragments of the so-called double glossy variety of window glass (cylinder blown) were recorded. This type of window glass is more common during the later Roman period.

Five small opaque blue *tesserae* (Nos 1400–1404) and ten playing counters (Nos 1405–1414), three opaque blue, six opaque white and one natural greenish-blue, were also recorded.

Glass from post-Roman contexts

The following four fragments, all from post-Roman contexts, have been included here because of their rarity in London assemblages.

a) <918> Part of a small, originally three-legged, circular table or coaster. Cast; colourless glass. The lip of the horizontal table has been ground and polished, a single wheel-cut groove runs around the edge. One leg, ground from an applied rod of colourless glass, survives. It has been cut into a rudimentary bow-shaped foot. Third quarter of the 1st century. [PM]. Fig 41.

This coaster fragment is exceptional. It comes from a small circular stand with three small legs carved to look like stylised animal legs in imitation of real-sized tables. It must have functioned in much the same way as coasters or centre-plates do today, namely for placing under drinking vessels or serving dishes. Metal examples are well known (see for instance examples from *Pompeii* in Royal Academy 1976, nos 320–321, both circular, in silver). Glass examples are not common. Circular colourless glass stands come from *Pompeii* (unpub, Naples Museum). A rectangular

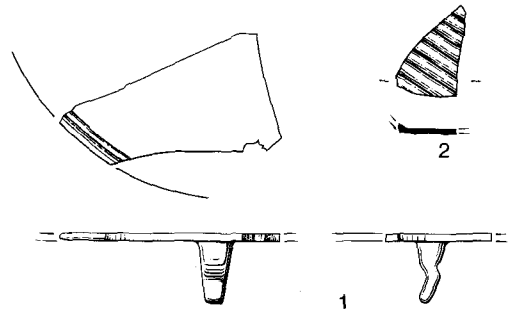


Fig 41. Glass objects (miscellaneous) Nos a) and d) (1:2).

example comes from Rome, in the Corning Museum. Almost colourless in metal, it measures 103 × 69mm and stands just 25 to 28mm high (Goldstein 1979, 152–3, no. 326, acc. no. 66.1.211). Another colourless rectangular stand with just one leg extant comes from *Nicopolis ad Istrum, Bulgaria* (Shepherd (d) forthcoming, Area K, no. 1 [4430]. This is from a 2nd century level.

A deep purple or deep blue fragment from a rectangular stand with part of one leg, the glass almost black in colour, comes from Winchester Palace, Southwark, and another in a similar metal but from a different stand comes from the adjacent *Hibernia Wharf* site (unpub Museum of London). These compare with a deep turquoise rectangular stand from *Herculaneum* (Scatozza-Horicht 1986, 72, no. 258). The Winchester Palace fragment is from a late 1st century context.

b) <454> Fragment from the base of a square-sectioned phial (Mercury flask—Isings form 84). Mould-blown; colourless glass. Base decorated with a single circle. Late 1st or 2nd century. [PM].

This type of mould-blown phial is well known throughout the western Empire during the late 1st and 2nd centuries but, surprisingly, it is very rare in London. Fire-distorted examples from the Mansell Street cemetery are the only examples so far recorded.

c) <468> Fragment from the dolphin-shaped handle of a small bottle or flask (Isings form 100). Free-blown; colourless glass. Late-3rd or 4th century. [PM].

d) <710a> Fragment from the side of a hexagonal-sectioned bottle (variant of Isings form 100). Mould-blown, colourless glass with a slight green tint. Body decorated with low relief diagonal ribs. Late 3rd or 4th century. [PM]. Fig 41.

Both c) and d) are some fragments from distinctive late-Roman vessel types. The bottle with small dolphin-handles (Isings form 100) and the diagonally ribbed fragment are related forms. Indeed, it is possible that they come from the same vessel. Larger parallels for the dolphin handled bottles come the Mansell Street cemetery and Billingsgate bath-house. A diagonally-ribbed vessel was also found on the latter site.

Coins*Michael Hammerson*

A total of 108 Roman coins were recovered during the excavations. A summary and detailed catalogue are given below.

Summary

Iron Age	2	Domitian	7
Roman Republic	3	Trajan	1
Roman Imperial pre-Claudian	2	Hadrian	1
Claudius I—regular	1	Antoninus Pius (incl. 1 Faustina II)	2
irregular	16	Caracalla (plated copy)	1
Nero	9	Elagabalus (probably) & Julia Soaemias	2
Nero, overstruck by Vitellius	1	Severus Alexander, Julia Mamaea & Orbiana	3
Vespasian	12	Gordian III	1
Titus	2	Gallienus	2
		Claudius II	1
		Postumus	1
		Illegible, c. 250–270	1
		Tetricus I/II	3
		Irregular Radiates	13
		Carausius	1
		Allectus	2
		Uncertain 1–3C	1
		House of Constantine, AD 310–320	1
		House of Constantine, AD 330–335	2
		Irregular House of Constantine, c. 340–6	5
		House of Constantine, 347–8	1
		Irregular House of Constantine, c. 347–50	3
		Irregular Constantius II, c. 355–365	4
		House of Theodosius	1
		Uncertain, later 3rd–4th C	2

Catalogue

The Iron Age coins were identified by Dr Daphne Nash (Ashmolean Museum) and Dr Andrew Burnett (British Museum).

Abbreviations: BMC₁ *British Museum Catalogue*; LRB₁ and 2 *Carson et al 1965*; RIC *Roman Imperial Coinage* (Mattingley et al 1923); Syd *Sydenham 1952*.

Den. *denarius*; Sest. *sestertius*; dp. *dupondius*; ant. *antoninianus*.

State of Wear (shown in parentheses): A *unworn*; B *slight wear*; C 'normal' wear; D *fairly heavy wear*; E *heavy wear*. ? *uncertain/ corroded*.

	Context	Identification	Date
1.	9	Greek bronze coin, probably of Massilia, 10mm. Obv., Head, 1, M[; rev., dolphin 1, [?][S]. (Saussaye 1842, no. 407) Pl 21 Weight 1.77gm.(B)	1st C BC
2.	PM	Possibly an Armorican Billon stater; obv., head r; rev. illegible. Very corroded (?)	1st C BC
3.	115	Republic den., v corroded; rev. prob. in biga/quadrigea.	Type of c. 110–75 BC
4.	u/s	Mark Antony, den., legionary issue, cf Syd. c. 35–30 1215 ff.(E)	BC
5.	u/s	Mark Antony, den., legionary issue, cf Syd. c. 35–30 1215 ff.(E)	BC
6.	89	Augustus, quadrans, RIC 180 (C)	c. 9–8 BC
7.	34	Caligula, AE dp., NERO ET DRVSVS CAESARES, RIC 43 (C)	37–41
8.	B 1	Claudius I, quadrans, RIC 72 (B)	41–54
9.	71	Irregular Claudius I, AE 23 × 21mm, rev. Minerva, Grade II copy as RIC 66 (?D)	c. 45–65
10.	71	Irregular Claudius I, AE 27mm, rev. Minerva, Grade II copy as RIC 66 (?B)	c. 45–65
11.	71	Irregular Claudius I, AE 26mm, rev. Minerva, Grade III copy as RIC 66 (?D)	c. 45–65
12.	73	Irregular Claudius I, AE 27 × 26mm, rev. Minerva, Grade II copy as RIC 66 (D)	c. 45–65
13.	23	Irregular Claudius I, AE 26 × 24mm, rev. Minerva, Grade III copy as RIC 66 (B)	c. 45–65
14.	74	Irregular Claudius I, AE 25.5mm, rev. Minerva, Grade II copy as RIC 66 (B)	c. 45–65
15.	117	Irregular Claudius I, AE 25.5 × 22.5mm, rev. LIBERTAS, Grade II copy as RIC 69 (B)	c. 45–65
16.	161–162	Irregular Claudius I, AE 25mm, rev., Minerva, Grade II copy as RIC 66 (C)	c. 45–65
17.	203	Irregular Claudius I, AE 24mm, rev. Minerva, Grade II copy as RIC 66 (D)	c. 45–65

	Context	Identification	Date
18.	PM	Irregular Claudius I, AE 24mm, rev. CONSTANTIAE, Grade II copy as RIC 68 (C)	c. 45–65
19.	22	Irregular Claudius I, AE 29 × 24mm, rev. ?Constantiae, Grade III copy as ?RIC 68	c. 45–65
20.	22	Irregular Claudius I, AE 23mm, rev. Minerva, Grade II copy of RIC 66 (C)	c. 45–65
21.	u/s	Irregular Claudius I, AE 26mm, rev. CONSTANTIAE, Grade II copy as RIC 68 (C)	c. 45–65
22.	u/s	Irregular Claudius I, AE 23mm, rev. Minerva, Grade III copy as RIC 66 (?C)	c. 45–65
23.	161	Irregular Claudius I, AE 22mm, rev. Minerva, unc. grade copy as RIC 66 (?C)	c. 45–65
24.	PM	Irregular Antonia, AE 26 × 24mm, Copy as RIC 82 (C)	c. 45–65
25.	PM	Nero, semis, as RIC 383 ff (C)	60–65
26.	156	Nero, as, rev. Victory, RIC 319 (C)	64–68
27.	123	Nero, as, rev. Victory, RIC 321 (B)	64–68
28.	113	Nero, as, rev. Victory, RIC 329 (B)	64–68
29.	u/s	Nero, dp., rev. SECVRITAS, as RIC 289ff, but legend variation. See MacDowall 1979, 529 (D)	67
30.	38	Nero, dp., rev. VICTORIA AVGVSTI, RIC 304 (A)	64–68
31.	PM	Nero, as, rev. Victory, RIC 329 (?C)	64–68
32.	161–2	Nero, as, rev. Apollo, RIC 364 (C)	64–68
33.	71	Nero, as, rev. Apollo, RIC 364 (A)	64–68
34.	u/s	Nero, sest., rev. Triumphal Arch, RIC 157. (B) but overstruck in 69 by Vitellius with ligatured letters VTE. The late Dr. Colin Kraay (pers comm) remarked that, to his knowledge, there were only four other examples of this countermark: from Verulamium, on a similar coin; an unprovenanced coin in the Ashmolean Museum, which may be a British find as other provenanced coins in the collection are British; from the Hall collection, said to be from Lincoln (rev. DECVRSTIO); and the specimen quoted in BMCI, p 37 (rev. ROMA). Dr Kraay's records showed no finds from the Rhine, and therefore all provenanced finds appear to be British. Presumably, therefore, struck in Britain for troops loyal to Vitellius during the Civil War of AD 69. Pl 21.	64–68
35.	161	Vespasian, dp., rev. PAX AVG, RIC 475 (B)	71
36.	u/s	Vespasian, dp., rev. PAX AVG, RIC 475 (B)	71
37.	u/s	Vespasian, as, rev. PROVIDENT, RIC 494 (B)	71
38.	105	Vespasian, as, rev. eagle, RIC 497 (C)	71
39.	158–160	Vespasian, as, rev. SECVRITAS, RIC 500 (C)	71
40.	112	Vespasian, as, rev. SECVRITAS, RICV 500 (C)	71
41.	u/s	Vespasian, as, rev. eagle, as RIC 497. (?)	71–72
42.	128	Vespasian, dp., rev. PAX, RIC 740 (B)	72–73
43.	126	Vespasian, as, rev. eagle, RIC 747 (C)	72–73
44.	216	Vespasian, dp., rev. AEQVITAS, RIC 58 (C)	76
45.	109	Titus, sest., rev. JVDAEA CAPTA (C) Legend variety not in RIC. There is an unpublished parallel in the British Museum (acc.no. 1935/4–4-7) from the Roach Smith Collection. One example occurred in the Garonne (France) hoard of over 4,000 sesterii.	77–78
46.	161	Vespasian or Titus, as, rev. AEQVITAS (C)	70–79
47.	u/s	Vespasian, as, rev. unc. (?)	69–79
48.	211–215	Vespasian, deified under Titus, den., RIC (Titus) 59a (?C)	80–81
49.	22	Domitian, as, rev. FIDES PVBLICAE, RIC 298 ff (C)	85–89
50.	128	Domitian, as, rev. IOVI CONSERVAT, RIC 269 (B)	85
51.	216	Domitian, as, rev. MONETA AVGVSTI, RIC 301b (C)	85
52.	u/s	Domitian, as, rev. MONETA AVGVSTI, RIC 335 (A)	86
53.	217	Domitian, as, rev. MONETA AVGVSTI, RIC 335 (C)	86
54.	153	Domitian, den., rev. Minerva, RIC 148 (C)	90
55.	148	Domitian, as, rev. unc. (?B)	81–96
56.	PM	Trajan, as, rev. Pietas, RIC 392 (A)	98–99
57.	216	Hadrian, den., rev. unc. (?)	c. 120

	Context	Identification	Date
58.	u/s	Antoninus Pius, as, rev. BRITANNIA, RIC 934 (C)	154–5
59.	163–187	Faustina II, sest., rev. VENVS, RIC (Antoninus Pius) 1388b (D)	c.145–60
60.	183	Caracalla, silver plated bronze copy of den., rev. VICT PART MAX, RIC 168a (C)	206–10
61.	M	Julia Soaemias, den., rev. VENVS CAELESTIS, RIC (Elagabalus) 241 (B)	214–18
62.	u/s	(probably) Elagabalus, silver plated bronze copy of den., rev. unc. (C)	219–22
63.	u/s	Julia Mamaea, den., rev. VESTA, RIC (Severus Alexander) 360 (C)	222–35
64.	204	Severus Alexander, silver plated bronze copy den., rev. Pax, RIC 27 (A)	223
65.	211–215	Orbiana, den., rev. CONCORDIA AVGG, RIC (Severus Alexander) 319 (?C)	c. 225
66.	217	Gordian III, den., rev. DIANA LVCIFERA, Summer RIC 127 (C)	241
67.	216	Gallienus, ant., rev. VIRTVS AVGG, as RIC 181 ff (B)	253–8
68.	216	Salonina, ant., rev. PVDICITIA, RIC (Gallienus Sole Reign) 24 (C)	259–68
69.	PM	Claudius II, ant., rev. unc.(?)	268–70
70.	B8	Postumus, ant., rev. PAX AVG, RIC 219a (B)	259–68
71.	PM	Illegible ant. (?)	c. 250–70
72.	PM	Tetricus I, ant., hybrid rev. Tetricus II, PRINC IVVENT, RIC ... Possibly cast copy. (?C)	270–73
73.	208	Tetricus I, ant., unc. rev., possibly cast copy (B)	270–73
74.	PM	Tetricus II, ant., rev. PIETAS AVGG, RIC 254ff, possibly irregular (C)	270–73
75.	217	Irregular, Victorinus, AE 17mm, rev. Pax, copy of RIC 55 (B) Pl 21.	c. 270–85
76.	u/s	Irregular, Victorinus, AE 20mm, rev. Spes, copy of RIC 73 (C) Pl 21	c. 270–85
77.	217	Irregular, Tetricus I, AE 15.5mm, rev. poss. Hilaritas, copy as RIC 79? (A) Pl 21	c. 270–85
78.	216	Irregular, Tetricus I, AE 13mm, rev. Pax, copy of RIC 102 (B) Pl 21	c. 270–85
79.	217	Irregular Gallic Empire, AE 13mm, rev. Pietas, copy as RIC (Victorinus) 57 or (Tetricus I) 109 (B)	c. 270–85
80.	u/s	Irregular ant., AE 17.5mm (?)	c. 270–85
81.	PM	Irregular Gallic Empire, AE 15mm (C)	c. 270–85
82.	217	Irregular Gallic Empire, AE 14mm (D)	c. 270–85
83.	217	Irregular Gallic empire, AE 7mm	c. 270–85
84.	217	Irregular ant., possibly altar type of Claudius II, AE 14mm + (?)	c. 270–85
85.	PM	Irregular ant., AE 14mm, (C)	c. 270–85
86.	207	Irregular ant., AE 13.5mm (?)	c. 270–85
87.	u/s	Irregular ant., AE 11mm (B)	c. 270–85
88.	217	Carausius, ant., rev. PAX AVG, RIC 98 ff (C)	287–90
89.	207	Allectus, 'quinarius', rev. VIRTVS AVGG, RIC 55 (B)	293–96
90.	B13	Allectus, 'quinarius', rev. prob. VIRTVS AVGG, as RIC 55 (?B)	293–96
91.	PM	Illegible, broken bronze coin, either plated copy of 1–3C den. or late 3rd C ant.	1–3C
92.	206	Constantine I, follis, rev. SOLI INVICTO COMITI, Lyons mint (C?)	c. 315
93.	216	Constantinopolis, AE3, LRB1 59 (A)	330–35
94.	PM	Constantine I, AE3, rev. GLORIA EXERCITVS (two standards), LRB1 60 (B)	330–35
95.	206	Constantinopolis, AE3, LRB1 51, AD 330–5, clipped down to 7mm (C)	c. 340–6
96.	u/s	Irregular Constantinopolis, AE 12.5mm, copy of LRB1 185 (B)	c. 340–6
97.	PM	Urbs Roma, cast copy of LRB1 58, 7mm (C)	c. 340–6
98.	u/s	Irregular Constans, AE 15.5mm, rev. GLORIA EXERCITVS (1 standard), copy of LRB1 133 (B)	c. 340–6
99.	PM	Irregular Theodora, AE 16mm, rev. PIETAS ROMANA, copy as LRB 1...(?B)	c. 340–6

	Context	Identification	Date
100.	211-215	Constans, AE3, rev. VICTORIAEDDAVGGQNN, poss. cast copy, LRB1 142a (?B)	347-8
101.	PM	Irregular Constans, AE 14.5mm, rev. VICTORIAE DD DDNNAVGGQNN, copy as LRB1.137 (C)	c. 347-50
102.	PM	Irregular Constantius II, AE 18mm, rev. FEL TEMP REPARATIO (Phoenix), copy as LRB2 32 (?B)	c. 350-5
103.	217	Irregular Constantius II, AE 16mm, rev. FEL TEMP REPARATIO (Fallen horseman), copy as LRB2 72 (B)	c. 355-65
104.	PM	Irregular Constantius II, AE 11.5mm, rev. FEL TEMP REPARATIO (Fallen horseman), copy as LRB2 72 (?C)	c. 355-65
105.	PM	Irregular Constantius II, AE 11mm, prob. type of Fallen horseman, copy as LRB2 72 (B)	c. 355-65
106.	209	House of Theodosius, AE4, rev. unc. (B)	388-402
107.	217	unc. irregular later Roman, AE 13mm. Cut in half in antiquity. (?)	c. 270-365
108.	B2	unc. irregular later Roman, AE 12mm. (?)	c. 270 365

Coins from north Southwark

Altogether 962 Roman coins have been recovered so far from excavations in and around north Southwark; these can be summarised as follows:

Iron Age	5	
Roman Pre-Claudian	22	(6 irregular)
Claudian	143	(132 irregular)
Nero & Vitellius	61	(5 irregular)
Vespasian & Titus	78	(1 irregular)
Domitian	36	(1 irregular)
Nerva/Trajan	20	(1 irregular)
Hadrian	24	(2 irregular)
Antoninus Pius	23	(3 irregular)
Marcus Aurelius	7	(1 irregular)
Commodus	1	
Severan	15	(6 irregular)
Caracalla to Severus		
Alexander	23	(9 irregular)
235-253	8	(1 irregular)
253-273 regular issues	82	
c. 270-285	120	(120 irregular)
Carausius & Allectus	26	
296-310	4	(1 irregular)
310-320	11	
320-330	19	
330-341	27	
341-348	84	(63 irregular)
348-364	55	(49 irregular)
364-378	46	(7 irregular)
378-388	1	
388-402	21	
	<u>962</u>	

The 108 Roman coins from 15-23 Southwark Street therefore represent 12% of all those excavated in north Southwark at the time of writing. It represents the largest group of coins from a single site so far excavated in the locality. Other sites within the area from which large numbers of coins (over 40) have been excavated, and with which comparisons may be drawn, are:

Courage Brewery sites (104); Winchester Palace (86); Bermondsey Abbey (81); 4-26 St Thomas' Street (77); Arcadia Buildings, Great Dover Street (58); 201-211 Borough High Street (43); Chaucer House, Tabard Street (43); 199 Borough High Street (41).

Together, these nine sites have produced 641 (67%) of the 962 Roman coins excavated on 51 sites in north Southwark. The coins from these sites are shown as percentages on the histogram chart (Fig 42); all are from the main Roman settlement, with the exception of Chaucer House and Arcadia Buildings situated some 450m to the south and Bermondsey Abbey, over 1km to the south-east.

The individual histogram bars relate to commonly-used numismatic divisions, either reigns or periods, which best reflect the occupation of a site according to the coin find evidence, rather than the site phases. These are:

- 1 Pre-conquest
- 2 AD 41-54 Claudian
- 3 54-69 Neronian & Civil Wars
- 4 69-81 Vespasian/Titus
- 5 81-96 Domitian
- 6 96-118 Nerva/Trajan
- 7 118-138 Hadrian
- 8 138-161 Early Antonine
- 9 161-192 Late Antonine
- 10 192-213 Severan
- 11 213-235 Caracalla—Severus Alexander
- 12 235-253
- 13 253-273 (Regular issues only)
- 14 c. 270-285 (Irregular issues)
- 15 286-293 Carausius/Allectus
- 16 296-310 Tetrarchy
- 17 310-320 Constantinian
- 18 320-330 Constantinian
- 19 330-341 Constantinian
- 20 341-350, (including irregular issues) Constantinian
- 21 350-364, (including irregular issues) Constantinian
- 22 364-378 Valentinianic
- 23 378-388 Theodosian (i)
- 24 388-402 Theodosian (ii)



Plate 21. Coins. Top row: Irregular copy Victorinus AD 270–285 (No. 75); Nero, overstruck by Vitellius AD 64–8 (No. 34); Gaulish (Massilia) 1st century BC (No. 1); Middle row: Irregular copy Tetricus I AD 270–85 (No. 78); Irregular copy Tetricus I AD 270–85 (No. 77); Irregular copy Victorinus AD 270–80s (No. 76); Bottom row: Irregular copy Constantius AD 355–365 (No. 103); Irregular copy Victorinus or Tetricus I AD 270–285 (No. 79)

The coins from Roman Southwark were first studied in Hammerson 1978 (587–600). This was based on a total of 256 coins, and further finds, bringing the total to 802, necessitated a re-examination in Hammerson 1988 (417–426). The further increase from subsequent excavations to the above total of 962 has not materially altered the conclusions reached in Hammerson 1988, although it has even further emphasised the histogram ‘peaks’ in the Claudian copies and the coinage of c. 270–286. It has, however, increased the known numbers of Theodosian (388–402) coins to a total of 21 which, although still comprising only 2.2% of the Southwark total, indicates that there are certain sites— notably Bermondsey Abbey, beyond the main settlement—where late Roman occupation, for which there was previously little numismatic evidence, may be anticipated. The writer believes it to be significant that several of these very small, high-lead content, inconspicuous coins were found at Bermondsey Abbey, the first Southwark site at which spoil from selected late Roman contexts was carefully checked with a metal-detector. The future use of metal-detectors, or of sieving of late Roman levels, could significantly increase the recovery rate of these coins—which is very limited under rescue conditions—and enable a very different interpretation to be placed on the intensity and continuity of late Roman occupation, both in Southwark and elsewhere.

The nine individual site histograms on Fig 42 represent 66% of all Southwark coins from the nine sites producing most coins, and illustrate coin loss from sites in various areas of the Southwark settlement, as described above. Hammerson (1988, 417–426)

commented on the overall Southwark coin distribution and outlined the parameters within which coin-loss patterns should be studied (volume of coin production at any period; length of period being analysed; and relative values of the coins being studied) and, with those parameters in mind, some comparisons might be made with the numismatic evidence from 15–23 Southwark Street and these other major sites.

The coin histograms appear to fall into the following categories:

- (i) the main emphasis of coin loss is in the Claudian period and later 1st century, not recovering significantly thereafter (199 Borough High Street, 201–211 Borough High Street)
- (ii) a similar Claudian emphasis, the coin loss continuing, though not significantly increasing, through the Roman period (Courage Brewery sites)
- (iii) coin loss throughout the Roman period, with little real emphasis on loss in any period (Arcadia Buildings, Winchester Palace)
- (iv) as (iii), though possibly low before the 2nd century, with coin loss peaking in the mid 4th century and declining thereafter (Chaucer House)
- (v) coin loss minimal before the 2nd century, and low after the later 3rd century (4–26 St Thomas Street)
- (vi) little evidence of coin loss before the mid 3rd century, and coin evidence suggesting continuing occupation until the end of the Roman period (Bermondsey Abbey).

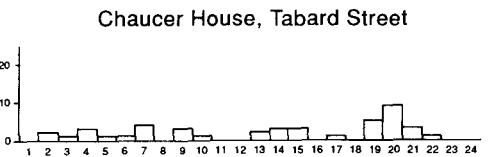
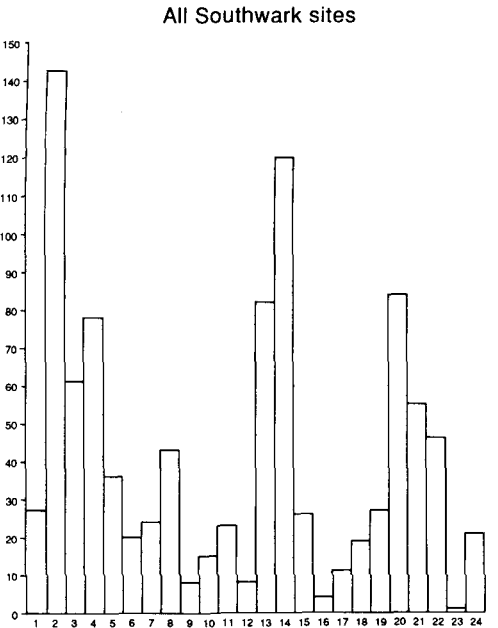
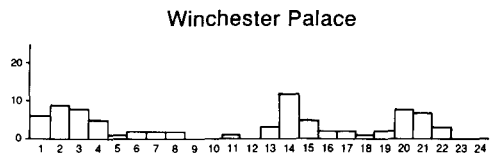
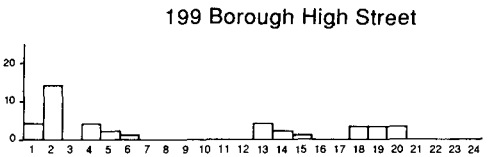
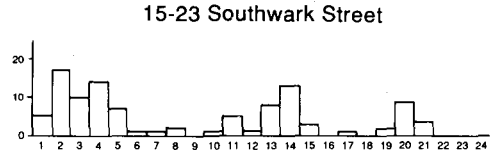
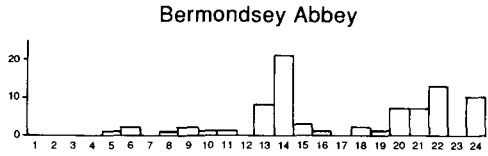
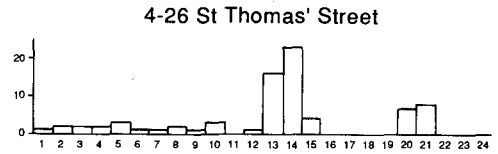
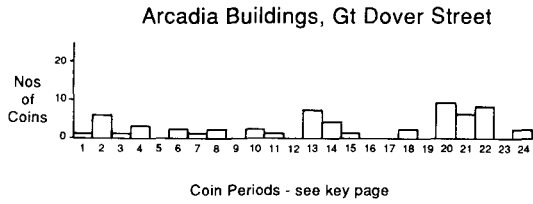


Fig 42. Coins: from nine sites in north Southwark.

Table 6. Coins: losses by date

2 = Pre-Claudian; 3-6 = c. AD 43-85; 7-9 = Late 1st-early 2nd C AD; 10-11 = 2nd C AD; 12 = Wall Robbing, later Roman; 13 = Late Roman burials; 14 = Dark earth deposits.

Coins	Pre-Claudian	AD 43-85	Late 1st/ early 2nd	2nd C	12	13	14
Pre-Claudian	1	1	2				
Claudian		9	1	4		1	
Neronian		4	2	2			
Vesp/Titus		1	4	4	1		
Domitian		2		3			1
Trajan							
Hadrian					1		
Antonine				1			
193-253				1	2		1
253-296					1		
296-330					1		
330-341				1	1		
341-350					1		
350-365							1
388-402					1		

The coin-loss pattern from 15-23 Southwark Street seems most closely to resemble group (iii), showing elements of both Winchester Palace and Arcadia Buildings. There is quite high coin-loss throughout the 1st century (post-AD 43). The presence of numbers of irregular Claudian coins suggests, as discussed in Hammerson 1978 and 1988, an early military presence in the locality, and the excavation of several items of Roman military equipment suggests that this presence may have been on the site itself, whilst Flavian coin-loss might be linked to the construction and 1st-century use of the early Flavian building—Building 4.

Second-century coin loss at 15-23 Southwark Street is low in comparison with several of the other major sites, suggesting a *prima facie* decline in activity which is, however, not supported by the ceramic and structural evidence. This may, therefore, be related to the nature, rather than the intensity, of use of the site at that time—perhaps an area to which there was no necessity to bring coins, or surfaces of a type on which it would be difficult to lose coins irrecoverably. Reece (1971, 274) suggests a similar explanation for the low numbers of coins at Fishbourne during a period shown by other evidence to be one of considerable activity.

Although the coin loss for the 3rd century is to some extent 'normal', in showing a 270s-280s peak commonly seen on most Romano-British sites, two factors may be noted: first, there is an unusually high percentage of coins from period 11 (AD 213-235) Caracalla—Severus Alexander based albeit on a relatively small number of coins, and secondly, the periods 13-14 'peak' (253-273 and c. 270-285), whilst present, is based on a relatively low number of coins, lower, in fact than the period 2 (AD 41-54 Claudian) peak and indicating a relatively low level of coin loss at a time when coin circulation was generally extremely high. This situation is repeated for the 4th century; the histogram profile here echoes a commonly-found

coin-loss pattern, peaking in the 340s and declining thereafter. However, the absolute numbers are, again, low. The coin-loss patterns for the later 3rd and 4th centuries therefore present a problem of reconciling a standard relative pattern with very low real figures. It may be that the site, whilst itself subjected to a low intensity of use, was close to others within the settlement where occupation was more intensive. It may, however, also reflect the partial survival of 3rd-4th-century stratigraphy, in which the overall coin-loss pattern survives but where, owing to the loss of deposits from these periods, the true numbers lost are no longer represented on the site.

A closer look may be taken at the significance of the coin losses in an attempt to obtain a better interpretation of the information they present. Firstly, Table 6 shows the coins from 15-23 Southwark Street according to the date of the deposits from which they were recovered.

Table 7 shows the state of wear, when ascertainable, of 1st-century coins from 15-23 Southwark Street.

Table 6 (coin losses, by site date bracket), shows that 17 (30%) of the 1st-century coins were lost during the period c. AD 43-85, a further 10 (18%) during the later 1st-early 2nd century AD, and another 13 (23%) during the remainder of the 2nd century. This suggests that there was consistent coin use and loss throughout the 1st (post-conquest) and 2nd centuries. Bronze

Table 7. Coins: state of wear of 1st-century coins

Coins	A	B	C	D	E
Claudius I		5	8	4	
Nero	2	2	4	1	
Vespasian/Titus		4	6		
Domitian	1	2	4		

coins of the 1st and 2nd centuries are known to have circulated together until at least the end of the 2nd century, possibly into the mid-3rd century, and therefore the scarcity of 2nd-century *issues* at 15–23 Southwark Street is as likely to be a reflection of the relative scarcity of those issues as of any ‘decline’ in the intensity of occupation on the site. Although 2nd century issues do seem to be conspicuous by their almost total absence from 15–23 Southwark Street, reference to the histograms on table 1 shows that they are present in Southwark. The proportions in which they are present are typical of a high proportion of sites in Britain and may reflect localised reasons for loss patterns on an individual site—such as those postulated above rather than conditions within the Southwark settlement generally.

The apparent continuation in circulation, through the later 1st and 2nd centuries, of the irregular coinage of Claudius I, is however of interest. These issues are considered to have circulated mainly during the period AD 43–65 as a supplementary coinage, when official bronze coinage was not being produced. Although it is accepted that some may have remained in use through the later years of the 1st century, the occurrence of four (25%) of the total of 16 suggests that they may have circulated into the 2nd century more commonly than is thought. The problem of residuality as a result of later 1st-2nd-century building activity is, of course, insoluble when coins are found within levels dated to periods within which they could have been in circulation.

Table 7 is offered as supplementary evidence to Table 6. It suggests that a high proportion of the 1st century coins from 15–23 Southwark Street had seen little (30%) or moderate (51%) circulation before being lost. It is, of course, impossible to quantify accurately the state of wear of coins in terms of years of circulation. However, Table 7 would certainly suggest that most Claudian and Neronian coins could, assuming regular use, have been lost during, say, the second half of the 1st century, with five perhaps seeing circulation into the 2nd century AD. Of the Flavian issues, the six lightly worn issues might not have seen circulation much beyond the early years of the 2nd century, whilst the ten showing ‘average’ wear might perhaps have circulated until the mid 2nd century before being lost. This might, therefore, indicate a certain closer compatibility of the coin evidence with the other archaeological evidence for 1st-2nd-century occupation on the site, modifying the illusion given by the coin list alone that there was some sort of ‘decline’ on 15–23 Southwark Street during the 2nd century.

Building material

Naomi Crowley

Introduction

The excavations at 15–23 Southwark Street produced over 6,700 kg of building material from

the Roman to post-medieval periods. This material was recorded by fabric and form using the standard Museum of London recording sheet and fabric codes. Samples of these fabrics are held at the Museum and described in the section on fabrics. The computerised data has been correlated with the building phases identified by the study of the stratified sequence, and the information used to assist the interpretation of the buildings. The range of building materials present is summarised here.

Brick

Roman bricks were made to more or less standard sizes based on the Roman foot (*pes*) which equals 296mm. 15–23 Southwark Street produced bricks of several distinct sizes.

Bessalis

These bricks, measuring approximately three quarters of a Roman square foot (191mm sq), are normally square, and were used to form *pilae* (pillars or piers) which supported the floor above the hypocaust. None of the hypocausts in Building 7 included surviving *bessales*: due to truncation/robbing, only the base bricks remained. However the Building 6 hypocaust *pilae* [144–146], survived up to no more than 10? *bessales* high. These are unusual in that they are round with an average diameter of 210mm and a thickness of 40mm. They are in fabrics 3023 and 3060, identified as coming from Radlett in Hertfordshire. Both the Winchester Palace and Park Street sites in north Southwark also produced small fragments of round *bessalis* in fabric 3023/3060. No other sites in London have produced round examples, and only 23 other sites in Britain are known (Brodrigg 1987, 35).

Pedalis

These square bricks measuring one Roman square foot (296mm sq) usually acted as bases and caps for the *pilae* constructed from *bessales*. An early trench, perhaps marking a boundary (period 2 Nos 21–24), contained a complete *pedalis* measuring 272 × 265 × 40mm. The construction backfill of one of the foundations of Building 7 contained one complete and three near complete *pedales* measuring 290 × 286 × 46mm, perhaps originating from Building 6. The excavator recorded *bessales* as *pilae* bases in the hypocaust [171] of Building 7. It is also likely that the *pilae* in the hypocausts of both Buildings 6 and 7 were capped by *pedales* which had not survived robbing.

Lydion

Most of the brick fragments are probably of this type, measuring 1 × 1.5 Roman feet (294 × 443mm), which was generally used for bonding or lacing courses in walls. Some of the bases of the *pilae* in the Building 6 hypocaust [144–146] were apparently formed from broken *lydion*, not *pedales*.

All bricks with measurable dimensions are in fabric group 2815.

Sesquipedalis/bipedalis

There are no complete examples of these large tiles, although occasional thick fragments of brick may be from a *sesquipedalis* (1.5 Roman square feet, 443mm sq) or a *bipedalis* (2 Roman square feet, 591mm sq). In view of the distance apart of the base tiles of the Building 6 hypocaust [144–146] and the Building 7 hypocaust [171], the size of the tiles needed to bridge the *pilae* would be 500mm sq and 450mm sq respectively, which would be in the range of *sesquipedalis*-sized bricks. *Bipedales* are the more usual size used to bridge *pilae* so it is somewhat unusual if *sesquipedales* have been used here. Where *sesquipedales* have been found *in situ* they have been in floors such as at Beauport Park (Brodrribb 1987, 41). Vitruvius in *The Ten Books On Architecture* mentions that they are suitable for making pavements on which to mount the *pilae* of the hypocaust.

Within the demolition debris of the Building 6 hypocaust [144–146] were four fragments of brick with a thickness of 58–60mm, and with two rows of indented marks forming a border (Fig 43, No. 1), apparently made with a triangular pointed tool. These

Table 8. Building materials, *lydion* bricks with measurable dimensions

Period		Dimensions (mm)
2	Early Features	? × 247 × 57
2	Early Features	? × 275 × 54
2	Early Features	? × 256 × 53
2	Building 1	? × 290 × 46
2	Building 1	? × 260 × 50
2	Building 1	? × 265 × 59
3	Levelling	? × 246 × 54
4	Building 6	? × 307 × 37
4	Building 6	? × 301 × 41
4	Building 6	? × 297 × 28
4	Building 6	? × 301 × 48
4	Building 6	? × 265 × 42
4	Building 7	426 × 299 × 44
4	Building 7	? × 297 × 40
6	Dark earth	380 × 285 × 42
7	Post-medieval	? × 303 × 39
7	Post-medieval	? × 290 × 37
—	Unstratified	? × 255 × 34

bricks may be part of *sesquipedales* used to bridge the *pilae*; the marks perhaps intended to key the *opus signinum* flooring above.

The site produced a number of fragments of combed brick. Two fragments in fabric group 2815 (3006) occurred in the demolition layers of Building 7 and residually in the fill of a later grave. These fragments have a combed pattern made with an eight pronged comb. Three fragments in fabric group 3200 occurred in the late Roman robber trenches of Building 7, and residually in a medieval context. The fragments are 37, 43, and 47mm thick and have a combed pattern consisting of curves, though the fragments are too small for the complete design to be identified. The rills are deep, made by a comb with eight or more prongs (Fig 43, No. 2). Large bricks such as *bipedalis* were often combed, and are a possible source of these fragments. Similar combed *bipedalis* bricks were found at Beauport Park, Bodiam, Dover and Richborough. (Brodrribb 1987, 114). These sites also produced *Classis Britannica* stamps, also on tiles in fabric group 3200.

Opus spicatum

There are ten examples of *opus spicatum* paving bricks from the site, five of them complete. These small bricks would have been laid on their long edge to form a herring-bone patterned floor surface. Such a surface would be hard wearing and therefore suitable for external areas such as courtyards. None of the examples from the site were found *in situ*. The examples in fabric group 2815 from the construction surface for a hypocaust and in fabric group 3028 from a floor make-up layer in Building 7 (mid 2nd century) occur with other building material which is likely to have originated in Building 6 (early-mid 2nd), though it is not possible to say if they were part of a herring-bone floor.

Solid voussoir

These wedge shaped tiles were used to form arches. There was only one possible example, in fabric group 3023, with a thickness varying between 24 and 31mm over a small section of the remaining length. Unfortunately this fragment occurred residually in a post-medieval context.

Tegula mammata

This type of brick is characterised by the addition of clay lumps or *mammae* to the top surface. There were no complete examples of these, but a large number of fragments, some indicating that the tiles had two clay lumps positioned at diagonally opposite corners. These belong to Brodrribb's (1987, 62) type A with shallow *mammae*, which were most likely used as bonding courses in walls or for flooring. Fragments of *tegula mammata* occurred in the boundary trenches [21–24]

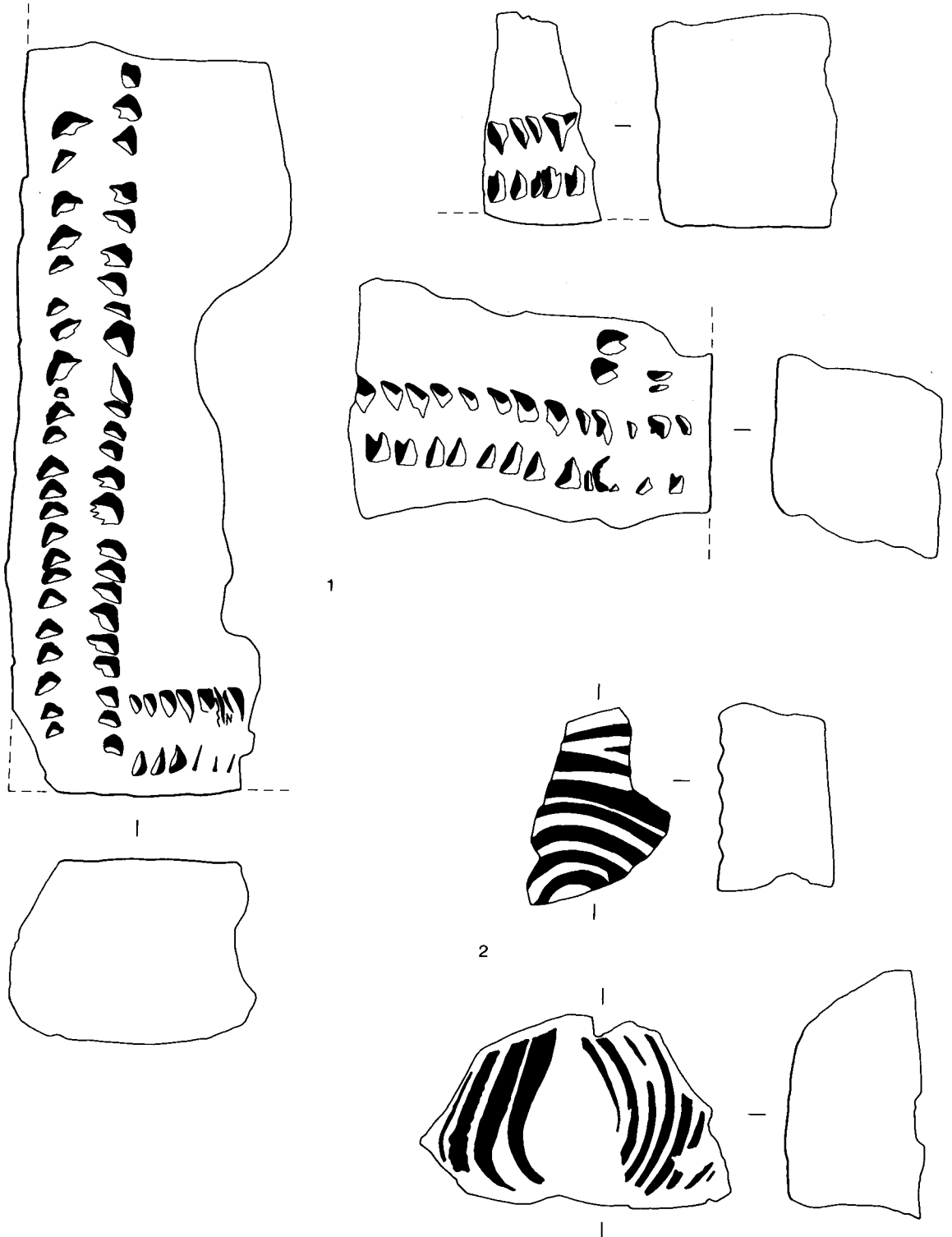


Fig 43. Building materials. No. 1 (keying marks on sesquipedales bricks) (1 : 2); 2 (combed brick in fabric 3200) (1 : 2).

Table 9. *Building materials, opus spicatum*

Fabric	Dimensions	Period	Feature
2454	? × 55 × 21 mm	2	Boundary trench
2454	? × 57 × 22 mm	2	Boundary trench
2454	95 × 59 × 19 mm	3	Gravel dump Building 5
2815	98 × 68 × 24 mm	4	Construction layer hypocaust Building 7
2454	94 × 56 × 19 mm	4	Robber trench for Building 7
2454	97 × 56 × 18 mm	4	Robber trench for Building 7
3028	? × 75 × 25 mm	4	Make-up for floor Building 7
2454	92 × 57 × 23 mm	7	post-medieval pit
2454	? × 54 × 19 mm	7	post-medieval pit
2815	106 × 65 × 23 mm	—	Unstratified

and in Building 1, the levelling for Building 3 and reused within the foundations of Building 4, in the walls of the hypocaust of Building 6 and the foundations and make-ups of Building 7. The fragments are in fabric group 2815, except for three fragments in fabric group 2454, reused in Buildings 6 and 7. There are only four examples with measurable dimensions. In London they appear to have been restricted to the 1st century.

Roofing tile

There are two types of roof tile, *tegula* and *imbrex*, used in conjunction with each other. *Tegulae* are flat tiles with a raised flange on each side. The adjacent flanges of two *tegulae* are then covered with a curved *imbrex*. Each *tegula* has cutaway sections at either end of the flanges to allow the tiles to slot together.

Fragments of *tegulae* occurred throughout all periods of the site, and were used for roofing, and in walls and make-up layers. Fragments of *imbrices* occur less frequently, probably due to the fact that they were less suitable for reuse than *tegulae*. Many fragments of *tegulae* have signature marks, and are discussed in the section on tile markings below. There were two fragments of decorated *imbrex*, both reused in the wall foundations of Building 7 (Fig 44, No. 3).

Cavity walling

Box-flue tiles, half-box flue tiles and wall tiles with spacer bobbins, mounted vertically between the wall

Table 10. *Building materials, Tegulae mammatae with measurable dimensions*

Fabric	Dimensions	Period
2815	? × 275 × 51 mm	2, Boundary trenches
2815	430 × ? × 46 mm	4, Building 6
2815	? × 240 × 35 mm	3, Building 4
2815	? × 240 × 36 mm	3, Building 4

and the plaster surface, created a cavity which enabled heat from the hypocaust to circulate behind the walls. This not only prevented damage to wall paintings from damp, but also allowed second storeys to be heated. The site produced numerous fragments of flue tiles, mainly associated with the hypocausts of Buildings 6 and 7.

Spacer bobbin (Fig 44, No. 4)

A single spacer bobbin was recovered from the backfill of a well associated with Building 7. These bobbin-shaped clay objects were held between wall tile and the wall by means of an iron nail or cramp.

Wall-tiles (Fig 44, Nos 5a, b)

These tiles were fixed vertically to walls to act as a lining, either to prevent damage to wall paintings from damp, or, with spacers, to create a cavity to circulate the heat from a hypocaust behind the walls. These flat tiles are slightly smaller and thinner than a *hydion* brick and have lattice scoring on one face. This scoring is commonly made with a pointed implement such as a knife (Fig 44, No. 5a), but on some examples this has been done with the fingers (Fig 44, No. 5b). The purpose was to aid the adhesion to the plaster. Another feature was notches cut out of the sides of the tile,

Table 11. *Building materials, Roof tile with measurable dimensions*

Fabric	Form	Dimensions (mm)	Period
2815	Tegula	? × 303 × 25	3, Building 5
2815	Tegula	? × 307 × 25	3, Building 5
2815	Tegula	372 × ? × 26	3, Building 5
2815	Imbrex	? × 280 × 18	4, Building 6
2815	Imbrex	? × 163 × 17	4, Building 6
2815	Imbrex	? × 196 × 20	4, Building 6
2815	Imbrex	400 × 188 × 17	4, Robbing of Building 7

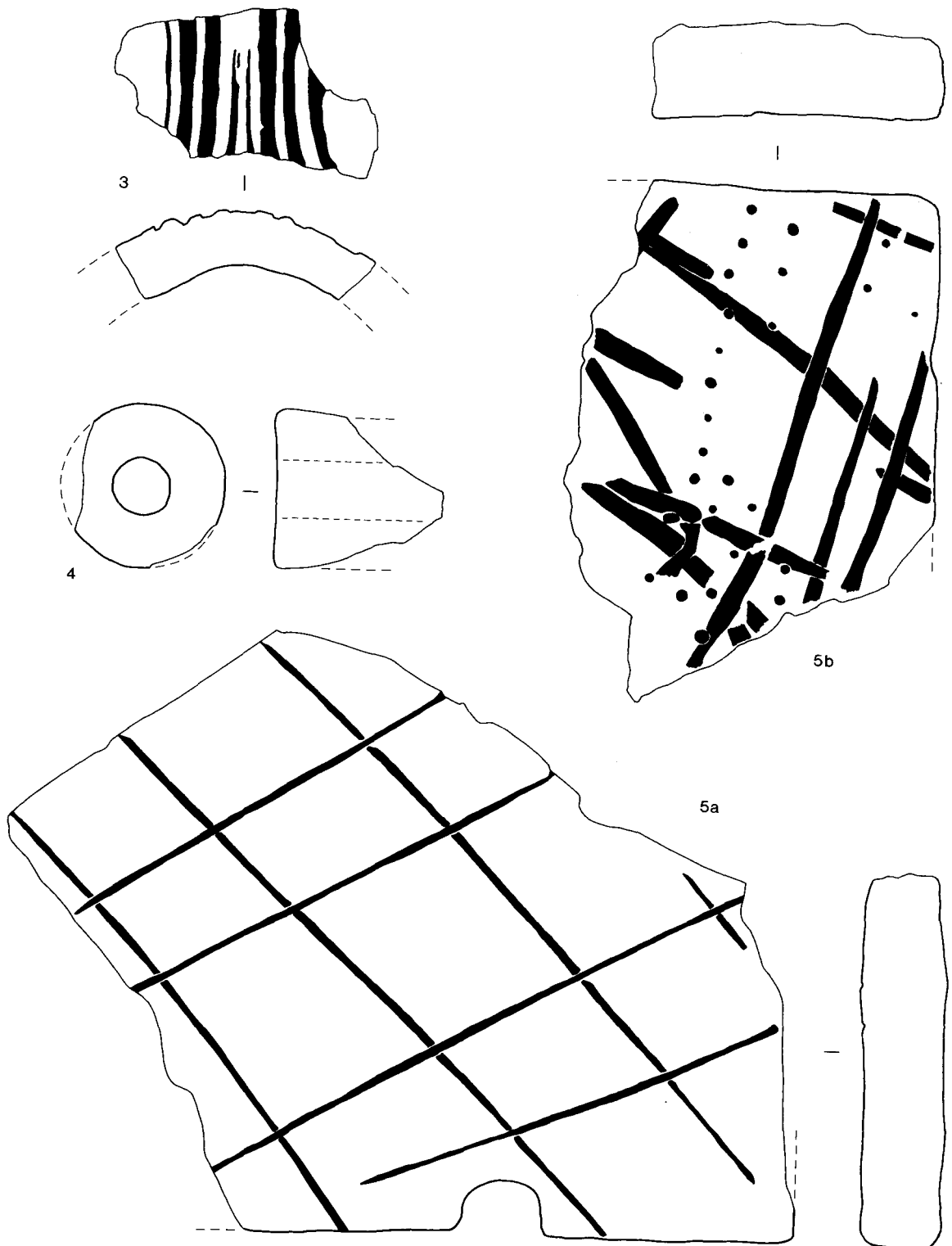


Fig 44. Building materials, Nos 3 (decorated imbrex); 4 (spacer bobbin); 5a (knife scored wall tile); 5b (keyed wall tile with hobnail boot print and finger keying), (1 : 2).

indicating that the tiles were probably attached to the wall with iron nails or cramps.

None of the wall tiles were found lining walls *in situ*. They first occur in the foundations of the 1st century Building 4. Several fragments occurred in levelling layers and in the foundations of Building 5; and one fragment occurred in Building 6. The robber trenches of Building 7 produced several fragments but these were reused and are unlikely to have been used as wall tiles in this building. The only tile with measurable dimensions (? × 265 × 26mm) came from this context.

Half-box flue tiles

These tiles, rare in London, resemble *tegula* but have vents cut out of the centre rather than the end of the

flanges and scored keying on the base. They were mounted vertically on the wall creating a cavity through which heat could circulate horizontally and vertically from a hypocaust. The scored side faced outwards and acted as keying for the wall plaster.

Two fragments in fabric group 2815 were associated with Building 5, although not *in situ*. One has a central cutaway. Of particular interest are 20 similar fragments in fabric group 2815 (3006), the majority of which come from the robber trenches of Building 7 in which they may have been used. These fragments are unusual in that they resemble *tegula* with cutaways at the ends of the flanges, with signature marks of one or three semi-circles on the surface but on the base lines of keying drawn by three fingers across the tile (Fig 45, No. 6).

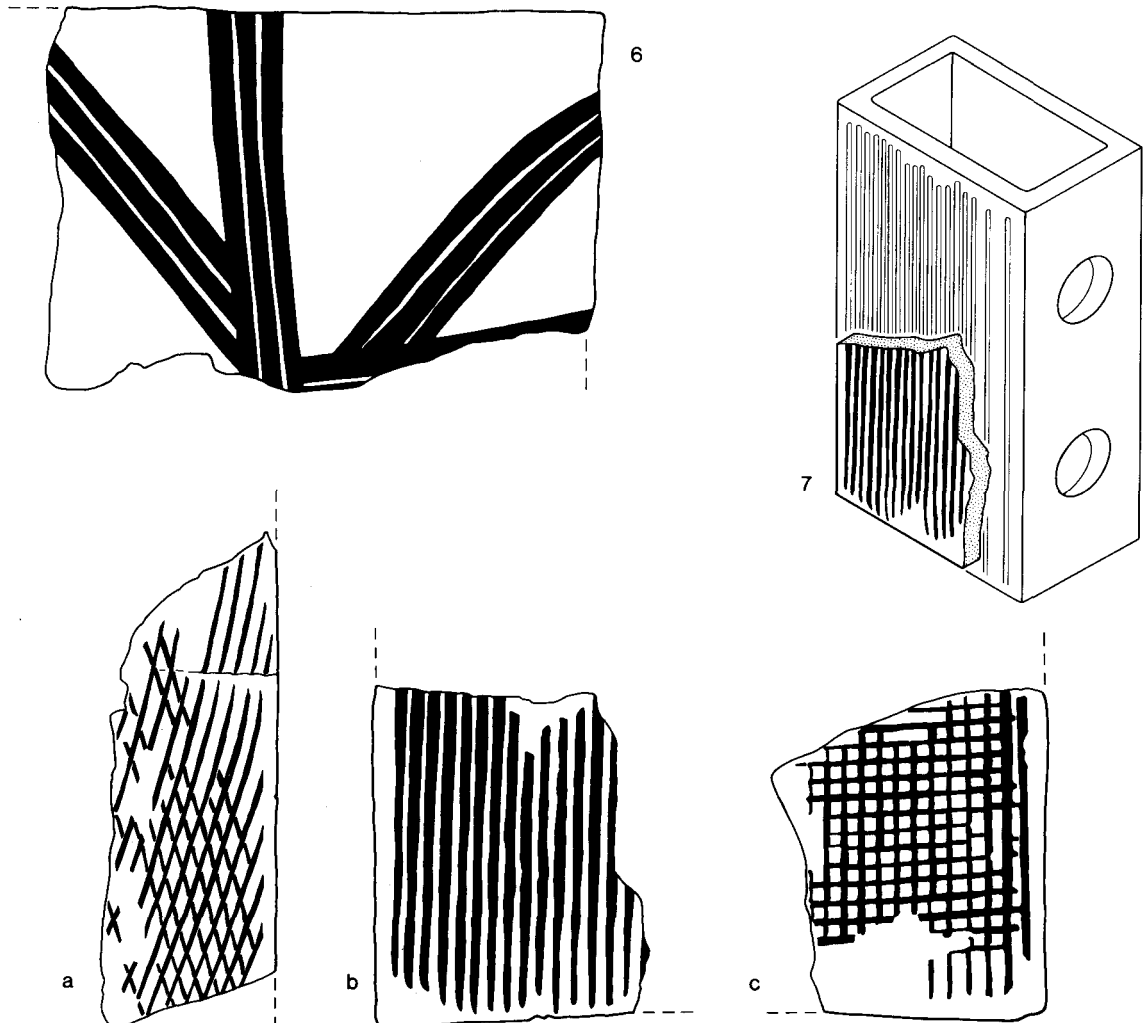


Fig 45. Building materials, Nos 6 (half-box flue tile); 7 (reconstruction of combed flue tile in fabric 3023/3060 from Building 6); Nos 7a, b and c (various combing patterns) (1:4).

Evidence from the City seems to suggest that the use of half-box flue tiles died out by the early 2nd century, to be replaced by the more useful box-flue tile. On this site, however, it would appear that they, as well as box-flue tiles, were being used in Building 7 sometime from the mid 2nd to 3rd century.

Box-flue tile

These hollow rectangular tiles were more sophisticated than the half-box flue tile, and could be mortared to the wall in continuous rows and stacks to serve as flues carrying heat around the building. Vents, square or round, were cut out of two opposite sides to allow heat to circulate horizontally. The other two opposing sides were keyed; on one side for attachment to the wall, and on the other to aid the adhesion of wall plaster.

There were three different types of keyed box-flue tiles on this site:

Combed flue tile: This type of keying is on most of the flue tile from the site. Various designs can be identified, although it is difficult to know whether they represent a form of signature or the artistic whim of the tiler. Building 6 produced the largest quantity of combed flue tile, in fabric groups 3060 and 3023. There are three different combing patterns, reconstructed from fragments from many tiles and illustrated in Fig 45, No. 7. These box-flue tiles appear to be large with a height of 41cm, a width of 22.5cm and a depth of 14cm, and with two circular vent holes on the plain face.

Scored flue tile: Scoring is not as common as combing on flue tiles, and consists of knife cuts in a diamond lattice pattern. Its earliest appearance on the site was levelling layers of Period 3. However, most of the fragments occurred in later contexts, mainly in Period 4 (3rd/4th century robbing). The fragments are mainly in fabric group 2815, and are small and reused; only one had a measurable width of 165mm (Fig 46, No. 8a). Of particular interest is a scored flue tile in fabric group 3200 occurring in Building 7, in late Roman robber trenches and in medieval and post-medieval layers. Fabric group 3200 dates from the mid 2nd to 3rd century and is associated with the *Classis Britannica*.

Evidence from other excavations in London suggests that scoring was an earlier form of keying than combing, and was predominantly in use in the 1st century. Although there were only two fragments of scored flue tile in contexts of that date, all fragments in fabric group 2815 occurring later were reused, whereas scored flue tile in fabric group 3200 appears to have been used in the mid 2nd century.

Roller stamped flue tile: These keying designs were made by rolling an engraved roller across the tile surface. Some of the designs could be very intricate, surprising since the design would be covered by mortar.

There are 27 fragments of roller stamped flue tile from the site, of which six are too small for the die type to be identified. The designs can be matched with those found in other parts of the country. They have been assigned die type numbers based on the catalogue of die types published by the Relief Patterned Research Group.

The earliest occurrence on the site is a fragment stamped with die 58 from a floor make-up in Building 6. This die type has also occurred on waterfront sites in the City (New Fresh Wharf and Pudding Lane), where it was provisionally dated to the late 2nd to early 3rd century. At 15–23 Southwark Street it occurs in layers dated AD 120–160, earlier than elsewhere.

Dies 3, 4, 11 and 12 occur in the late Roman robber trenches of Building 7 and residually in later contexts, while die 116 only occurs residually. Dies 11 and 12 are frequently found in association with each other. All these die types occur on other sites in London, and have a date range of early to late 2nd century.

Hollow voussoir

There is only one example of a possible hollow voussoir, from a well associated with Building 7. Voussoirs are similar in shape to box-flue tile except that they are tapered at one end, resulting in a wedge shape. They were used in roof vaulting in bath houses, 5 and are usually combed on all four sides.

Tile markings

Apart from the keying types already mentioned, other markings include signature marks, tally marks, a stamp, and animal prints.

Signature marks: These marks were made by drawing the finger(s) across the top surface of bricks, *tegulae* and very occasionally *imbrices*. Many signature marks such as semi-circles are common on many different fabrics, while some are restricted to a single mark. The most widely accepted explanation of these marks is that they are the signature mark of the tiler. Not all tiles are 'signed', so that perhaps only a proportion needed to be marked as a way of measuring the tiler's output. The signatures from all excavations in London have been catalogued by fabric and therefore by tiler. The signature types from this site have been assigned numbers accordingly, and these are listed in Table 12 and illustrated in Fig 47. The most common signature mark throughout all the fabric groups is one, two or three semi-circles. The majority of signatures in fabric group 2815 and 2454 are of this type.

Tally marks: These marks appear to be Roman numerals cut into the edges of some tiles, but more usually bricks, and are not very commonly found. It has been suggested that they marked batches ready for loading

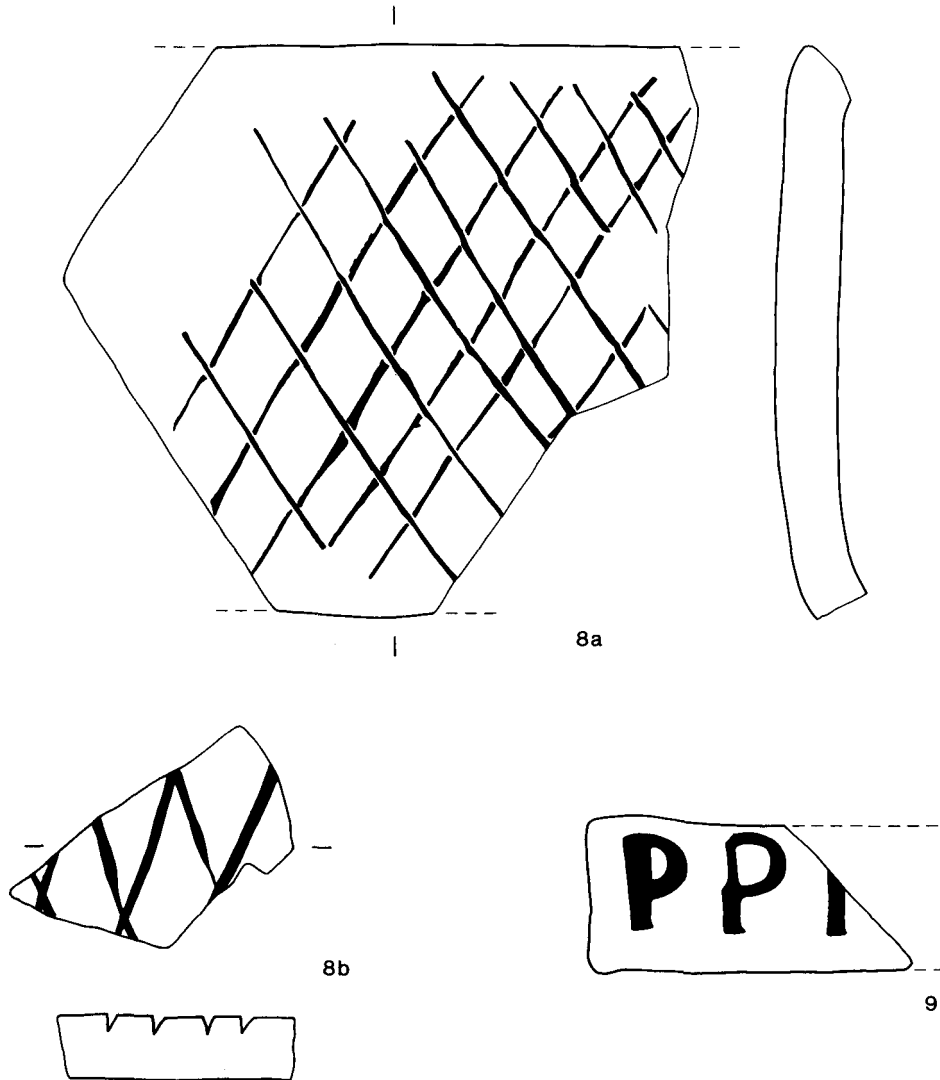


Fig 46. Building materials, No 8a (scored flue tile in fabric 2815) (1:2); 8b (scored flue tile in fabric 3200 (1:2); 9 (stamped imbrex) (1:1).

into the kiln. There are five definite tally marks from the site:

Tile stamp: There is a single example of a tile stamp from the site on an imbrex unfortunately residual in a post-medieval layer (Fig 46, No. 9). The stamp is incomplete but reads PPB., identified as Museum of London Die type 6. Tiles stamped with PPBRLON, PPRBR and PRBLON occur on various sites in Roman London. The lettering is thought to stand for *Procurator Provinciae Britanniae Londonii* and to have been stamped on batches of tiles manufactured at tile works producing tiles for public building works. The tile from this site is clearly one of these, but cannot be assigned to any particular building.

Animal prints: Three tegulae, four bricks, one imbrex fragment in fabric group 2815, and one brick and one tegulae fragment in fabric group 3060, had animal prints on the surface. These were all identified as dog paw prints.

Mosaics and tessellated floors

Mosaics

Building 7 featured remnants of mosaics *in situ* [186 and 187]. Although the survivals are small and fragmentary, it is possible to say something about the designs.

Table 12. *Building materials, Signature marks*

Signature type	Number of signatures	Fig 49, No.
Fabric 2452		
1	10	15
2	7	16
3	2	17
6	1	22
10	3	27
24	1	23
54	2	30
Fabric 2454		
1	8	15
2	5	16
4	2	26
Fabric 2459A		
2	4	27
3	5	16
5	13	26
30	6	15
Fabric 2459B		
11	1	32
Fabric 3004		
1	1	16
3	1	16
Fabric 3006		
1	23	15
2	62	16
3	5	17
5	1	19
22	1	22
27	1	28
47	1	31
49	2	18
50	1	24
54	1	27
Fabric 3060		
1	1	17
2	1	15
10	1	25
11	1	29

Segment [187] appears to be part of a border design consisting of squares, *c.* 10cm sq., and composed of red (tile) and black (Wealden shale) triangles, possibly within a Greek key motif made up of red and black lines. The background consists of white (clunch) *tesserae* (Fig 48, No. 10). The Greek key design is one of the most common patterns in mosaics and is usually found in borders and corridors. There appear to be only a few 2nd century examples of this design, *eg* at Silchester, Hants and Wingham, Kent (Neal 1981, 54). Other examples would appear to be 3rd or 4th century in date.

One segment [186] comes from a border design. This consists of a simple guilloche in white (clunch), cream (tile), buff (pottery), grey (Boulonnaise greensand), red (tile) and black (Wealden shale), are set in a black background and bordered by black and white

triangles on one side (Fig 48, No. 11). This design is commonly found in borders, and similar ones have been recorded at Gloucester and Cirencester and Fullerton, Hants (Neal 1981, 62, 80, 82). *Tesserae* made from greensand from the Boulonnaise in northern France have only been found on two sites in London, this site and at Winchester Palace where they were also found in a guilloche design.

A second fragment found along with the guilloche segment represents the lower half of a human head (Fig 49, No. 12). A variety of different stone and tile *tesserae* in white (clunch), pink (tile), yellow (tile), brown (tile), white/green (tile) and black (Wealden shale) has been used to form the face and hair. The fragment is clearly from a panel of a mosaic of high quality.

Another fragment of mosaic with a similar guilloche design to that found in Building 7, and in the same materials, came from one of the robber trenches of Building 7 (Fig 49, No. 13), along with fragments of black and white articulated *tesserae*. The black and white triangles bordering the guilloche are slightly different from those of the Building 7 fragment [186], but it is likely that this came from the same building, if not from the same floor. A similar fragment with a guilloche design, from dark earth deposits, may also have come from the Building 7 mosaic, as the materials used are the same (Fig 49, No. 14).

Glass *tesserae*

The site produced 29 glass *tesserae*. One of these was from floor makeups for Building 7, while others came from the fills of late burials, dark earth deposits and post-medieval layers. Most however were from the robbing of Building 7, and may originally have been set in a mosaic there. The majority are blue, five are green and one is turquoise. All are small, ranging from 7 × 5 × 4mm to 11 × 8 × 8mm. Glass *tesserae* are rarely found on sites in London and their use would have been restricted to fine quality work.

Tessellated floors

The tessellated floor fragment [143] *in situ* in Building 6 was made up of red with occasional white *tesserae* in fabrics 2815 (average size 24 × 24mm) and 2454 (average size 23 × 23mm) respectively, at a ratio of 8:1. The *tesserae* were set in a pure lime mortar above a fine pink *opus signinum* layer. The unusual feature of this floor is that the *tesserae* were grouted with a fine red crushed tile mortar. This careful attention to the laying of a tessellated floor is not commonly encountered on sites in London.

A large quantity of loose red tile *tesserae* from the robbing of Building 7 indicates that the building may have had plain pavements or plain borders around the finer mosaics.

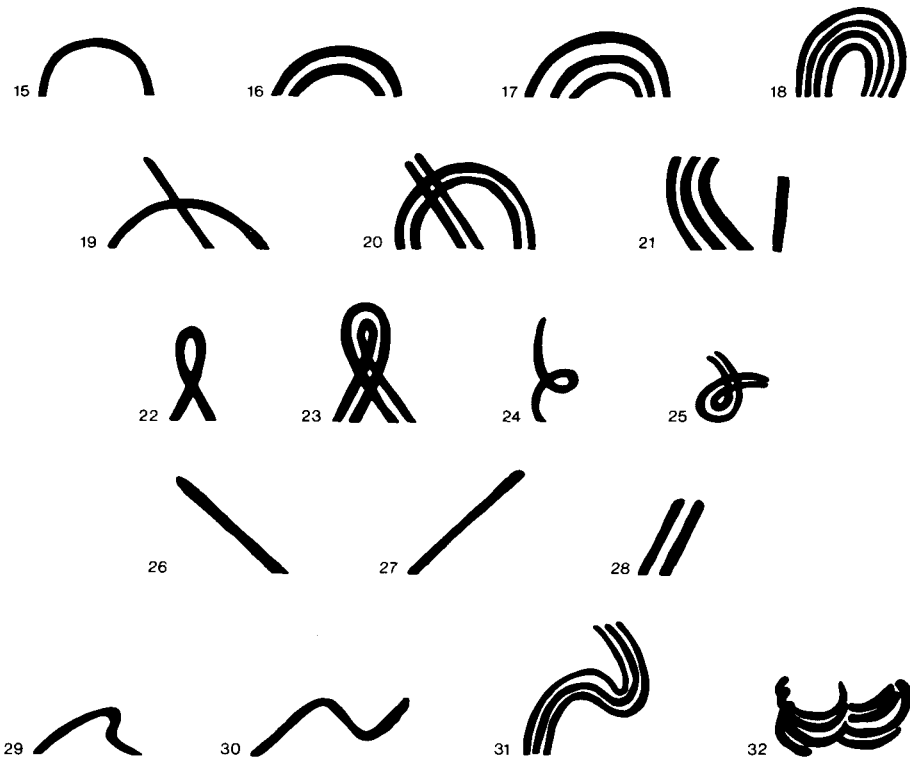


Fig 47. Building materials, Nos 15–32 (signature mark types) (not to scale).

Table 13. Building materials: Tally marks

Period	Fabric	Form	Numeral
4, Building 6	3006	Brick	II
4, Building 6	3006	Brick	I
4, Robber Building 7	2459A	Tegula	X (2 examples)
4, Robber Building 7	3006	Brick	III

Stone inlay and paving

Pieces of stone wall inlay are not commonly found on sites in London. Patterns made from these shaped pieces of stone, often coloured or patterned marble, were used to decorate the walls of the rooms of only the finest buildings. This site produced 11 fragments of stone inlay and two fragments of stone paving. Three pieces of white crystalline marble inlay were discovered in the make-up for the construction of Building 6 and in the construction make-up for the floors on Building 7, which also produced a piece of white crystalline marble paving. The robber trenches of Building 7 produced four fragments of Purbeck marble, one paving and three inlays; a gabbro-diorite inlay from the eastern desert of Egypt, and a white crystalline marble inlay. Later layers produced two

Purbeck marble inlay fragments, one reused as a *tessera* and a white crystalline marble inlay.

Purbeck marble is not a true marble but a hard shelly limestone from the Upper Jurassic Purbeck beds on the Isle of Purbeck in Dorset. Purbeck marble first appears on sites in London in the 1st century AD. It is difficult to identify the exact sources of white crystalline marbles, especially from small fragments such as these. Due to the coarse grained nature of the fragments it is likely that they are from various quarries in the Aegean, such as Thasos.

Although many of the fragments are small, most have thicknesses of between 6mm and 24mm, suggesting use as wall veneers. Only two pieces, one Purbeck and one white crystalline marble, with a thickness of 33mm, were probably used as paving.

Fabrics

The ceramic tiles were analysed under a binocular microscope and assigned a Museum of London fabric code. Each fabric represents a different clay type and is characterised by the type and frequency of inclusions in the clay matrix. A number of fabrics have been grouped together as representing variations in the clay exploited in the same area or, in the case of fabric

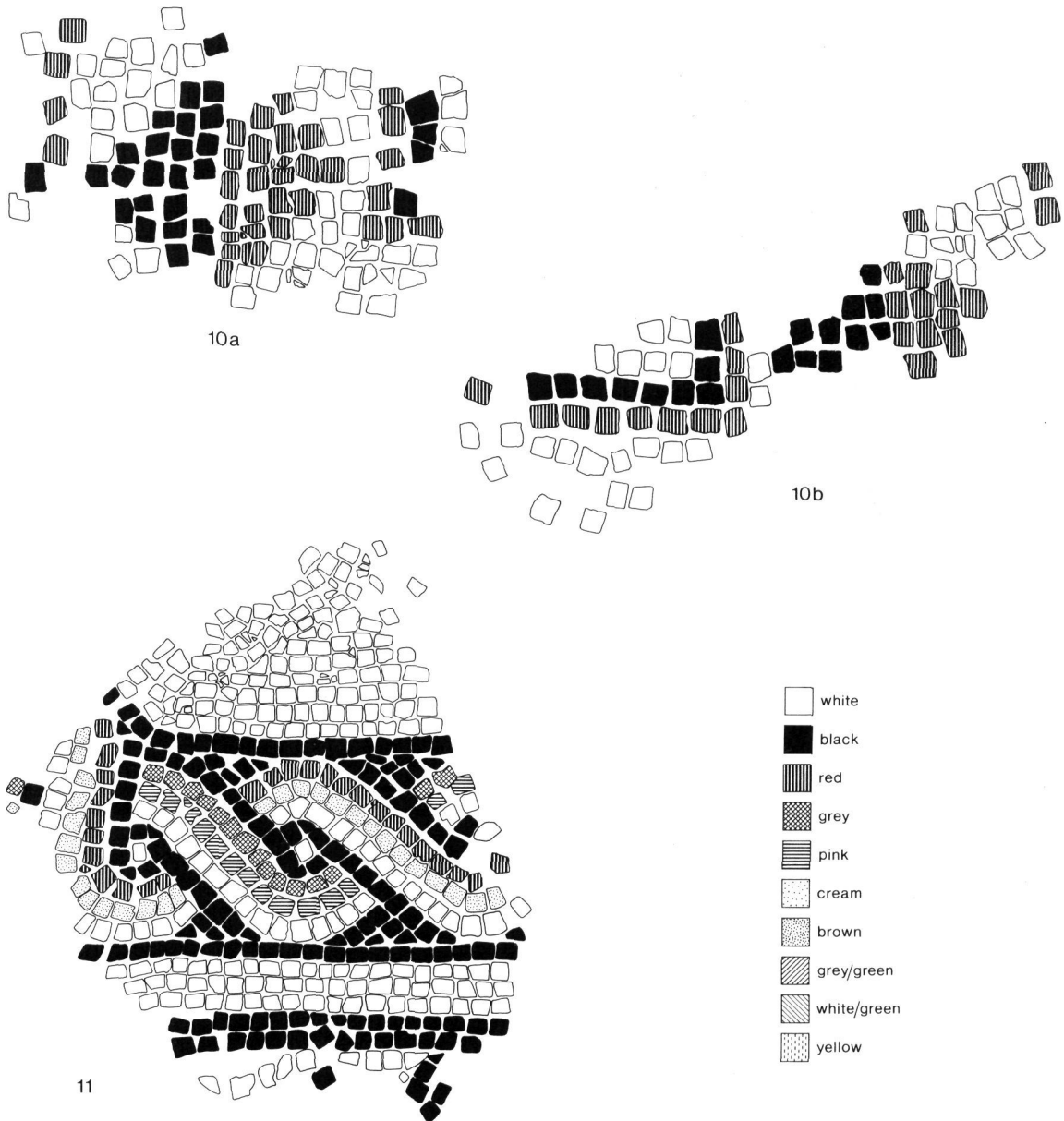


Fig 48. Building materials, No 10 (Building 7 mosaic [187]); 11 (Building 7 mosaic [186]) (1:4).

group 2815, variation in the same clay deposit exploited in different areas. The dating of the manufacture of these fabrics is based on findings from sites in London.

Fabric group 2815 (2452, 2459, 3004, 3006)

As this is the most common group of fabrics found on sites in London it has been given its own group number, 2815. These red coloured fabrics can be

divided according to the size and frequency of the quartz that they contain. The majority of tile is in this fabric group, which occurs throughout each phase of the site, and most forms of tile are represented.

Fabric 2452: A fine fabric with occasional quartz (up to 0.5mm), sometimes with a scatter of calcium carbonate and iron oxide (up to 2mm).

Fabric 2459: A fine sandy fabric with few quartz grains over 0.2mm. Occasional scatter of calcium carbonate and iron oxide (up to 1mm).

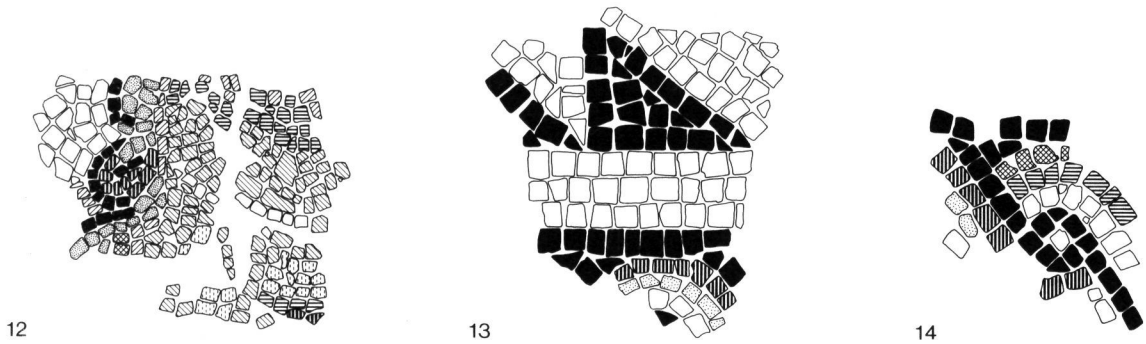


Fig 49. Building materials, No 12 (Building 7 mosaic [186]); 13 (mosaic segment from robber trenches of Building 7); 14 (mosaic from dark earth deposits) (1:4).

Fabric 3004: A sandy fabric with abundant quartz (up to 0.7mm) and occasional calcium carbonate and iron oxide (up to 0.7mm).

Fabric 3006: A sandy fabric with moderate to frequent quartz (up to 0.3mm), and with an occasional scatter of calcium carbonate and iron oxide.

Kilns producing these fabrics have been identified in Essex, Hertfordshire, and Surrey, although the exact locations of all the tileries have yet to be identified. Fabric types in this group were produced both in the same areas and at widely separated locations in consequence of the extent and the homogeneous nature of the clay deposits in the Thames Valley region. The suggested date of manufacture is 1st to 3rd century.

Fabric group 2454/2455/3022

The fabrics in this group are hard and well fired, and have a distinctive yellow, white or pink colour. They contain varying amounts of rounded quartz (up to 0.5mm), and frequently both rose quartz with a pink tinge and occasional iron oxide and calcium carbonate inclusions (up to 1.0mm).

Fabric 2454: More frequent well spaced quartz.

Fabric 2455: Fine smooth clay with a scatter of quartz.

Fabric 3022: Abundant quartz.

The varying quartz content may indicate variations in the clay deposits and differing tileries within the same area. The source is the Eccles area of Kent and the suggested date of manufacture, AD 50–75/80. Fragments of brick, tegulae and imbrex occurred throughout the site. The trenches of the early Flavian features [21–24] and Building 1 produced fragments of roof tile and brick, four *tesserae* and two *opus spicatum* paving bricks in fabric 2454/3022. Most of the tile is in fabric group 2815, but fabric 2454 makes up 16% of the assemblage. Due to its hard wearing nature,

tiles in this fabric group continue to occur, reused in the make-ups and walling of the later buildings.

Fabric group 3060/3023

This group is distinguished from fabric group 2815 by frequent small black iron oxide inclusions within the clay.

Fabric 3060: Red coloured with abundant quartz inclusions (up to 0.3mm), occasional red iron oxide (mainly 0.5–2mm but occasionally larger) and frequent black iron oxide specks (up to 0.1mm).

Fabric 3023: As 3060 but with cream coloured silty inclusions (up to 3mm).

Radlett in Hertfordshire is the source for this group and the suggested date of manufacture, AD 50/70–120 (+?).

The majority of tile in this fabric group was associated with the hypocaust in Building 6 in the form of combed flue tile and round *bessalis* bricks, many *in situ*. It is clear that these were a special order from the kilns at Radlett for the construction of the hypocaust. Although roof tile and bricks in this fabric group occur in small quantities on a large number of sites in Roman London, it is uncommon to find flue tile in such large quantities. Round *bessales* are known at only one site in the City, where a fragment was found in a post-Roman layer, while Winchester Palace and Park Street, have also produced small fragments of round *bessalis* in this fabric group.

The following fabrics are present in lesser quantities:

Fabric group 2453

This fabric is one of a group of six similar fabrics. The tile from this site is a pink coloured variant of fabric 2457, which is usually grey or brown. The fabric has frequent cream coloured clay inclusions, varying in size from 0.8mm to 4.2mm, and frequent calcium carbonate inclusions (up to 0.6mm). Frequent small

red iron oxide (0.2–0.4mm) and quartz grains (0.1–0.6mm) are present within the clay matrix with very occasional large angular quartz inclusions (up to 0.3mm). Scattered small shell fragments (up to 0.8mm) are visible. The tiles all include red moulding sand, a distinctive feature of tiles in this group of fabrics.

No kiln site has yet been identified, but examples have been found on sites in Hampshire (Winchester and Southampton). Its occurrence on the London waterfront at New Fresh Wharf has led to suggestions that the group may be a foreign import. The suggested date of manufacture: AD 140/180—3rd century.

Fragments of *tegula*, *imbrex* and *tessera* were included in the robber trenches of Building 7. This fabric appears at a time when the majority of fabric group 2815 kilns seem to have ceased production: new buildings, like Building 7, appear to have been constructed with a mixture of reused tile and tile from new sources, such as this fabric. The presence of this fabric may also be due to repairs to the roof and flooring during the use of the building.

Fabric 3011

This fabric varies in colour from red to orange, with frequent darker red iron oxide inclusions (0.2–2mm) and yellowish silty inclusions (0.6–2mm, occasionally up to 10mm). The source is unknown and the date of manufacture AD 70/100–140/200 +

Only a few *tegula* and *imbrex* fragments were found, occurring in contexts associated with Building 7 and its later robber trenches.

Fabric 3018

Light orange coloured fabric. A fine clay matrix with frequent lighter coloured clay inclusions (up to 2mm) and scattered quartz. Some examples have silty bands. The source is unknown and the suggested date of manufacture, AD 100–120.

There are only a few small fragments of tile in this fabric. Two small fragments of *imbrex* occurred in the robber trenches of Building 7 while one fragment of combed flue occurred residually in a post-medieval feature.

Fabric 3019

Light brown or orange colour, frequently well fired with a reduced core. Abundant sub-angular platy laminated siltstone inclusions (up to 7mm) with iron oxide (up to 0.3mm), quartz (up to 0.3mm), and occasional calcium carbonate. The source is Braxells Farm, Hampshire and the suggested date of manufacture, AD 100–120

There is little tile from the site in this fabric, and all is either reused or residual. A fragment of *tegula* occurred reused in the foundations of Building 7, as well as a few small fragments in a robber trench of

that building, and six fragments of brick in the fill of a later grave.

Fabric 3025

A fine, orangey-brown or pinkish-red coloured fabric with white streaks and occasional iron oxide (up to 1mm) and quartz (up to 0.3mm). The source is unknown, and the suggested date of manufacture, AD 60–80/100.

A fragment of brick occurs in the Period 3 levelling that preceded Building 3. Fragments of brick, *tegula*, *imbrex* and combed flue were scattered throughout a number of contexts, mostly in the robber trenches of Building 7.

Fabric 3028

Red or orange coloured sandy fabric with frequent quartz (up to 0.4mm) and silty pellets and bands (up to 6mm) with a scatter of red iron oxide (up to 1mm). The source is unknown and the suggested date of manufacture, AD 70–100/120.

Several fragments of brick and *tegula* occurred in the levelling layers preceding Building 3. Occasional small fragments and a broken *opus spicatum* paving brick occur in the make-up for Building 6. The majority of tile in fabric 3028 occurred in Building 7 and its robbing. This is mostly *tegula* but includes combed flue tile, brick and *imbrex* fragments.

Fabric 3050

This red to orange coloured fabric has distinctive frequent dark red ('rose') quartz inclusions (up to 0.3mm) with varying amounts of normal quartz (up to 0.3mm) and occasional iron oxide and limestone. Fine silty streaks and bands may be visible in the clay matrix. The source is unknown and the date of manufacture ? 2nd century (too few sites for a date range to be suggested).

A fragment of brick in this fabric occurred in the rubble raft for hypocaust [174] in Building 7, which was constructed in the mid 2nd century. Other fragments of brick and a fragment of scored flue tile in the robber trenches of Building 7 have mortar on their broken edges, and so are most likely to have come from elsewhere for use as rubble in the construction of the building.

Fabric 3051

This fabric varies in colour from red, through pink to yellowish brown. The fabric has a mottled and streaky appearance with frequent quartz (0.2–0.4mm), moderate rounded iron oxide (0.8–1.2mm) and occasional calcium carbonate inclusions (1–1.4mm) and larger rock fragments (up to 3mm). The source is unknown

and the suggested date of manufacture, AD 70 to 100–120.

One fragment of brick in this fabric occurs in the floor makeup of Building 5.

Fabric 3054

This light brown fabric has distinctive grog inclusions of red and cream coloured tile fragments (up to 6mm) with abundant quartz (up to 1mm) with frequent red iron oxide inclusions. Source: Sussex? Suggested date of manufacture: AD 75/80–100.

Several small fragments of *tegulae* occurred in the makeup of Building 5 and in the foundations of Building 7.

Fabric 3200

A distinctive reddish-pink fabric with variable quantities of streaks, lenses and swirls of creamy white clay. Frequent black or red-brown near-spherical particles of iron ore (usually about 1mm but occasionally up to 3mm). Occasional sub-angular platy fragments of white finely laminated siltstone (up to 10mm). The kiln site has not been located, but the clay is identified as Fairlight Clay in the central Weald (Peacock 1977, 235–48). *Classis Britannica* stamps are made in this fabric. Suggested date of manufacture: earliest date AD 100–150.

All the tile in this fabric came from the robber trenches of Building 7. This includes four fragments of brick, three of which are combed, four fragments of scored flue tile and one fragment of *tegula*. Combed brick and scored flue tile occur in this fabric at known *Classis Britannica* sites. The fragments are small and constitute no more than 1% of the robber trench assemblages. There is very little evidence of this fabric in London. Two stamped tiles are known from Winchester Palace as well as some unstamped tile. In the City only one stamped tile has been found near the fort, and a few fragments have come from a waterfront excavation. It is possible that the Fleet transported tile in this fabric to London as ballast for use in their buildings or for sale as rubble (Crowley & Betts 1992).

The wall plaster

Richenda Goffin

Methodology

The Roman painted wall plaster from 15–23 Southwark Street was fully quantified only in excavation Area II; study of that from Area I being

confined to contexts with groups of considerable potential. The total weights do not include plaster wall footings *in situ*, lifted off site.

The plaster was first considered by site phase and building. The physical characteristics of the fragments were recorded on proforma sheets. Fragments from each context were sorted by sequence of construction, *ie* according to the same number and type of mortar and *intonaco* layers. They were then weighed and counted, and the mortar layers were measured and described. The surface design was noted, together with the pigments used. Other characteristics, such as roller stamp marks on the reverse of the mortar, or links with similar fragments from other contexts, were also recorded. Certain fragments were selected for illustration, which was done by tracing the design on polythene sheets. The completed sheets have been deposited in the archive of the Museum of London Archaeological Service.

A total of 134 kilos, 756 grammes of wall plaster was excavated from Area II, *ie* 2,989 fragments in all. The plaster is discussed here by individual building, but material from later demolition deposits is sometimes included in the discussion in order to take account of particular schemes attributable to one particular room or building phase.

Building 5 (late 1st/early 2nd century)

Weight: 5,419 grammes Quantity: 31 fragments

In situ plaster was found on both sides of a clay wall [96] dividing Rooms 4 and 5 of Building 5, while crushed wall plaster had been used to form part of the floor [112] of Room 4. Plaster from these contexts was probably of a very fragmentary nature, and none was retained.

The material most likely to be associated with Building 5 was recovered from demolition contexts and pits [124–127] cutting through the building. Fragments from the backfill of one pit had a yellow ochre background, some of which also had a thin white stripe 3mm in width. The pit [127] had cut through the floor [113] of Room 7, and the plaster may therefore have originated in that room.

A large lump of plaster came from robbing [121] of a wall [118] of Building 5, and may have originally fallen from it. The surface decoration consisted of the remains of a linear design in black, maroon, yellow and green on a white background (Fig 50, No. 1). There appeared to be some additional motifs in black and possibly yellow ochre in the intervals between the bands, but the surface was too abraded and discoloured for them to be identified in detail. The mortar fabric construction was unusual in that there were three layers as well as the *intonaco*. The third layer was poorly mixed and full of lime, and bore the impressions

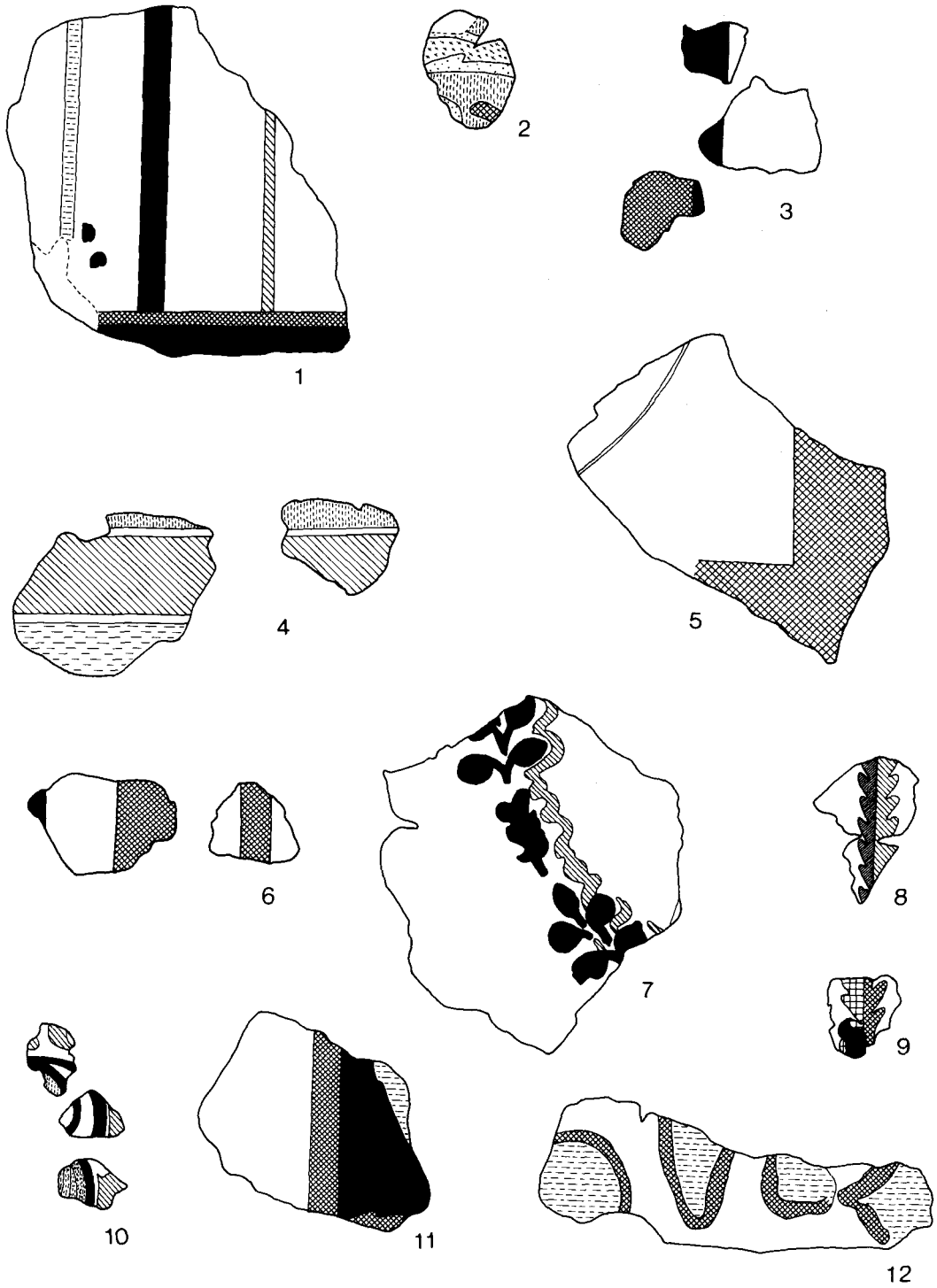


Fig 50. Wallplaster, Nos 1-12 (1:4).

of timber lathes. It is likely that this piece originated from part of the wall just above the dado at the bottom of the central zone of decoration, between two panels. A similar scheme was reconstructed from the plaster from Norfolk Street, Leicester, where the white ground is framed by red, green and yellow stripes, which run down into horizontal red and grey bands (Ling 1985, 27). This example has a stylised foliate motif running vertically between the panels. Such simple linear schemes on a white background were common types of decoration, popular throughout the Roman period both in Britain and on the Continent.

Building 6 [128–157] (early-mid 2nd century)

Weight: 5,4294 grammes Quantity: 1,218 fragments

Rooms 1, 2 and 3.

A length of wall stub of plaster [148] was lifted from its position *in situ* on the exterior of the western clay wall of the hypocausted Room 2, facing a wall of Room 1. It measured 900mm in length, and was 190mm in height. The design was made up of a pink background, painted with random splashes of maroon, black and white, typical of a dado decoration. This was divided by black vertical stripes 24mm in width, spaced 410mm apart. A similar type of dado design was found at the Flavian farm building at Boxmoor (late 1st century). Here a pink dado splashed with black, white and purple spots was divided into panels by black lines (Davey & Ling 1982, 82).

Two badly damaged parallel alignments of wall plaster [149] had survived within the south wall of Room 2 [144], but no plaster was retained.

Room 4

Plaster fragments were recovered from makeup in Room 4 [128]. Their interpretation is problematic, but it seems likely that the plaster was part of the floor make-up itself and thus originated from an earlier phase.

Ten fragments have a red ochre background, with a white, blue and dark red ochre design (Fig 50, No. 2). This may be part of a candelabrum motif, a common design which is discussed more fully in relation to a better example from the robbing of Building 7 [216].

Demolition debris from Building 6

A considerable quantity (11,610 grammes) of plaster came from [158], demolition infill within Room 2 and possibly from a collapsed wall within it. Many fragments were characterised by a plaster surface of

plain white. Other fragments with the same mortar layering also had the remains of a crudely applied maroon band, sometimes with a thinner black stripe on one side.

Some of the plaster from [158], and also from [159] (demolition dumps over the hypocaust), also probably originated from the wall [148] Room 1, as fragments from these contexts shared the same dado design.

It seems likely that part of the middle zone of the decoration of one or more of the walls of the hypocausted Room 2 was painted with a linear design, featuring large areas of white, with red ochre (maroon), further embellished with black stripes (Fig 50, No. 3). It was not possible to reconstruct the precise relationship of these areas of colour, though it is suggested that the scheme consisted of white panels framed in maroon bands with black stripes. This hypothesis is based on the frequency of fragments with these colours and design, and with the same mortar sequence. Such a simple linear design, which was crudely applied and involved the application of a more limited range of pigments than the linear scheme from Building 5, was commonly used in different types of buildings, and must have been relatively cheap to produce. Fragments with a similar colour scheme and design have been recovered on the other side of the Thames at 6–12 Fenchurch Street, City of London (2nd century), (Goffin 1985, 12). Such modest schemes were also popular in other north-western provinces, such as Holland (Nymegen in Peters 1967) and Gaul (Glanum IX in Barbet 1983), as well as in Italy itself.

A total of 16,108 grammes of painted wall plaster was recovered from demolition dumps and pits [159–160] which cut through Building 6. The material from [159] has already been discussed in relation to the wall scheme for the the hypocaust.

The group of plaster recovered from the pits [160] is likely to have originated from Room 1, as it came from the backfill of a pit which had cut through the dividing wall between Rooms 1 and 2 and truncated the plaster [148]. It contained two fragments of the pink dado design identical to that on [148], and another dado piece. This featured a white background and black and red ochre splashes, with a thin black horizontal line of 5mm wide and a band of red ochre of indeterminate width: the mortar on this fragment was very different from that found on the other dado fragments. Another fragment found in the pit with this type of mortar had a plain yellow ochre ground, while a further fragment had a linear design on a ground of red ochre. This in turn had been covered with a green band, edged with a white line 4mm in width.

Another fragment with this design was recovered from the backfill of a gully [154]. These gullies were most probably backfilled with material from the demolition of Building 6, perhaps from other walls of Rooms 1 or 2.

In all, 14,326 grammes, comprising 116 fragments of painted plaster came from gullies associated with

Building 6 [153–157]. A fragment from [154] shows a linear scheme with red ochre, a green band of 47mm and a yellow band, separated by white stripes 5mm wide (Fig 50, No. 4). Since this piece was very similar to the fragment from [158], both fragments have been considered together. They suggest that the middle zone of a wall from Building 6 was decorated with a design of panels framed by several colours. One possibility is that the scheme was based on red panels, surrounded by green borders with a yellow band painted in between the dado and the borders. More substantial remains of a similar scheme have been reconstructed and discussed elsewhere (see Design A below). Parallels from outside London include the bottom of the middle zone of plaster in Room 4, Verulamium XXI, 2, (late Antonine). Here, green panels are framed by red bands between white lines, with a band of yellow running below them (Davey & Ling 1982, 180).

Other fragments with a distinctive mortar sequence were recovered from [153] and [154]. Many of the pieces were plain white on an intonaco layer, thicker than usually found at c. 1mm. Several fragments from [153] have been consolidated to suggest the corner of red ochre bands framing a white background (Fig 50, No. 5). Evidence of a compass mark sweeping across the wet plaster was visible. This was clearly part of a different scheme from those already considered in connection with Rooms 1 and 2, since the mortars were entirely dissimilar.

Building 7 (mid 3rd century)

AREA 1 (not fully quantified)

A considerable amount of plaster was excavated from the backfill [203] of a well associated with Building 7. Two main types were noted.

Three hundred and eleven fragments of burnished plain red ochre were recovered, seven with lines, possibly graffiti, incised on the surface of the plaster. The abraded remains of a yellow ochre stripe with a circular motif were present on several fragments. This may represent the remnants of a central scheme of red fields, embellished with further decoration in yellow and/or cream, possibly part of a candelabrum motif.

The main elements of the second design seem to be composed once again of white panels with black and red ochre bands (Fig 50, No. 6). Three pieces showed evidence of a plaster layer with a black linear design, which had been covered with another thin skin of plaster less than 1mm thick. This layer also bore traces of a similar design in black. Another fragment had two layers of both mortar and plaster. The plaster surface on the bottom layer appeared to have been plain white, but the second layer showed another linear design in red ochre and black and white.

The only *in situ* wall plaster from Building 7 came

from either side of a short remnant of clay wall [195] between Rooms 21 and 22. The phasing of this wall was not certain as it had been truncated by later robber trenches and was not fully recorded during the excavation. A large single piece of painted wall plaster [197] was situated to the north of the wall [195] from which it had collapsed. The plaster was lifted with the clay wall still adhering to its back. The surface was decorated with a foliate design enhancing a white ground (Fig 50, No. 7). Stylised leaves had been painted in a curved line, in black, with mid green wavy highlights inside. This type of hanging foliate garland appears to have been a particularly prevalent decoration on the upper zone of wall schemes of the fourth Pompeian Period (Ling 1991, 74–75). A horizontal garland on a white background runs along the frieze in the reconstruction of the plaster from Norfolk Street, Leicester (Ling 1985, 27). A more elaborate example comes from the lunette from the second century building excavated at Winchester Palace, Southwark (McKenna & Ling 1991). Here, a hanging garland of flowers and leaves on a burnished yellow ochre ground is threaded through the colonnades of an architectural perspective. Garlands were also used to decorate the central zone of a wall scheme such as that at Malton (Ling 1985, 24).

Other fragments from this context [197] with a different mortar layering sequence show a foliate design in two shades of green and maroon, dark pink and black on a white background (Fig 50, Nos 8–9). Such devices were used to separate panels in the middle zone, as in the scheme at Norfolk Street, Leicester (Ling 1985, 27). Other parallels include the foliate garlands suspended behind the colonnades of the middle zone of the south wall of room 2 of the Painted House at Dover (Philp 1989, 145), and three fragments from Brading, Isle of Wight (Liversidge, 1969, 142). A similar design was also found on a panel decoration in Aardenburg (Moormann 1982, 166, no. 3). Such motifs could also have been used as part of a repeating pattern of intersecting garlands for ceiling designs, such as in the plaster from room 8, Caerwent VII N (Davey & Ling 1982, 38).

Further fragments from the same context included five curvilinear patterns in brown and black, with a possible foliate motif in green (Fig 50, No. 10). A further fragment was decorated with a black interval with maroon and yellow, bordered by a maroon band on a white background (Fig 50, No. 11). This could be part of the junction between a panel and a black interval with a candelabrum motif, or may perhaps originate from a larger design. In addition there was evidence of a dado design in three different colour schemes, separated by a white stripe 6mm in width. One background was yellow, with veining in maroon and pink-orange; the second black with green splodges; and the third pink with orange/yellow splodges (not illustrated).

The remains of the clay wall [195] were consolidated

and lifted in three pieces. The first footing, which was 1440mm in length and 160mm in height, still retained the remains of a white quarter moulding which adhered to the south side of the wall, and which had joined the bottom of the wall to the remains of a tessellated floor [198]. The remains of a dado design painted on the surface is of a pink and yellow background, splashed with black and white.

Remnants of a second footing was situated behind [195], but was considerably less substantial. Two areas of clay walling were recovered, measuring 240mm x 100mm, and 120mm x 60mm. The design on the surface of the plaster represents a variant on the simple stippled dado. The main features were yellow blobs which were outlined in pale red ochre, with areas of white between them (Fig 50, No. 12). Such abstract patterns, which appear to be stylizations of marble breccias, were more common, at least from the 2nd century, in Britain (Davey & Ling 1982, 31). A more elaborate example of this particular treatment of motif came from Insula XXVIII, Building 3, at Verulamium (mid 2nd century). Here not only the dado but also the main zone was covered in panels which imitate this type of marbled decoration (*ibid.*, 184).

AREA II

Weight: 19,843 grammes Quantity: 258 fragments

A total of 4,415 grammes, comprising 108 fragments, of plaster were recovered from a floor surface [179] of Building 7. Most of these fragments shared a distinct type of mortar with a thick *intonaco* layer varying in depth from 1 to 2mm. The plaster surface was painted in areas of plain white and red ochre, whose dimensions could not be ascertained.

Several fragments of white painted plaster and two with red ochre came from [175] makeup layers for the floors of Building 7. Some of these layers were of interest in that they sealed the hypocaust Room 2 of Building 6, and fragments from the makeups show similarities with plaster designs from the hypocaust demolition [158].

Four fragments from [175] showed evidence once again of the polychrome linear designs noted previously. Two joining fragments bore the remains of a red ochre band with a maroon stripe and the remains of a black band (Fig 51, No. 13). Another piece featured a white, black and yellow ochre linear design (Fig 51, No. 14). A fourth fragment had a black and white design identical to that on fragments from [158] (Fig 50, No. 3). The pigments were painted on a white *intonaco* layer less than 1mm thick, over a mortar sequence very similar, if not identical, to that on fragments from [158]. It is likely that these fragments were all part of the same scheme, and belonged to the hypocausted room of Building 6. If so, the hypothesis of the white panels and red bordered design is confirmed.

Robbing of Building 7

AREA II

A total of 27,786 grammes of plaster, comprising 657 fragments, derived from the robbing of Building 7 in Area II [204–206 and 216]. Broadly speaking, this plaster can be divided into two groups. The first group comprises a number of fragments with various mortars and designs. The second is a group of plaster characterised by two distinct phases of decoration, with one set of mortar and plaster layers above the other. Included in this grouping are several fragments with the same design which were recovered from dark earth deposits.

The first group was recovered from a backfilled pit [216] situated just to the east of wall [163] of Building 7 in Area II. Several fragments with the same mortar layer were decorated once again with simple linear patterns (not illustrated). One fragment had a light green stripe 4mm in width on a darker green ground; another had two shades of red ochre with a white stripe 5mm in width. Seven other pieces had a red ochre surface, one with the remains of a white stripe. The most distinctive piece was from a candelabrum design, on a red ground which had been mixed into the *intonaco* layer. The disc was painted in blue, while finer details were picked out in cream and red brown (Fig 51, No. 15). The use of this kind of motif was particularly popular on wall paintings both in Italy and in the north western provinces. The device of separating panels by intervals decorated with candelabra seems to have occurred most frequently in the last quarter of the 1st century and the first half of the 2nd century (Peters 1967). Candelabra were also used to decorate the interior of panels themselves, for example in the Insula XVI courtyard house at Leicester, which was dated to the middle of the 2nd century. It seems likely that the 15–23 Southwark Street candelabrum was used in this way, and the proximity of the pits to wall [163] would suggest that the plaster originated from the latter.

There are close parallels for the design and colour combination of this motif from other London sites. Fragments from the site of 6–12 Fenchurch Street (2nd century) showed parts of a candelabrum design on a pink/orange ground (Goffin 1985, 32). The largest fragment had a mid blue disc with maroon, pale blue and white details. Excavations at 52 Southwark Street, a nearby site, have produced several pieces of candelabrum motif on a red/orange ground. Once again, a blue disc was highlighted with details of the design picked out in cream, and also in blue and white (Heard 1989b). There are many examples of candelabrum designs painted on a red background from sites excavated elsewhere in Britain, either from the intervals between panels, or inside the panels themselves. It seems that the application of candelabra to a red background was particularly popular during

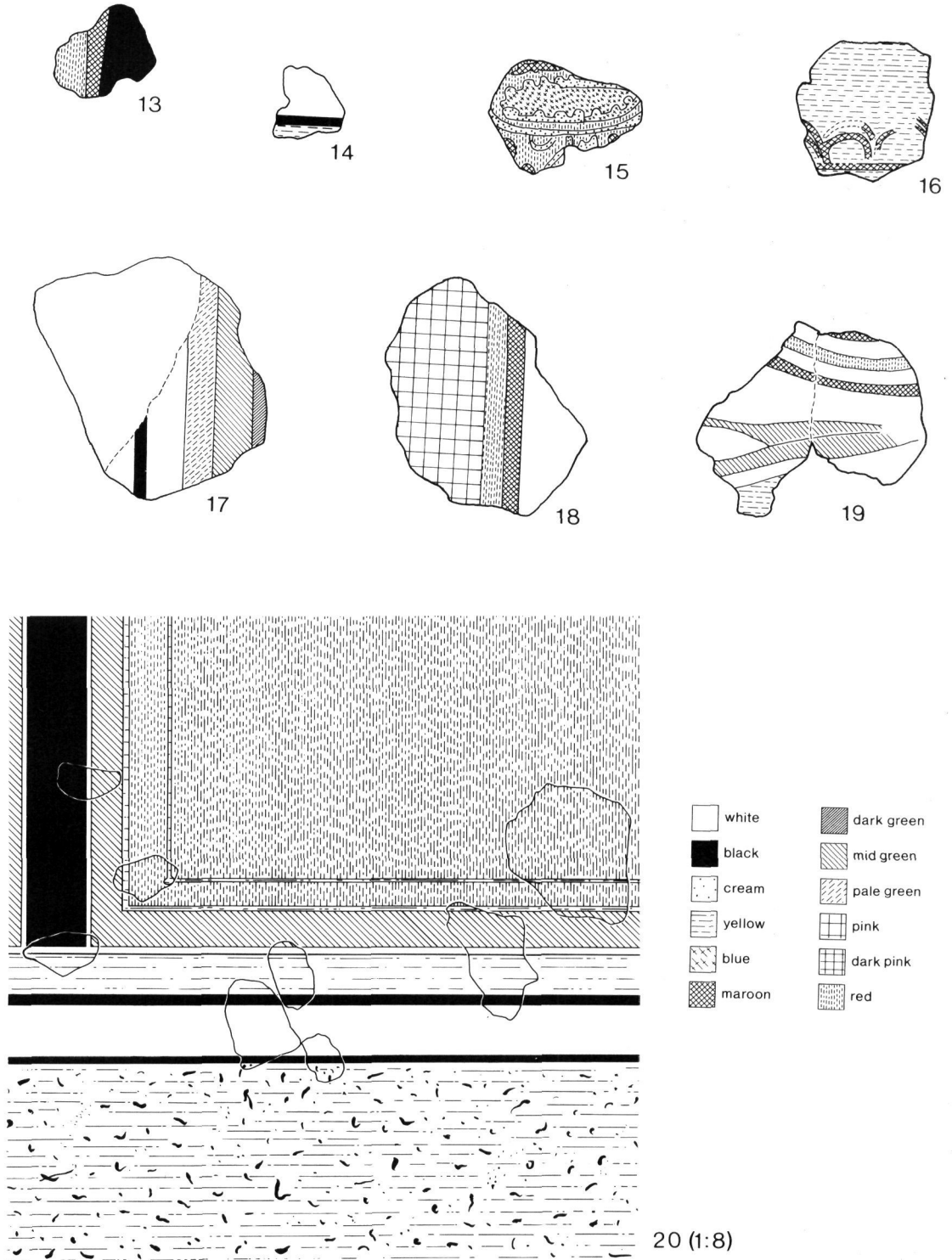


Fig 51. Wallplaster, Nos 13-19 (1:4); No 20 (1:8).

the 2nd century (Liversidge 1977, 83). Examples come from Blue Boar Lane, Leicester (mid 2nd century) (Shaw 1984); Scampton, Lincs (dating uncertain), and the Woolworth's site, Winchester (?2nd century), (Davey & Ling 1982, 153, 195).

One other fragment, also from the same pit and painted in red ochre on a yellow ochre background, was of particular interest. The decoration consists of a series of tapering crescent shapes running along a narrow band of the same colour (Fig 51, No. 16). Such a pattern may represent an imitation of stucco moulding, as it is not dissimilar to those found on such features as ceilings in Pompeii (Ling 1991, 87). It is possible also that it derives from a repeating pattern or 'embroidery border' typical of the 4th Pompeian style (*ibid*, 71).

The second group was characterised by two phases of wall plaster decoration, one on top of the other. These were found within the demolition infill [205] of hypocaust [174] of Building 7. Since fragments obviously belonging to these decorative schemes were found in later phases, they have been included in this group, so that the design can be discussed fully.

Design A (bottom layer)

This decorative scheme was painted on a thin layer of white *intonaco* less than 1mm thick, and a single layer of mortar. The design once again was based on bands and stripes of different colours on a white ground. One large fragment had a thin black line of 5mm, and three bands of different shades of green darkening progressively further from the black line (Fig 51, No. 17). Another fragment had stripes of two shades of red ochre and a wider band of a pale orange/pink (Fig 51, No. 18). A third fragment had a maroon band of at least 28mm in width (not illustrated). This type of linear design has already been discussed in relation to the middle zone of a wall scheme. It could, however, have represented the remains of a ceiling design in which a multi-coloured linear pattern, such as squares or octagons, was repeated over a white ground. There were no corner fragments of the design to confirm that this was so, but in view of the curvilinear design of B, which could well come from a ceiling, it is a distinct possibility. Parallels for this type of design come from Wroxeter (second half of the 2nd or 3rd century). Here a pattern of roundels inside large octagons had been painted over a white background. The colours were black, and grey-yellow, with black spots decorating the octagonal lines (Davey & Ling 1982, 200).

Design B (top layer)

Another layer of mortar and plaster was applied over the first design. The main design consisted of a series of parallel curves and arcs of different colours, pale red ochre, deeper red ochre, yellow, with faint green

shapes, possibly representing a foliate design (Fig 51, No. 19). The diameter of one of the arcs appeared to be 360mm. There was no evidence of compass marks or guidelines scored into the *intonaco* layer.

This decoration may form part of a pattern of repeating circular motifs on a white background. Such designs are often attributed to ceilings. At Cirencester, plaster fragments excavated from a late first century timber-framed shop (Insula V) had curving yellow, red and green frames, possibly from a ceiling (Davey and Ling 1982, 97).

Other parallels are ceiling plaster from Collingham (Dalton Parlours), (3rd/4th century), and Witcombe (3rd/4th century) (*ibid* 1982, 102, 199). It is also possible that this design derived not from a ceiling but from an actual wall, as part of a 'wall paper' pattern. Here the design is an all-over network of ornament, which could include brightly coloured medallions and floral motifs (Ling 1985, 34). Such schemes are not uncommon on the Continent.

Unstratified wall plaster

A considerable amount of plaster (674 fragments) from one part of a wall scheme was excavated from an unstratified context. The two layers of mortar had been applied to a keyed clay surface, leaving a clear herring-bone patterned impression on the reverse of the fragments. The design appears to come from the junction of the top of the dado with the beginning of the middle zone of decoration (Fig 51, No. 20). A dado with a yellow background was lightly stippled with small white and black splashes. This was divided from a broad horizontal white band by a black stripe. A further broad band of yellow was divided from a green band by a white stripe. On top of this were plain panels in red ochre, embellished with internal yellow ochre lines. There were no further clues as to the rest of the scheme, although there were 38 fragments of plain black, which could perhaps have made up the intervals between the panels. In one fragment areas of black and areas of green were separated by a white stripe, and in another were very slight remains of a white stripe and a hint of yellow on one edge. It seems likely that the main scheme consisted of red panels framed by coloured borders, and separated with black intervals. Such linear schemes were especially common during the late 1st/early 2nd century. Fragments from the fort at Malton, Yorks have this colour scheme, and the black intervals are further decorated with candelabra (Davey & Ling 1982, 145). This is also true of the black intervals from the plaster scheme from the villa at Boxmoor, which also has red fields framed with green and with black intervals (*ibid*, 84).

Mortars

The wall plaster from 15–23 Southwark Street demonstrated a wide range of mortar types. Although recorded in some detail for the archive, they have not been described in this report. Most fragments consisted of two layers of mortar, with an *intonaco* layer usually less than 1mm in thickness; often, however, only a single layer of mortar was left adhering to the plaster. One large fragment from Building 5 had two conventional mortar layers and a third composed mainly of lime, with little other inclusions. The first mortar layer applied to the wall almost invariably contained fragments of gravel pebbles of varying sizes, together with the remains of impressions and voids left by organic material such as straw. There was great variety in the composition of the second layer, although it was consistently finer than the first.

Method of application and pigments

Pigments were apparently applied to the plaster from 15–23 Southwark Street by use of the fresco technique. The paint was applied on fresh laid damp lime plaster, so that the pigments were fixed by the carbonatization of the calcium hydroxide from the wet *intonaco* layer (Mora & Philpott 1984, 11). In some cases the pigments have flaked off, but this may be due to them being applied too thickly, rather than a *secco*, that is, mixed with a binding agent before being applied to a dry layer of plaster. In many cases the *intonaco* layers were plain white, but certain groups of fragments indicate that pigment had been added, thus colouring the plaster to create an even background colour. The pigments most frequently used for this purpose were red and yellow ochres.

The actual application of the pigment varied greatly in quality of execution. Many fragments, often from the linear schemes, show clear evidence of brushmarks. Other pieces, often those with a smooth, possibly burnished, background of yellow or red ochre, suggest finer workmanship.

The pigments used on the material from Southwark Street appear to be unexceptional in their range. They consist mainly of natural earth pigments such as red and yellow ochre, and green earth. Egyptian blue, composed of an artificially produced silica compound, was also used (Pratt 1976, 224). There was no indication of more expensive pigments classified by Pliny as 'brilliant' (*Natural History*, Books 33–5), such as cinnabar (mercuric sulphide), which has been found on the nearby site of Winchester Palace and 6–12 Fenchurch Street in the City of London, as well as elsewhere in Britain.

Conclusions

The fragments of painted wall plaster recovered from Buildings 5–7 represent only a tiny proportion of the original overall wall coverage, and as such can only give a glimpse of the appearance of the walls. Like other sites, the best preserved plaster often comes from the lowest part of the wall scheme, and is decorated with a standard dado design. However, surviving fragments do indicate that the main designs of some of the central wall zones of the rooms of these buildings consisted of simple panel schemes outlined with coloured bands and stripes.

The panels were often white, but there is also evidence of red ochre forming the main background colour, in some cases perhaps embellished with candelabra. Fragments of more elaborate designs do survive and some of the plaster, in particular that recovered from Building 7, shows evidence of good quality workmanship. This is appropriate since it is a building of some substance, constructed from masonry with evidence of hypocausts and mosaics. Even so there is no indication of high quality painting which could be comparable with that of the first phase of wall plaster recovered from the 2nd-century hypocausted building at Winchester Palace. This was also superior technically, both in the preparation of the plaster and the types of pigment used.

4. ENVIRONMENTAL EVIDENCE

James Rackham

Introduction

The excavations at 15–23 Southwark Street produced environmental material dating from the prehistoric to the post-medieval period. While the medieval and post-medieval environmental evidence has been analysed and written up (see the Site Archive) only the material from the prehistoric, Roman and post-Roman dark earth deposits is discussed in the following reports.

A range of environmental remains was recovered and analysed, including timber and wood, waterlogged, mineralised and carbonised plant remains, animal bone, fish bone, marine mollusc shell and a number of human skeletons.

Preservation of environmental material on the site was limited, largely due to the fact that most of the excavations were over a sandy sub-soil with good drainage. In these areas, except in deep features (*eg* gullies and drainage ditches), the survival of biological remains, particularly insects and waterlogged plant material, was poor.

However, the preservation of animal and human bone, and of shell was generally good.

On-site sampling for the recovery of environmental material consisted of the hand collection of bone and shell plus the selection of samples from contexts likely to preserve waterlogged plant and insect remains.

Twenty seven soil samples from the periods discussed in this report, and ranging from 0.25 to 3.5 litres in volume, were selected for processing and analysis of biological remains on the basis of the stratigraphy, dating of the site, size and preservation potential.

Similarly, only the animal bone from those contexts with a secure stratigraphic relationship and date were identified and analysed. Since few large groups of animal bone were recovered, recording was confined to a scanning record (see below). Many of the contexts from which animal bone was recorded and discussed below are not individually noted in the archaeological accounts above, although all are securely phased within the archaeological sequence (see Site Archive). A significant proportion of the collected material was not studied mainly because of a lack of stratigraphic integrity and security.

Clearly these samples could not address all the possible questions. They were particularly limited by size and, in the case of the soil samples, by a sampling strategy directed towards sampling largely waterlogged deposits. Apart from dark earth deposits, all pre-Roman and Roman samples were taken from ditches, gullies, pits and waterlain sediments, rather than floor/occupation layers, hearths and surface deposits.

Sample processing

All soil samples were processed by flotation using a Siraf tank. The flot was collected on a 250 micron sieve and the residue retained on a 1mm sieve. All the flots and residues were dried as deposits were poorly waterlogged and good biological preservation was not expected. The residues were sorted for shells and fish bones. The dried flots were found to have small quantities of preserved plant and insect remains, the latter in insufficient quantities to warrant study. The plant remains had survived through waterlogging, mineralisation and carbonisation.

The plant remains

Elizabeth Pearson & John Giorgi

Introduction

Plant remains were recovered and analysed from the following contexts: waterlaid clays and ditch deposits in Period 1 (prehistoric/early Roman); pitfills and a linear feature associated with Buildings 1 and 2, Period 2 (pre-Flavian); a charcoal sample from Building 7, Period 4; and from various levels within a metre of thick dark earth deposit from Period 6, which covered most of the site.

It was hoped that the botanical samples from this range of feature types and phases would provide information on the development of the local environment and human activities associated with the use of particular buildings and areas through time. However, these investigations were limited by the small number and size of the samples (see above), which produced a low frequency and diversity of preserved plant remains.

Methodology

Plant remains were extracted from flots and residues by scanning. This involves recording the species present and their abundance according to the following scale + = 1–10, ++ = 11–50, +++ = 50–250 and ++++ = 250+.

The seeds were identified using reference material housed at the Museum of London Archaeological Service. The results are summarised in Tables 14a–c. Information on the habitats and uses of each species listed in these tables is taken from Clapham *et al* (1962), Clapham *et al* (1987), and Culpeper's *Complete Herbal* (1653). The results are discussed by period.

The prehistoric/early Roman period

Six samples from Period 1 produced a small range of waterlogged plant remains, plus several charred grass seeds and mineralised grape pips (*Vitis vinifera*) (Table 14a).

Plants found in wet/marshland environments, were well represented by waterlogged seeds. These included both aquatics, for example water

Table 14c. Plant remains from Building 7 (Period 4) and dark earth deposits (Period 6)

Species	Common name	Habitat	CH (4)—Dark earth samples														
			61.4	436	440	442	420	454	455	477	501						
<i>Carbonised remains</i>																	
Cerealia	indet. cereal	FI															
Rubus fruticosus/idaeus/caesius	blackberry/raspberry/ dewberry	CDFGH															
Carex sp.	sedge	CDEH	+														
Gramineae indet. indeterminate	— —	ABCDEFHI	+														+
<i>Waterlogged remains</i>																	
Ranunculus acris/repens/bulbosus	buttercups	ABCDEG															
Ranunculus subgen. Batrachium (DC) A	crowfoots	E															
Chenopodium rubrum/glaucum cf. Leguminosae	red/glaucous goosefoot	AB															+
Rubus fruticosus agg.	blackberry	CFGH															
Rubus fruticosus/idaeus/caesius	blackberry/raspberry/ dewberry	CDFGH															
Apium nodiflorum (L.) Lag.	fool watercress	E															
Polygonum persicaria L.	persicaria	ABEH															
Polygonum hydropiper L.	water pepper	E															
Urtica dioica L.	stinging nettle	BCDEFGH															
Cannabiaceae indet.	—	BCGHI															
Ficus carica L.	fig	FGI															
cf. Marrubium vulgare	white horehound	BG															
Sambucus nigra L.	elder	BCFGH															
Potamogeton sp.	pondweed	E															
Carex sp.	sedge	CDEH															

Key to Tables 14a-c: Feature Types: CH, charcoal; DT, ditch fill; GU, gully/slot fill; LAY, layer; LF, fill of linear feature; PIT, pit; fill; WC, waterlain clay.
Habitat Codes: A, arable weeds; B, weeds of waste places, disturbed ground; C, plants of woods, scrub, hedgerows; D, open environment (fairly undisturbed); E, plants of damp/wet environment.

plantain (*Alisma plantago aquatica*) and crowfoots (*Ranunculus* subgen. *Batrachium*), plus bankside/marshland plants, for instance, rushes (*Juncus* spp.). The latter is represented by large numbers of seeds although rushes are prolific seed producing plants. The seeds recovered from the waterlain sediments may have been redeposited.

The remaining waterlogged seeds are from plants that may grow in a range of habitats including disturbed ground, possibly arable land and wasteground, for example goosefoots (*Chenopodium* spp.) and stinging nettle (*Urtica dioica*). These may be indicative of human activity close by, which is supported by the presence of several charred grass seeds and mineralised grape pips from a waterlain clay.

The grapes represented in this sample may either be from imported or locally cultivated fruit. *Vitis* pips have been found at several sites in Roman Southwark including a 1st/2nd-century pit at 199 Borough High Street and a 2nd-century pit at 1–7 St Thomas Street (Tyers 1988). They have also been found at numerous Roman sites throughout the City.

Seeds of elder (*Sambucus nigra*) and blackberry/raspberry/dewberry (*Rubus fruticosus/idaeus/caesius*) were recovered from several samples. These plants may be found in woodland/hedge-row/scrub environments, while elder is especially characteristic of disturbed, base-rich and nitrogen-rich soils (Clapham *et al* 1987). These fruits may have been collected for food, for example, elder being used for syrups, jams, wines and as a dye. They are robust seeds and have been frequently found on archaeological sites of all periods in Southwark and the City.

Other studies of plant macro-remains from prehistoric sites in Southwark have produced similar mixed assemblages representing a range of habitats, including wetland environments and disturbed ground suggesting human activity in the area (Tyers 1988). Charred remains are occasionally found; excavations at 283 Tooley Street, for example, produced carbonised wheat and barley grains in late Iron Age features (Giorgi 1993).

The pre-Flavian buildings

The ten assemblages of plant remains analysed from Period 2 were virtually all from pitfills associated with Buildings 1 and 2, and consisted

of a wider range of waterlogged and charred plant remains than that of Period 1 (Table 14b).

Evidence of human activity is reflected in small assemblages of charred plant remains from five samples, particularly from two pits in Buildings 1 and 2. These consisted of grains of wheat (*Triticum* sp.) and barley (*Hordeum sativum*), large grass seeds (eg *Bromus* sp.) plus other potential arable weed seeds (eg *Rumex* spp.).

This type of charred material appears to be part of the general background cereal crop debris, probably representing waste from processing cereal crops which had been discarded on fires for fuel or accidentally burnt. Small quantities of carbonised wheat and barley grain have been found at a number of Roman sites in Southwark: in early Roman deposits at Winchester Palace (Giorgi in prep) and from Borough High Street (Tyers 1988). Occasionally large quantities of grain are recovered, for example, a large storage deposit of hulled barley from Courage Brewery (Anne Davis, pers comm). The cereal grains may have been used for human consumption while barley may have also served as animal feed.

The waterlogged plant assemblages represent a similar range of habitats to Period 1 although there is an increase in the number of plants associated with disturbed ground, perhaps reflecting increased human activity in the area although the difference may also be due to the type of features that were sampled. Dyers rocket/weld (*Reseda luteola*), identified from a linear feature in Building 1, has been found on a number of Roman sites in London, albeit in small quantities. It is a plant known from the medieval documentary records to have been cultivated and used for making yellow dye. However, it is also a weed of disturbed ground and arable land and its presence in low numbers and in a mixed assemblage suggests that it may simply be a casual.

Late Roman Building 7 (Period 4)

The charcoal sample from this period produced a very small quantity of charred remains including several seeds belonging to sedges (*Carex* spp.), characteristic of wetland environments.

Dark earth deposits (Period 6)

The samples from five contexts were analysed from dark earth deposits, the majority being

recovered from the lower levels (Table 14c). These produced very small assemblages of charred and waterlogged plant remains similar to the earlier periods and indicative of disturbed, scrub/hedgerow, and wasteland environments. Indeed, five samples produced just one species, three of which contained elder, a particularly robust seed. Only one sample produced a moderate range of seeds associated with wetland environments.

One difference was the recovery of seeds belonging to fig (*Ficus carica*) in one sample, found at numerous sites throughout the Roman period in the City and Southwark, for example at Winchester Palace (Giorgi, in prep) and in Borough High Street (Tyers 1988). These probably represent imported fruits. Cannabis/hemp/hop (*Cannabis sativa/Humulus lupulus*) was found in another sample and may represent utilised plants, hemp being used for rope, hop in brewing and both for medicinal purposes. However, like dyers rocket, their presence in low numbers suggests they may simply be weeds, hemp occasionally growing as a casual on waste ground while hop is found in hedgerows and thickets. Charred cereal fragments were recovered from one sample.

Conclusions

The small number and size of the samples and consequently the limited range of preserved plant remains allows little detailed interpretation to be made of the surrounding environment or possible functions of the excavated features. Nevertheless, the record of these plants, particularly the potential economic species, is of interest in assessing the frequency of their occurrence at different periods and locations in Southwark and the City.

Fish bones

Alison Locker

A small number of fish bones was recovered from the Roman and dark earth deposits. The majority of these derived from the soil samples and were sorted from sample residues collected on a 1mm sieve. Only two fish bones were identified by Alan Pipe among the hand collected animal bone.

The following species were identified; ray (Rajidae), eel (*Anguilla anguilla*), herring (*Clupea harengus*), smelt (*Osmerus eperlanus*), Cyprinidae, cod (*Gadus morhua*), stickleback (*Gasterosteus aculeatus*), and tub gurnard (*Trigla lucerna*). Indeterminate fragments such as fin rays were not counted, but their presence is indicated on Table 15.

Discussion

In Period 1 the four fish bones identified from the pre-Roman waterlain deposits, with the exception of the tub gurnard, may represent species inhabiting water-filled cuts or channels. The tub gurnard vertebral centrum may represent food debris or an incidental inclusion.

In a pre-Flavian ditch fill [22] of Period 2 a single eel and a small cyprinid vertebral centrum were identified. Both could be natural occurrences, *ie* not food remains.

In Period 3 the tub gurnard vertebral centrum from Building 5 may represent food debris.

The four eel vertebral centra from the 2nd-century Building 7 deposits could have come from specimens trapped in the Thames as they migrated seawards (Wheeler 1979, 61). Smelt were also seasonally available in the tidal area of the Thames (*ibid* 48), and have also been identified from a 2nd-century pit in St Thomas Street, Southwark (Jones 1978, 416). Herring were the subject of an extensive fishery in the medieval period and would also have been an important food fish during the Roman period.

The dark earth deposits of Period 6 included a small indeterminate ray denticle, two eel vertebral centra and two fragments of cod; all probably food debris.

Conclusions

The sample is too small for any differences between context or period to be significant. However there is no evidence from the Roman period, other than a single herring and two tub gurnard vertebral centra, for any exploitation further afield than the Thames, although at other Roman sites in London, such as St Thomas Street, marine offshore species such as cod, haddock and mackerel have been identified. Even these could have come from only as far as the outer estuary (Wheeler 1979).

Shellfish

John Buglass

The shellfish remains were recovered during hand excavation and are therefore dominated by the larger exploited marine species. Oyster is ubiquitous throughout the deposits. Common mussel and cockle are occasional throughout the Roman levels, and dog whelk and common whelk rare.

The mammal and bird bones

Alan Pipe and James Rackham

Introduction

This report deals only with the hand-collected animal bone from stratified and phased Roman and dark earth contexts. It includes many layers not specifically noted in the site report. There are significant levels of residual pottery in a few of the contexts (*ie* dark earth deposits) and low levels in many of the later Roman levels. This, combined with a large number of contexts producing small groups of bone and the virtual absence of large bone groups, determined the recording method and analytical treatment given to the assemblage and effectively limited the interpretation that could be applied to it.

All animal bone data recorded from this site are held in the Environmental Archaeology Section archive, available for reference on request.

Methodology

The bones were recorded directly into the Environmental Archaeology Section database using the 'scanning' technique. This system was devised by Rackham for use on material with limited post-excavation resources, and/or constraints imposed by limitations on group-size or dating.

A scanning record describes on a single line all the data relating to an individual species in a particular context. This data line includes the total weight of the bone of that species, the presence or absence of fragments of horn core (horn cores and antlers), head (skull and mandibles), vertebrae and ribs, upper limb

(scapula, humerus, innominate and femur), lower limb (radius, ulna, tibia, fibula and patella), metapodial and carpal and tarsals, and phalanges and sesamoids. In addition, presence or absence of neonates and infants is noted. Tooth eruption and wear are recorded for intact cheek tooth rows of cattle, sheep, goat and pig. Where individual bone fragments are sufficiently complete for a number of measurements to be taken, these are also recorded.

This recording technique does not produce a data record for each bone, nor does it give a fragment count of the bones of each species, however it does allow analysis of species abundance in terms of weight, and of number of contexts within which each species occurs. It allows consideration, at a gross level, of carcass-part utilisation but does not deal with detailed description of fragmentation or butchery techniques. Information on age is limited to the tooth row data and frequency of neonates and infant occurrence; no records are made of epiphysial fusion.

Measurements are taken using the methods given in von den Driesch (1976). When sufficiently numerous, these may allow recognition of sexual dimorphism and comparison of animal stature and proportion.

Further levels of analysis were not justified for this assemblage.

The bones were, as far as possible, identified to species and anatomical element using reference collections held at the Environmental Archaeology Section (Museum of London), the Ancient Monuments Laboratory (English Heritage) and the British Museum (Natural History). Various reference publications, particularly Amorosi (1989), Cohen & Serjeantson (1986), Lawrence & Brown (1974), Olsen (1979), Schmid (1972) and Wheeler & Jones (1989) were also used.

Estimates of age from mandibular tooth-eruption and wear were made using data from Schmid (1972), Silver (1970) and Wilson *et al* (1982).

Results

Tables 15 and 16 present the species recovery from each period group of contexts.

Area II produced relatively small amounts of bone, particularly from Periods 1 and 2, and the bulk of the material studied derives from Area I.

Table 15. Environmental: mammal, bird and fish remains, Roman and dark earth deposits (number of contexts or samples in which each species occurs)

Species	Period					
	1	2	3	4	5	6
Hand collected material:	19	78	84	105	25	26
Total no. contexts with bone						
Human			2	2	3	1
Horse	1	5	3	4	1	1
Cattle	10	46	42	49	15	13
Sheep or goat	11	40	44	39	12	10
Sheep		10	4	4	1	
Pig	9	46	53	58	17	11
Dog		1	3	3	1	3
Cat				2	1	
Red deer	3	2		2	1	
Roe deer		5	1	5		
Brown hare		7	9	6	3	1
Rabbit		1			1	
Cattle size	8	44	43	64	16	14
Sheep size	10	57	63	62	22	14
Chicken	2	18	22	28	10	4
Goose, domestic			5		8	2
Mallard/domestic duck			6	2	6	3
Duck sp.		1		2		
Woodcock				1		1
Wood pigeon				1		
Raven				1		
Unidentified bird		1	7	2		
Cod					1	
Gadidae			1	1		
Material from samples:						
Total number of species	6	9				5
Ray sp.						1
Eel	1	1		3		2
Herring				1		
Smelt				1		
Cyprinid sp.	1	1		1		
Stickleback	1					
Tub gurnard	1		1			
Indeterminate frags:	2		1	3		2

The relative frequencies of cattle, sheep or goat and pig are plotted in Fig. 52 for each period and area, although the sample sizes in Area II are small and subsequent analyses treat each period as a single sample.

Species composition

Cattle remains are clearly dominant by weight throughout the occupation in Periods 1—6 (Fig. 52, Table 16). However, the incidence of cattle bones, in terms of numbers of contexts, varies (Fig. 53), and it is not always the most

Table 16. Environmental: total weight (in grammes) of each species from each period

Species	Period					
	1	2	3	4	5	6
<i>Area I</i>						
Human				40	1	
Horse	945	1780	30	60	80	
Cattle	1130	9955	2555	7080	3470	
Sheep or goat	105	2180	255	400	115	
Sheep		250	3			
Pig	80	2825	981	1082	430	
Dog		5				
Cat				5		
Red deer	110	255				
Roe deer		65				
Brown hare		3	8	5	6	
Cattle size	2040	3180	1163	2590	680	
Sheep size	123	1755	492	452	325	
Chicken	3	69	68	47	33	
Goose, domestic		8		6	5	
Mallard/domestic duck		10	2	2	2	
Duck sp.		1				
Woodcock				1		
Raven				5		
Indeterminate bird		1		1		
Gadidae				1		
<i>Area II</i>						
Human			36	4	9	5
Horse		35	375	60		70
Cattle	160	325	1432	2315	360	1112
Sheep or goat	25	601	306	192	33	210
Sheep		50	45	70	1	
Pig	140	285	628	900	149	93
Dog		40	7	25	25	
Cat						1
Red deer				10	35	
Roe deer				115		
Brown hare			15	8	3	1
Rabbit		1			1	
Cattle size	250	189	415	1456	190	285
Sheep size	55	171	233	535	167	81
Chicken	5	1	18	60	25	3
Goose				27	2	
Mallard/domestic duck				1	1	1
Duck sp.				26		
Woodcock						1
Wood pigeon				1		
Indeterminate bird			6	1		
Cod			6		1	
Gadidae			2			

frequent species. Thus, in Periods 3 to 5, pig bones were present in more contexts than cattle *ie* 53, 58 and 17 by comparison with 42, 49 and 15. Sheep/goats generally occurred in fewer

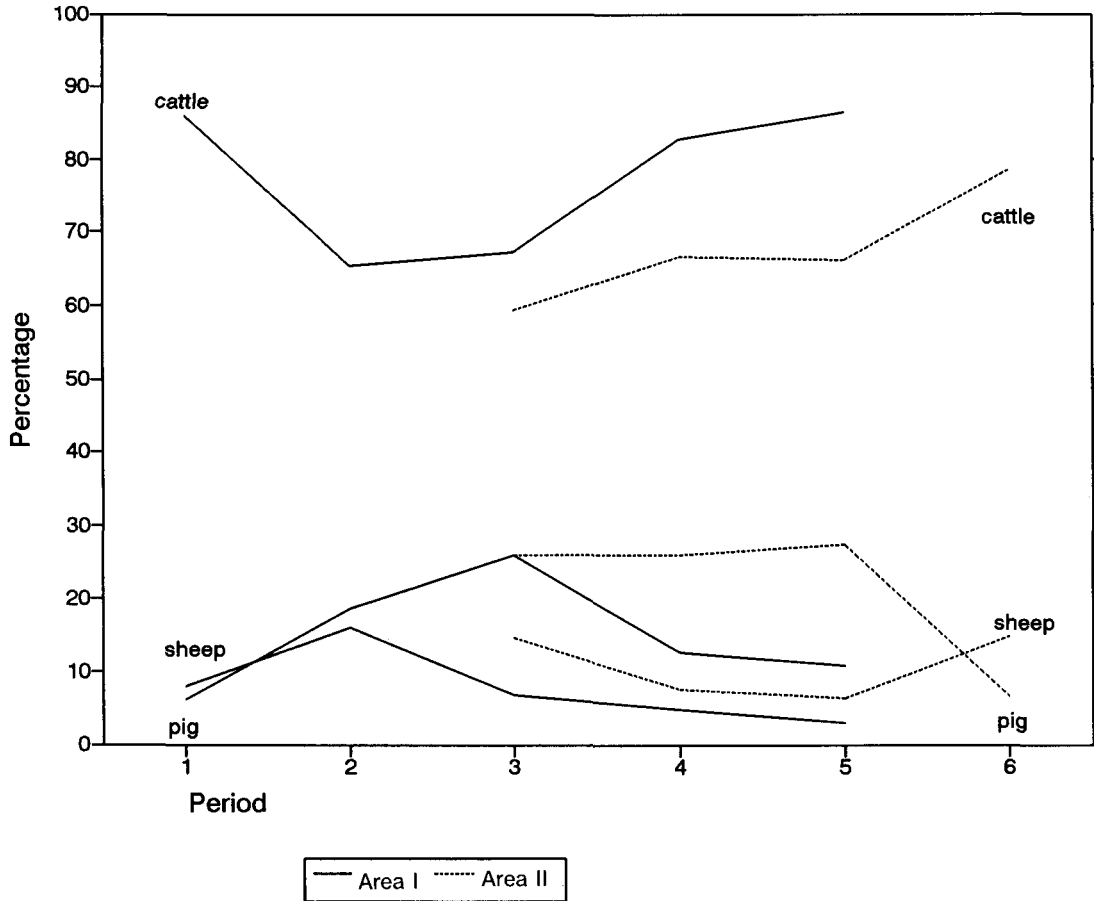


Fig 52. Environmental: bone weight of cattle, sheep and pig as a % of the sum of these species for each period. Areas I and II are presented separately.

contexts than either of these species. Since these samples are all hand collected, this picture probably slightly under-represents pig, sheep and goat frequency relative to cattle. The frequent occurrence of 'cattle-size' and 'sheep-size' remains in all periods (Table 15) effectively means that the real incidence of cattle and sheep consistently exceeds that of pigs.

The rather small number of contexts in Periods 1, 5 and 6 limits interpretation. Although, by weight, most other species are insignificant, it is interesting to note that chicken bones occurred relatively frequently in all periods and that hare and duck consistently occurred in some contexts of most periods. There are no major trends in this data, much of it reflecting the number of contexts in each period; hence the abundance of species in Period 4. However, minor variations

in abundance suggest some local economic changes.

It should be emphasised that the scanning method employed does not allow accurate comparison of species abundance and merely gives an indication of trends in relative frequency of occurrence of recorded species. In general, the recovery of cattle, sheep/goat and pig is similar in terms of number of contexts of occurrence and there are no significant peaks of individual species, particularly in view of the frequency of 'cattle-size' and 'sheep-size' and the effect that this can be expected to have on the real recovery of cattle and sheep/goat.

Clearly, in terms of bone-weight (and by inference, meat-weight), cattle contributed most to the diet (Fig 52). The relative importance of cattle mirrors other London Roman sites studied.

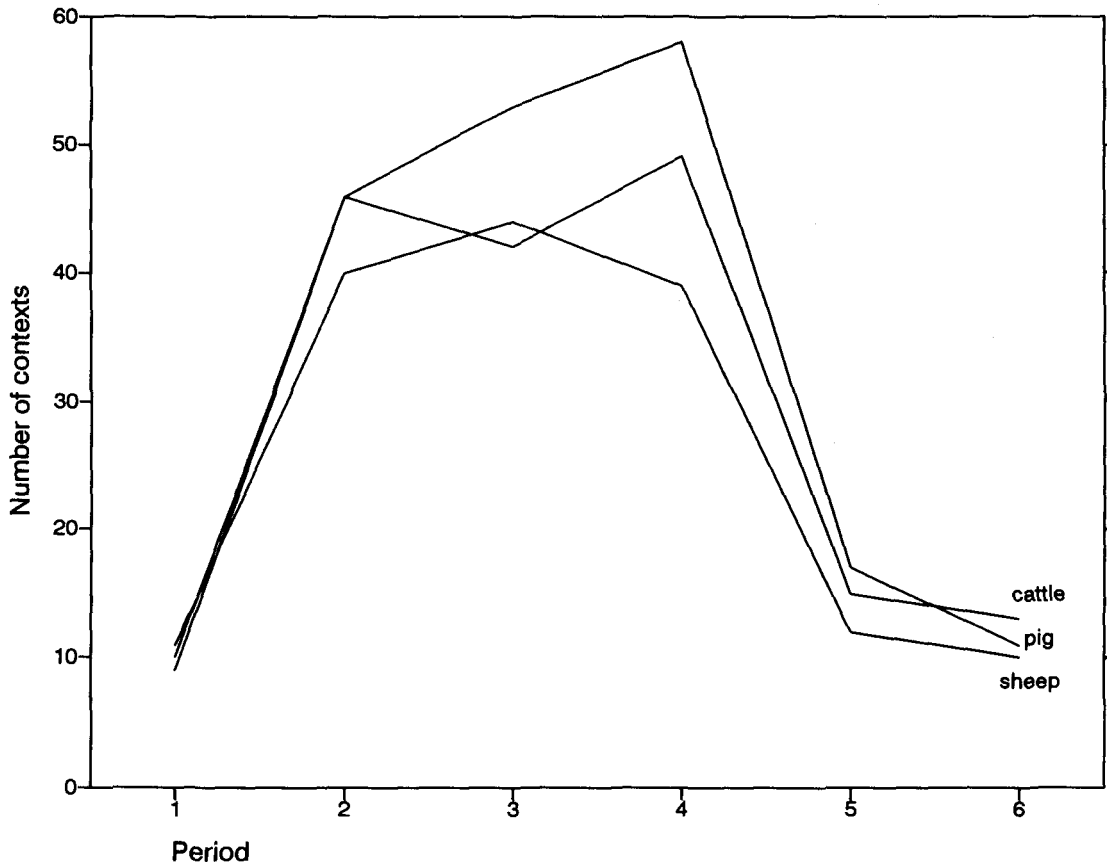


Fig 53. Environmental: frequency of contexts producing cattle, sheep and pig bones in each period on the site. Areas I and II are presented together.

Pig and sheep/goat are the next major contributors, apparently reaching their, roughly equal, maxima in Periods 2, 3 and 4.

Although catalogued as sheep/goat, no goat bones were identified from the Roman deposits, and all the sheep/goat material is believed to be sheep.

Carcass utilisation

Table 17 indicates the frequency with which particular parts of the carcass were present in terms of contexts. Only cattle, sheep and pig are discussed here although it should be noted that all the deer bones represent food debris and primary butchery waste, and not antler working, and that the other species of wild mammal and

bird are probably also food remains, being largely limb bone fragments.

There appear to be differences between the anatomical composition shown by different periods, although unfortunately Periods 1, 5 and 6 are represented by only a few contexts (Table 17). In Period 2, more contexts contained cattle head (skull plus mandible) fragments than other parts of the skeleton although cattle size ribs and vertebral fragments were ubiquitous in this and all other periods. Lower limb bones and metapodial, carpal and tarsal fragments occurred in almost as many contexts as the head bones. These are relatively poor value meat cuts and probably include some primary butchery waste. In the following Period, 3, head bones occur infrequently and, in contrast, more contexts produced lower limb fragments and phalanges

Table 17. *Environmental: number of contexts with different parts of the skeleton of cattle (and cattle size), sheep or goat (and sheep size) and pig in each period*

Period	Total no. contexts	H/C	Head	V/R	UL	LL	MTP	Phal	Neo	Inf
Cattle/cattle size										
1	10		2	3/8	5	5	4	3		
2	50		23	15/44	18	20	20	13		
3	38		7	13/34	16	18	14	18		
4	49	3	16	18/48	29	22	14	10		1
5	15	1	5	3/14	5	7	7	8		
6	13	1	6	6/9	5	2	4	5		1
Sheep/Sheep size										
1	11		3	1/7	4	7	1			
2	42	3	20	9/51	19	21	18	3		3
3	42		14	3/43	17	21	8	3		1
4	39		13	8/48	16	17	9			5
5	12		4	3/15	6	3	1			2
6	10		5	3/8	5	3	1	2		1
Pig										
1	10		6		1	3	2			
2	50		30	6	23	24	19	10		2
3	49		24	3	27	28	13	5		1
4	58		30	1	21	27	22	8		6
5	17		6	3	6	8	8	4		1
6	11		3		2	4	4	1		1

Key: HC horn cores; Head skull & mandible; V/R vertebrae & ribs; UL upper limb; LL lower limb; MTP metapodials, carpals & tarsals; Phal phalanges & sesamoids; Neo neonates; Inf infants

than other bones. These are again low value meat units, and a high frequency of phalanges suggests primary butchery of the carcass although cattle feet could be processed for food and other uses. The concentration of these elements is not sufficient to suggest commercial exploitation. Period 4 contrasted with the earlier assemblages in that more contexts contained upper limb fragments than other bones. These are high value meat cuts, and the abundance of contexts with these fragments and those of the lower limb (Table 17) but no feet suggests a good quality domestic food supply at this time, as well as the more general debris of butchery. The remaining periods are represented by too few contexts to warrant discussion.

Both the cattle and the sheep/goat assemblages contain only sparse samples of horncore although skull elements are common.

Although the pig and sheep material may be biased by preservation and recovery factors, *eg* dog gnawing and poor sampling procedure resulting in under-representation of the smaller and more fragile bones, there appears to be no real bias in representation towards particular anatomical areas. This suggests use of carcass areas of high and low meat-bearing quality and

probably implies use of complete carcasses rather than arrival of the meat as prepared joints.

The abundance of contexts with pig head and lower limb fragments may well be due to the relative robustness of mandibular and tibial fragments and their resultant tendency to survive well.

The general picture perhaps tentatively suggests a change between Periods 3 and 4; the latter period showing a higher proportion of the choicest cuts and perhaps suggesting a change in status or nature of the occupation on the site.

Of some interest is the complete absence of neonatal bones. This suggests that none of these domestic animals were living and breeding in the vicinity. The small number of contexts with infant animals, in particular in Period 4, is likely to represent some slaughter and consumption of lambs and piglets rather than natural deaths of local stock. Very few juvenile cattle were recorded and of 15 jaws from the Roman levels only two exhibited a juvenile condition. In contrast, many of the pig jaws were juvenile, a pattern almost universal on sites of all periods. As well as the presence of juvenile sheep bones, 20 mandibles still possessed deciduous dentition indicating ages below three years, and a further 21 showed

advanced wear on the complete adult dentition, indicating fairly aged adults.

The lack of neonate and the relative scarcity of juvenile material may also reflect poor sampling procedure and possibly the greater intrinsic fragility of these remains and resultant susceptibility to damage *eg* by dog gnawing.

Most of the measurable material recorded from this site derives from the post-Roman levels, and the measurements are therefore not analysed here. Interestingly, the sheep bones from which stature (withers height) was calculated suggested that Roman sheep were larger than the medieval and post-medieval specimens on the site, except for one large post-medieval example. The mean stature ('withers'/shoulder height), calculated from seven specimens using conversion factors summarised in von den Driesch & Boessneck (1974), of the Roman sheep was 61.4 cms. This stature compares with other Roman material from Southwark, *eg* the stature estimates of sheep/goats from Chaucer House were in the range 55–63 cms. (Pipe, 1989).

Conclusions

The analysis shows that the site had access to all the major domestic food animals and wild mammals available as food resources throughout the Roman period. There are, however, fluctuations in the relative importance of these species. Pig may show slightly higher levels in Periods 2, 3 and 4. The difference in the context frequency of pig in these periods may coincide with a change in carcass part/context frequency suggesting better quality beef and mutton joints.

While the former may represent broad economic changes in animal husbandry and supply, the latter may reflect a local change in site circumstance and may relate to a different use or social status for Buildings 6 and 7. The post-Roman dark earth deposits are characterised by a drop in pig frequency and bone weight relative to cattle and sheep. Despite these changes, beef represents by far the most significant contribution to the diet in all periods. The collection appears generally domestic in character, despite possible primary butchery waste in Periods 2 and 3; and lacks the abundance of foot and head fragments, smashed cattle bones or bone working waste found elsewhere in London that clearly reflect craft or commercial activities. The slight differences between the species weights, *eg* of pigs in Periods 4 and 5, in

Area I and Area II (Table 16) possibly reflect differences in land-use between these parts of the site. The generally small sample sizes, in particular from Area II, preclude any definite indication or interpretation of such differences in species and/or anatomy.

There is no evidence of animals breeding on the site at any period and presumably the meat was procured already butchered, or the animals purchased on the hoof and butchered on site.

Although the evidence for fish consumption is minimal, it appears fairly typical of most other Roman London sites so far studied. The lack of soil sample work has probably resulted in significant under representation of this faunal group.

The dentition of cattle suggests that mainly adults were available in the market place, but the sheep jaws suggest nearly 50% of the animals were slaughtered before maturity and the remainder as quite old animals. This suggests that the primary economic use of the cattle was something other than meat, perhaps for draught or for dairy production. The sheep on the other hand were clearly important as a primary meat source as well as for probable dairy and wool production. This picture contrasts with the typically young age of the pig remains for which species no primary use, apart from breeding, is available.

The relative lack of cattle and sheep horn cores in the assemblage implies that these were removed and processed elsewhere for use of the horn as a raw material. There is no real evidence for bone or horn working at the site. All the wild species recovered would have been present as locally exploited game, *eg* woodcock and red deer, or as scavengers (*eg* raven). The rabbit remains are presumably intrusive.

These results serve to indicate the general nature of animal exploitation at the site. Their tentative nature reflects dating considerations plus limitations of the recording and sampling procedures used.

Dendrochronology: tree-ring analysis of Roman timbers

Ian Tyers

Introduction

The analysis and dating of timbers from three Roman structures at 15–23 Southwark Street are

reported here. A 218 year site master has been produced from the measurements of 30 samples. Nearly 200 other samples were examined but not measured.

The southern wall trenches of Building 4 were extensively piled using oak stakes where they crossed an area of reclaimed ground. Two other Roman structures, a pit and a well, also retained some of their timber linings.

The samples

The piles [78]

The traces of some 500 stakes were recorded but the majority were driven into the better drained underlying sands and did not survive. A total of 211 piles that had been driven into the clays and silts of a channel infill were recovered. Many of these were extremely well preserved, often retaining all the sapwood and bark, and in some cases the mosses growing on the bark surfaces were noted.

The timbers ranged from roundwood stakes to quarter and smaller split sections. All the points and the splitting of the sections appeared to have been executed using adzes and axes; no signs of the use of saws were noted.

The complete surviving sections of the piles were extracted as far as was possible. None had survived to the original top surface. The preservation conditions on the site were such that the piles were initially visible in the bottoms of the wall trenches merely as stains, but approximately 30–50 cms below this they were fully preserved. The surviving lengths varied between 40 and 120cms, thus implying that the original piles were 170cms long maximum. The piles were extremely densely packed. Roman piles on some sites are neatly spaced out and relatively ~~loosely~~ *loosely* packed, *cf* under the Roman Riverside Wall at Baynards Castle (Hill *et al* 1980).

A total of 211 stakes were recovered. Many were ~~not~~ *not* suitable for dendrochronological analysis due to a lack of sufficient rings for reliable cross-matching or due to the presence of anatomical anomalies. These timbers were selectively sketched or photographed and then discarded. A total of 44 piles were suitable for analysis and 27 of them successfully dated.

The well [216]

Nine timbers were recovered from a Roman timber-lined well. All were planks from the inner and outer box of the bottom row of timbers, except one sample, 533, which was from the row above bottom. The rest of the well probably also had a timber lining which had not survived. Four samples were measured for tree-rings; the rest discarded as unsuitable.

The pit [216]

Five timbers were recovered from a Roman structure interpreted as a pit. Two corner posts, samples 382 and 388, survived as well as three planks, samples 384, 389 and 390. One sample, 388, was suitable for dendrochronological analysis; the rest were discarded.

Methodology

Standard dendrochronological practice was adopted (see for example Baillie 1982 and Hillam 1985). The ~~tree-ring~~ *tree-ring* sequences of the timbers were measured to an accuracy of 0.1mm initially, some of the samples being re-measured some years later to an accuracy of 0.01mm. Only one radius was measured as standard but difficult, obscure, or important sequences may have been re-measured. The tree-ring sequences were plotted on roll paper to aid visual cross-checking. Cross-matching between timbers was carried out. Phase means and site means were constructed, and the sequences were compared, both with each other and with other tree-ring series. The main reference chronologies used were other Roman sequences, available at the time of analysis, from archaeological sites in Southwark and the City of London as well as data from other sites in England, Northern Ireland, Germany, Belgium and Switzerland.

Results

Forty-nine different timbers were measured. Many of the other timbers were rejected for measurement as having insufficient rings, the minimum number considered viable being 50. Some timbers were rejected as unmeasurable.

Thirty different timbers were dated: 27 timber piles, two from the well and one from the pit. Fig 54 shows the absolute chronological position of the dated pile sequences. Table 18 provides

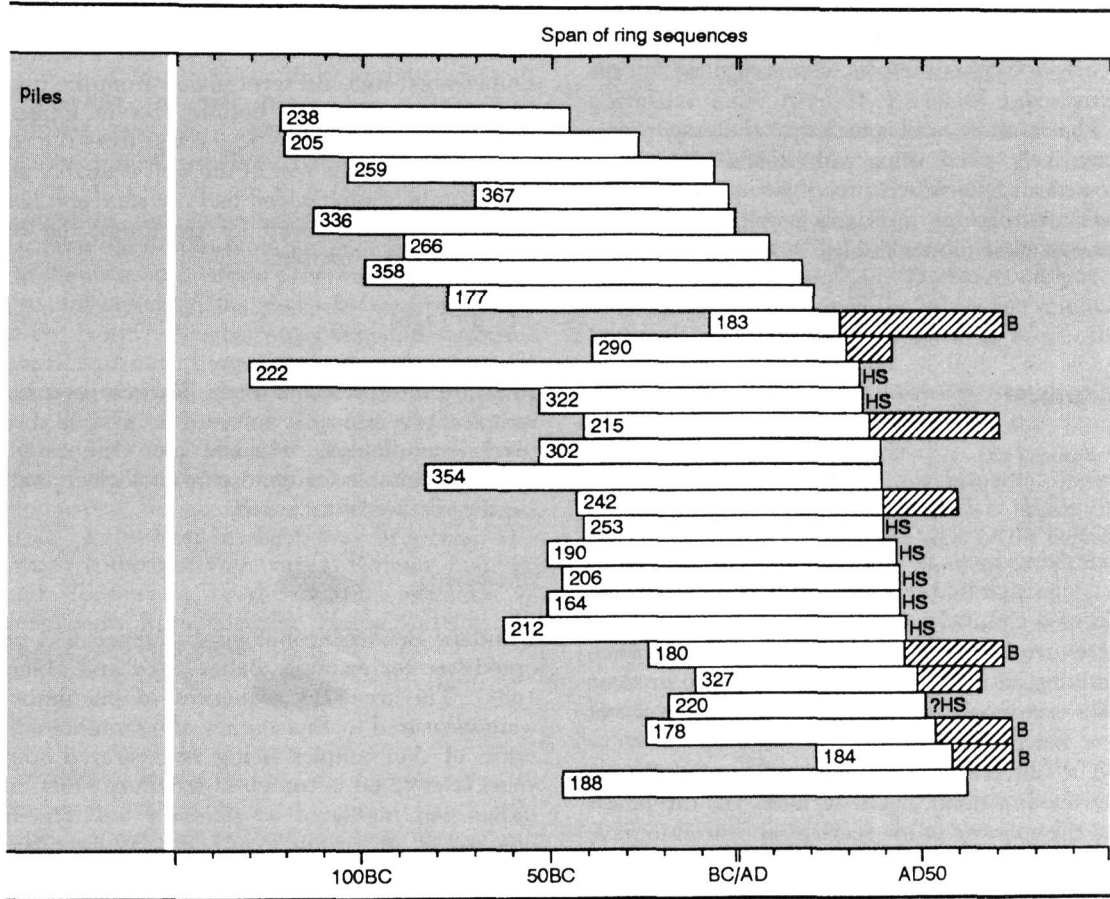


Fig 54. Dendrochronology: the absolute chronological position of the dated pile sequences. The numbers refer to the individual pile sample numbers HS heartwood/sapwood boundary; B bark.

details of the cross-matching between the individual piles. Table 20 provides details of the cross-matching between individual dated timbers and the mean sequences derived from them and a range of dated reference chronologies. The ring-width data for both these and the undated material and a range of other records derived from all the piles are stored at the Museum of London Archaeology Services's Dendrochronology Laboratory.

The piles

The 27 dated samples cross-match to produce a sequence dated 130 BC–AD 74. A very large number of samples from this phase were unsuitable for analysis because of insufficient rings. They do however provide a possible insight into woodland management techniques, and they

also provide raw sapwood data for refining sapwood estimates.

The pit

The single measured timber of 111 rings is dated to 144–34BC.

The well

Only two of the samples were datable, and appear to be planks derived from the same tree (see Tables 19 and 20). The sequence is dated 75 BC–AD 50.

Interpretation

The piles

All the dated piles appear to have been felled contemporaneously. There is no tree-ring

evidence for a later phase of piles within the wall trenches. All the dated samples that retain heartwood/sapwood boundaries, or some sapwood, or bark surfaces, are compatible with the same felling date. There are two samples, 180 and 183, dated with felling in AD 72; and two, 178 and 184, dated with felling in AD 74. There

Table 19. Correlation values (*t* values from Baillie and Pilcher 1973) between individual tree-ring sequences

Individual sample nos	
Phase Well 75 BC-AD 50	
529	533
	7.2

Table 20. Dendrochronology: Correlation values (*t* values from Baillie & Pilcher 1973) between individual tree-ring sequences and a number of independent reference chronologies. Only correlations over 3.0 are listed. \ is where the overlap is less than 5 years

Sample no.	Reference chronology									
	CITY	MLN	PEN	TST	PDN	STHK	COSE	PD	DRT	MAN
a) Piles 130 BC-AD 74										
164	5.1	4.9	4.4	3.4	3.9	4.0		3.9	3.4	3.5
177	5.7	5.7	6.3	5.7	3.8	5.7	6.1	4.6	4.4	5.5
178	6.0	5.5	3.2	3.5	5.2	5.6	3.9	4.5		
180	6.2	4.5	4.7	4.9	4.9	5.6	3.6	4.4	3.3	3.6
183	4.4	4.0	3.3			3.4		3.5	3.4	
184	5.5	4.6			5.9	3.5		3.5		\
188	3.5		4.1		4.5	3.9		3.7		3.3
190	8.2	7.6	7.5	6.7	7.3	6.1	6.6	4.9	6.4	5.5
205	5.1	4.1	3.2	3.6	3.8					
206	6.5	5.8	6.0	5.0	4.9	4.9	3.3	4.2	4.4	4.2
212	7.4	7.7	6.7	6.3	6.6	6.7	5.7	5.3	6.0	3.1
215	6.0	5.5	4.3	3.9	4.9	5.4	3.9	3.8		4.2
220	5.3	6.5	4.8	3.4	4.3	4.7	3.9	4.3		
222	7.5	7.4	6.9	6.3	6.1	4.8	5.9	4.3	5.1	5.7
238	4.9	4.4	3.8	3.7	3.7		\			
242	5.8	4.6	4.5	5.1	5.3	3.7	5.6	4.0		4.2
253	4.5	4.3	4.0	4.0	3.7	4.1		3.7	3.2	
259	10.1	9.8	8.0	8.5	5.7	6.8	4.2	6.8	4.4	5.5
266	7.6	7.1	6.1	5.8	5.4	7.2	3.3	6.6	6.2	4.5
290	5.7	5.7	5.2	4.8	3.8	5.2	3.3	5.5	3.0	4.1
302	3.0	3.7	3.2		3.3	3.9	3.8	3.2		
322	5.4	6.0	5.6	5.8	4.0	5.6	5.0	4.8	5.1	
327	7.3	6.1	4.1		6.2	4.0	3.4	5.1	4.2	3.4
336	4.5	5.3	4.6	5.2		3.1		3.1		4.2
354	6.5	6.4	5.5	6.4	3.1	5.7	3.7	5.1	3.7	5.2
358	5.0	4.0	3.7	4.5					3.9	
367	7.0	6.5	6.5	6.8	5.6	6.4	6.1	6.4	4.3	4.2
MEAN	16.7	14.4	11.8	11.1	12.0	9.3	8.6	10.4	6.5	7.5
b) Pit 144 BC-34 BC										
388	4.5	4.8	5.8	3.7	3.5	3.5		3.9		
c) Well 75 BC-AD 50										
529	5.4	4.2	4.0	3.5	3.2	4.6		4.4	3.6	
533	3.0									
MEAN	4.4	3.0		3.9		3.6		3.4		3.2

Code:

CITY = 14 City of London sites mean (I Tyers unpublished report)

MLN = Miles Lane (Hillam 1986)

PEN = Peninsular House (Hillam 1986)

TST = Thames St Tunnel (Hillam 1980)

PDN = Pudding Lane (data J. Hillam)

STHK = 11 Southwark sites mean—(excludes 15–23 Southwark Street) (I Tyers unpublished report)

COSE = Courage Brewery (COSE84) (Tyers 1988a)

PD = Pickfords D (Tyers 1988b)

DRT = 3 Droitwich sites mean (data 1 Hillam 1982; 2 A. Crone unpublished; 3 C. Groves unpublished)

MAN = Mancetter (Hillam 1984)

are in addition three samples that retain some sapwood, samples 215, 290 and 327, and four samples, 164, 190, 212 and 222, with the heartwood/sapwood boundary, that are all compatible with felling in the same period when using the sapwood estimates from Hillam *et al* 1987.

The pit

The dating of this timber is of no value for site interpretation. A minimum of 80 years of growth is missing from the sample; not a particularly unusual situation.

The well

The two dated planks show ~~no~~ ^{no} sign of sapwood survival and can only provide a terminus *post quem* for the well of AD 60+, ~~is~~ ^{is} some 10 years after the last surviving heartwood ring.

Discussion

The piles

All the datable timbers are suggestive of a fairly tight felling range, and probably a short building and construction phase. However there remains the possibility that the large number of rejected samples are of a secondary piling phase within the old wall trenches of Building 4, and constructed from much younger trees unsuitable for dendrochronological analysis; an occurrence such as this has been identified in the 3rd-century waterfronts at New Fresh Wharf (Hillam & Morgan 1986). In this case, however, there is no archaeological evidence of a second phase and the rejected trees are likely to have been derived from a different and much more immature woodland group.

The presence of bark on the majority of the piles suggests that they had not been stored for any length of time prior to use. The bark, if it had had a chance to dry out, would have been more likely to fall off during the piling operation. Similarly there are likely to have been sufficient demands from local tanning industries for bark stripping to have been profitable if the timber had been stored in wood-yards for any length of time.

There is no striking evidence of significant differences in woodland source in the measured trees. However, as noted above, the rejected

trees are likely to have come from a very different source.

The critical part of this interpretation is whether the 27 dated samples are representative, in terms of felling date, of the total population of piles present under Building 4, or whether they represent an earlier (or later) re-piling phase following an unrecognised rebuilding of the structure on the same wall lines. On archaeological grounds there is no evidence of collapse in the area of the piles. In fact the piles seem to have served their intended function admirably. Nor is there any significant evidence of storage or re-use of any of the timber. Some of the piles appear to be felled two years earlier than some others. This may represent the period of construction of the building. It does seem highly unlikely that vast quantities of stored timbers were used, since a much greater range of felling dates would be expected if that were the case. The 150 fast grown undatable immature piles recovered are most likely to be of similar date to, but of different origin from, the dated group.

It should also be noted that the dated samples were not the biggest and obviously 'best' from the excavations, which demonstrates that total sampling is necessary even on this scale. It would have been extremely easy to miss the datable piles completely by taking only a limited sub-sample of a dozen, or even more, piles from the site.

Some of these samples were re-measured in 1984 prior to their final destruction in the Belfast High Precision Radiocarbon Laboratory as part of the Dendrochronology/Radiocarbon Calibration curve project. They contribute data to the calibration curve for the 1st century BC.

Human remains

Tony Waldron

Introduction

Five adult skeletons in various states of preservation were recovered from the site. Unfortunately two skeletons (Burials 11 and 13) were lost during excavation, and the remaining skeletons were too fragmentary for study. Wherever possible the five studied skeletons were assigned a sex and age using standard anthropological techniques (see Workshop 1980). Where the skull and long bones were intact, measure-

ments were taken both to estimate height (Trotter 1970) and to determine some metric indices (Brothwell 1981). A catalogue of the remains appears below.

Sex and age

Three of the skeletons were considered to be male on the basis of the morphology of the skull or pelvis, and another was considered to be female on the same grounds. The fifth skeleton lacked a skull and the pelvis was too damaged to allow proper examination; nevertheless, measurements of the femoral and humeral head suggested that it was from a male (Table 21).

All the skeletons were of mature adults. Two males were considered to be aged 35–45 years and two others (including the female) were aged at least 45 years at death. The last skeleton lacked those parts of the skeleton which are best used to assess age.

Table 21. *Human bone: demographic detail of skeletons*

Burial	Sex	Age	Height (m)
B1	Female	45+	1.58 (+0.04)
B4	Male	Adult	1.72 (+0.04)
B5	Male	45+	1.59 (+0.03)
B7	Male	35–45	1.66 (+0.04)
B9	Male	35–45	1.75 (+0.03)

Height

Heights were estimated from the maximum length of the limb bones using the regression equations published in 1970 by Trotter. Each of the estimates is shown with its standard error term (Table 21). In the first case (Burial 5), the height is 1.59 ± 0.03 m; this indicates that the 'true' height lies between 1.56 and 1.62 m. Where more than one long bone was measured, that which gave the smallest standard error term was used in the calculation.

From Table 21 it can be seen that the height of the males ranged from 1.59–1.75 m; the single female had a height of 1.58 m. There is insufficient data on which to perform any statistical analyses, but it may be noted that the average height for modern males is 1.74 m and for females, 1.66 m. All but one of these individuals was shorter (on average) than their modern counterparts.

Metric indices

Those cranial, femoral and tibial indices which could be calculated are shown in Table 22. They are too few to allow for any critical comment, although it is interesting that two of the femoral indices are in the eurymeric range (>85), which is unusual and indicates that the upper shaft of the femur is more nearly circular than the norm.

Pathology

Not surprisingly in such a small sample, there was no unusual pathology present. However, two of the group had dental disease, three had degenerative changes in the spine and one had evidence of osteoarthritis.

Dental disease

There were only three skeletons in which the skull or mandible were present, and of these, two (Burials 7 and 9), had lost teeth during life as the result of disease of the teeth or gums. In addition, one (Burial 7) had five teeth with caries.

Degenerative disease of the spine

Both skeletons with dental disease also had degenerative changes in the spine. These took the form of osteophytosis of the lower thoracic and upper lumbar spine and the presence of Schmorl's nodes in the thoracic spine. Osteophytes on the vertebra are lateral out-growths of new bone which develop around the margins of the vertebral body and, when unaccompanied by signs of other diseases, are probably normal concomitants of ageing. They have a different aetiology from osteoarthritis, although they are often referred to as being part of the osteoarthritic process.

Schmorl's nodes are indentations in the end plates of the vertebral bodies which are caused by herniations of the nucleus pulposus of the

Table 22. *Human bone: metric indices of skeletons*

Burial	Cranial	Femoral	Tibial
B1	78.4	71.9	77.8
B5		90.6	71.5
B7	76.2		
B9		93.9	

intervertebral disc. Their exact aetiology is not clear but they are probably traumatic in origin and are extremely common in palaeopathological material.

Osteoarthritis

One skeleton (Burial 5) had osteoarthritis of the acromio-clavicular joints, the sterno-clavicular joints, the foot and the spine. In the spine the facet joints of the sixth and seventh cervical and first thoracic vertebrae were involved. In the foot, the left first metatarso-phalangeal joint was affected. These sites are all found to be frequently diseased in skeletal material.

Catalogue

This catalogue indicates the state of preservation of each inhumation, and gives an estimation of the total amount of the skeleton present. The age, sex and height of each skeleton are given where these could be determined; the method used in each case is shown in brackets. Each estimate of height (in metres) is accompanied by its standard error.

B1. Well preserved skeleton lacking left humerus and clavicle, both scapulae, mandible and cervical and upper thoracic vertebrae. Skull is assumed to belong to the post-cranial skeleton and there is no reason to suppose that it does not; *c.* 85%

Female (morphology of pelvis)

45+ (morphology of pubic symphysis)

1.58 + 0.04 (femur + tibia)

B4. Partial and damaged adult skeleton. Lacks skull, left leg, left lower arm, left pelvis, some cervical vertebrae and small bones of the hands and feet; *c.* 50%

Male (femoral and humeral head diameters)

1.72 + 0.04 (right humerus)

B5. Well preserved skeleton which lacks the skull and some vertebrae and some small bones of the hands and feet; *c.* 85%

Male (morphology of pelvis)

45+ (morphology of pubic symphysis)

1.59 + 0.03 (femur + tibia)

B7. Incomplete skeleton of robust male. Lacks right humerus, pelvis, lower legs and some small bones of the hands; *c.* 45%

Male (morphology of skull)

35-45 (morphology of pubic symphysis; dental wear)

1.66 + 0.04 (left humerus)

B9. Substantially intact skeleton but with a great deal of post-mortem damage. Many small bones missing, most of axial skeleton and both fibulae; *c.* 85%

Male (morphology of pelvis and skull)

35-45 (morphology of pubic symphysis, dental wear)

1.75 + 0.03 (femur + tibia)

5. CONCLUSIONS

The excavations at 15-23 Southwark Street have revealed a sequence of Roman buildings including some high status structures apparently connected with a civic or military function. Taken with discoveries of substantial stone buildings and evidence for military occupation at other sites in north Southwark (Yule 1989, 13-17), these findings challenge the traditional interpretation of Southwark as a low status suburb of Londinium and suggest that at least parts of the civil and military administration were sited on the south bank of the river.

There is some evidence for pre-Roman use of this and other sites in north Southwark, but as yet data is insufficient to indicate how substantial or permanent occupation may have been. It is therefore unclear whether those responsible for the earliest Roman activity in the area were in any way influenced by pre-existing structures.

It has often been suggested that it was the Roman army which was responsible for the initial infrastructure works and ground preparation in Roman Southwark; for example building the roads and consolidating the bridge-head crossing (*eg* Sheldon 1978, 28). At 15-23 Southwark Street, there is evidence for activity perhaps in the mid 1st century in the form of coins of AD 45-65 and pottery of AD 45/50-65. The presence of a dolabra sheath guard in a late Iron Age/early Roman context suggests the presence of the army.

Sheldon (1978, 28) also suggested that the army may have made use of north Southwark as a base for the transport and distribution of supplies in the pre-Flavian period. This hypothesis is supported by finds of military equipment and a high number of irregular Claudian coins on north Southwark sites during the pre-Flavian period. These are most commonly found on sites where the army were present in this period. Comparison of the coin distribution shows that it is most similar to those from coastal or estuarine supply bases (Hammerson 1978, 587-600).

In addition to the dolabra sheath guard, at least nine other items of military equipment were found at 15-23 Southwark Street. On the basis of these and 16 irregular Claudian coins, Hammerson (this volume) suggests that there was a military presence on the site itself. There is no clear evidence for the functions of the earliest Roman buildings at 15-23 Southwark Street

(Structures 2, 3 and Buildings 1–3), which dated to AD 60–74, but their small size and simple construction suggest that if they had a ‘military’ use it would most likely have been as residences for personnel involved in distribution, or as stores and outhouses.

Later in the 1st century AD masonry buildings were constructed on the site (Building 4 is dated to AD 74 by dendrochronology), also at Winchester Palace, where there was a large building with a raised floor possibly used for storage. These large early masonry buildings are in marked contrast to their contemporary clay and timber counterparts, and imply a higher status of military, official or public function. There may have been a physical connection between these two masonry buildings in the form of a road—Road 3 at Winchester Palace is aligned on Building 4.

It has been suggested that Building 4 may have been a *mansio* providing accommodation for the *cursus publicus* (imperial posting service) and other government officials. It was so positioned as to be at the southern approach to the Roman city close to the junction of two major roads. Although it has only a few of the characteristics of a *mansio* further remains of this complex, which should aid interpretation, are being revealed on neighbouring sites at the time of writing (Drummond-Murray 1993, and also possibly Woodger 1994).

Buildings 6 and 7 appear to represent the continued use of a refurbished Building 4 in the later Roman period, perhaps still functioning as a *mansio*. That these buildings were of high status is indicated by the presence of hypocausted rooms and mosaics. Buildings 6 and 7 produced large quantities of high quality building material such as glass *tesserae*, mosaics, exotic marbles and hypocaust tiles. The ceramic building material fabric assemblage associated with these buildings, including the *Classis Britannica* fabric, is comparable with those from other nearby Southwark sites, such as Winchester Palace and Courage Brewery, but is dissimilar to those of the walled City, indicating some difference in sources of supply. This would appear to support the hypothesis that this part of Roman London had a different or special status (Crowley, this volume).

At Winchester Palace a building complex dating from the early 2nd to 4th centuries incorporated a heated suite of rooms and a large bath house. A 3rd-century inscription lists military personnel, suggesting a continued mili-

tary or administrative role for buildings on this site. The Courage Brewery sites revealed a large masonry courtyard building possibly supplied with its own cultic cellared building, which suggests the presence of a Romanised elite.

It would thus appear that during most of its history, this area of Roman Southwark served not only as a residential and commercial area, but also as a district where important administrative or military functions were being carried out outside the walled city.

By the mid 4th century, however, inhumations were being placed in the former settlement, indicating that it had contracted perhaps to a small enclave around the bridgehead. The coin loss pattern for excavated sites in north Southwark peaks in the AD 340s and declines thereafter—although this is based on a relatively low numbers of coins (Hammerson, this volume). Additionally the reworking of late Roman stratigraphy into dark earth deposits at this and other sites results in a paucity of evidence for this period. How far the settlement continued into the 4th century, therefore, is unclear.

ACKNOWLEDGEMENTS

Carrie Cowan wishes to thank the Greater London Council, the Department of the Environment, English Heritage, the London Borough of Southwark, the John Lewis Partnership, Courage Ltd, Mecca Ltd for funding the excavation and English Heritage for funding the post-excavation work.

Thanks are due to the staff and volunteers who worked on the excavation and post-excavation analysis.

Thanks are also due to David Beard, Jonathan Cotton, Dominic Perring, Chris Sparey-Green and John Wachter for their comments on the text, and especially to David Bentley, Peter Hinton and Brian Yule for their help and advice.

Thanks are also due to Gill Andrews, Alison Hawkins, Quita Mould, John Schofield, Roberta Tomber and Roger Thomas for their help, and to Tony Dyson who edited the report.

Excavation

George Dennis, David Beard and Martin Dean supervised the excavation of Area I and George Dennis, David Beard and Carrie Cowan supervised the excavation of Area II.

Illustrations

Figures 1, 2, 5–7, 9–14 and 16 were drawn by David Bentley; Figure 3 by Tracy Wellman; Figures 8 and 15 by Michael Jones. Figure 17 was drawn by Jonathan Cotton; Figures 18 and 37–41 by Nigel Harris; Figure 19 by Jo Higson; Figures 20–36, 43–51 by Sue

Hurman. Figure 42 was drawn by Hester White; Figures 52 and 53 by James Rackham; Figure 54 by Ian Tyers.

Photographs

The site photographs were taken by George Dennis and David Beard; the finds photographs by Andy Chopping who also printed all the photographs for publication.

BIBLIOGRAPHY

- ADKINS & NEEDHAM (1985), L Adkins & S Needham 'New research on a late Bronze Age enclosure at St Mary's Hospital', Carshalton *Surrey Archaeol Collections* 76, 11–50.
- ALLASON-JONES (1984), L Allason-Jones 'Roman earrings' *Current Archaeol* 8 (92), 340–41.
- ALLEN (1986), D Allen 'The glass vessels' in Zienkiewicz 1986, 98–116.
- AMOROSI (1989), T Amorosi *A postcranial guide to domestic neo-natal and juvenile mammals* (BAR International Ser, 533).
- ANDERSON & WACHER (1980), A S Anderson & J S Wacher 'Excavations at Wanborough, Wiltshire: an interim report' *Britannia* 11, 115–126.
- ARTHUR & MARSH (1978), P Arthur & G Marsh *Early fine wares in Roman Britain* (BAR British ser 57).
- ATKINSON (1914), D Atkinson 'A hoard of samian ware from Pompeii' *J Roman Stud* 4, 27–64.
- BAILEY (1980a), D M Bailey 'Ceramic lamps' in D M Jones *Excavations at Billingsgate Buildings, 'Triangle', Lower Thames Street, 1974* (LAMAS Special Paper 4), 84–6.
- BAILEY (1980b), D M Bailey *A catalogue of lamps in the British Museum: 2, Roman lamps made in Italy*.
- BAILEY (1983), D M Bailey 'A Cnidian relief ware sherd from London' *Antiq J*, 63, 374–6.
- BAILEY (1988), D M Bailey *A catalogue of lamps in the British Museum: 3, Roman provincial lamps*.
- BAILLIE (1982), M G L Baillie *Tree-ring dating and archaeology*.
- BAILLIE & PILCHER (1973), M Baillie & J Pilcher 'A simple cross-dating program for tree-ring research' *Tree-ring Bulletin* 33, 7–14.
- BAKER & BROTHWELL (1980), J Baker & D Brothwell *Animal diseases*.
- BAMFORD (1982), H M Bamford *Beaker domestic sites in the Fen edge and East Anglia* (East Anglian Archaeology monograph 16).
- BARBER ET AL (1990), B Barber, D Bowsher & K Whittaker, 'Recent excavations of a Roman cemetery in Londinium' *Britannia* 21, 1–12.
- BARBET (1983), A Barbet *La peinture murale romaine dans les provinces de l'Empire* (BAR International ser).
- BARRETT (1978), J Barrett 'The prehistoric pottery from 106–114 Borough High Street' in *Southwark Excavations 1972–74* (London Middlesex Archaeol Soc & Surrey Archaeol Soc: Joint Publication 1), 197–9.
- BARRETT (1988), J Barrett 'The prehistoric pottery' in Hinton 1988, 55–66.
- BERGER (1960), L Berger *Romische Glaser aus Vindonissa*, Bele.
- BETTS & FOOT (forthcoming), I M Betts & R Foot 'A newly identified late Roman tile group from Southern England'.
- BIRD & GRAHAM (1978), J Bird & A Graham 'Gazetteer of Roman sites in Southwark' in Bird et al 1978, 517–26.
- BIRD & MARSH (1978), J Bird & G Marsh 'The samian ware' in Bird et al 1978, 527–30.
- BIRD ET AL (1978), J Bird, A H Graham, H Sheldon & P Townend *Southwark Excavations 1972–74* (London & Middlesex Archaeol Soc & Surrey Archaeol Soc: Joint Publication No 1).
- BOND (1988), D Bond 'Excavation at the North Ring, Mucking, Essex: a late Bronze age enclosure' *East Anglian Archaeol*, 43.
- BOON (1974a), G C Boon *Silchester, the Roman town of Calleva*.
- BOON (1974b), G C Boon 'Caernarvon-Segontium' *Amgueddfa: bulletin of the National Museum of Wales* 18, 5–6.
- BRAILSFORD (1962), J W Brailsford *Antiquities from Hod Hill in the Durden collection in the British Museum*.
- BRITISH MUSEUM CATALOGUE (1923), *Catalogue of coins of the Roman Empire*, vol 1.
- BRODRIBB (1987), G Brodrigg *Roman brick and tile* (Gloucester).
- BROTHWELL (1981), D Brothwell *Digging up bones*.
- BROWNE (1975), D M Browne 'Bone objects' in Woods et al 1975, 258.
- BURNHAM & WACHER (1990), B C Burnham & J Wacher *The small towns of Roman Britain*.
- BUSHE-FOX (1928), J P Bushe-Fox *Excavation of the Roman fort at Richborough, Kent: 2* (Oxford).
- BUSHE-FOX (1932), J P Bushe-Fox *Third report on the excavation of the Roman fort at Richborough, Kent* (Rep Research Cttee Soc of Antiqs, 10).
- CARSON ET AL (1965), R A C Carson, P V Hill & J P C Kent *Late Roman bronze coinage*.
- CHARLESWORTH (1959), D Charlesworth 'Roman glass in northern Britain' *Archaeol Aeliana* 4th ser. 37, 33–58.
- CHARLESWORTH (1972), D Charlesworth 'The glass' in S S Frere (ed) *Verulamium Excavations 1* (Rep Research Cttee Soc of Antiqs 28), 196–215.
- CHARLESWORTH (1984), D Charlesworth 'The Xanten Glass' in *Beitrag zur Archeologie des romischen Rheinlands 4* (Rheinische Ausgrabungen 23, Cologne), 984, 283–300.
- CLAPHAM ET AL (1962), A R Clapham, T G Tutin & E F Warburg *Flora of the British Isles* (2nd ed, Cambridge).
- CLAPHAM ET AL (1987), A R Clapham, T G Tutin

- & E F Warburg *Flora of the British Isles* (3rd ed, Cambridge).
- CLARKE (1979), G Clarke *The Roman cemetery at Lankhills (Winchester Studies 3: Pre-Roman and Roman Winchester, Part 2)* (Oxford).
- COHEN & SERJEANTSON (1986), A Cohen & D Serjeantson *A manual for the identification of bird bones from archaeological sites*.
- COLLINGWOOD & WRIGHT (1991), S S Frere & R S O Tomlin (eds) R G Collingwood & R P Wright *The Roman inscriptions of Britain 2: Instrumentum domesticum* fasc 2.
- COOL (1990), H E M Cool, 'The problem of 3rd century drinking vessels in Britain' in *Annales du 11e Congrès de l'Association Internationale pour l'Histoire du Verre, Basel 1988* (Amsterdam), 167-175.
- COOL & PRICE (1987), H Cool & J Price 'The glass' in G W Meates *The Roman villa at Lullingstone, Kent, 2: The wall paintings and finds* (Maidstone), 110-142.
- CRADDOCK ET AL (1973), P T Craddock, J Lang & K S Painter 'Roman horse-trappings from Fremington Hagg, Reeth, Yorkshire' *British Museum Quarterly* 37, 9-17.
- CROWLEY & BETTS (1992), N Crowley & I Betts 'Three Classis Britannica stamps from London' *Britannia* 23, 218-222.
- CRUMMY (1983), N Crummy *The Roman small finds from excavations in Colchester 1971-79* (Colchester Archaeol Trust, Report 2).
- CULPEPER (1653), N Culpeper *The Complete Herbal*.
- CUMMINGS (1980), K Cummings *The technique of glass forming*.
- CUNLIFFE (1968), B W Cunliffe (ed) *Fifth report on the excavations of the Roman fort at Richborough, Kent* (Rep Research Cttee Soc of Antiqs, 23).
- CUNLIFFE (1971), B W Cunliffe *Excavations at Fishbourne, 1961-69: 2 The finds* (Rep Research Cttee Soc of Antiqs, 27).
- CUNLIFFE (1988), B W Cunliffe (ed) *The Temple of Sulis Minerva at Bath: 2 The finds from the sacred spring* (Oxford University Cttee for Archaeol, Monograph 16).
- CURLE (1911), J Curle *A Roman frontier post and its people: the fort of Newstead in the parish of Melrose* (Glasgow).
- CZURDA-RUTH (1979), B Czurda-Ruth *Die römischen Gläser vom Magdalensburg: Archeologische Forschungen zu den Grabungen auf dem Magdalensburg 6* (Kartner Museumsschriften 65), (Klagenfurt).
- DAVEY & LING (1982), N Davey & R Ling *Wall-painting in Roman Britain* (Britannia Monograph Ser, 3).
- DEAN (1980), M Dean 'Excavations at Arcadia Buildings, Southwark' *London Archaeol* 3, 367-372.
- DEAN & HAMMERSON (1980), M Dean & M Hammerson 'Three inhumation burials from Southwark' *London Archaeol* 4, 17-21.
- DENNIS (1978), G Dennis '1-7 St Thomas Street' in Bird *et al* 1978, 291-422.
- DILLON ET AL (1991), J Dillon, S Jackson & H Jones 'Excavations at the Courage brewery and Park Street, 1984-1990' *London Archaeol* 6, 255-262.
- DOWN (1979), A Down 'Glass' in A Down (ed) *Chichester Excavations 4* (Chichester), 163.
- DRIESCH, VON DEN (1976), A von den Driesch 'A guide to the measurement of animal bones from archaeological sites' *Peabody Museum Bulletin* 1, Cambridge Mass., Harvard University.
- DRIESCH, VON DEN & BOESSNECK (1974), A von den Driesch & J Boessneck 'Kritische Anmerkungen zu Widerristhohenberechnung aus Langenmassen vor- und fruhgeschichtlicher Tierknochen' *Saugetierkundliche Mitteilungen* 22, 325-348.
- DRUMMOND-MURRAY (1993), J Drummond-Murray *Excavations at the Redcross Way Cable Trench (Jubilee Line Extension)* Unpublished archive report, Museum of London.
- DRURY (1975), P J Drury 'Chelmsford' in W Rodwell & T Rowley (eds) *Small towns of Roman Britain* (BAR British ser, 15), 159-174.
- ENGLISH HERITAGE (1991), *The management of archaeological projects*.
- FERRETTI & GRAHAM (1978), E Ferretti & A H Graham '201-211 Borough High Street' in Bird *et al* 1978, 53-176.
- FOLZER (1913), E Folzer 'Die Bilderschusseln der ost-gallischen Sigillata-Manufakturen' *Römische Keramik in Trier*, 1 (Bonn).
- FOSSING (1929), P Fossing *The Thorvaldsen Museum: catalogue of the antique engraved gems and cameos* (Copenhagen).
- FRANCE & GOBEL (1985), N E France & B M Gobel *The Romano-British temple at Harlow* (West Essex Archaeological Group).
- FREMERSDORF (1967), F Fremersdorf *Die römischen Gläser mit Schliff, Bemalung und Goldauflagen aus Köln* (Die Denkmäler des römischen Köln, 8).
- FRERE (1984), S S Frere *Verulamium Excavations 3* (Oxford Univ Cttee for Archaeol: Monograph No 1).
- FRERE (1987), S S Frere *Britannia*.
- FRERE & ST JOSEPH (1974), S S Frere & J K St Joseph 'The Roman fortress at Longthorpe' *Britannia* 5, 1-129.
- FUENTES (1991), N Fuentes 'The mule of a soldier' *J Roman Equipment Studies* 2, 65-99.
- FURTWANGLER (1896), A Furtwangler *Königliche Museen zu Berlin: Beschreibung der Geschnittenen Steine im Antiquarium* (Berlin).
- GARD (1937), L Gard *Reliefsigillata des 3. und 4. Jahrhunderts aus den Werkstätten von Trier* (unpub dissertation, Univ of Tübingen).
- GERCKE (1970), P Gercke *Gemmensammlung im Archäologischen Institut der Universität Göttingen* (Antike Gemmen in Deutschen Sammlungen (Wiesbaden)) 3, 63-176.
- GIORGI (1993), J Giorgi *The plant remains from 283 Tooley Street, Southwark* (MoLAS Archive Report).

- GIORGI (in prep), J Giorgi *The plant remains from Winchester Palace, Southwark*.
- GLASBERGEN (1948), W Glasbergen 'Versierde Claudisch-Neronische Terra Sigillata van Valkenburg ZH' *Jaarverslag van de Vereniging voor Terpenonderzoek* (Groningen), 25–28.
- GODWIN (1975), H Godwin *The history of the British flora: a factual basis for phytogeography* (2nd ed, Cambridge).
- GOETHERT-POLASCHEK (1977), K Goethert-Polaschek *Katalog der romischen Landesmuseums, Trier* (Mainz am Rhein).
- GOFFIN (1985), R Goffin *Romano-British wall plaster from Fenchurch Street, City of London* (unpublished report for the Diploma in Post-excavation Studies, University of Leicester).
- GOLDSTEIN (1979), S M Goldstein *Pre-Roman and early Roman glass in the Corning Museum of Glass* (Corning).
- GOODBURN (1984), R Goodburn 'The non-ferrous metal objects' in Frere 1984, 19–68.
- GOODBURN & GREW (1984a), R Goodburn & F Grew 'Objects of bone' in Frere 1984, 69–76.
- GOODBURN & GREW (1984b), R Goodburn & F Grew, 'Objects of stone' in Frere 1984, 77–82.
- GRAHAM (1978), A H Graham 'The geology of north Southwark and its topographical development in the post-pleistocene period' in Bird *et al* (1978), 501–516.
- GRAHAM (1988a), A H Graham '64–70 Borough High Street' in Hinton 1988, 55–66.
- GRAHAM (1988b), A H Graham 'The District Heating Scheme' in Hinton 1988, 27–54.
- GRAHAM & HINTON (1988), A H Graham & P Hinton 'The Roman roads in Southwark' in Hinton 1988, 19–24.
- GREEN (1977), C Green 'The significance of plaster burials for the recognition of Christian cemeteries' in R Reece (ed) *Burial in the Roman world* (CBA Research Rep 22), 46–52.
- GREEN (1975), H J M Green 'Godmanchester' in W Rodwell & T Rowley (eds) *Small towns of Roman Britain* (BAR British ser, 15), 183–210.
- GREEN (1976), M Green *The religions of civilian Roman Britain* (BAR British ser, 24).
- GREW & GRIFFITHS (1991), F Grew & N Griffiths 'The pre-Flavian military belt: the evidence from Britain', *Archaeologia* 109, 47–84.
- GROSE (1991), D F Grose 'Early imperial Roman cast glass: The translucent coloured and colourless fine wares' in M Newby & K Painter (eds) *Roman glass: Two centuries of art and invention* (Soc of Antiqs Occasional Paper 13), 1–18.
- HAGEN (1937), W Hagen 'Kaiserzeitliche Gagatarbeiten aus dem rhenischen Germanien' *Bonner Jahrbuch* 142, 77–144.
- HAMMERSON (1978), M Hammerson 'The coins' in Bird *et al* 1978, 587–601.
- HAMMERSON (1988), M Hammerson 'The Roman coins from Southwark' in Hinton 1988, 417–26.
- HARDEN (1936), D B Harden *Roman glass from Karanis found by the University of Michigan archaeological expedition in Egypt 1924–9* (University of Michigan Studies, Humanistic Series, 41, Ann Arbor).
- HARDEN (1947), D B Harden 'The glass' in C F C Hawkes & M R Hull *Camulodunum: First report of the excavations at Colchester 1930–39* (Research Rep of the Soc of Antiqs 20), 287–307.
- HARDEN (1960), D B Harden 'The Wint Hill hunting bowl and related glasses' in *Journal of Glass Studies* 2, 44–81.
- HARDEN (1962), D B Harden 'Glass in Roman York' in RCHM YORK 1962, 136–141.
- HARDEN (1973), D B Harden 'The glass' in A.C.C. Brodribb, *Excavations at Shakenoak Farm, near Wilcote, Oxfordshire*, 4 (privately printed), 98–107.
- HARDEN (1987), D B Harden *Glass of the Caesars* (Milan).
- HARDEN & PRICE (1971), D B Harden & J Price 'The glass' in B W Cunliffe *Excavations at Fishbourne, 1961–1969 2: The Finds* (Rep Research Cttee of the Soc of Antiqs, 27), 317–368.
- HAWKES & DUNNING (1961), S C Hawkes & G C Dunning 'Soldiers and settlers in Britain, fourth to fifth centuries, with a catalogue of animal-ornamented buckles and related belt-fittings' *Medieval Archaeol* 5, 1–70.
- HAWKES & HULL (1947), C F C Hawkes & M R Hull *Camulodunum* (Rep Research Cttee Soc of Antiqs, 14).
- HEARD (1989a), K Heard 'Excavations at 10–18 Union Street, Southwark' *London Archaeol* 6, 126–131.
- HEARD (1989b), K Heard *Excavations at 52 Southwark Street, London SE1* (unpublished archive report, Museum of London).
- HEARD ET AL (1990), K Heard, H Sheldon & P Thompson 'Mapping Roman Southwark' *Antiquity* 64, 608–19.
- HEBDITCH & MELLOR (1973), M Hebditch & J Mellor 'The forum and basilica of Roman Leicester' *Britannia* 4, 1–83.
- HEIGHWAY & PARKER (1982), C M Heighway & A J Parker 'The Roman tiliary at St Oswald's Priory, Gloucester' *Britannia* 13, 25–78.
- HENIG (1978a), M Henig *A corpus of Roman engraved gemstones from British sites* (BAR British Ser 8).
- HENIG (1978b), M Henig 'Signet rings from Roman London' *Trans London Middlesex Archaeol Soc* 29, 113–6.
- HILDYARD (1945), E J W Hildyard 'The ancestry of the trumpet fibula' *Antiq J* 24, notes 154–158.
- HILL ET AL (1980), C Hill, M Millett & T Blagg *The Roman riverside wall and monumental arch* (London & Middlesex Archaeol Soc: Special Paper, 3).
- HILLAM (1980), J Hillam 'The Thames Street tunnel; interim dendrochronology report' (Ancient Monuments Lab Report Series No. 3257, unpublished).

- HILLAM (1982), J Hillam 'The dating of the Roman timbers from Friar Street 1, Droitwich' (Ancient Monuments Lab Report Series No. 3754, unpublished).
- HILLAM (1984), J Hillam 'Mancetter Excavations 1977: Tree-ring analysis' (Ancient Monuments Lab Report Series No. 4169, unpublished).
- HILLAM (1985), J Hillam 'Theoretical and applied dendrochronology: how to make a date with a tree' in P Phillips (ed) *The archaeologist and the laboratory* (CBA Research Rep, 58), 17-23.
- HILLAM (1986), J Hillam 'Tree-ring dating in the City of London: the Bridgehead sites and the dating of the Roman harbour' (Ancient Monuments Lab Report Series, No. 4794, unpublished).
- HILLAM & MORGAN (1986), J Hillam & R Morgan 'Tree-ring analysis of the Roman timbers' in Miller *et al* 1986, 76-85.
- HILLAM ET AL (1987), J Hillam, R A Morgan & I Tyers, 'Sapwood estimates and the dating of short ring sequences' in R G W Ward (ed) *Applications of tree-ring studies: current research in dendrochronology and related subjects* (BAR International Ser 333), 165-185.
- HINTON (1988), P Hinton (ed) *Excavations in Southwark 1973-76, Lambeth 1973-79* (London & Middlesex Archaeol Soc & Surrey Archaeol Soc: Joint Publication No 3).
- HOBLEY (1972), B Hobley 'Excavations at the Lunt Roman military site, Baginton, Warwicks' *Trans Birmingham & Warwicks Archaeol Soc* 85, 7-92.
- HULD-ZETSCHKE (1971), I Huld-Zetsche 'Glatte Sigillaten des Massenfundes aus Trier' *Rei Cretariae Romanae Fautorum Acta* 13, 21-39.
- HULL (1959), M R Hull *Roman Colchester* (Rep Research Cttee of the Soc of Antiqs, 20).
- ISINGS (1957), C Isings *Roman glass from dated finds* (Groningen).
- JACKSON (1986), R Jackson 'A set of Roman medical instruments from Italy' *Britannia* 17, 119-167.
- JENKINS (1958), F Jenkins 'The cult of the 'Pseudo-Venus' in Kent' *Archaeol Cantiana* 72, 60-76.
- JENKINS (1978), F Jenkins 'Pipe-clay statuette; 93-5 Borough High Street' in Bird *et al* 1978, 470-3.
- JENKINS (1985), I Jenkins 'A group of silvered-bronze horse-trappings from Xanten' *Britannia* 16, 141-164.
- JENKINS (1986), F Jenkins 'The ceramic figurines' in Miller *et al* 1986, 205-6.
- JONES (1978), A K G Jones 'The fish remains' in Bird *et al* 1978, 414-416.
- KENYON (1948), K M Kenyon *Excavations at the Jewry Wall site, Leicester* (Rep Research Cttee of the Soc of Antiqs, 15).
- KENYON (1959), K M Kenyon *Excavations in Southwark 1945-1947* (Research papers of the Surrey Archaeol Soc, No 5).
- KINGSFORD (1971), C L Kingsford (ed) *John Stow: a survey of London* 1, (Oxford).
- KNORR (1919), R Knorr *Topfer und Fabriken verzierter Terrasigillata des ersten Jahrhunderts* (Stuttgart).
- KNORR (1952), R Knorr *Terra-Sigillata-Gefasse des ersten Jahrhunderts mit Topfernamen* (Stuttgart).
- LANDES (1983), C Landes *C Verres gallo-romains* (Catalogue d'Art et d'Histoire du Musee Carnavalet 4, Bulletin du Musee Carnavalet, 36e annee, Nos 1-2).
- LAWRENCE & BROWN (1974), M J Lawrence & R W Brown *Mammals of Britain*.
- LAWSON (1976), A J Lawson 'Shale and jet objects from Silchester' *Archaeologia* 105, 241-75.
- LIGHTFOOT (1988), C Lightfoot 'Cameo glass no. 83' in Hinton 1988, 374-8.
- LING (1985), R Ling *Romano-British wall painting* (Aylesbury).
- LING (1991), R Ling *Roman painting*.
- LIVERSIDGE (1969), J Liversidge 'Furniture and interior decoration' in A Rivet (ed) *The Roman villa in Britain*, 127-172.
- LIVERSIDGE (1977), J Liversidge 'Recent developments in Romano-British wall painting' in J Munby and M Henig (eds) *Roman life and art in Britain* 1 (BAR 41).
- LOESCHKE (1919), S Loeschke *Lampen aus Vindonissa* (Zurich).
- LONDON MUSEUM (1930), London Museum Catalogue, No 3: *London in Roman times*.
- LONDON MUSEUM (1970), London Museum: *Glass in London*.
- MASSKANT-KLEIBRINK (1978), M Maaskant-Kleibrink *Catalogue of the engraved gems in the royal coin cabinet, The Hague: The Greek, Etruscan and Roman collections* (The Hague).
- MACDOWELL (1979), D W MacDowell 'The western coinages of Nero' *American Numismatic Soc*.
- MACGREGOR (1976), M MacGregor *Early Celtic art in north Britain* 1 (Leicester).
- MACKENNA & LING (1991), S A MacKenna & R Ling 'Wall painting from the Winchester Palace site, Southwark' *Britannia* 22, 159-171.
- MACKRETH (1987), D F MacKreth, 'Roman public buildings' in J Schofield & R Leech (eds) *Urban archaeology in Britain* (CBA Research Rep 16), 133-146.
- MACPHAIL & COURTY (1985), R I MacPhail & M A Courty 'The interpretation and significance of urban deposits' in H Jugner (ed) *Nordic Archaeometry* (Finnish Archaeol Soc 3), 71-83.
- MCDONNELL (1990), G McDonnell *The identification of the slags and residues from DGLA sites: National Gallery and Peabody, London* (Ancient Monuments Laboratory report 69/90, unpublished).
- MANNING (1972), W H Manning 'The iron objects' in S S Frere (ed) *Verulamium Excavations* 1 (Rep Research Cttee Soc of Antiqs 28), 163-192.
- MANNING (1985), W H Manning *Catalogue of the Romano-British iron tools, fittings and weapons in the British Museum* (British Museum Publications).
- MARSDEN (1971), P R V Marsden 'Recent

- excavations in Southwark' *Trans London Middlesex Archaeol Soc* 23, 19-40.
- MARSH (1978), G Marsh '8 Union Street' in Bird *et al* 1978, 221-231.
- MARSH (1981), G Marsh 'London's samian supply and its relationship to the development of the Gallic samian industry' in A C & A S Anderson (eds) *Roman pottery research in Britain and north-west Europe: papers presented to Graham Webster* (BAR International ser 123), 173-238.
- MATTINGLEY ET AL (1923), H Mattingley *et al* *Roman imperial coinage*.
- MENZEL (1966), H Menzel *Die romischen Bronzen aus Deutschland* 2 (Mainz).
- MERRIFIELD (1965), R Merrifield *The Roman city of London*.
- MERRIMAN (1987), N Merriman 'A prehistory for central London' *London Archaeol* 5, 318-326.
- MILLER ET AL (1986), L Miller, J Schofield & M Rhodes *The Roman quay at St Magnus House, Lower Thames Street, London, 1974-78* (London & Middlesex Archaeol Soc: Special Paper 8), 205-6.
- MILNE (1970), J S Milne *Surgical instruments in Greek and Roman times* (New York).
- MILNE (1982), G Milne 'Further evidence for Roman London Bridge?' *Britannia* 13, 271-6.
- MOORMAN (1982), E Moorman 'Roman wall painting in the Netherlands: a survey' in J Liversidge (ed) *Roman provincial wall painting of the western empire*.
- MORA & PHILIPOTT (1984), P Mora, L Mora & P Philippot *The conservation of wall paintings*.
- MURDOCH (1991), T Murdoch (ed) *Treasures and trinkets: jewellery in London from pre-Roman times to the 1930s* (Museum of London).
- NAUMANN-STECKNER (1991), F Naumann-Steckner 'Depictions of glass in Roman wall-paintings' in M Newby & K Painter (eds) *Roman glass: two centuries of art and invention* (Soc of Antiqs Occasional Paper 13), 1-18.
- NEAL (1976), D S Neal 'Northchurch, Boxmoor, and Hemel Hempstead station: the excavation of three Roman buildings in the Bulbourne valley' *Hertfordshire Archaeol* 4, 1-135.
- NEAL (1981), D S Neal *Roman mosaics in Britain* (*Britannia* Monograph Series 1).
- NEEDHAM (1987), S Needham 'The Bronze age' in J Bird & D G Bird (eds) *The archaeology of Surrey to 1540*, 97-138.
- OLIVER (1984), A Oliver 'Early Roman faceted glass' *Journal of Glass Studies* 26, 35-58.
- OLSEN (1979), S J Olsen *Osteology for the archaeologist* (Papers of the Peabody Museum of Archaeology and Ethnology, Cambridge, Massachusetts, 56 (3) and (4)).
- OSWALD (1936-7), F Oswald 'Index of figure-types on terra sigillata (samian ware)' *Annals of Archaeol Anthropology* 23.1-4, 24.1-4 (Liverpool).
- OSWALD & PRYCE (1920), F Oswald & T D Pryce *An introduction to the study of terra sigillata*.
- PARTRIDGE (1977), C Partridge 'Excavations and fieldwork at Braughing, 1968-73' *Hertfordshire Archaeol* 5, 22-108.
- PEACOCK (1977), D P S Peacock 'Brick and tile of the Classis Britannica: petrology and origin' *Britannia* 8, 235-248.
- PERRING (1987), D Perring 'Domestic buildings in Romano-British towns' in J Schofield & R Lecch (eds) *Urban archaeology in Britain* (CBA Research Rep 61), 147-155.
- PERRING (1991a), D Perring *Roman London*.
- PERRING (1991b), D Perring 'Lo scavo di Piazza Duomo: cta romana e altomedioevale' in D Caporusso (ed) *Scavi MM3.1. Gli Scavi* (Milan), 105-161.
- PETERS (1967), W J T Peters 'Mural painting fragments found in the Roman castra at Nijmegen' *Berichten van Rijksdienst voor het Oudheidkundig Bodemonderzoek* 15.
- PHILIPS (1985), P Philips (ed) *The archaeologist and the laboratory* (CBA Research Rep 58).
- PHILLIPS & WALTERS (1978), B Phillips & B Walters 'A mansion at Lower Wanborough, Wiltshire' *Britannia* 8, 223-227.
- PHILP (1989), B Philp, *The Roman house with Bacchic murals at Dover*.
- PIPE (1989), A Pipe 'The animal bones from Chaucer House, Southwark' *MOLAS archive report* BON 03/89.
- PRATT (1976), P Pratt 'Wall painting' in D Strong & D Brown (eds) *Roman crafts*, 223-31.
- PRICE (1978), J Price 'Trade in glass' in J du Plat Taylor & H Cleere (eds) *Roman shipping and trade: Britain and the Rhine provinces* (CBA Research Report 24), 70-78.
- PRICE (1979), J Price 'The glass' in H S Gracie & E G Price 'Frocester Court Roman villa, 2nd report 1968-77: the courtyard' *Trans Bristol & Gloucs Archaeol Soc* 97, 9-64.
- PRICE (1980), J Price 'The Roman glass' in G Lambrick 'Excavations in Park Street, Towcester' *Northants Archaeol* 15, 63-8.
- PRICE (1987a), J Price 'Late Hellenistic and early Roman cast vessel glass in Spain' *Annales du 10e Congres de l'Association Internationale pour l'Histoire du Verre, Madrid 1985*, (Amsterdam), 61-80.
- PRICE (1987b), J Price 'The glass from Felmongers, Harlow in Essex; a dated deposit of vessel glass found in an Antonine pit' *Annales du 10e Congres de l'Association Internationale pour l'Histoire du Verre, Madrid 1985* (Amsterdam), 185-206.
- PRICE (1991), J Price 'Glass' in A Wilmott *Excavations in the middle Walbrook valley* (London & Middlesex Archaeol Soc: Special Paper 13), 153-67.
- RCHM YORK (1962), Royal Commission on Historical Monuments: *An inventory of the historical monuments in the city of York, 1 Eburacum: Roman York*.
- REECE (1971), R Reece 'The coins' in B W Cunliffe (ed) *Excavations at Fishbourne, 1961-69 2: The finds* (Rep Research Cttee of the Soc of Antiqs 28), 92-9.

- RIB, see Collingwood & Wright 1991.
- RICKEN & FISCHER (1963), H Ricken & C Fischer 'Die Bilderschusseln der römischen Topfer von Rheinzabern: Textband mit Typen-bildern zu Katalog 6 der Ausgrabungen von Wilhelm Ludowici in Rheinzabern, 1901-1914' *Materialien zur romisch-germanischen Keramik*, 7.
- RITTERLING (1912), E Ritterling 'Das fruhromische Lager bei Hofheim in Taunus' *Annalen des Vereins für Nassauische Altertumskunde und Geschichtsforschung* 40, 1-416.
- ROGERS (1974), G B Rogers 'Poteries sigillées de la Gaule centrale, 1: les motifs non figures' *Gallia* supplement 29.
- ROSKAMS (1991), S Roskams 'The dark earth' in D Perring, S Roskams & P Allen *The early development of Roman London west of the Walbrook* (CBA Research Rep 70), 64-5.
- ROSS (1967), A Ross *Pagan celtic Britain: studies in iconography and tradition* (New York).
- ROSS (1970), A Ross *Everyday life of the pagan Celts*.
- ROSSER (1961), C E P Rosser *The objects of jet in Roman Britain* (unpublished MA thesis, University of Manchester).
- ROUVIER-JEANLIN (1972), M Rouvier-Jeanlin *Les figurines gallo-romaines en terre cuite au Musée des Antiquités nationales (Gallia supplement 24)*.
- ROYAL ACADEMY (1976), Royal Academy of Arts *Pompeii AD 79* (exhibition catalogue).
- VON SALDERN (1985), A von Saldern 'Römische Hochschliff-gläser' *Jahrbuch des Museums für Kunst und Gewerbe, Hamburg* 4, 27-42.
- SAUSSAYE (1842), L de la Saussaye *Numismatique de la Gaule Narbonnaise* (Paris).
- SCATOZZA-HORICHT (1986), L Scatozza-Horicht *I vetri romani di ercolano* (Cataloghi della Soprintendenza Archaeologia di Pompeii 1).
- SCHAAF (1988), L SchAAF '199 Borough High Street' in Hinton 1988, 27-54.
- SCHERF (1970), V Scherf *Antike Gemmen in Deutschen Sammlungen* 3 (Die Gemmensammlung in Herzog-Ulrich-Museum, Braunschweig), 1-61.
- SCHMIDT (1972), E Schmidt *Atlas of animal bones* (Amsterdam).
- SCHMIDT (1972), E Schmidt *Antike Gemmen in Deutschen Sammlungen 1 Kaiserzeit Glaspasten* (Staatliche Münzsammlung, München).
- SCHWAB (1978), I Schwab '106-114 Borough High Street' in Bird *et al* 1978, 177-220.
- SENA CHIESA (1966), G Sena Chiesa *Gemme del Museo Nazionale i Aquileia* (Aquila).
- SENNEQUIER (1985), G Sennequier *Verrerie d'époque romaine* (Rouen).
- SERJEANTSON & WALDRON (1989), D Serjeantson & T Waldron (eds) *Diets and crafts in towns* (BAR British ser 199).
- SHARROCK (1976), J T R Sharrock *The atlas of breeding birds in Britain and Ireland* (British Trust for ornithology).
- SHAW (1984), G Shaw *The wall plaster from Blue Boar Lane, Leicester* (unpublished report for Diploma of Post-excavation Studies, University of Leicester).
- SHELDON (1971), H Sheldon 'Excavations at Lefevre Road, Old Ford, E3' *Trans London Middlesex Archaeol Soc* 23, 42-77.
- SHELDON (1974), H Sheldon 'Excavations at Toppings and Sun wharves, 1970-72' *Trans London Middlesex Archaeol Soc* 25, 1-116.
- SHELDON (1978), H Sheldon 'The 1972-74 excavations: their contribution to Southwark's history' in Bird *et al* 1978, 11-53.
- SHELDON & TYERS (1983), H Sheldon & I G Tyers 'Recent dendrochronological work in Southwark and its implications' *London Archaeol* 4 (13), 355-61.
- SHEPHERD (1978), J D Shepherd *A preliminary study of the base designs of mould-blown glass bottles* (unpublished BA dissertation, Institute of Archaeology, London).
- SHEPHERD (1982), J D Shepherd 'The glass fragments from Southfield Road' in G Clarke 'The Roman villa at Woodchester' *Britannia* 13, 227-8.
- SHEPHERD (1985), J D Shepherd 'Roman glass' in B Cunliffe & P Davenport *The temple of Sulis Minerva at Bath* (Oxford University Cttee for Archaeology, Monograph 7), 161-4.
- SHEPHERD (1986a), J D Shepherd 'Vessel and window glass' in A McWhirr *Cirencester excavations 3: Houses in Roman Cirencester* (Cirencester), 117-121.
- SHEPHERD (1986b), J D Shepherd 'Glass' in Miller *et al* 1986, 209-210.
- SHEPHERD (forthcoming a), J D Shepherd 'The glass' in *Pre-Basilican levels at Leadenhall Court, London*.
- SHEPHERD (forthcoming b), J D Shepherd 'The glass' in S Trew, *Excavations at The Ditches, Gloucestershire*.
- SHEPHERD (forthcoming c), J D Shepherd 'The glass' in P Allen, *Excavations at The Grove, Boreham, Essex*.
- SHEPHERD (forthcoming d), J D Shepherd 'The glass' in *Excavations at Nicopolis ad Istrum, Bulgaria*.
- SHEPHERD (forthcoming e), J D Shepherd 'The glass' in B Barber & D Bowsher *Roman London: Eastern cemetery* (forthcoming).
- SILVER (1970), I A Silver 'The ageing of domestic animals' in *Science in archaeology* (New York).
- STANFIELD & SIMPSON (1958), J A Stanfield & G Simpson *Central Gaulish potters*.
- STEANE & FOREMAN (1988), J M Steane & M Foreman 'Medieval fishing tackle' in M Aston (ed) *Medieval fish, fisheries and fishponds in England* (BAR British ser 182), 137-186.
- SWAIN (1988), H Swain 'Gazetteer of sites' in Hinton 1988, 479-88.
- SYDENHAM (1952), E A Sydenham *The coinage of the Roman republic*.
- TERRISSE (1968), J-R Terrisse 'Les céramiques sigillées gallo-romaines des Martres-de-Veyre (Puy-de-Dôme)' *Gallia* supplement 19.

- TOWNEND & HINTON (1978), P Townend & P Hinton 'Roman glass from 201-211 Borough High Street' in Bird *et al* 1978, 151-153.
- TROTTER (1970), M Trotter 'Estimation of stature from intact limb bones' in T D Stewart (ed) *Personal identification in mass disasters* (Smithsonian Institution, Washington), 71-97.
- TYERS 1988, I Tyers 'Environmental Evidence from Southwark and Lambeth' In P Hinton (ed) *Excavations in Southwark 1973-76, Lambeth 1973-79*. LAMAS/Surrey Arch Soc Joint Publication 3, 443-477.
- TYERS (1988a), I Tyers *Dendrochronology report* (unpublished report no. MOL8/88).
- TYERS (1988b), I Tyers *Dendrochronology report* (unpublished report no. MOL12/88).
- WACHER (1975), J Wacher *The towns of Roman Britain*.
- WALTERS (1926), H B Walters *Catalogue of the engraved gems and cameos in the British Museum: Greek, Etruscan and Roman*.
- WALTHEW (1975), C V Walthew 'The town House and villa house in Roman Britain' *Britannia* 6, 189-205.
- WARD (1987), R G W Ward (ed) *Applications of tree-ring studies: current research in dendrochronology and related subjects* (BAR International Ser 333), 232.
- WARD PERKINS (1938), J B Ward Perkins 'The Roman villa at Lockleys, Welwyn' *Antiq J* 18, 339-76.
- WEBSTER (1958), G Webster 'The Roman military advance under Ostorius Scapula' *Archaeol J* 105, 49-98.
- WEBSTER (1971), G Webster 'A hoard of Roman military equipment from Fremington Hagg' in R M Butler (ed) *Soldier and civilian in Roman Yorkshire*, 107-25.
- WEBSTER (1990), G Webster 'A late celtic sword-belt with a ring and button found at Coleford, Gloucestershire' *Britannia* 21, 294-5.
- WELKER (1974), E Welker *Die romischen Glaser von Nida-Heddeheim* (Frankfurt a.m).
- WHEELER (1978), A Wheeler *A key to the fishes of northern Europe*.
- WHEELER (1979), A Wheeler *The tidal Thames*.
- WHEELER & JONES (1989), A Wheeler & A K G Jones *Fishes* Cambridge).
- WHYTEHEAD (1986), R Whytehead 'Excavation of an area within a Roman cemetery at West Tenter Street, London E1' *Trans London Middlesex Archaeol Soc* 37, 23-126.
- WILD (1970), J P Wild 'Button and loop fastners in the Roman provinces' *Britannia* 1, 137-144.
- WILSON ET AL (1982), R Wilson, C Grigson & S Payne (eds) *Ageing and sexing animal bones from archaeological sites* (BAR British ser 109).
- WOODGER (1994), A Woodger *Excavations at the Redcross Way Grouting Shaft (Jubilee Line Extension)* Unpublished archive report, Museum of London.
- WOODS ET AL (1975), D Woods, M Rhodes & T Dyson 'Africa House sections, London, 1973' *Trans London Middlesex Archaeol Soc* 26, 252-66.
- WORKSHOP (1980), Workshop of European anthropologists 'Recommendations for age and sex diagnosis of skeletons' *J of Human Evolution* 9, 517-549.
- YADIN (1963), Y Yadin *The Finds from the Bar Kokhbar period in the Cave of Letters* (Jerusalem).
- YULE (1988), B Yule 'The natural topography of north Southwark' in Hinton 1988, 13-17.
- YULE (1989), B Yule 'Excavations at Winchester Palace, Southwark' *London Archaeol* 6, 31-37.
- YULE (1990), B Yule 'Dark earth and late Roman London' in *Antiquity* 64, 620-28.
- YULE (FORTHCOMING), B Yule in *Excavations at Winchester Palace*.
- ZAZOFF (1975), P Zazoff *Antike Gemmen in Deutschen Sammlungen, 4: Hannover, Kestner-Museum* (Wiesbaden).
- ZIENKIEWICZ (1986), J D Zienkiewicz *The Legionary fortress baths at Caerleon 2: The finds* (National Museum of Wales and Cadw) (Cardiff).

The Society is grateful to English Heritage for a grant towards the publication cost of this article.