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Excavations at Battle Bridge Lane in 1995: medieval and early post-medieval development along Tooley Street, Southwark

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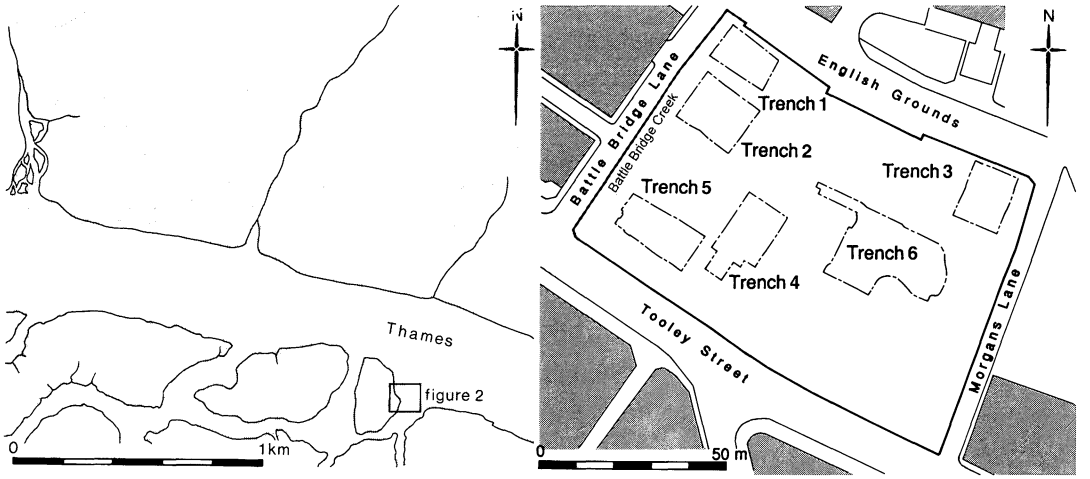
Summary

Excavations at Battle Bridge Lane, Southwark, examined a large area to the north of Tooley Street — the line of the probable Saxon river bank and of a later medieval road. The site revealed a typical part of north Southwark's urban development during the medieval and post medieval periods, amplifying what was already known about the site from documentary evidence. The earliest remains included a number of ditches, rubbish pits, and dump layers of mid-11th to 14th century date. These were principally succeeded in the 15th and 16th centuries by two large ponds which may have been associated with local industry or recreation. Both were back filled in the 16th century with a large quantity of highly organic commercial and domestic refuse. In the later 16th and early 17th centuries much of the site was occupied by a series of gardens and yards. In one yard evidence was found for the small-scale manufacture of copper-alloy objects. Some of the listed copper-alloy waste (nos 45–69) appears to date from the late 16th century when a coppersmith, Olaf Burr, owned parts of the site. During the 17th and 18th centuries copper alloy metal working continued in a small workshop, and a number of buildings were associated with a documented brewery. Much of the evidence for the development and diversity of local industries in the later medieval and early post-medieval periods came from the wealth of well preserved faunal and floral remains.

Introduction

The Museum of London Archaeology Service undertook excavations on the site of Battle Bridge Lane, Southwark, London SE1 at TQ 3315 8025 (fig 1). The site covered an area of



Figs 1 and 2 Battle Bridge Lane. Left: plan of central London (City) and north Southwark, showing the site in relation to the main prehistoric and Roman topographical features. Right: location map of the site, in relation to the modern street plan, showing the trenches excavated (1–6). (Reproduced by kind permission of the Ordnance Survey, © Crown copyright NC/00/1028)

approximately 6950m^2 and was subject to redevelopment by St Martins Property Investments Ltd, which generously funded both the excavation and the present publication.

An initial evaluation in January 1995 revealed the presence of medieval and post-medieval remains. This work was followed by excavation in August of the same year. The archaeological investigations consisted of six trenches (fig 2, 1–6). Trenches 1, 2, and 5 lay in basemented areas where the archaeological stratigraphy was truncated to a level of 1.2m OD, while trenches 3, 4, and 6 were unbasemented and the archaeology survived to a level of 3.5m OD. The present street level is at 4m OD. The present High Water Level at Tower Bridge is between 3.2m and 3.5m OD. During the Saxon and medieval periods the High Water Levels are largely unknown for this part of the Thames. However recent work at Bull Wharf further upstream in the City indicates High Water Levels there for the mid-10th century of 1.1m to 1.2m OD and between 1.4m OD and 1.8m OD for the period 1121–81 (Robin Wroe-Brown, pers comm).

The site was excavated to answer a number of archaeological research questions applicable to many sites in north Southwark:

i) What is the natural topography of this area?
ii) What, if any, is the character of prehistoric activity in the area?
iii) What evidence exists for Roman or Saxon land use or activity in the area?
iv) Are there any indications in the record that might explain the absence of Roman or Saxon activity in this area?
v) What evidence exists in the archaeological record for the exploitation of this area during the medieval period and what form does this evidence take?
vi) Is there any archaeological evidence for water management in this area during the late medieval period?
vii) Is there archaeological evidence supporting the development of industry in this area (particularly milling facilities) during the medieval period?
viii) Is there evidence for increasing the industrialization of the area in the late 16th or 17th century?

The site was excavated, recorded and archived under the Museum of London site code BAB95.

TERMINOLOGY AND CONVENTIONS USED IN THE REPORT

Trench refers to a defined and limited excavated area of the site. The trenches have been re-numbered (1–6) for publication, and a concordance between the letters used for the trenches during the evaluation and excavation phases and the published numbers can be found in the site archive.

Phase refers to a general period in the archaeology of the site and may include the archaeology within one or more trenches.

Building refers to a man-made structure (probably roofed) defined within a trench and phase. Please note that some buildings appear in more than one phase.

Open Area refers to an open space (eg a yard, an alley, a garden etc) defined within a trench and phase. Please note that some Open Areas appear in more than one phase.

Accession numbers are printed in round brackets and preceded by MoL.

Not all the archaeological contexts from the site are published here; many are only described in summary. In a number of cases not all contexts within a phase discussed are illustrated, but where a phase or part of a phase is illustrated only those contexts which are mentioned by number in the text are illustrated.

HISTORICAL BACKGROUND

During the Roman period the site lay within a channel or creek on the southern bank of the Thames just to the east of the settlement of north Southwark on the edge of a small island or eyot under what is now the Hays Galleria, and to the west of the much less populated Horsleydown eyot. In the Saxon period it probably lay within the tidal margins of the river, immediately to the north of the southern river bank which probably roughly followed the line of what is now Tooley Street. Tooley Street, a corruption of St Olave's Street, probably existed as early as the 11th century, but the land to either side remained largely open and undeveloped until the later 12th or earlier 13th century (Carlin 1996, 25). By that time large plots of land on the north side of the street were acquired by the abbot of Battle and the prior of Christ Church, Canterbury, who built large town houses to the west and east of the site (Carlin 1996, 25–30). Immediately to the north two tide mills, owned by Battle, had existed from 1215–30 or earlier, making use of the mill stream (Battle Bridge Creek) to the west of the site. The Poll Tax return of 1381 indicates that the eastern side of the mill stream was mostly occupied by millers. Immediately to the east at Horsleydown Lane (Morgan's Lane) two further tide mills were built by the 1240s, as by 1270 were two other mills (Dunley's Mills), still further to the east (Carlin 1996, 55–6). Documentary sources indicate that by the 14th century the northern frontage of Tooley Street was occupied by shops, workshops and dwellings (Carlin 1996, 46–7). East of Morgan's Lane lay the 'Rosary', the site of a moated manor house built for Edward II in 1324–5 and subsequently a mansion belonging to Sir John Fastolf in the 1440s. This manor house and its surroundings have recently been the subject of a series of excavations (Bluer 1993, 59–63). By the late 15th and early 16th centuries the site was owned by the Copley family, and a number of tenements and their gardens existed along Tooley Street and Battle Bridge Lane (Carlin 1983, 340–2). These are shown on the Agas woodcut of *c* 1550 which also indicates buildings along Morgan's Lane and behind those along the Tooley Street frontage. Southwark in the later 16th century was characterized by the subdivision of larger open spaces into new tenements with smaller yards and gardens as the population increased. What in 1452 was a tenement and three gardens in the south-eastern corner of the site, had, for instance, by 1546 become six tenements and six gardens. Similarly, in the south-western part of the site, six tenements in 1555 may have been the site of the two messuages and a garden or yard bought in 1550 by Olave Burr (Carlin 1983, 340–2). For much of the latter part of the 16th century part of the site was in the possession of Olave Burr (*c* 1514–5), a successful businessman and prominent local citizen. He is most

frequently referred to as a coppersmith, but is never recorded as engaged in that trade, but in ships' outfitting and brewing (Bennell 1980, 121–7). Cartographic evidence from the 17th and 18th centuries shows the site became increasingly built-up during that period, with a greater emphasis on industrialization, particularly brewing, as it progressed. This period saw the formation of what by the mid-18th century was to become Tooley's Gate, splitting by the early 19th century into Bull Court, and Brewers Court or Alley.

The site

PHASE 1: PREHISTORIC/ROMAN/EARLY MEDIEVAL

All trenches

Open Area 1 (not illustrated)

The natural river terrace gravels were found to survive between 1m and 1.2m OD. These were sealed by waterlaid silt deposits which survived, where not truncated, to a maximum level of 2.3m OD. These were largely sterile, producing some fragments of twigs, roots, and bark, but no finds except for isolated intrusive sherds of later medieval pottery near the surface. The site was in essence one large natural open area within the tidal margins of the Thames up to the early medieval period.

PHASE 2: 11TH/12TH CENTURY

Trench 1

Open Area 1 (not illustrated)

The underlying alluvial deposits survived to a truncated level of 1m OD and were cut to a depth of 0.5m OD by a truncated north-west to south-east drainage ditch or channel (5). The upper, dumped, fill (4) of this produced pottery dated to 1050–1150 and a bone strip mount (small finds report no 98). The lower, waterlaid, fill (7) produced three large unabraded pottery sherds dated again to 1050–1150 (pottery report, no 1) and contained a large number of hemlock (*Conium maculatum*) seeds. This plant has medicinal uses, although it is also a characteristic plant of damp ground, ditches and waste ground (Stace 1991). The other plant remains included wetland and disturbed ground species and occasional food plants, eg grape (*Vitis vinifera*) (table 17, M28–M31). A wet environment is also suggested by the presence of waterflea eggs (Cladoceran ephippia) and freshwater molluscs in the sample.

Trench 5

Open Area 1 (not illustrated)

Immediately to the north of Tooley Street were a number of clay silt layers (147/150) at 1m OD which produced pottery dated 1050–1150. The layers may have represented rubbish dumped along the edge of the Thames. Evidence of food residues and human activities included a small number of charred cereal grains and a charred legume seed in layer 148 along with a number of wetland and disturbed ground plants (table 17, M28–M31).

PHASE 3: 12TH/14TH CENTURY

Trench 4

Open Area 2 (not illustrated)

The underlying river silts of phase 1 were sealed by a heavily truncated gravel surface at 2.1m OD, possibly for an alley or courtyard. The limited amount of pottery associated with this dated to 1150–1300. The surface was partially sealed or repaired by a second external surface of worn

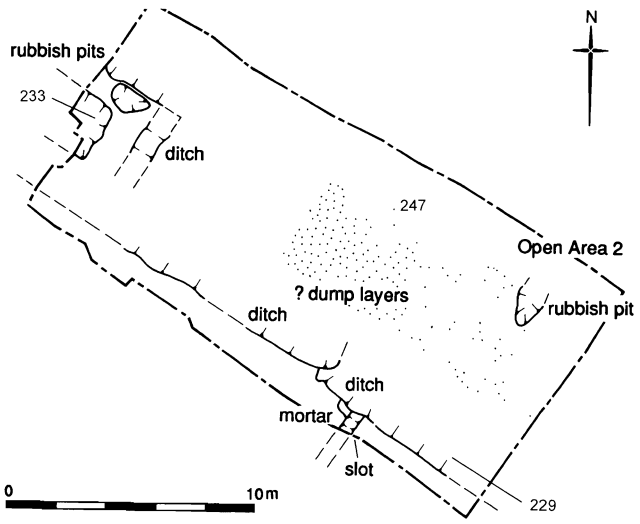


Fig 3 Battle Bridge Lane. Trench 5: Open Area 2

ragstone cobbles with a similar level. It is possible that these surfaces formed part of the ground level from which the cut features described below were dug.

Trench 5

Open Area 2 (fig 3)

A number of cut features produced pottery dated to 1150–1300 or 1350. A small pit (249) cut into the phase 2 layers (not illustrated). To the south of it was a small patch of mortar, probably part of the basal fill of a larger cut feature. To the east was a north-east to south-west slot, possibly marking a property boundary. In the north-west corner of the trench was a small oval rubbish pit.

These features were similar to a second group which were either stratigraphically later or clearly datable to post-1200, most of the pottery being of 13th century date.

The small pit (249) was sealed by a layer of clay silt (247). This survived to a maximum level of 1.3m OD. To the west of this layer were two similar layers which may have been the basal fills of large cut features and which were cut by a small oval rubbish pit at the northern limit of excavation. To the south of these layers was a north-east to south-west ditch cut to the west by a second north-east to south-west ditch. The fill (229) of this feature probably represented rubbish disposal. Animal bone from a waterlaid silt layer (247) and the ditch fill (229) included the usual mammalian domesticates, here dominated by cattle, a few domestic birds and a single fallow deer bone. Within each of these two deposits the cattle were particularly well represented by primary waste, incorporating both skull and lower limb parts (39 out of 52 fragments), suggesting that a large proportion of these assemblages derived from an abattoir or butcher (tables 11, 12a–b, M14–M15).

In the north-west corner of the trench was a large square rubbish pit which was considerably deeper than the other medieval features in the trench. The fill (233) produced a Kingston-type ware ram's head aquamanile in an assemblage which consisted mostly of sherds of lower status cooking pots and a number of undecorated jug fragments (pottery report, no 2).

PHASE 4: 14TH/16TH CENTURY

Trench 1

Open Area 3 (not illustrated)

A large pit cut the waterlaid silts (phase 1). The lowest waterlaid fill (9) produced pottery dated to 1380–1500 and seeds from wetland, grassland and disturbed ground plants, as well as

waterflea eggs (Cladoceran ephippia) and freshwater molluscs. 'Buttercups' (*Ranunculus acris/repens/bulbosus*), sedges (*Carex* spp), gipsywort (*Lycopus europaeus*), and self-heal (*Prunella vulgaris*) were particularly well represented. These derive from plants growing nearby or from the residues of imported flooring or thatching materials and hay fodder crops. Potential food residues included fruit seeds, eg fig (*Ficus carica*), walnut (*Juglans regia*), plum/bullace (*Prunus domestica* sl), and some of the *Brassica/Sinapis* seeds, while the small number of seeds of hemp (*Cannabis sativa*) and dyer's rocket (*Reseda luteola*), both of which may have been used in the textile industry, may either be the residues of economic plants or simply weeds (table 17, M28–M31). This fill also produced bone waste from beadmaking (small finds no 40). The upper fills produced pottery suggesting that the trench was backfilled with rubbish in the later 16th century. These fills became increasingly organic and waterlogged with depth, and produced a number of leather fragments. It is possible that that this cut was associated with Battle Bridge Creek. It may have been a shallower version of the pond described in trench 2 and would originally have been *c* 2m deep.

Trench 2

Open Area 3 (not illustrated)

The waterlaid silts were cut by a large north-east to southewest aligned man-made pond. This had steep, near vertical sides and a flat base at 0.4m OD. It was 6.5m wide, at least 10.65m long and had a truncated depth of 1.8m and an original depth of *c* 2.5m, given that the contemporary ground surface was probably *c* 2.1m OD. The lowest fill (246) was waterlaid and the pond may have been fed by Battle Bridge Creek to the west. This produced pottery dated to 1480–1550. The botanical assemblage was dominated by the leaves of duckweed (*Lemna* spp) with a number of other aquatic plants, eg stonewort (Characeae), water plaintain (*Alisma* sp), pondweed (*Potamogeton* spp), and horned pondweed (*Zanichellia palustris*), and very large quantities of waterflea eggs (Cladoceran ephippia), freshwater molluscs and ostracods. A wide range of other wild plants of wetland, grassland and disturbed ground habitats was also recovered, indicative of both the surrounding area and possibly the by-products of imported materials. Potential food/economic plants were represented by seeds of fig, elder (*Sambucus nigra*), blackberry/raspberry (*Rubus fruticosus/idaeus*), dyer's rocket and hop (*Humulus lupulus*) (table 17, M28–M31). The upper fill (245) contained a large amount of leather-working waste, including a child's shoe (small finds report, no 1). A possible slate mould for metal working was also found (small finds report, no 82). This fill also contained botanical evidence for a range of wetland, grassland and disturbed ground plants, but with much more evidence for the residues of human activities. The assemblage was dominated by large numbers of seeds belonging to dyer's rocket and hops, which may be from brewing, while food plants included grape and apple or pear (*Malus/Pyrus* spp) (table 17, M28–M31).

Trench 3

Open Area 3 (not illustrated)

A large latrine pit cut the waterlaid silts of phase 1. In the south-west corner of the pit three long oak stakes had been driven into the silts, and two oak blocks or planks lay against them as braces. These represented the foundations of a seat or walkway on the edge of the latrine pit. The lower fill (66) was waterlaid and became increasingly organic with depth. This produced a few sherds of pottery dated to 1480–1600 and a number of leather shoe fragments. The plant remains from fill 66 were from species that grow in a range of habitats, wetland and disturbed ground plants being well represented. A wetland habitat was also indicated by the presence of waterflea eggs (Cladoceran ephippia), ostracods, and freshwater molluscs. Evidence of food plants included a range of fruit species including the first evidence for peach (*Prunus persica*) from the site. There were a number of whole hazelnuts (*Corylus avellana*) which showed signs of insect infestation or

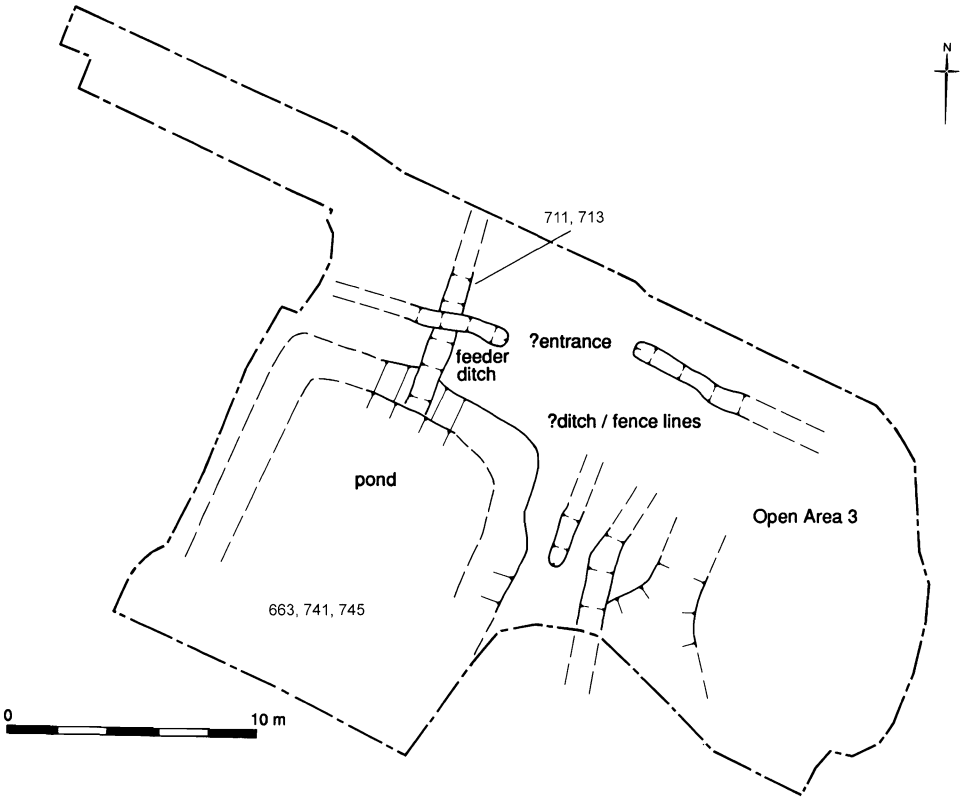


Fig 4 Battle Bridge Lane. Trench 6: Open Area 3

burrowing. These may have either been naturally deposited or could represent stored produce for later consumption. Carrot (*Daucus carota*) seeds were identified: these may be from the cultivated or wild variety. Some of the wetland plants, eg sedges amd rushes (*Juncus* spp), may have been used as flooring/roofing materials for the timber-framed buildings associated with the gardens/yards, while a number of the other seeds may represent garden plants, for instance, large numbers of *Viola* seeds, and marigold (*Calendula* sp) (table 17, M28–M31). This fill also produced the remains of a number of sheep or goat feet, comprising two metapodials (both identified as sheep) and fifteen phalanges. The foot bones undoubtedly represented skinning waste (table 11, M14). There were no obvious biological indicators, eg mineralised fruit seeds, cereal bran, puparia, however, to suggest the presence of faecal deposits.

Trench 6

Open Area 3 (fig 4)

The waterlaid silts of phase 1 were cut by a very large man-made pond. This had near vertical sides and a flat base at $\leq$0.6m OD, giving the pond an excavated, untruncated, depth of 2.6–2.9m. This was fed by a narrow ditch to the north with similarly steep sides cut to a level of 1.3m OD and 1m deep. This channel drained into the pond, possibly directly from the Thames. No evidence for timber revetments or linings was found in either the channel or pond. The lowest fills of both were a series of organic waterlaid clays (711 and 745), which unfortunately produced only a few sherds of pottery with a wide date range of 1300–1650. These produced aquatic plants, eg stonewort, pondweed, duckweed, and large quantities of waterflea eggs (Cladoceran ephippia),

freshwater molluscs and ostracods in fill 745. Other wild plants of wetland, grassland and disturbed ground habitats were also recovered. There were a few potential food/economic plants, eg fig, walnut, coriander (*Coriandrum sativum*) (table 17, M28–M31).

Above this the pond and ditch were backfilled with highly organic clay silts which produced pottery dated to the 15th and 16th centuries. They also produced a large number of items, in bone, leather, copper alloy and iron, associated with local domestic and commercial/industrial waste disposal (small finds, nos 7, 10–11, 15, 17, 20–21, 24, 31, 38, 71–80, 84, 87, 94, 100–1). The upper fill (663) also produced one cloth seal probably dated 1471–90 (no 34) and two jettons, one of late 15th-century date (nos 89–90). These backfills produced a wide range of wild plant species from wetland habitats, some of which may have been used as building materials, eg sedges, rushes, and disturbed ground habitats, some of which may have been imported on to the site as cereal weeds, eg corncockle (*Agrostemma githago)*, stinking mayweed (*Anthemis cotula*), corn marigold (*Chrysanthemum segetum*). Box *(Buxus sempervirens*) leaves, found in fill 741, may represent cleanings and sweepings from a garden. There was also an increase from earlier periods in potential food/economic plants: charred cereal grains; a charred pea (*Pisum sativum*) in fill 741; waterlogged fruit seeds, eg grape, fig; vegetables (*Brassica/Sinapis* spp) and herbs, eg caraway (*Carum carvi*), and also in industrial/commercial plants: dyer's rocket, hop and hemp seeds (table 17, M28–M31).

Most of these upper fills contained relatively few bones with the exception of 663. The sheep/goat assemblage within this deposit included a large proportion of primary waste parts (93 out of 132 fragments), and, in particular, lower limb elements (65 metapodials and 21 phalanges). A noticeable feature of these skeletal parts was that the great majority were from very juvenile animals in contrast to those described above from the latrine. These bones, plus the head parts, are likely to represent skinning waste. The bias towards juvenile animals perhaps suggests waste from a tanner specialising in a particular product. Evidence for the industrial use of cattle bone was found in two fills (663 and 713). Each produced a single large horncore, representing hornworking waste, as indicated partially by their size and also by the method of butchery employed to remove the core from the skull (animal bone report). Fill 663 also provided a worked lower limb part (a metatarsus) which is likely to be a pinner's bone (small finds, no 38).

To the north the ditch was cut by a second, much shallower and narrow east–west ditch. This had been backfilled at a similar date to the pond and deeper ditch, and may therefore have been part of a complex of ditches feeding the pond, or a contemporary property boundary, possibly a hedge. To the south-west of the pond were three similar shallow north-east to south-west ditches.

PHASE 5: LATE 16TH/EARLY 17TH CENTURY

Trench 4

Open Area 5 (fig 5)

The cobbled and gravel surfaces of phase 3 were truncated by the cut for a timber box drain (721). The surfaces were not repaired after the construction of the drain and may already have been buried by accumulated or dumped soil. The drain was square in section, *c* 0.3m by 0.3m, and constructed of oak planks fitted together with slightly curved lap-joints secured by iron nails. Each set of joints and occasionally the middle of the base plank were supported by an oak sleeper. Two of the sleeper timbers had clearly been reused from earlier structures, possibly a medieval revetment or house. The drain flowed from the north-east down to the south-east. It may have flowed out into Tooley Street or joined another drain which did so. The backfill (719) of the drain cut produced pottery dated to 1480–1550, and a variety of metal objects (small finds no 32) including copper-alloy waste (nos 45 and 69). The botanical remains from the 'active' fill (747) of the drain included seeds of possible used plants and wild species, of which a large number were disturbed ground plants with relatively fewer wetland/grassland plants. A small number of freshwater molluscs and waterflea eggs (Cladoceran ephippia) were also present. Food/economic plants were well represented, with especially large numbers of hop seeds,

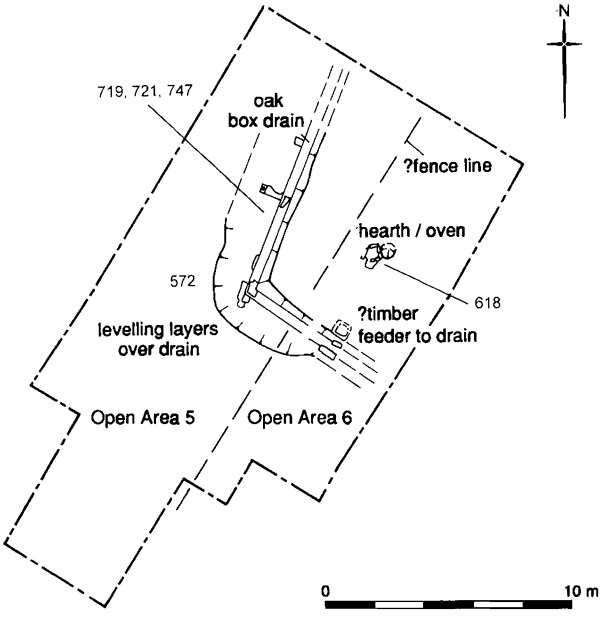


Fig 5 Battle Bridge Lane. Trench 4: Open Areas 5 and 6

possibly from the residues of brewing. Other potential economic plants included flax *(Linum usitatissimum)*, dyer's rocket, and hemp seeds, all of which potentially may have been used in the textile industry. Food plants included evidence for cereals: a charred barley (*Hordeum sativum*) grain and cereal bran fragments; fruits, eg fig seeds; and herbs, eg coriander, and caraway seeds (table 17, M28–M31). Other possible food refuse included a moderate quantity of mammal and fish bones.

The timber drain was sealed by levelling up to 2.6m OD which extended over much of the trench. This produced pottery with a date range of 1480–1550, and contained small flecks of copper-alloy waste. It was cut by a number of insubstantial timber structures, stakes and postholes, which formed no recognizable patterns and may have been left by temporary structures such as scaffolding, fence lines or animal pens. All these small features were sealed by a second extensive levelling layer (572) which raised the ground surface to *c* 2.7–2.8m OD. This produced pottery dated to 1550–1600 together with a Nuremberg jetton dated 1500–85 (small finds, no 91) and some copper-alloy sheet offcuts (nos 46, 48–9, 58–9, 64, and 67–8). This layer was cut by a small oval pit backfilled with ash which produced pottery dated 1480–1550 and some flecks of copper-alloy waste.

Open Area 6 (fig 5)

The general levelling layer (572) was cut at the east limit of excavation by modifications to the timber drain. A pit had been dug and lined with timber planks *c* 0.8m long by 0.5m wide. These planks were very decayed, and may have served as the base of an access chamber or feeder for the drain, although this could not be proved on account of the condition of the timbers, which also appeared to have been partially robbed. A fragmentary layer of worn cobbles was also laid above layer 572 at 2.55m OD. This cobble layer had a constructed edge to the west, but was severely truncated to the east where it was cut by a small brick-lined hearth (618). The bricks from this included a number of small imported Dutch types (table 6, M7). The fills of the hearth were largely of black ash and coal. Close to the hearth was a small round pit filled with black ash and coal. This produced no datable finds but may have been a small casting pit associated with the hearth. Both features produced flecks of copper-alloy waste.

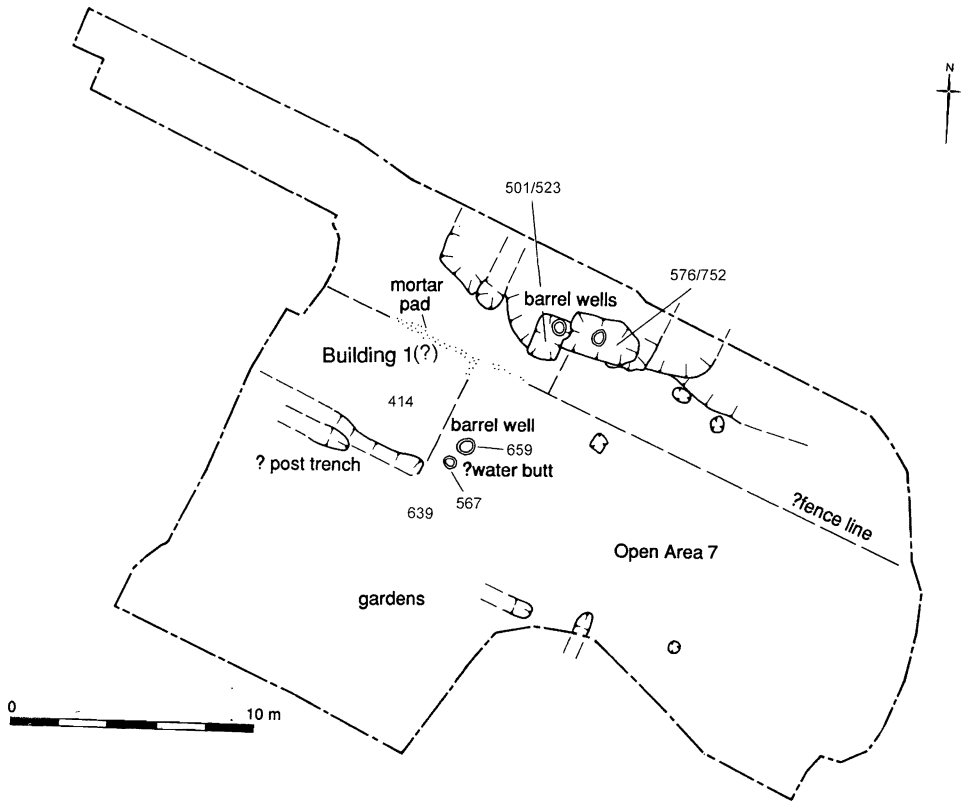


Fig 6 Battle Bridge Lane. Trench 6: building 1(?) and Open Area 7

The hearth was abutted and the pit sealed by a layer of sand which formed the bedding for a second cobbled external road or courtyard surface at 2.7m OD. This surface conformed to the western boundary of the previous surface. It is unlikely that the laying of this new surface represented a significant change in land use.

Trench 6

Building 1 (fig 6)

The infilling of the large pond in Open Area 3 was completed by an extensive levelling layer (639) raising the ground surface to 2.3m OD. The date range for the pottery from this layer was 1550–1600 and it also produced a Henry VI silver groat (small finds no 88). This levelling may have been in preparation for the laying of a north-west to south-east aligned shallow mortar linear pad footing for a timber building. There was evidence for a southern return on part of the footing, but the pad was badly damaged and this was uncertain. To the south the levelling layer was cut by a north-west to south-east rubble filled trench and may have represented another foundation or post trench for the structure. The building in question, if it existed, was probably not substantial and may have been fairly short-lived.

Open Area 7 (fig 6)

With the possible construction of building 1 it is probable that Open Area 3 was subdivided into smaller areas, if this had not already taken place. However, the archaeological evidence for this

is limited, with only a large concentration of cut features to the north of the building to suggest that it may at least have been split into two.

An extensive flood deposit (414) with a general surface level of 2.45m OD appeared to cover building 1, although it may only have sealed the foundations rather than the timber superstructure. The layer was partially waterlogged and produced pottery dated 1550–1600, and two pinner's bones. The animal bone included red kite, a well known scavenger in both towns and cities throughout Britain up to the end of the 18th century (Sharrock 1976, 112) (tables 11–13, M14–M16).

Immediately to the east of building 1 the flood deposit was cut by a small well *c* 3m deep re-using five oak barrels as its lining. This reached a minimum level of about 0.7m OD. The fill (659) was highly organic and waterlogged, representing the gradual silting up of the well. The pottery date range was 1600–1700. Close to the well was a small clay-lined barrel (567), possibly a storage pit or water butt; pottery from its fill (564) had a date range of 1480–1600, and it included fragments of a bird nesting pot.

To the north of building 1 a number of inter-cutting pits were cut by two barrel wells. Their close proximity to each other may suggest the existence of a fence line between them, each positioned in the corner of a separate yard or garden.

To the west was a well *c* 3m deep reusing five oak barrels as a lining. The well reached a minimum level of about $\leq$1m OD. The fills (523) were highly organic and waterlogged, representing the gradual silting-up of the well. This produced pottery dated to 1480–1550 and an iron hooked tool which may have been reused on the well rope (small finds, no 99). The plant assemblage included a range of disturbed ground and wetland/grassland species, with large numbers of seeds of nipplewort (*Lapsana communis*), a plant of waysides, wood-margins, walls, and waste places, and petty spurge (*Euphorbia peplus*), a plant of cultivated and waste ground (Clapham *et al*, 1987) (table 18, M32–M33). The barrel well was in the north-east corner of the base of a large sub-rectangular pit, which may have truncated it, but is more likely to have housed the upper works of the well. Certainly no difference could be detected between the fill (501) of this and that of the well. Although there was no evidence for a timber superstructure, this may have been removed. The pottery from the pit had a date range of 1550–1600. Most of the pig and sheep-size bones from this phase were from fill 501, and represent the remains of two partial skeletons, one from a foetal/neonate individual and the other from a juvenile animal. No butchery marks were noticed which could suggest the deposition of whole carcasses or, at the least, that neither animal was killed for its meat (table 11, M00). Although 501 was clearly in part cess material, there was no evidence to suggest that any of the associated bone fragments arrived with this material, ie there were no partially digested bones discovered and the few fishbone fragments were insufficiently small to have travelled easily through the alimentary canal. This same pit produced a small number of amphibian bones, suggesting that it had become a pitfall trap (tables 11–13, M14–M16).

To the east was a second well lined with some four or five oak barrels and *c* 3m deep, and reaching a minimum level of *c* 1m OD. The fill (752) was highly organic and waterlogged, representing a gradual silting up. The pottery dated to 1480–1600 and included two complete redware sprinkle pots (fig 17) and three timber bowling balls (small finds, nos 95–7). The well lay in the centre of the base of a large square sub-rectangular pit which again may have contained a superstructure no longer extant. The fill (576) was similar in all respects to the barrel well fill below, and represented silting up and rubbish disposal. It produced a large group of finds. Much of the pottery from the fill was associated with cooking and food preparation and fell in the date range 1580–1600, with only one piece, part of a green-glazed Border ware fuming pot with a date range of 1550–1700 (pottery report, no 6; table 1, M2). This fill also produced a clay pipe bowl with a date range of 1610–40 (Heard 1997). The sheep/goat assemblage from the fill was largely composed of primary waste parts (60 out of 93 fragments), the mandible being particularly well represented (39 fragments). Unlike the earlier examples, this assemblage is perhaps best interpreted as containing an excess of processing waste, as might be expected from an abattoir or a butcher following the dressing of the carcass, rather than industrial waste. This

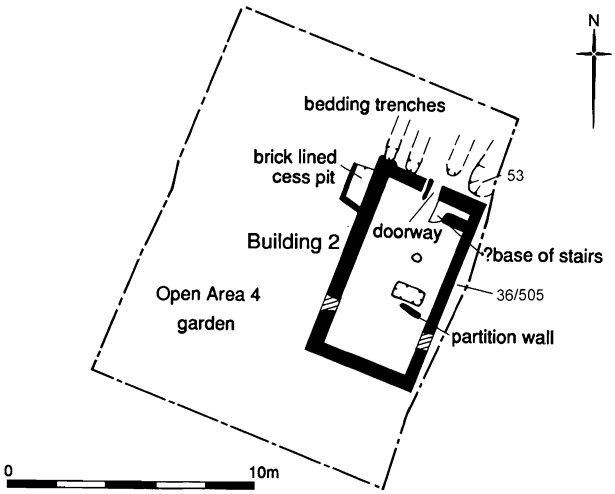


Fig 7 Battle Bridge Lane. Trench 3: building 2 and Open Area 4

fill also produced duck (probably domestic) (tables 11–13, M14–M16). The plant remains included a range of disturbed ground and wetland/grassland species, but with particularly high seed numbers of black nightshade (*Solanum nigrum*), a plant of waste places and a weed of gardens (table 18, M32–M33).

Evidence of both food/economic plants included cereals, represented by a charred oat (*Avena* sp) grain in 659 and cereal bran, particularly in the sample from 576; the cereal bran samples also contain beetles and puparia and may represent either human or animal cess. A similar range of fruits to earlier phases was present, but with better preserved evidence for the identification of large numbers of both seeds and endocarp fragments of apple/crab apple (*Malus domestica/sylvestris*) in 523; a few seeds of *Brassica/Sinapis* spp, carrot and the herbs, caraway and fennel (*Foeniculum vulgare*), were also recovered. The residues of commercial/industrial activities were represented by a high number of hop seeds in 501 and 576, which dominated both these samples and presumably derived from brewing activities. Occasional seeds of flax and dyer's rocket were recovered from 501 (table 18, M32–M33). Some of the wild plants in the sampled features from this area may have been used as building materials, eg sedges, or may represent garden plants, eg *Viola* spp.

PHASE 6: MID–LATE 17TH CENTURY

Trench 3

Building 2 (fig 7)

The features and layers of phase 5 (not published) were cut by the foundations of an oblong brick building with foundations of rammed chalk rubble (36/505) (table 4, M4). The foundations were considerably deeper in the north-west corner, to counter the soft ground produced by the latrine pit of phase 4. Parts of the walls of building 2 were substantially rebuilt probably soon after it was constructed. Inside, a surface of crushed chalk and mortar was laid down with a maximum level of 2.85m OD. This layer was cut by two postholes, possibly for scaffolding, the fill of one producing a small amount of pottery dated 1600–1700.

Partially sealing the north wall foundation were the remains of a brick door jamb. Fragments of a possible brick stair-base were found in the north-east corner of the building. A brick-lined cesspit was dug alongside the north-west corner of the foundations of building 2. The final back fill of the cesspit, prior to the construction of building 7a in the early 18th century (phase 7), produced a single clay pipe bowl with a post-1700 date (Heard 1997).

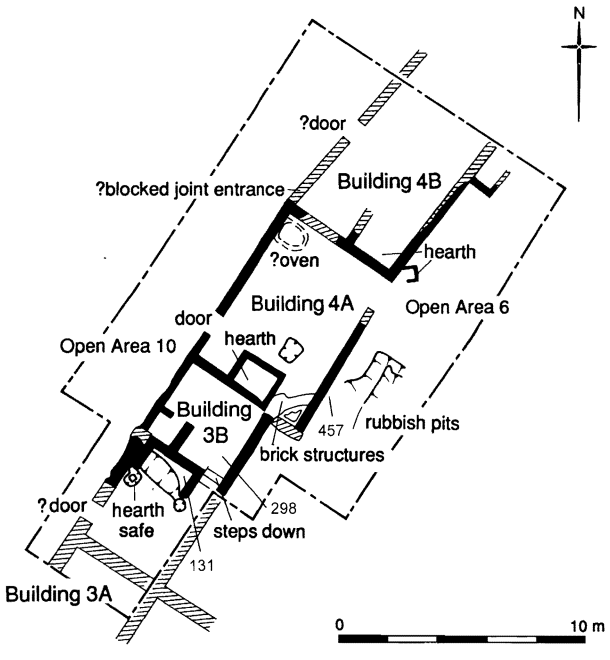


Fig 8 Battle Bridge Lane. Trench 4: buildings 3a, 3b, 4a and 4b, and Open Areas 6 and 10

Open Area 4 (fig 7)

A number of garden features, broadly datable to the 17th century, appeared to be contemporary with building 2. A bedding trench fill (53) was dominated by the residues of industrial waste with large quantities of clinker and slag. The plant remains consisted virtually entirely of debris from food preparation and consumption which may have been used as fertiliser, with a small number of charred mainly free-threshing wheat (*Triticum aestivum* s.l) grains and occasional fruit seeds, eg grape (table 18, M32–M33).

Trench 4

Building 3a (fig 8)

At the southern end of the trench the levelling deposits of phase 5 in Open Area 5 were cut by a north-east/south-west flint and ragstone foundation. This was the west wall of a building in the documented 17th/18th century alley later called Tooley's or Bull Court (Open Area 10: not excavated). Abutting this wall to the east were the foundations of a brick chimney stack (131) (table 4, M4) which formed the north wall of building 3a, the south and east walls having been removed by modern basements. At the southern tip of the western arm of the chimney base a small pit contained a decayed timber box, the fill of which produced pottery dated 1600–1700 and one clay pipe bowl with a tighter date range of 1640–60 (Heard 1997). The pottery included fragments of a green-glazed money box, suggesting that the feature was a hearth safe, and parts of an elaborate glass vessel and an iron shot-making tool (small finds, nos 30 and 83).

Building 3b (fig 8)

The chimney stack of building 3a was abutted to the north by the brick walls of a second room or building with an intact lower ground or semi-basement brick floor (298) at 2m–2.1m OD (table 4, M4). This floor sloped down toward the north-east where a small soakaway for surface water cut through the floor in the corner of the room. A small flight of steps in the south-east

corner of the building gave access to building 3a. The north-west corner of the building contained a small partition wall, possibly for a storage chamber.

Open Area 6 (fig 8)

The last cobbled surface (phase 5) was cut by a small oval pit. The surface was repaired with a compact brick rubble surface. Pottery from this was dated to 1650–1700. To the north of this were two large inter-cutting rubbish pits, which also cut the cobbled surface.

Building 4a/b (fig 8)

The edge of the repaired cobbled surface in Open Area 6 was sealed by a number of walls (457) (table 4, M4) which appeared to be of a single build and abutted building 3b to the south, covering what had been Open Area 5. These walls divided the northern area of the trench into two buildings to the west of Open Area 6/8.

Building 4a (fig 8)

A brick wall (457) formed the west wall of the building, one of the bricks being a Dutch type of the 17th or 18th century (tables 4, M4, and 6, M7). The wall did not abut building 3b to the south; a gap was left, suggesting a doorway into Open Area 11. There was also originally no return or join to the north wall of the building, suggesting another entrance — possibly a joint one with building 4b. However, it is likely that this north entrance was soon blocked off. Against the blocking was a small concave brick oven filled with undated black ash. This was subsequently rebuilt in the same form and again filled with black ash. This produced a small amount of pottery dating to 1620–1700. Both the ash fills contained flecks of copper-alloy waste. An oblong brick-built hearth was inserted against the north wall of building 3b. It was filled with two layers of black ash, one of which produced pottery dated to 1600–1800, and contained copper-alloy sheet offcuts (small finds report nos 50–4 and 60–3).

Building 4b

Building 4b may have included a single large hearth in the south-east corner as part of the original design, although this may simply represent the remnants of an internal partition. As noted in building 4a, there may originally have been a doorway between the two buildings in the south-west corner of building 4b.

Trench 6

Open Area 8 (fig 9)

Building 1 and Open Area 7 were sealed by an extensive series of levelling layers. These raised the ground surface to a maximum of 3.2m OD. The lowest layer (318) produced pottery with a date range of 1480–1550 (table 2, M2), and the later (300) layers generally of 1550–1600 (table 3, M2), with one of 1600–1750.

To the south a number of pit cuts were sealed by a possible surface of ash/clinker and dark grey/ black clay silt. This raised the ground level to a maximum of 3.2–3.4m OD. This may represent part of a yard surface which originally covered all or part of the open area. The date range of pottery from the ash and clinker was 1640–1700 but there was also an 18th-century pipe bowl that may have been intrusive (Heard 1997).

Building 5 (fig 9)

To the north a brick-walled building was constructed in Open Area 8 (table 5, M6). The building had a rough internal surface at about 3.2m OD. The foundations of the south wall (365)

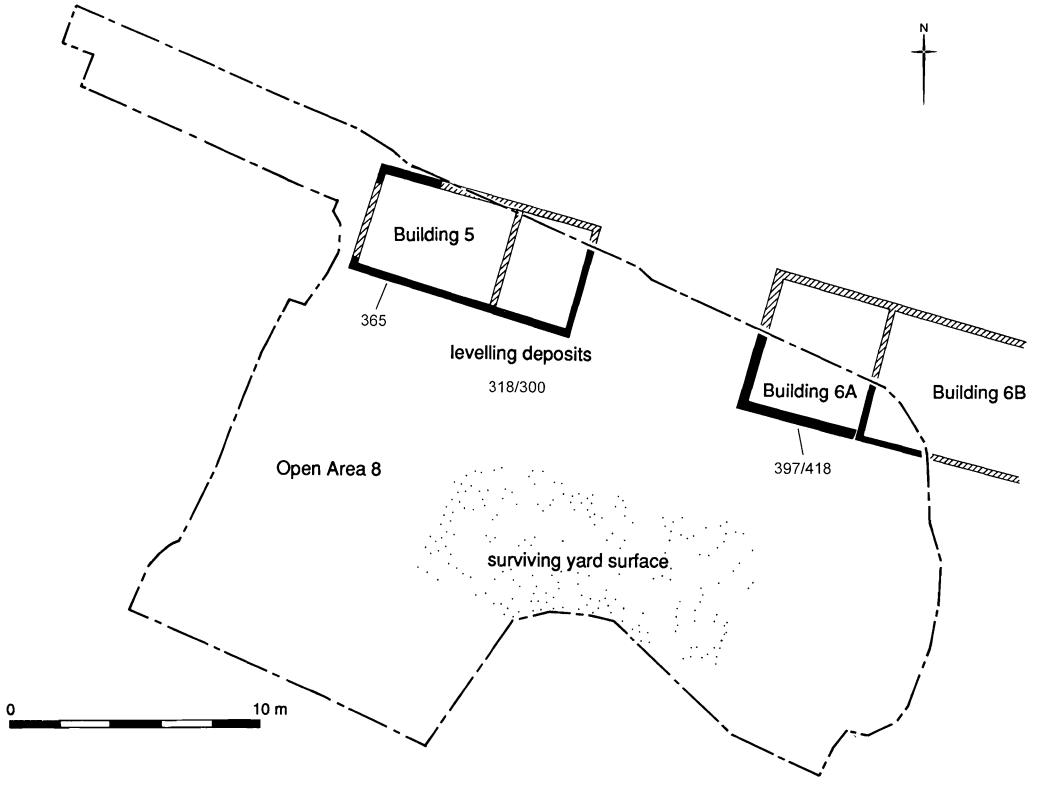


Fig 9 Battle Bridge Lane. Trench 6: buildings 5, 6a and 6b, and Open Area 8

produced several fragments of moulded stone. The building was on a slight north-west to south-east alignment.

Building 6a/b (fig 9)

To the east of building 5, and again on a north-west to south-east alignment, was a second brick building with two rooms (397/418) (table 5, M6). The west room, building 6a, included internal make-up layers for floors which no longer survived. Only a small portion of the east room, building 6b, lay within the area excavated, and this too featured internal levelling and make up layers for a floor no longer extant.

PHASE 7: EARLY 18TH CENTURY

Trench 3

Building 7a/b (fig 10)

The north wall of building 2 was demolished prior to the construction of an extension to the north — building 7a/b. The walls (281) (table 5, M6) of the south-east corner of the new building — building 7a — partially covered the north-west corner of building 2. This had a brick floor at 3m OD, slightly lower than the contemporary ground surface of 3.15m OD, and sealed the phase 6 cesspit. A second brick-floored building 7b was found in the north-west corner of the trench.

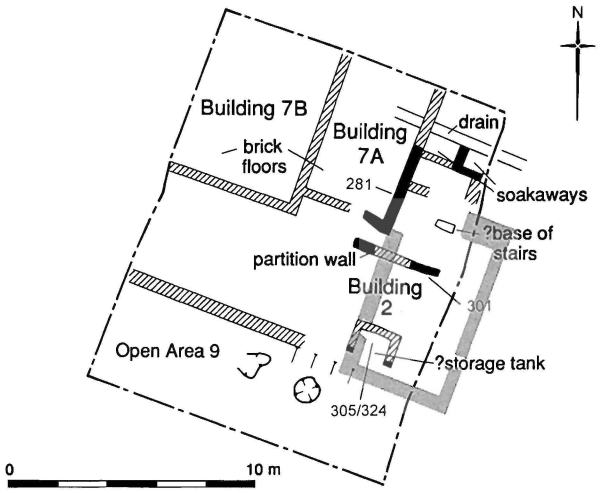


Fig 10 Battle Bridge Lane. Trench 3: buildings 2, 7a and 6b, and Open Area 9

Building 2 (fig 10)

Those parts of building 2 not affected by building 7a/b remained in use. The phase 6 features were sealed or partially sealed by a thin general layer of ash and clinker laid down as make-up prior to further internal modifications to the building. This had a general surface level of 3.15m OD. It produced pottery with a date range of 1600–1700, as well as a clay pipe bowl which post-dated 1660 (Heard 1997). The layer was cut by a brick-lined pit (305/324) (tables 4 and 5) inserted against the south wall. The pit was at least 0.7m deep and may have served as a storage pit or water tank. To the north of this was a small internal wall (301) (table 5, M6) which divided the building into two roughly equal-sized rooms. The building was probably extended northward alongside building 7a. A drain complex was found here which consisted of two brick-lined soakaways served by a single square-sectioned brick surface drain.

Open Area 9 (fig 10)

A series of pits and layers contained much demolition material and refuse. The latest of these produced pottery dated 1630–70 and including a certain amount of kiln waste from the nearby kilns at Pickleherring, which were in operation between 1618 and 1723. This layer also produced a clay tobacco pipe which post-dated 1700 (Heard 1997).

Trench 4

Building 4a (fig 11)

A series of brick wall foundations was built alongside the north wall of the building, probably in part to replace it. The western part of the foundations (480) formed three sides of an oblong, open to the south. Each side was built on an oak plank raft. To the east, the foundations formed a second closed square (458) (tables 5, M6, and 6, M7), which was shallower and lacked timber rafts. The foundations may have been the base for a set of stairs. After the construction of these foundations an L-shaped internal partition wall was constructed down the centre line of the building, forming a small room in the north-west corner with a doorway to the north. This had a brick floor (283) of stretchers laid on edge, including imported Dutch bricks (tables 5 and 6), with a level of 2.65m–2.7m OD. Fragments of copper-alloy offcuts were found in this structure (small finds, nos 47, 56–7 and 65).

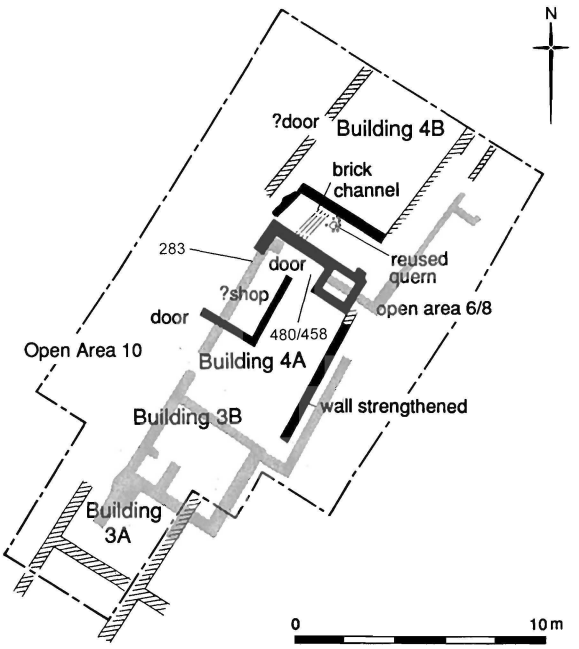


Fig 11 Battle Bridge Lane. Trench 4: buildings 3a, 3b, 4a and 4b and Open Areas 6/8 and 10

Building 4b (fig 11)

A double hearth was incorporated into the south wall of the building. The earlier partition wall/hearth was largely demolished, as probably was much of the original south wall of the building. This work appears to have occurred when the new north wall of building 4a was built, or soon after. A small dividing wall was constructed on the stub of the original wall, re-using a quern stone, possibly as a pot rest. To the north a single narrow wall separated the double hearth from the rest of the building. The hearth was filled with a single layer of thin black ash, and the western part included a small brick channel. To the north the double hearth was abutted by a thin patchy layer of sand at a level of 2.9m OD — possibly the bedding layer for a floor.

Trench 6

Open Area 8 (fig 12)

The phase 6 ash and clinker surface probably continued in use into the early 18th century. At the south limit of excavation this surface was cut by a large, rectangular and steep-sided pit. The upper fill was composed of black ash and clinker and produced residual pottery dated to 1600–50. The plant remains from the lower fill (624) were made up mainly of a large number of hop seeds, possibly associated with brewing activities. A large quantity of cereal bran fragments, together with puparia, in the sample could be evidence of faecal deposits (table 18, M32–M33), and perhaps represented a thin deposit of horse manure.

Immediately to the east the surface was cut by a large sub-circular mortar mixer. It had a central barrel, of which no timbers survived. Many of the other fills comprised loose white mortar. The uppermost fills produced pottery dated 1680–1750 and a clay pipe bowl which post-dated 1700 (Heard 1997). This may have been associated with the construction of building 8, or even buildings 10 and 11 outlined in phase 8.

Building 8 (fig 12)

A large brick walled semi-cellared building was constructed to the west of building 5, with a brick floor at 2.7m OD in which a number of timbers were inset. The north wall survived to

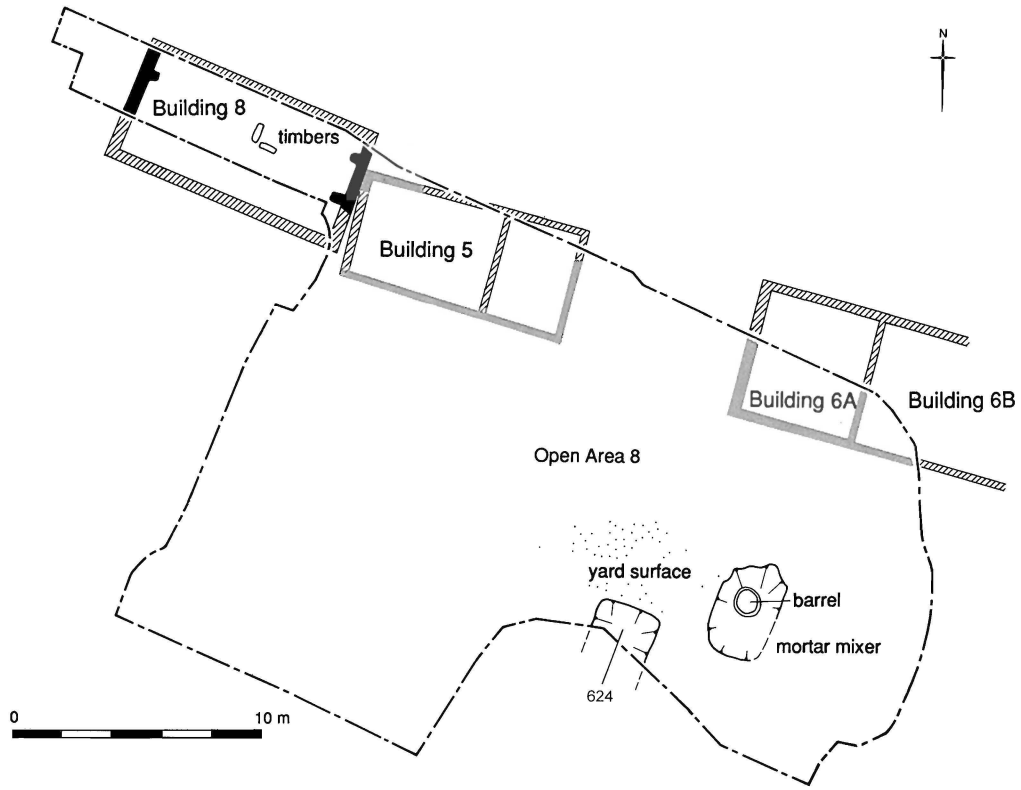


Fig 12 Battle Bridge Lane. Trench 6: buildings 5, 6a, 6b and 8, and Open Area 8

c 3.5m OD. The building has been phased slightly earlier than buildings 10 and 11 (phase 8) in view of its alignment with buildings 5 and 6a/b but could equally belong to phase 8.

PHASE 8: MID–LATE 18TH CENTURY

Trench 4

Building 9a/9b (fig 13)

The cellar or lower ground floor of building 3b was back filled. A series of wall foundations formed a single large building with two rooms that replaced buildings 3b and 4a, but not buildings 3a or 4b.

Trench 6

Buildings 10/11 (fig 14)

To the south of buildings 5 and 6a/6b were a series of fragmentary wall foundations and brick rubble make-up layers, possibly for floor surfaces, which apparently represented a single phase of construction but were otherwise difficult to interpret. They almost certainly represented more than one building. A possible solution is shown in fig 14. The remains included a number of narrow pier bases which may indicate the position of gates or arches, possibly with rooms above. They also included a large brick cesspit and a brick-lined storage pit with an oak plank floor.

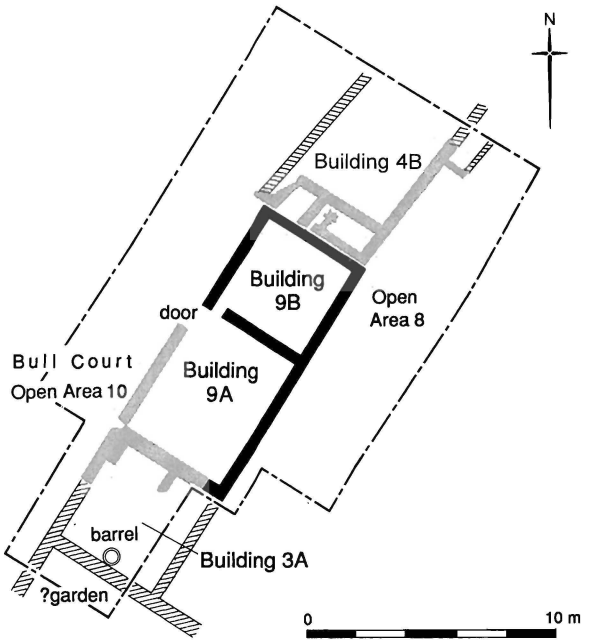


Fig 13 Battle Bridge Lane. Trench 4: buildings 3a, 4b, 9a, and 9b, and Open Areas 8 and 10

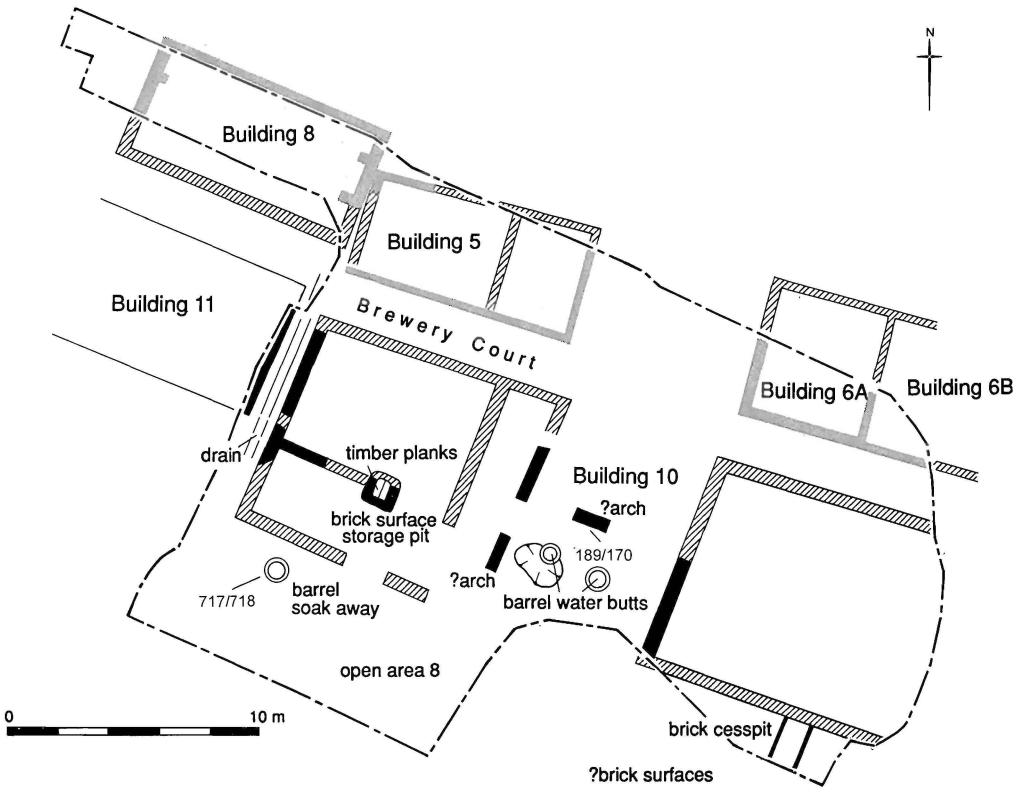


Fig 14 Battle Bridge Lane. Trench 6: buildings 5, 6a, 6b, 8, 10 and 11, and Open Area 8

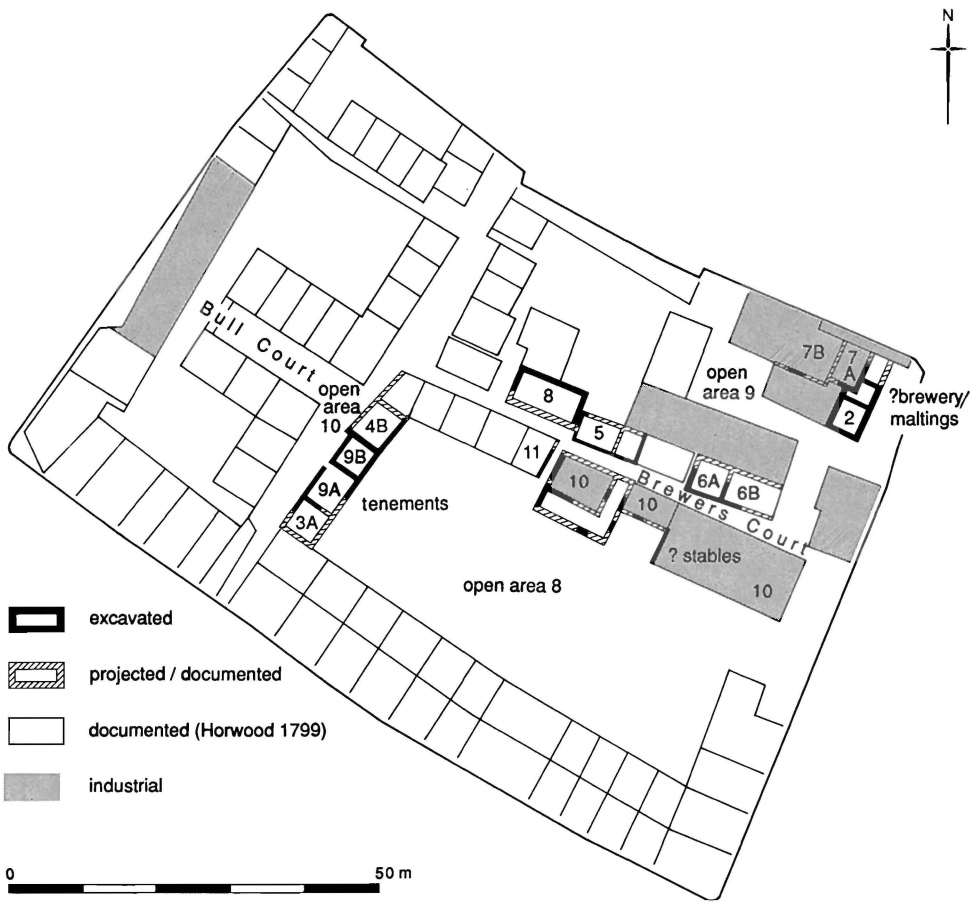


Fig 15 Battle Bridge Lane: the site by the late 18th century, showing the main excavated structures in relation to Richard Horwood's map of 1799

Open Area 8 (figs 14, 15)

Between and to the south of buildings 5, 6a/b, and 10, Open Area 8 was sealed by a fragmentary but extensive courtyard or alley surface (189/170) (table 5, M6).

The largest surviving fragment lay to the south of the two buildings. This was composed of red and yellow brick laid on edge, stacked roof tiles and cobbles at 3.3m–3.4m OD. The surface was heavily truncated and considerably worn, suggesting heavy or prolonged use. The surface contained a number of gullies for the drainage of surface water and was composed either of bricks laid at a slight angle on bed, or stacked roof tiles. The largest part of the courtyard or alley surface was cut by a series of water-butts and barrel-lined soakaways. To the south of building 10 was a large barrel-lined soakaway in which the barrel appeared to be of softwood rather than oak. The spot dates from the upper fill (717) lay in the date range 1720–80, and the finds assemblage included two wooden bowling balls and a complete clay pipe made after 1730 (Heard 1997). This fill also produced six large horncores, each butchered in a similar way to that described for the phase 4 specimen. The lower fill (718) produced a large number of plants of disturbed ground (albeit not particularly well represented individually), much fewer wetland plants, eg sedges, and the residues of food/economic plants. The latter included occasional charred grains, fruits, eg grape, fig, and occasional seeds of *Brassica/Sinapis* spp and dyer's rocket (table 18, M32–M33). This deposit provided the usual mix of domestic and wild animal bone

species (the latter comprising rabbit and a few fish species). It would appear that a portion of the cattle found in these deposits are relatively large (animal bone report).

The finds

THE POTTERY, by Roy Stephenson

Phase 2

The pottery recovered dated from the mid 11th to mid 12th century, and consisted of common fabrics of that period, such as early medieval shell tempered ware (EMSH), local greyware (LOGR) and coarse London type ware (LCOAR).

1 An EMSH cooking pot with a non-characteristic hooked rim and pronounced thumbing decoration (fig 16).

Phase 3

The bulk of the pottery was 12th–13th century. Typical fabrics include London-type ware (LOND) jugs decorated in a variety of styles such as the highly decorated white slip and north French styles. Other fabrics present in trench 5 to a lesser extent include Kingston-type ware (KING), calcareous London-type ware (LCALC), sand and shell tempered ware (SSW), LCOAR and South Hertfordshire grey/Limpsfield ware (SHER). The KING sherds were confined to fill 229, which was dated 1230–50. The assemblage from layer 247 was large, but consisted mostly of SHER cooking pots with a small quantity of imported Saintonge ware (SAIG). Layer 243 produced a single SAIG sherd with a clear glaze.

2 A KING aquamanile. This example appears to be a ram's head with large extravagant curly horns.

The aquamanile was the most striking medieval ceramic find. Aquamaniles are zoomorphic vessels probably used for ritual handwashing at table, and not normally for low-status everyday meals. A parallel for a Kingston-type ware horned animal exists (Pearce & Vince 1988, 49), although that example has been identified as a cow because of a moulded bell around its neck. Similar horned creatures have been identified in London-type ware (Pearce *et al* 1985, 116). The aquamanile would have been a complex vessel to construct, being difficult to fire, and would have commanded a premium price. However, the other pottery deposited with this fragment was not high status, and consisted mostly of sherds of SHER cooking pots and a number of undecorated LOND jug fragments.

Phase 4

The pottery dates generally from the 15th and 16th centuries.

A large group from the first half of the 16th century came from a channel and pond infill (Trench 6). It derived from a number of contexts with a number of vessel sherds in common, indicating roughly contemporary deposition. Among the group were a number of imported sherds including a degraded early Valencian (VALE) albarello fragment, a Mediterranean majolica albarello, and a medieval Spanish amphora (SPOA) fragment. Other noteworthy sherds include a mature Valencian ware bowl, with degraded lustre externally and a blue foliage pattern internally, and a Tudor Brown ware (TUDB) hanging bowl with a pie crust rim. Other locally produced vessels included a TUDB jar with incised curly line decoration.

3 A Guys type ware (GUYS) bowl base decorated with sgraffito floral pattern (fig 16)
4 A Colchester slip ware (COLS) jug — a rare non-local ware in London (fig 16)
5 A mature Valencian lustre ware (VALM) bowl, with blue internal foliage design (fig 16)

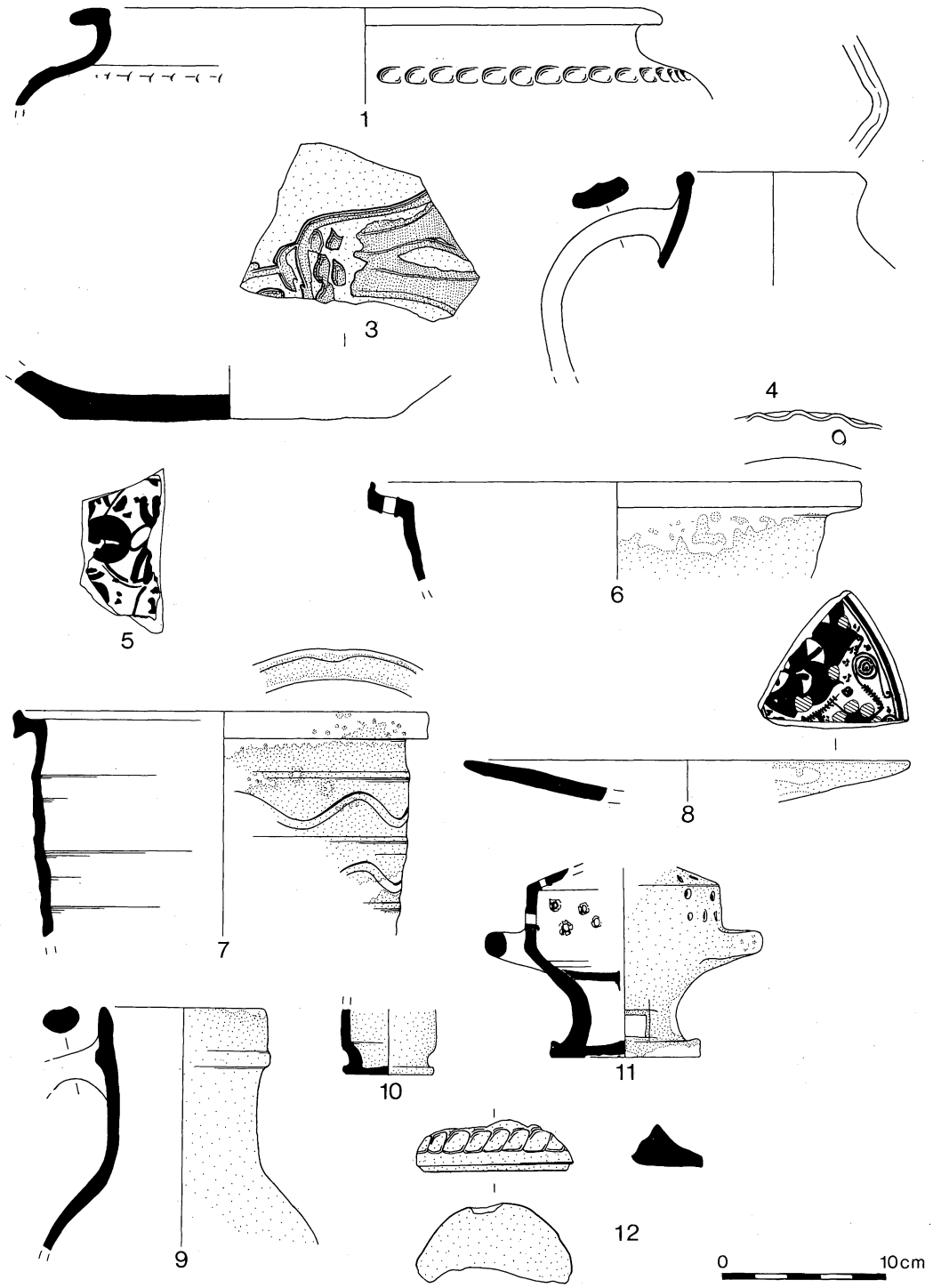


Fig 16 Battle Bridge Lane: the pottery, catalogue numbers 1, 3, 4–12

6 A Tudor brown ware (TUDB) hanging bowl with pierced rim and pie crust rim (fig 16)
7 A Tudor brown ware (TUDB) jar with incised decoration (fig 16)
8 A Montelupo polychrome ware (MLTG) bowl (fig 16).

Phase 5

The pottery types span the transition between the late 15th and 16th century wares (such as Tudor Brown ware (TUDB) and GUYS), and the more refined wares of the late 16th and 17th century, such as BORD and post-medieval redware (PMR). This transition is demonstrated by a number of contexts in trench 6 that produced sherds from both of these broad groups.

From pit fill 501 came a large assemblage of pottery consisting mostly of TUDB, bichrome ware (BICR), GUYS, and a variety of common imports such as RAER and Dutch redware (DUTR). Among the locally produced ware is a very large diameter TUDB cauldron, and what may be a TUDB waster cauldron. This latter appears overfired and is warped. However its presence is not indicative of pottery production in the vicinity, even though imperfect vessels were frequently discarded at their production site, and it may have been used as a 'second', which is rare for vessels of this period. From the upper fill of the pond came a GUYS sgraffito decorated basin or *Lavabo* (no 16) used for clothes washing, and not surprising in such a location.

Pit fill 576 produced a very large contemporary group which weighed 10742g. This was probably deposited in the last twenty years of the 16th century, given the coincidence of GUYS and TUDB with the border wares and finer post-medieval redwares, such as PMR, post-medieval black glazed ware (PMBL) and Red Border ware (RBOR). Table 1 (M2) shows pottery from pit fill 576 broken down by fabric and forms and quantified by rim EVEs.

Sources of pottery from fill 576

Locally produced Tudor wares	32%
Finer post-medieval redwares	14%
Border wares	4.5%
Imports	19%
Tin-glazed ware	0.5%

Form and function of pottery from fill 576

Using and expanding the categories used in the Aldgate report (Orton 1984) it is possible to produce a form and function breakdown:

Storage and transport	20%
Cooking and food preparation	68%
Table/decorative ware	12%
Sanitary ware	nil

The assemblage is largely concerned with cooking and food preparation, with a minority of the wares being used for the table, storage, and transport. The storage and transport category is largely represented by bottle forms such as the BORDG bottle (no 9).

9 A BORDG bottle (fig 16)
10 A Spanish tin-glazed ware (STGW) albarello without any rim, which may represent pharmaceutical activity on or near the site (fig 16).
11 A green-glazed Border ware fuming pot possibly with a sanitary function. Although substantially complete the rim has not survived. It has two horizontal loop handles, the upper portion of the body and shoulder is extensively pierced with round holes, and the upper portion of the base is pierced by a solitary handle to give access to the pedestal portion of the body, which in turn is accessed by a rectangular aperture (fig 16).

These fuming pots are assumed to be for burning aromatic herbs or incense, the pedestal acting as a rake-out area for ash and also for drawing air through to the smouldering matter. However it should be noted that this vessel shows no signs of sooting or burning, nor do any other border ware examples from the existing published study (Pearce 1992).

12 BEAG goblet fragment, with a ropework cordon about its base. No immediate parallel can be found for this form (fig 16).

13 & 14 Two Tudor brown ware (TUDB) sprinkling pots, bag-shaped vessels with rod handles, connecting pierced finials to their shoulders, and with extensively stabbed bases fig 17).

The sprinkle pots would have been immersed in water, the user putting a thumb over the aperture in the finial to stop air entering the vessel and thus retain the water. Removal of the thumb would allow the water to fall.

15 A Tudor brown ware (TUDB) cauldron decorated with incised curvy lines (fig 17).

16 A Guys type ware (GUYS) basin or *lavabo* with sgraffito decoration (fig 17).

Notable among the other ceramics from phase 5 are sherds from a TUDB bird-nesting pot from fill 564, and, imported from Raeren in the Rhineland, a whistle in the shape of a grinning jester's head, wearing a tricorn hood. These playthings are rarely found on archaeological sites, and the published types are mostly confined to examples from kiln sites (Hurst *et al* 1986, 207).

17 A Raeren stoneware (RAER) whistle formed in the shape of a jester's head.

Phase 6

These ceramics again show the interaction between the 16th and 17th century pottery groups.

For instance while the assemblage from the lower make-up layer 318 in trench 6 is nearly half TUDB and in the upper layer (300) the quantity has only fallen to 41%, there is a notable rise in white Border ware, and green and yellow glazed Border ware (BORDG and BORDY). This was at the expense of the imported redwares such as Dutch redware (DUTR), Dutch slip ware (DUTSL) and Dutch slip decorated ware (DUTSD), as the border wares apparently start to take a larger share of the market over a very short period of time.

Tables 2 and 3 show pottery broken down by fabric and forms and quantified by rim EVEs: table 2: layer 318 (M2); table 3: layer 300 (M2).

The group included an unusual DUTR chafing dish and a TUDB base with a cut-away section — possibly performing some industrial function — in layer 300 (table 3). The presence of a fragment of TUDB watering pot further underlines the semi-horticultural nature of this area. Additionally, layer 318 (table 2) produced what may be an unusual variant of the TUDB fabric, a fragment of a pipkin with a thick iron-rich glaze. Whereas thick iron-rich glazes are common on 17th century drinking vessels, and occasionally chamber pots (PMBL), such a glaze on a 16th century vessel suggests a possible antecedent for this type of glaze.

A Spanish micaceous ware (SPAM) flask came from pit fill 407 and sherds of an unusually large Staffordshire butterpot with internal clear glaze and an external slip from bedding trench fill 465. Notable among the border wares are fragments of a green-glazed money box recovered from the fill 112 in trench 4.

Phase 7

The bulk of the assemblage appears to be typical of the last two-thirds of the 17th century. The pottery includes post-medieval redwares (PMR), post-medieval black-glazed ware (PMBL), metropolitan slipware (METS), Westerwald stoneware (WEST), tin-glazed ware and biscuit sherds (TGW and BISC) and Border wares (BORDY and BORDG).

Further confirmation of the use of the area for horticultural purposes comes from fill 489, in the shape of a flower pot with side drain holes, a pronounced cordon and traces of glaze. This vessel is more likely to have been used as an ornament than for market gardening.

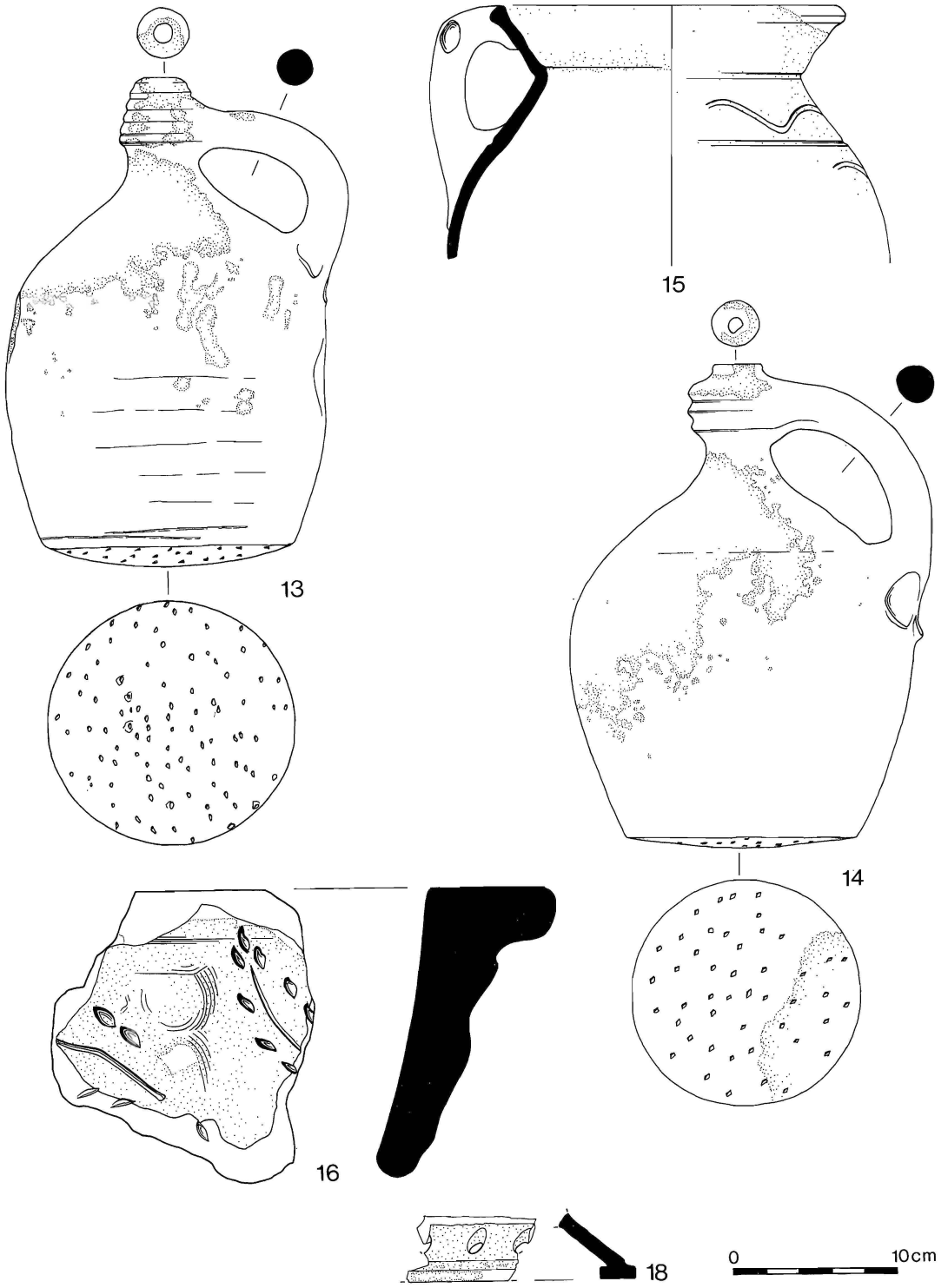


Fig 17 Battle Bridge Lane: the pottery, catalogue numbers 13–16 and 18

18 A fragment of a TGW open-work basket stand, probably rectangular in shape (Austin 1994, 169, fig 292). Although very fragmentary, this may have been used as a centre-piece at table, perhaps for serving fruit or desserts. It may have been manufactured at the nearby delft factory at Pickleherring: there is also BISC present in the same group (fig 17).

Phase 8

The bulk of the pottery consists of commonly occurring wares of the period. These are a typical mixture of locally produced earthenwares, such as PMR, RBOR and BORD, with increasing amounts of mass produced wares such as Staffordshire white salt glaze (SWSG).

The assemblage from the barrel-lined well (649) produced a very small amount of Staffordshire wares, with a sizeable collection of locally produced earthernwares, including a BORDY red slip decorated flanged dish and a RBOR sherd with red slip decoration.

THE BUILDING MATERIALS, by Terence Paul Smith

Introduction

The building materials consisted almost entirely of medieval and post-medieval ceramic building materials, although a small amount of (residual) Roman ceramic building material and a very little building stone were also recovered. The medieval and post-medieval bricks sampled comprise a large body of such material. Fabric numbers given are those currently in use within the Finds Section (Building Materials) of the Museum of London Specialist Services (MoLSS), where full fabric descriptions are kept.

The Roman, medieval and post-medieval ceramic building materials reports are reproduced in microfiche (M3–M13).

SMALL FINDS, by Geoff Egan

Most non-ceramic finds from the site up to *c* 1600 are included below, together with a small selection of 17th century items of potential significance (glass-vessel fragments catalogue nos 31–2, the latter a particularly unusual find in Britain). One bone item is from the late 11th/early 12th century (no 98) and a stone mould comes from the late 14th/early 15th century (no 82) but otherwise there is an overwhelming emphasis on the 16th century — a period that is generally rather under-represented in London's archaeology.

Some of the dress accessories catalogued appear to be characteristic of the late 15th/early 16th centuries (neck-chain/pendant link no 5, wire accessories nos 6ff, the dark coating on buckle no 3), while the household items are of fairly standard, long-lasting forms. Several of the items relating to production, notably of textiles and metalwork, are unusual finds of some significance. The fragment of a wool-carding comb (no 32) and cloth seals from Bristol and for a substandard textile (nos 34–5) relate to the former. The latter is represented by trimmings etc from copper-alloy sheeting (nos 45–52, almost certainly imported) and a piece stamped with a trade mark, perhaps a label from a producer of sheeting (no 69), which has no traced parallel. These particular finds are an important group, illustrating for the first time the kinds of waste to be expected from the initial stages of preparing metal sheets for the production of goods in the 16th century. There are also iron rods (nos 64–5), probably a fairly common form of smithing waste despite their infrequent recognition among published finds; the stone mould for undefined lead/tin products is an uncommon find. The evidence for working sheet copper alloy is all from the later 16th and 17th centuries. One of the iron rods is from the early 16th century and the sheet waste is from the late 16th century, apart from no 71 which is attributed to *c* 1480–*c* 1550, while the mould for lead/tin is from a century earlier. The mason's chisel (no 31) is an unusual and hence useful addition to the tools from London datable to the Tudor period.

The four jettons (variously attributed to Tournai, Paris and Nuremberg) and a lead token (nos 89–93) continue to extend the extraordinary range found on excavations, and part of a small balance (no 94) hints at careful scrutiny of gold coins.

Three heterogeneous wooden gaming bowls (nos 95–7) are unusual survivals, and they provide tangible evidence of one of the leisure attractions for which Southwark was renowned in the 16th century. The horse equipment (nos 84–7) relates to travel, whether within the urban area or beyond, and the netweights (nos 41–4) are from fishing, not necessarily restricted to the Thames. Among the miscellaneous finds, a piece of elaborate copper-alloy sheeting with an incomplete inscription (no 100) is from an unidentified object, perhaps for religious usage.

Faunal identifications of bone objects are by Alan Pipe.

In the following catalogue registered finds numbers are contained in pointed brackets; context numbers are shown in parentheses.

Clothing

SHOE

1 <213> (246). Ceramic dating *c* 1480–*c* 1550. Wrap-around style leather upper from one-piece right ankle shoe for a child. L after drying 213mm, ht 90mm; circular iron buckle dia 12mm on thong, and corresponding strap survive; slight wear.

Grew & de Neergaard (1988, 41 fig 65 and 71 fig 105) show the style, which continued from the early 15th century.

Dress accessories

BUCKLES

(all pins are missing)

2 <167> (639) Ceramic dating late 16th century. Lead/tin; circular frame dia 15mm; corroded.

Presumably for a shoe (Egan & Pritchard 1991, nos 121–210).

3 <69> (44) fig 18. Ceramic dating late 16th century. Copper alloy; double oval frame, 41 x 30mm, slightly angled profile; bar is flanked by side protrusions; floral motif on each edge; remains of black coating.

The coating is a common feature of late 15th/early 16th century copper-alloy dress accessories (Clark 1991, 156–7 no 413).

4 <47> (unstratified) fig 18. Relatively pure tin (XRF analysis by K Suenson-Taylor); incomplete; sleeved plate 30 x 22mm from buckle with integral frame and plate, the latter triply fluted lengthways and with a three-pointed aperture at the inside edge, flanked by roundels with raised borders, each holding a separate lead/tin rivet; leather from strap survives.

The frame can be restored as an oval *c* 23 x 17mm, from a parallel found in London (private collecction).

NECK CHAIN OR PENDANT

5 <75> (unstratified) fig 18. Corroded and incomplete lead/tin hexagonal accessory with one attachment loop (of possible original two); 30 x 34+mm; beaded border with acorn-like knops at four corners; raised central roundel with rough, radiating hatching at edge and (?) originally four quatrefoil openings (?leaving a central saltire-cross device). Either a pendant, for which the design would seem to be somewhat low-key, or more likely, one link from a decorative chain, probably worn around the neck even though the attachment loop appears very flimsy. There are a few other survivals of what appear to be lower-class versions of the precious-metal neck chains which were fashionable in the late 15th/16th centuries (eg VHA89 acc no 854, and a possible fragment found in a (?)late medieval deposit in Northampton (Oakley 1979, 265–6, fig 115, 2).

WIRE ITEMS, POSSIBLY FROM ARTICLES OF DRESS

These may be from women's head-dresses, supports for ruffs etc; some could be from objects unrelated to clothing.

The four items 9–12 appear very fragmentary and their identification as dress accessories is more open to doubt than for nos 6–8.

Copper alloy

6 <240> (318) Ceramic dating late 16th century. L 245mm, gauge *c* 2.98mm; two smoothed ends; includes two probably deliberate angled bends.

7 <251> (740) Ceramic dating late 16th century. Incomplete: surviving length 198mm, gauge 1.15mm; one flattened, slightly spatulate end, the other broken off.

8 <225> (unstratified). L 208mm; one pointed, one possibly smoothed end; includes two probably deliberate angled bends.

9 <258> (246) Ceramic dating *c* 1480–*c* 1550. Two lengths of wire with many kinks, in rough circles *c* 90mm; gauge *c* 1.30mm.

Iron

10 <253> (740) Ceramic dating late 16th century. Length *c* 330mm, bent into sub-trapezoidal configuration; there are five pieces of smaller-gauge twisted around the main piece at different points along it, possibly to allow it to be sewn into place on fabric.

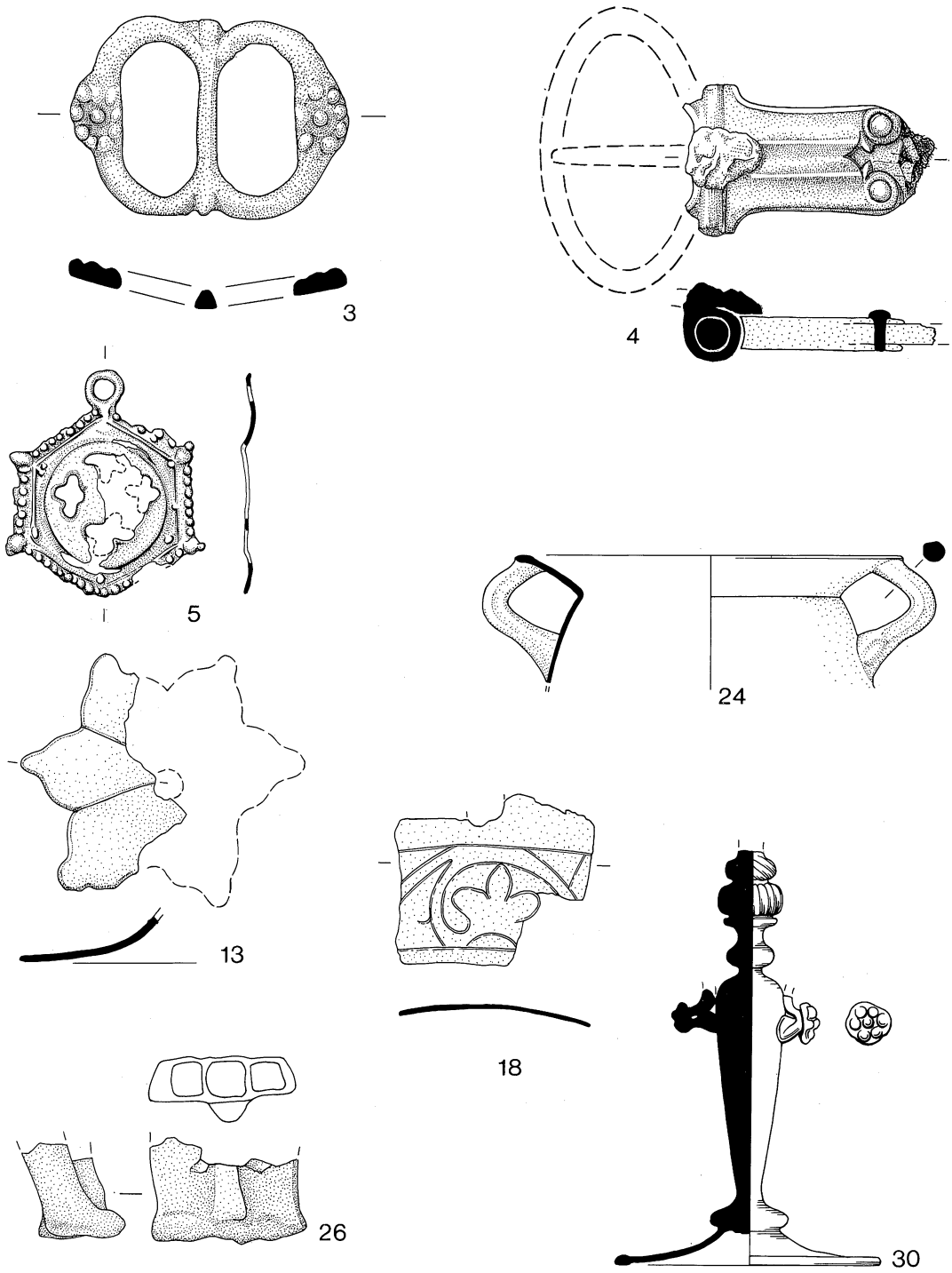


Fig 18 Battle Bridge Lane: small finds, catalogue numbers 3–5, 13, 18, 24, 26, 30
Nos 3, 4, 5, 13 and 18 published at 1:1
Nos 26 and 30 published at 1:2
No 24 published at 1:4

11 <252> (740) Ceramic dating late 16th century. Arched configuration, dia *c*80mm; twisted into loop towards one end; (no tin coating).

Bead

12 <144> (557) Ceramic dating *c* 1550–*c* 1600. Translucent turquoise glass; sub oval, length 7mm, w 6mm. Beads of this date are not common finds in London, though the striking colour of the present one would tend to aid retrieval.

Household items

FURNITURE HANDLE

13 <224> (489) fig 18. Ceramic dating *c* 1680–*c* 1750. Fragment of a slightly domed, ornate sexfoil backplate from a drop handle, dia 45mm.

Probably from a drawer. Another, with an oval, moulded handle still attached by a staple or pin has been found in Norwich (Margeson 1993, 78, 80, fig 45 no 487, d 36mm; see also no 488, a backplate, dia 32mm). Both examples from Norwich are smaller than the present plate and although these are described as drawer handles, an alternative suggestion of a coffin handle is given. The restricted aperture of the grip does not seem appropriate for this function, and there was no suggestion of human burials in the 1995 excavation.

LOCK

14 <136> (694) Ceramic dating 15th century. Iron: fragment of mounted-lock plate 50+mm x 38+mm, with part of mechanism; bar and slightly displaced S-shaped spring are present; top of key aperture survives (Egan 1998, fig 82, no 283).

ROTARY KEY

15 <70> (714) Ceramic dating *c* 1480–*c* 1550 (described from X-ray plate). L 42mm; sub-oval bow 20 x 15mm; bit 13 x 12mm, with asymmetrical clefts and (?)one channel.

LOCK HASP

16 <94> (713) Ceramic dating *c* 1480–*c* 1550. Incomplete iron loop; length 127mm; narrowed at middle. For a chest, door or gate, etc (Egan 1998, fig 39, nos 76–8).

CHAIN

17 <114> (761) Ceramic dating *c* 1480–*c* 1600. Iron; S-shaped wire links length 14mm, each through two apertures of one neighbour and one of the other (ie semi-rigid pairs articulating with the next ones); overall surviving length 195mm.

Perhaps to suspend a hanging lamp etc, being too flimsy for most security purposes.

MOUNT, PROBABLY FROM A CASKET

18 <203> (unstratified) fig 18. Sheeting fragment 30+ x 26+mm; engraved with stylized, formal (?)trefoil scroll on field of zigzags, all between plain line borders; possible foliate (?quatrefoil) opening in area beyond border.

For the decoration, see Egan (1998, nos 158, 163, from the late 14th/early 15th century) and Hinton (1990, 779–80, fig 225, no 2397, from the late 13th/early 14th century). The latter is a casket lid covered with sheeting and the former are strip mounts, again probably from caskets.

KNIVES

19 <241> (318) Ceramic dating *c* 1480–*c* 1550. Corroded (described from X-ray plate); surviving part of (?)blade length 88 x 14mm.

20 <153> (663) Ceramic dating early 16th century. Part of blade surviving length 30+mm, w 22mm; whittle tang length 98mm.

21 <148> (663) Ceramic dating early 16th century. Corroded; pointed blade only; length (?)113mm+, w (?)18mm; tip bent over.

22 <117> (513) Ceramic dating *c* 1480–*c* 1600. Corroded; part of blade and whittle tang with remains of (?)plain round wooden handle; total length surviving 122mm.

23 <223> (696) Ceramic dating late 16th century. Parts of blade l 57+ x 12mm and whittle tang length 25mm; copper-alloy shoulder strip; maker's mark of (?)opposed arcs.

COPPER-ALLOY VESSELS

Cast

24 <88> (713) fig 18. Ceramic dating *c* 1480–*c* 1550. Rim with angled, vertical handle; dia approx 260mm; fillet to strengthen edge.

From a tripod cauldron; a high quality vessel.

25 <255> (633) Ceramic dating late 16th century. Plain, flaring rim, dia approx 120mm.

(?)From a cauldron.

26 <168> (639) fig 18. Ceramic dating late 16th century. Foot with vertical ridge; 42 x 14mm, surviving ht 32mm; probably a repair from the triple (?)prongs in centre of break, which may have helped with fixture — ie the original stump of a broken vessel foot had two saw cuts vertically to form three prongs, which gave a keyed base around which the repair was cast; so firm was this attachment that a second break removing the repair also took the prongs with it. Analysis by XRF of the main part and a (?)prong produced similar results from both areas.

27 <198> (unstratified). Flaring rim; dia *c* 145mm; thickened along edge.

(?)From a jug or ewer.

Sheeting: folded sheet rivet (for repair to sheet vessel)

28 <133> (713) Ceramic dating *c* 1480–*c* 1550. Fragment, 33 x 8mm; possibly originally octagonal.

See Egan (1998, nos 488–94) for the use of these cheap repairs.

GLASS VESSELS

Number 29, although unstratified, can confidently be attributed to the 16th century, while no 31, from a 17th century deposit, may be from the late 16th or early 17th century.

29 <58> (unstratified). Wall fragment of crystal-glass vessel with bands of spiralled *lattimo*, alternately threads and thicker strips.

30 <12> (112) fig 18. Ceramic dating 17th century. Greyish crystal flat base, dia 82mm and with folded edge, and cigar-shaped stem, from elaborate, relatively large drinking vessel, surviving ht 124mm; stem has knops at top and base, two of the upper ones with moulded ribbing; two applied, pinched trails on the sides, with applied 'berry' prunts, are probably the remains of butterfly-type decoration.

Items associated with production

STONEWORKING

Chisel

31 <146> (663) fig 19. Ceramic dating early 16th century iron stone-dressing tool, length 124mm; sinuous, waved blade with six grooves or teeth on each face, total w 70mm + (small part missing); the slight bend in the shaft may be an original feature to keep the fingers away from the stone being worked; head slightly beetled from use.

A rare survival of what must have been a common mason's tool. It would have produced parallel grooving on the surfaces on which it was used.

TEXTILE RELATED ITEMS

Carding comb

These were used in pairs to align fibres and to remove any foreign material left after initial cleaning with coarse woolcombs, prior to spinning thread (Patterson 1979, 193–4 & (b), 153).

32 <235> (219) Ceramic dating *c* 1480–*c* 1550. Series of double-pointed prongs of iron wire from a comb, most surviving in their original position in staggered rows in three main lumps of soil, together making up an area approx 75 x 50mm; no trace of the leather through which they would originally have been set survives and nor does any of the wooden frame.

Several more-complete combs have been excavated in London, eg Acc. nos. 1776 (an unusual survival of a pair, 240 x 120 and 225 x 115mm) and 3625 leather and prongs, and 2411 leather only — all from BC72 site in the City, while SYM88 acc no 24 (found in an early 16th century deposit a short distance away from the present item) is a 108mm long fragment with prongs, leather and wood surviving. A wooden frame of oak 249 x 131mm, with the nailed leather intact (of calf and including vermilion-dyed attachment strips) but the metal prongs lost through corrosion was found at Bordesley Abbey (Gloucester) in an (?)early 15th century deposit (published as a possible book cover 'embroidered with iron wire' — Astill 1993, 225–7, OB143, fig 99, pl 37); another fragment of leather with prongs from a late 16th/mid-17th century tannery site has been published from Northampton (Goodall 1979, 272–3, fig 119 no 65). The most complete of these parallels suggests that somewhere around 2700–2800 double prongs would have been used for each comb.

Spindle whorl

33 <55> (unstratified). Lead; irregular plano-convex; dia 21mm, ht 13mm; wt 25.4gm. Presumably medieval, the weight is within the usual bracket for late-medieval whorls. Lead ones are not very common in London (Egan 1998, fig 203, nos 803–4 for a pair).

Cloth Seals

Regulatory lead seals attached to individual cloths prior to sale, to attest the quality (Egan 1994). Abbreviations: // = next disc, - = no stamp.

34 <74> (663) fig 19. Ceramic dating early 16th century. Dias 17//19mm (the flans are too small to accommodate the entire stamps): ship emerging from a port // crown over dimidiated and conjoined sun and rose.

Bristol alnage seal with the city's arms (the ship and watergate) and the halved sun/rose badge as used on coins of 1471–90. See Egan (1994, 22–3, fig 8 no 4), for references to further parallels.

35 <206> (unstratified). Corroded; dia 28mm // missing: - // (on rivet) large, Lombardic F.

Alnage seal; the letter indicates a faulty cloth, the minor imperfection(s) of which were not serious enough to prevent its being sold at market (Egan 1994, 56, fig 25 nos 110–11); (?)late 15th/early 16th century.

36 <48> (unstratified) fig 19. Dias 12mm: anchor //-.

There are no obvious parallels for this small seal, though crossed anchors are known on larger ones found in London and Oxfordshire and a parallel for these in Mechelen in Belgium. There may be a maritime/shipping connection, but thick sailcloths would have had much larger seals (Egan 1994, 113, fig 44 no 328).

37 <42> (unstratified) fig 19. Dias 18mm // 19mm: - // (?)G privy mark.

The mark (the orientation of which is not absolutely certain) is stylistically late 15th/16th century. Presumably a seal of a weaver/clothier etc (Egan 1994, 78ff).

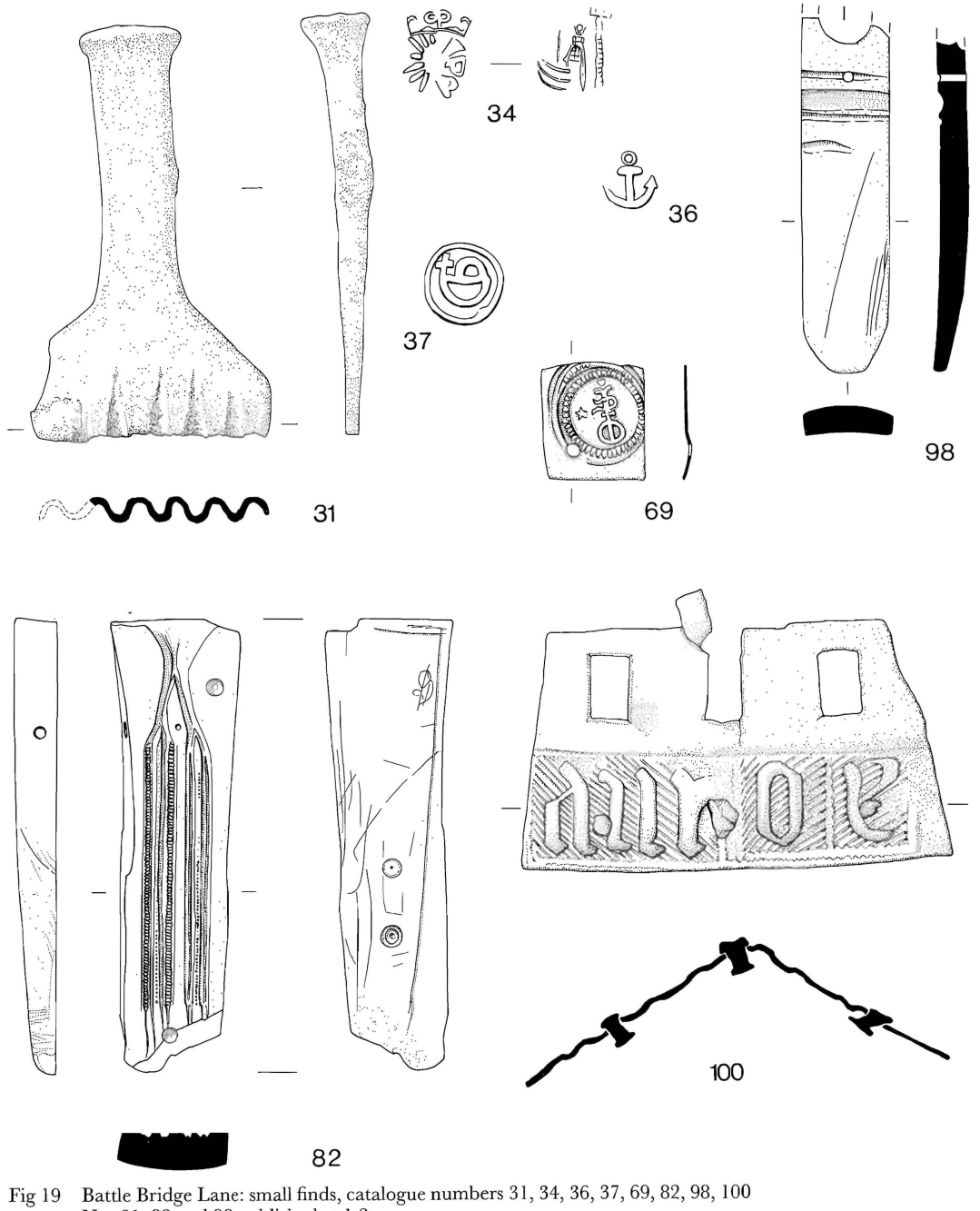


Fig 19 Battle Bridge Lane: small finds, catalogue numbers 31, 34, 36, 37, 69, 82, 98, 100
Nos 31, 82 and 98 published at 1:2
Nos 34, 36, 37, 69 and 100 published at 1:1

PINMAKING

Pinmakers' bones

Presumed to have been used to hold pin shafts in the grooves while the points were being sharpened. These are common and widespread on London sites, especially from the half century to which the following two are attributed (MacGregor 1985, 171).

38 <176> (663) Ceramic dating late 16th century. L 82mm; cattle left metatarsal.

39 <108> (300) Ceramic dating late 16th century. Fragments missing; length 85mm; cattle right metatarsal.

BEADMAKING

40 <1> (9) Ceramic dating *c* 1380–*c* 1550. Waste bone panel, probably from cattle metatarsal posterior shaft, trimmed on one face only and with four surviving holes (two of which are broken off) each dia *c* 12mm, for beads up to 8mm thick.

Egan & Pritchard (1991, 311–5) illustrate similar panels from the late 13th to early 15th centuries; bone beads were commonly used for rosaries. This type of waste disappears from the archaeological record around the time of the Reformation.

FISHING

Netweights

41–44 <44–6 & 50> (All unstratified). Lead sheeting rolled into oval tubes and rounded; they vary from 9 x 24mm to 13 x 29mm and 10–31gm in weight.

Parallels from dated contexts, notably a wreck of *c* 1400 in London (Marsden 1996, 102–3, fig 91), suggest a late medieval date is appropriate.

METALWORKING

Copper alloy

XRF analyses were carried out by Kerstin Suenson-Taylor, at the Ancient Monuments Laboratory.

Sheet offcuts: strips cut straight along one side, the other (to which the sheeting thins out) irregularly undulating (thicknesses vary through each piece)

45 <87> (719) Ceramic dating *c* 1480–*c* 1550. Reddish metal: length 185mm, th ≤ 1.75mm; straighter side somewhat raggedly cut.

46 <178> (572) Ceramic dating late 16th century. Corroded: 62 x 12mm, th ≤ 2.3mm.

47 <141> (288) Ceramic dating *c* 1480–*c* 1600. Corroded: (?) as preceding items; 34x9mm; th ≤ 2.75mm.

48 <177a> (572) Ceramic dating late 16th century. Corroded: length 55mm, th varies markedly from approx 1.6–3.2mm.

49 <182> (572) Corroded: (?)as preceding items, 55 x 13mm (th obscured).

50–4 <142> (276) No ceramic dating. XRF analyses show small amounts of lead in each of these and no 56 also has a small amount of zinc (no tin was detected).
A) L 123mm, max th approx ≤ 1.6mm.
B) L 97mm, max th approx ≤ 1.3mm.
C) L 92mm, max th approx ≤ 1.7mm.
D) L 74mm, max th approx ≤ 0.9mm.
E) L 32mm, max th approx ≤ 1.7mm.

55 <236> (+C1) Corroded: length 202mm.

Sheet offcuts: strips cut on both sides

56–7 <140> (288) Ceramic dating *c* 1480–*c* 1550. Both are corroded.
A) L 41mm, max th ≤ 1.9mm.
B) L 41mm, max th ≤ 1.4mm.

58 <180> (572) Ceramic dating late 16th century. Corroded: l 120mm.

59 <179> (572) Ceramic dating late 16th century. Curved; l 78mm, max th ≤ 1.8mm.

60–63 <263> (276). XRF analyses shows small amount of lead in each of these and nos 61–3 also have small amounts of zinc (no tin was detected).
A) L 63mm, max th ≤ 1.9mm.
B) L 53mm, max th ≤ 1.9mm.
C) L 47mm, max th ≤ 0.9mm.
D) L 34mm, max th ≤ 2.1mm.
Two discrete thicknesses seem to be represented.

64 <177b> (572) Ceramic dating late 16th century. Corroded; curved; length 29mm, max th ≤ 1.6mm.

Other offcuts

65 <67> (285) Ceramic dating *c* 1480–*c* 1550. Square, 15 x 15mm; th ≤ 1.5mm.

66 <72> (562) Ceramic dating *c* 1480–*c* 1600. Roughly right-angled triangle, 63 x 57mm, th ≤ 2.45mm (cut along all sides). This is somewhat thicker than the other offcuts.

67 <183> (572) Ceramic dating late 16th century. Rough rectangle with one straight side, 29 x 20mm; th ≤ 1.25mm.

68 <185> (572) Ceramic dating late 16th century. Ragged strip, lacking obvious cut or finished edges, 34 x 9mm, th ≤ 1.4mm (cut along all sides).

Numbers 45–55, cut along one side only, are likely to be trimmings to remove the stamped edges from sheets as received from their producers, who in the 16th century would probably have been in the Low Countries. No recognized parallel has been traced for these — presumably waste from a routine first stage of preparation of the sheets for the manufacture of specific goods. Trimmings cut along both sides like nos 56–64 probably represent over-cutting when large sheets were divided into smaller sizes, while trimmings that have become curved were presumably cut with a tool having two slightly offset blades, similar to a pair of shears; the trimmings that remained flat were probably cut or scored with a single blade (perhaps as in a guillotine). The absence of tin which is revealed by the analyses suggests that a relatively pure copper, perhaps with a little lead to make it readily workable, was what the producers intended.

Sheeting with stamp

69 <82> (719) fig 19. Ceramic dating *c* 1480–*c* 1550. 17 x 15mm, th 0.65–0.50mm; slightly distorted by oval stamp with privy mark (no obvious letters) flanked by two small stars (only one shown in fig 19), all in beaded border, hole near one corner.

This small piece of stamped sheeting may be a maker's quality-control mark from the sheet-metal stamping industry, at the suggested date probably from the Continent. The hole may have been for attachment (?with wire) to the product. No parallels in sheeting are known, though tin or possibly lead ingots were stamped with an angel mark in London in the early 16th century (Egan 1996).

Iron

Slag

70 <237> (308) Ceramic dating late 16th century. Rusty, amorphous conglomerated lump approx 90 x 70 x 55mm of non-magnetic slag with varied inclusions of coal, charcoal, grey material etc (possibly surrounding a straight-edged object, judging from the X-ray plate).

Another piece is from a late 17th/early 18th century deposit.

Sheet offcuts
(none has evidence of tin coating)

The slight unevenness along one side of each of nos 75 and 78 may be the equivalent for this metal of nos 45–55 of copper alloy, while nos 71–2, 74, 76–7 and 79 are the equivalent of nos 56–64.

71 <134> (713) Ceramic dating *c* 1480–*c* 1550. Strip cut along both sides; 60 x 9mm, th *c* 1.65mm; angled ends.

72–76 <226> (740) Ceramic dating late 16th century.

A) Spiral strip, length 130mm, th *c* 1.6mm; cut along both sides.

B) Strip, length 96mm, hammered into uneven, thin bar max. th 5.25mm.

C) Curved strip, length 82mm, th *c* 1.8mm; cut along both sides (one ?by a two-bladed tool).

D) U-shaped strip, length 68mm, varied th (average *c* 2.4mm); one side cut smoothly, the other slightly uneven.

E) Curved strip, length 190mm, th *c* 1.6mm; unevenly cut along both sides.

77 <227> (740) Ceramic dating late 16th century. Strip length 8mm, th *c* 0.93mm; cut along both sides.

78–79 <228> (740) Ceramic dating late 16th century.

A) Strip length 98mm, th slightly uneven, max. th *c* 4.25mm; curved; one side cut; the other slightly uneven.

B) D-section strip, length 25mm, th *c* 4mm; curved into arc; (?)cut along both sides.

Iron rods: lumps of iron discarded as offcuts during smithing

80 <154> (663) Ceramic dating early 16th century. Angled bar, 27 x 16mm, thinner in one half; cut through transversely at one end, and (?)less neatly with several blows at the other.

81 <195> (unstratified). Doubly wedge-shaped lump, 60 x 30 x 26mm, apparently roughly cut through at one end. This may well be an offcut from a rod or a part-worked object discarded during smithing; its connection with the other ironworking items is circumstantial in the absence of stratigraphic information.

Lead/tin

Stone mould

82 <33> (245) fig 19. Ceramic dating *c* 1350–*c* 1450. Dark purplish slate (?slightly micaceous); incomplete: carved into sub-rectangular form 133+ x 36(+) x 12mm; one long side is uneven, possibly recut, and with a keying hole; the heat-darkened ingate divides into two channels, each leading to double linear grooves (each of these having shallowly scored lines for gas escape) with a series of slightly uneven, transverse lines across the outer ones of the pairs; there is another row of drilled marks in a similar register down the central portion (it is not certain that these would have been evident in cast products) echoed by three further marks at one end, and a small, central blind hole and a larger drilled pit near the ingate at the other, with another blind hole at the break. These holes may have been for keying; the other main face has scratches around the perimeter and elsewhere, and two circle-and-dot motifs (one being very shallow).

Moulds of stone of medieval date were usually for the production of items of lead/tin (Egan forthcoming (b)). Although the present piece has apparently been used, as the discoloration suggests, some parts even of the (?)main design appear unfinished, and it is difficult to infer the form of the finished products from this single element. It could have been for the end or edging of a somewhat larger item, though this seems unlikely, to judge from the position of the ingate. If it was broken before the carving was completed (and the position of the break argues that it was not), for example in the course of a trial casting, the transverse lines may be preliminary tooling. It seems unlikely that this was for casting window cames (for which reeding is unknown in the medieval period) despite some superficially similar traits. The only lead waste recovered from the site, a runnel and an amorphous lump is from context 687, which is attributed to *c* 1480–*c* 1600, slightly later than the context for the mould.

(?)Shot tool

83 <18> (112) Ceramic dating 17th century. Iron; incomplete and very corroded; robust, flat-ended, plier-like tool with hemispherical recess (dia approx

15mm) and channel apparently to *each* side in both opposed faces; the handles have been lost through corrosion.

Perhaps for slightly adapting the shape of shot balls (an opposed pair of channels would suggest that this was not a simple casting tool).

Horse equipment

HORSESHOES

84 <147> (663) Ceramic dating *c* 1480–*c* 1500. Corroded branch, length 105mm+, web 27mm, with three large nail holes.

85 <242> (318) Ceramic dating late 16th century. Two corroded branches, length 118mm+, web 37mm, each with two+ nail holes and worn at toe; presumably originally parts of the same shoe.

SPUR

86 <239> (318) Ceramic dating late 16th century. Incomplete and corroded; curved branches; length 133mm, span approx 100mm, length of straight neck 49mm; rowel with eight points; (no evidence of tin coating).

(?)BUCKLE/HASP

87 <98> (713) Ceramic dating *c* 1480–*c* 1500. Iron: T-shaped frame 65 x 83mm, with sheet roller on narrower edge; pin missing; traces of tin coating. Presumably equine (Egan 1995, 59–60 nos 39, 44 & 46 dated to the late 13th to early 15th centuries).

Coins and related items

COIN

88 <34> (639) Ceramic dating late 16th century. Silver groat of Henry VI, Calais mint, rosette-mascle issue 1427–30.

JETTONS OF COPPER ALLOY
(lettering is Lombardic in each case)

89 <78> (663) Ceramic dating early 16th century. Dia 27mm: central quatrefoil from bows of keys in cross arrangement, fleurs de lis between, OEƎRVCSRE

Tournai issue, probably late 15th century, related to series with *Ave Maria stella Dei mater* legend. (Mitchiner 1988, 228, 231 and especially 693, though none of those described is precisely similar).

91 <186> (572) Ceramic dating late 16th century. Corroded; incomplete flan in two pieces; dia 23mm: orb with cross in ornate trefoil, ?...(DOE)... // five-petalled rose, crowns and fleurs de lis around (edge legend) Nuremberg, *c* 1500–85. (Mitchiner 1988, 38ff, eg 383 no 1245).

92 <54> (unstratified). Dia *c* 24mm; fragment missing: ship on the sea, ...ARTM... // heater shield with arms of France modern, ...(I)O(M)...

Nuremberg, *c* 1490–*c* 1550 (Mitchiner 1988, 365–75, jettons which have lozenge-shaped arms, and 355–8 for 'French shield' (ie of heater-shape) jettons with orbs on the other side and dated to *c* 1500–*c* 1525).

LEAD/TIN TOKEN

93 <43> (unstratified). Dia 13mm: Lombardic D enclosing small W // trefoil with pellets on leaves.

Late medieval.

BALANCE

94 <107> (713) Ceramic dating *c* 1480–*c* 1550. Iron beam length 57mm, with separate, riveted pointer ht 21mm; copper-alloy split ring survives from chain attaching pans at one end of the beam.

The tiny set of scales from which this survives would probably have been used for checking individual gold coins.

Leisure items

BOWLING BALLS

Several acts were passed in the 16th century attempting to ban bowling, along with dicing, as distractions from leisure-time archery practice, which was seen as important for the defence of the realm. Similar bowls of roughly comparable date have been found before in London and elsewhere (Egan, in prep, for one from just north of the city and references to other parallels). Wood identifications are by Damian Goodburn.

95 <38a> (752) Ceramic dating *c* 1480–*c* 1600. Dia 69 x 72mm; *Taxus baccata*; both faces have paired, concentric grooves.

irregularly facetted at one end, broken off at the other; drilled (?)blind hole dia 8mm in centre; hole (?)with rivet, and grooves from transverse abrasion, near letter end.

(?)A mount, possibly re-used as a tool.

99 <190> (523) Ceramic dating *c* 1480–1550. Hooked tool; iron; corroded; length 240mm; flaring socket, broken at (?)two nail holes; recurving spike.

This tool could have served to draw objects closer or to push them away; perhaps for manoeuvring river craft close to land — though the form does not correspond with the majority of large hooks found in the river Thames in London, which are thought to have been for this purpose (Martin Brendell, pers comm). Alternatively it may have been for pulling thatch etc off burning buildings (a fire hook in the MoL is considerably larger — acc no B737); this might not have been appropriate for the mainly ceramic tiled roofs of Southwark (it seems too pointed to have been a crook for sheep).

100 <91> (713) fig 19. Ceramic dating *c* 1480–*c* 1550. Trapezoidal, copper-alloy sheeting, folded, bent and damaged; 65 x 36mm; row of three rectangular holes cut out along shorter of main sides; stamped blackletter (?) *au roy* on field of oblique hatching along larger side; three rolled-sheeting rivets, for attachment to material <2mm thick.

It is uncertain what this elaborate item was part of. The legend (? 'to the king') may be part of a religious reference such as 'glory to the King of Heaven' etc.

RUBBING STONE

101 <118> (702) Ceramic dating late 16th century. Roughly shaped plano-convex fragment of basalt (Niedermendig lava), dia *c* 105mm, ht *c* 30mm, the flatter side slightly smoothed (?)by abrasion.

Fitting neatly in the hand, this object was presumably adapted from a piece of a quern or mill-stone; its specific function, whether industrial or domestic, is uncertain; a similar item found in Canterbury (Garrard 1995, 1216, 1218, fig 540 no 1439) is described as a rubber to smooth timber or stone and is thought to be residual medieval.

102 <229> (740) Ceramic dating late 16th century. Sheet-iron triangle 139 x 29mm, with one rounded, right-angled corner; nine holes in a row, three of them with non-ferrous metal blacking/solder traces. (?)Cut from a larger object.

Environmental evidence

THE ANIMAL BONES, by Kevin Rielly

Introduction

Animal bones were recovered from most areas of the site, principally by means of hand collection with an accompanying bulk sampling strategy. Overall while there are some obvious concentrations of animal bones, a large proportion was contained within several small assemblages. In general the greater the size and concentration of the assemblage, the greater its potential value for the interpretation of animal usage. For this reason, this report is principally confined to the analysis of the bones from the larger assemblages. These are listed in table 11 (M14) and include deposits from phases 3, 4, 5, 7 and 8. A phase by phase commentary on the larger assemblages is included in the stratigraphic text where appropriate.

Recording and quantities

Bones were analysed from a total of 23 contexts/deposits, and provided a hand-recovered quantity of 61.07kg or 1,408 fragments. Ten of these contexts provided sieved bone assemblages. All the bones were recorded on ORACLE using a post-assessment database devised for the environmental section at MoLSS. A contribution to this analysis was made by Alan Pipe who identified the fishbones, and also provided information concerning the ecology and capture of the fish species represented.

The species identified from this site are shown in tables 12a (M15) and 13 (M16). The quantification method used is the total fragment count, the numbers of bones generally being insufficient to warrant the use of a weighted method. It should be noted that the former method is likely to cause a relative over-representation of the larger species owing to differential recovery. The extent of this bias can be deduced with reference to the accompanying table of sieved assemblages (table 13).

There are overall similarities within all the deposits. These include the generally good to excellent state of the bones, the latter concentrated within the organic waterlogged levels. In addition the great majority of the bones were identified as cattle, sheep/goat and pig. Amongst the sheep/goat collection, there is a widespread incidence of sheep, with no obvious indication

of goat. Alongside these bones there are a number which have been allocated according to size ie cattle and sheep-size. These incorporate all vertebrae (with the exception of the atlas, axis and sacrum) and ribs. The former size category undoubtedly belong to cattle, while the smaller size belongs to sheep/goat and/or pig. Within the sieved assemblages, a large quantity of the bones have been classed as cattle/sheep size. These are generally composed of unidentifiable limb bone fragments. The other major similarity is the generally mixed nature of the skeletal part distributions for all three major domesticates, and the extensive butchery observed on these parts, in particular regarding cattle.

The detailed reports and tables 14–15 are reproduced in microfiche (M14–M21).

Discussion

There are clearly two major elements to the bone assemblages from this site, these being food and industrial waste. This section reviews the evidence for the organization of both activities with suggestions about the possible formation processes of the various bone-containing deposits. The collected evidence will be used to indicate the extent and diversity of animal connected activities in the vicinity of this site. As with the last section, the analysis will be largely concerned with the late medieval/early post medieval occupation periods (ie phases 4 and 5), though the earlier and later bone collections will be referred to where relevant.

The meat economy

It can be assumed that the vast majority of the animals represented at this site were killed for their meat. This is confirmed to a great extent, at least regarding the domestic animals, by the wealth of butchery cuts. The few exceptions include the small number of infant mortalities (see below) and the relatively small proportion of non-food species as dog, cat, red kite, small rodent and amphibian (tables 12a, M15, and 13, M16). Amongst the food species the major contributor to the meat diet, in all phases, is cattle. This result is taken from a comparison of the relative weights of the bones belonging to the larger animals represented at this site (table 12b, M15). Unlike total fragment count, a comparison of weight will take into consideration the relative carcass size differences of these species. Sheep/goat and pig are likely to have offered a greater contribution than suggested by the weight data (sieved compared to hand-recovered total fragment and weight data); however, even with this correction, it is likely that the relative order of meat contribution will remain the same. A further bias to the weight data is the inclusion of industrial waste, ie representing concentrations of particular types of skeletal waste belonging to animals which were killed, processed, and most of the waste deposited, elsewhere. These include the sheep/goat metapodials from the pond backfill in phase 4 and the group of cattle horncores from the phase 8 barrel (see Industry).

The meat provided for the local population was clearly taken from animals which were processed in the vicinity of the site, as indicated by the general mix of skeletal parts representing each of the major food animals. There is evidence (ie the poleaxed cattle skulls) to suggest that, at least in phase 5, animals arrived on the hoof. In addition the same phase produced a deposit which was rich in sheep/goat primary waste, which is likely to represent the waste from a butcher's shop. The combined evidence strongly suggests a level of organization for the meat supply involving at least two stages, ie butcher and consumer. Certainly the similarity and extent of the observed butchery, particularly on the cattle bones, is more likely to have occurred at the hands of trained butchers than within a domestic household. The butcher would have also been responsible for the supply of the various post-mortem products intended for industrial or craft purposes. This is discussed in the next section.

Regarding the likely sources of supply, it was noticed that a small number of foetal/neonate individuals were represented in phases 4 and 5, with cattle and sheep/goat in the former and cattle and pig in the latter occupation phase. This may indicate that a portion of the animals represented in these phases were locally bred. Very young cattle and pig have been found at a

number of contemporary sites in London eg at Finsbury Island Pavement (Rielly 1996) and the Royal Navy Victualling Yard (West 1995). West suggested that the calves at the latter site may be indicative of the keeping of dairy cows in the back gardens of the nearby tenement buildings. This interpretation could equally apply to this site, with cattle being kept within either the adjacent gardens or yards. Certainly the majority of the cattle represented were in the correct age group to be milkers. Regarding pigs, the presence of very young individuals is probably the result of some local breeding accompanying the common post-medieval practice in London of stalling pigs within or at the fringes of the city for fattening (Chartres 1986, 183). The actual extent of local husbandry cannot be accurately estimated. However it is known that the greater part of the meat for the London markets during this period (particularly concerning cattle and sheep) was derived from grazing areas within the neighbouring shires (Fisher 1954, 136), and to a lesser extent, though becoming a major contributor by the later 18th century, from much further afield, including Wales (Skeet 1926 and Armitage 1978, 218 on the history of the long-distance cattle drive).

Whatever the source of these domesticates, with the exception of the pigs and a few cattle and sheep/goat, it is clear that the majority were not bred for their meat. Milk was certainly an important commodity in post-medieval London, with grazing areas for dairy cows situated to the north and west of the city (Chartres 1986, 183). The sheep age distribution may indicate the presence of animals initially used for wool. There was apparently a significant move during the post-medieval period away from wool production towards meat production (*ibid*, 180). The evidence from this site suggests either that this overall changeover had not yet been initiated or that wool was still the main product of sheep husbandry within the supply area and, possibly, that mutton, rather than lamb, was the meat favoured in this part of Southwark. The ageing evidence from each of the later periods (phases 7 and 8) is insufficient to provide any comment on this supposed change in emphasis.

The remainder of the meat diet, in most phases, was met by a diverse range of animals, birds and fish, including in the second category, both domestic and wild species (tables 12a, M15, and 13, M16). Phase 4 clearly produced the greatest range, as well as the greatest abundance of species, particularly regarding fish. The principal source of deer, and possibly rabbit, within the late medieval and early post-medieval periods were the enclosed parks, situated and managed within the estates of the wealthier classes (Grant 1988, 164). Such animals were either exported to the London markets, or were given as gifts to the various high status households in London eg as occurred between the late medieval estates of the bishops of Winchester and Winchester House (Rielly & Giorgi 1995). However it should be mentioned that by the early post medieval period, there had occurred a significant increase in the number of estates with warrens, which had the effect of reducing the previously high status value of rabbit meat (Cantor 1987, 37).

Most of the fishbones found in phases 4, 5 and 8 belonged to cod and whiting. These were all from relatively small fish, the whiting averaging about 30–40 cm in length and the cod a little larger, possibly 50–60cm. The small Gadidae represented in phases 4 and 5 may represent even smaller specimens of the same species. These size ranges suggest estuarine catches of young fish migrating into the mouth of the Thames in winter (Wheeler 1979, 175). The majority of the remaining species may also have been caught in this general area, or possibly further upriver. These include plaice/flounder, mackerel, thornback ray, wrasse and eel. The latter species could be caught in huge numbers (well into the 19th century) using static traps constructed of wicker baskets. These were often positioned alongside water wheels or weirs (*ibid*, 140). Other species present include a representative of the Salmonidae, which may be salmon. This species, like eel, represented a seasonal commodity, which could also be caught in traps. Pike and roach (and the other Cyprinidae) are basically freshwater fish. The former species was a highly prestigious fish during the medieval period, and was kept in stew (storage) ponds, ready to be caught and served to honoured guests or at special occasions (Hammond 1993, 76). Just one species may represent a catch from further afield, ie the single specimen of ling from phase 4. This fish is generally found in more northerly waters, and unlike the other fish, which were probably purchased fresh, the ling is likely to have been either salted or dried. Overall the fish assemblage is similar to other

contemporary collections, eg at Winchester Palace (Locker 1995), although there are some obvious differences, including the lack of herring and the generally smaller size of the whitefish (cod and whiting). Each of the species described would have been available from the London markets during this period and, with the likely exception of the pike, none would have been prohibitively expensive (*ibid*).

Throughout this data there is some indication of food which can be classed as high status, amongst a general range of readily affordable meat products. The former includes the veal portions, fallow deer and (possibly) the rabbit present in phases 4 and 5, and the pike found within a phase 4 deposit. In addition there is, as stated, a wide distribution of cattle, sheep/goat and pig skeletal parts, a proportion of which could represent the remains of the more valuable cuts of meat. Although it should be noted that the meat may have been taken off the bone (more likely with cattle than sheep/goat or pig), these parts possibly represented butcher's rather than household waste. It is certainly likely that the general area of the site was occupied by a cross-section of people from all social levels, as indicated by the presence of large town houses, tenements and various industrial complexes. The mixture of waste within the phase 4 and 5 deposits is probably a reflection of the variety of sources using this area as a rubbish dump.

Industry

A number of distinct types of waste point to the local presence of certain industries/crafts. These include hornworkers, tanners and pinners. The latter activity is shown by the presence of pinners' bones in six deposits (generally just one to a context), mainly concentrated in phase 5, but also found in phases 4 and 6 (see small finds). Hornworking is demonstrated by the small quantity of large cattle horncores found in phase 4 deposits and the concentrated cattle horncore assemblage from the phase 8 barrel. It should be mentioned that while these cores, by their size and butchery, can be classed as hornworking waste, the actual quantities suggest either a very small-scale operation or, perhaps more likely, that this site was not the main dumping ground for the waste from the local hornworking industries. Larger horncore dumps were found at West Vent Shaft, London Bridge Street (Rielly 1997), ranging in date from the 15th to 18th centuries. The evidence from both these sites suggests the importance of this part of Southwark to the hornworking industry during the late medieval and post-medieval periods.

Noticeably there were no cattle horncores found in phase 5 deposits. However there were a number of cattle skulls showing the reciprocal butchery marks resulting from the removal of the horncore. It is likely that this butchery occurred either at the butcher's or at the abattoir, the horn being removed with the skin. This process would also have left the lower limb bones still attached, the skins and adjoining boney parts then being dispatched to the tanner, and subsequently, the horns to the hornworker (MacGregor 1989, 119; Serjeantson 1989, 139). These parts may have acted as convenient tying points while the skins were being stretched. Otherwise, the metapodials may have been removed and then boiled in order to liberate an oil known to be especially useful for dressing leather (Serjeantson 1989, 141). From this evidence it is likely that the concentrations of metapodials found within the two phase 4 deposits represent dumps of tanning waste. However the larger of these two assemblages is somewhat unusual on account of the very young age of the animals represented. As with the horncores, there is another site in the general area with a similar assemblage — a group of approximately 80 juvenile sheep/goat metapodials within an early post-medieval deposit from the Jubilee Line Ticket Hall, Mayor Sworders Arches (Rielly 1997). There must be some significance regarding the age of these animals. It is known that calf skins produced the best vellum (Serjeantson 1989, 129), and perhaps a similarly distinct use was made of lambskin.

THE PLANT REMAINS, by John Giorgi

Introduction

During the excavations, soil samples were collected for the potential recovery of biological data. The following report concerns the plant remains present in these samples and the information

that this material may provide on the nature of economic/human activity in the area, the character of the local environment and how these may have changed over time.

Sampling and processing methods

Twenty-two samples from 21 contexts were selected from a range of features dating from the 11th to 18th centuries. The number of samples by phase and feature type is shown in table 16 (M22). No samples were taken from features in phases 1, 3, and 9, while over 50% of the analysed samples were from phase 4 (14th–16th century). This limited comparisons between phases. The size of the samples varied between 10 and 30 litres and were processed in a flotation machine using sieve sizes of 0.25mm and 1.00mm for the recovery of the flot and residue respectively. After processing, part of any flot which contained organic material was stored in industrial methylated spirits (IMS), while the remaining part of the flot was dried. Sample residues were also dried and sorted for biological and artefactual material. The plant material was sorted and identified using a binocular microscope and modern reference material and seed identification manuals housed in the Environmental Section, MoLAS.

Results

The results by context are listed in tables 17 and 18 (M28–M33). Preservation of plant remains in the samples was generally very good, owing to the close proximity of the river and the high water table. All 22 samples contained identifiable botanical material represented mainly by seeds and fruits although those samples with good organic preservation also contained leaf, thorn, budscale, root/stem, moss and indeterminate vegetative fragments. Cereal bran was recovered from five samples, while variable quantities of wood and charcoal fragments were found in most samples.

A wide range of species was represented in the majority of the samples. Preservation was mainly by waterlogging, although charred plant remains (other than charcoal) were present in eleven samples. The botanical material included food plants and plants used for commercial, industrial and domestic purposes, and wild plants that may either have been growing as weeds or were accidentally imported onto the site through human or natural agencies. It is often impossible or very difficult to separate out the residues of used plants from weeds, although this can sometimes be resolved through the use of supporting biological, archaeological and artefactual data.

Indeed, a wide range of other biological and artefactual evidence was recovered from the sample residues and flots. Other environmental remains included varying amounts of animal bone, molluscs (including freshwater snails), crustaceans (ostracods, waterflea eggs (Cladoceran ephippia)), and insects (beetle fragments, puparia). Domestic and industrial refuse included pot, glass, leather, brick/tile, mortar, metal and clinker/slag fragments in a number of samples.

A general discussion of the plant remains recovered from the site, under the headings of food plants, commercial, industrial plants, miscellaneous uses of plants, and wild plants, is reproduced in microfiche (M22–M27). An examination of the plant remains contained within individual assemblages and the information that they may provide for the interpretation of features from which the samples were recovered, is discussed within the stratigraphic text by phase.

Conclusions

The levels for the underlying river gravels reflect the position of the site during the prehistoric and Roman periods; most of the site probably lay within a river channel or creek close to the London Bridge island settlement. The gravels would have been subject to constant erosion and reworking. The revetted east edge of the Roman eyot beneath Hays Galleria has subsequently been located on the west edge of the site in more recent excavations at Battle Bridge Lane by MoLAS (David Saxby, pers comm). The phase 1 waterlaid silts were largely deposited by the

Thames during the post-Roman period. By the late Saxon period the southern river bank probably roughly followed the line of what is now Tooley Street. The site was subject to further periodic flooding until the post-medieval period (see below).

The western and south-western part of the site appears to have been in or close to a settlement by the 11th or 12th centuries (phase 2), representing evidence of very late Saxon or, more probably, Norman occupation of north Southwark. The two sampled deposits suggest a marshy area, and evidence for such occupation in north Southwark, particularly around the London Bridge eyot, is sparse. At the west end of Tooley Street, on the east side of that eyot, a number of similar waterlaid and dumped deposits associated with the early river bank produced pottery of 11th century date (Graham 1988, 49–53). The activity outlined in this phase would be consistent with attempts to drain and work open croft or wasteland.

The phase 3 features suggest occupation in at least the south-west corner of the site from the 12th through to the 14th century, the bulk of the activity occurring in the 13th century. By that period much or all of the site was thus to the south of the Thames waterfront. Possibly for this reason, no definite evidence was found for the late 13th century river erosion noted on Wilson's Wharf to the north (Yule 1979, 264) and at Toppings and Sun Wharves to the west (Sheldon 1974, 25–30). However, none of the features excavated could be shown to post-date the late 13th century — most were probably early to mid 13th century — and all pre-14th century features were confined to the southern fringe of the site with the single exception of the deeply cut phase 2 ditch. No pre-14th century features were found in trenches 3 and 6 to the north where the archaeological stratigraphy was essentially intact. Thus by inference the site may have produced indirect evidence of flooding. A number of the phase 1 deposits in trenches 3 and 6 may have post-dated that phase and been deposited by the later medieval flooding which washed away earlier archaeology.

The heavily truncated phase 3 features in trench 5 suggest further rubbish disposal, drainage works, and the presence of property boundaries along the north side of Tooley Street. The features excavated in this phase appear to pre-date the documented 14th century street-front premises, given their date and probable proximity to the medieval road line, particularly if the north-east to south-west ditch was a roadside feature. The pits may represent a combination of rubbish disposal from the abbot of Battle's property (the ram's head aquamanile and the fallow deer bone may be indicative of waste from a high-status household), or from the local tidemills, or a local workshop, possibly a butcher or an abattoir.

By the late 15th and early 16th centuries any buildings shown on the Agas woodcut of *c* 1550 probably lay on or just beyond the perimeters of the site, the undisturbed areas (trenches 3, 4 and 6) probably being occupied by gardens and yards behind them. It is likely that the phase 4 ponds and latrine were cleaned out a number of times before being finally abandoned to local rubbish disposal, so that a 14th century date for their cutting is not impossible. However, a 15th or even early 16th century date is probable for much of the activity in this phase in which the features suggest a number of open areas, either private or public, and the movement and storage of water for either public, domestic, or commercial use. They also suggest a much wetter local environment on the site than may have been the case in phase 3, and this is to some extent confirmed by the recent archaeological work on the adjacent Fastolf's Place. Here were a number of features associated with the large-scale management of water from the early 14th to the 16th century, most notably the moat constructed around Fastolf's Place in the 15th century (Bluer 1993).

The large ponds from trenches 2 and 6 may have been associated with either Battle Mills, which remained in use until the 17th century as a double mill, or the Horselydown Mills which were rebuilt in 1388 as a double mill and were still in use in 1520 (Carlin 1996, 55–6). The proximity of trench 2 to the line of Battle Bridge Creek may suggest that this pond was associated with the Battle Mills, and the Poll Tax return of 1381 indicates that the eastern side of the mill stream (Battle Bridge Lane) was mostly occupied by millers' dwellings. However, the trench 6 pond may have been a little too far away to be associated with either of the documented mill sites. A large dock or inlet on the Thames waterfront shown on the Agas woodcut may have lain

directly to north of the pond and been connected to it by the excavated ditch. This pond — and even that of trench 2 — may have been associated with other occupations which required proximity to water. In 1381 the occupations of people living on or close to the site who made significant use of water included brewer, fisherman, boatman, tanner, dyer, fuller, and laundress (Carlin 1996, 178–9).

The other ditches shown on figure 4 may suggest that the pond was largely fenced off, possibly with hedges as suggested by the box leaves in the ditch fill, and with a possible entrance to the enclosure to the north. It may therefore be that the ponds were intended for recreation. In 1544 Sir Roger Copley sold the Battle Mills with two wharves and large ponds, the purchaser having the use of the river banks and ponds for fishing, fowling and viewing, and tenants being forbidden to interfere with the fish or install cygnets (Rendle 1878, 277). If this included either of the excavated ponds, that pleasant picture would seem to be contradicted to some extent by the archaeology, which suggests that by this date they were already being backfilled with rubbish. This process had begun by the mid–late 16th century and perhaps even by the later 15th, and so may have been gradual. However, it could also have been fairly rapid and represent the large-scale disposal of rubbish from outside associated with the levelling up for the gardens of phase 5 in the late 16th century.

The considerable problems caused to the citizens of Southwark by commercial and domestic waste in the later medieval period and 16th century, and the methods used to dispose of it, legal or otherwise, are well documented. One typical and particularly undesirable method was its disposal in local watercourses, ditches and ponds. Similarly, local privies such as the trench 3 latrine pit, possibly serving a single tenement or group of tenements, were also a frequent source of sanitary problems (Carlin 1996, 235–44). The excavated feature was clearly cleaned out prior to its use as a rubbish pit. A long-standing practice in London (certainly during the post-medieval period), involving the regular cleaning-out of cesspits, was the distribution of 'nightsoil' among the market gardens and farms around the city (Wheeler 1979, 21). The rubbish disposal in this phase gives an insight into a number of contemporary local industries whose rubbish may have caused problems. In the finds assemblage beadmakers, pinmakers, shoemakers, and metal workers, possibly in both iron and copper alloy, are represented. The plant remains suggest the presence of dyers, brewers, and textile finishers on or near the site, reinforcing the documentary evidence. In the animal remains horn workers and butchers are represented.

As with phase 4, any phase 5 buildings associated with the various open areas must have lain largely beyond the limits of excavation. Southwark in the later 16th century was characterized by the subdivision of larger open spaces into new tenements with smaller yards and gardens as the population increased. The deposits within trench 4 may represent the creation and use of two yards to the rear of workshops on Tooley Street. The copper-alloy waste found in these yards suggest an association with metal working. For much of the latter part of the 16th century Open Areas 5 and 6 may have been in the possession of Olave Burr (see Historical Background) who had property in the south-west corner of the site. The deposits associated with building 4a/b, which replaced these yards after *c* 1650 (phase 6), show that coppersmithing, or a related trade, was still being carried out long after Burr's death, whether or not he owned the property and whether it was he or tenants of his who were engaged in coppersmithing. Since much of the copper-alloy waste took the form of small flecks and sheet offcuts, and since evidence of large forges, furnaces and casting pits was lacking, it is likely that this small urban workshop was principally concerned with the fabrication and repair of small objects fashioned from copper sheeting produced elsewhere. Burr also owned property to the north of these yards in Battle Bridge Lane (Carlin 1983, 342), and the timber drain beneath the yards may well have served such a property as well as the yards themselves. Flowing down toward Tooley Street, it must have served a structure to the north, possibly the Battle Mills or, given the number of hops found in it, a small brewery or textile workshop. In essence the archaeological evidence may at least reinforce the documentary evidence regarding Burr's activities in brewing and copperworking, if not actually confirm it.

By the later 16th century the various civic attempts to prevent the noisome and illegal methods of rubbish disposal in the locality appear to have finally been largely successful (Carlin 1996, 243–4). Although a certain amount of refuse was still clearly being disposed of in the open areas on site, it appears to have been intended as levelling material for the creation of the gardens and yards which were not then subject to the large-scale disposal of waste. The backfilling of the ponds and their levelling appears on occasion to have created its own problems. For instance, the waterlogged deposit 414 suggests a general, if temporary, flooding over the area above the pond in trench 6 which may have occurred simply because the pond was no longer present to contain the excess river water. The possible open areas created in this process and shown on figure 6 seem likely to represent domestic gardens and, although they may still have been market gardens growing produce for sale, the finds from the barrel wells and rubbish pits would suggest a domestic and recreational use.

During the mid to later 17th century (phase 6), it is clear that, with the increasing population and industrialisation of north Southwark, space was at a premium, and a large number of the yards and gardens in phase 5 were replaced by buildings. A number of these buildings, possibly building 2, building 3a/b and building 6a/b, may have been constructed before the middle of the century, but most were probably constructed after the mid-century and may even post-date the Great Fire of 1666 and the Southwark fires of 1667 and 1676. Nevertheless, all the buildings were probably standing by the time that Morden and Lea's map of 1682 was surveyed, for this shows the site to be heavily built up, with the alleyway clearly visible and buildings in the approximate locations excavated.

Open Area 5 was replaced by buildings 3a, 3b, 4a, and 4b. The buildings were most likely to have been a combination of domestic dwellings and workshops. The foundations of the buildings were insubstantial, suggesting structures of no more than one or two storeys. Building 3b appeared to be a storage area or semi-cellar for building 3a, possibly a stock room. If so, the type of workshop/shop is unknown. The continuing presence of fragments of copper-alloy waste found in the deposits associated with building 4a/b and Open Area 6 suggest the continued presence of metal workers in a building that was not constructed until after *c* 1650. Building 4a contained one small oven and one larger hearth; building 4b may also have contained a large hearth (but as this area was extensively rebuilt as a double hearth in the next phase, it is impossible to be certain of this); it is also possible that the phase 5 hearth in Open Area 6 was still in use, which may suggest that some casting was being carried out. However, as in phase 5, there was a marked absence of copper-alloy slag and all the waste was more likely to have been associated with the fabrication of objects from sheets after casting elsewhere. Thus some or all of the hearths and ovens could have been for domestic use.

There was little internal evidence to suggest what function building 2 served. It contained no hearth or chimney, and had no substantial internal partitions at ground floor level. It may therefore be tentatively suggested that it served as a storage chamber, in the absence of anything to indicate a domestic or specific industrial function. There is no evidence to suggest that Open Area 4 continued to be anything other than a garden until the end of the century. The number of bedding trenches identified may suggest the area was a market garden and that building 2, if associated with it, was used to store produce. Equally it is possible that this part of the site was already part of a brewery, as suggested by Horwood's map of 1799 (fig 15), and was perhaps used to store malted barley. In a 17th to 19th century malting house excavated at St Mary's Guildhall in Lincoln, the ground floor of the west range had been subdivided by slight brick walls, and a number of the compartments lined with rammed chalk. These were interpreted as storage bins for malted barley (Egan 1983, 198). If building 2 was part of a maltings, the enterprise was probably small, and any associated germinating floor and kilns would probably have lain beyond the areas excavated.

In trench 6, buildings 5 and 6a/b and Open Area 8 may represent the further development of a brewery which was to give the name Brewers Court to this part of the alley in the 18th century. However, there was no archaeological evidence to link these structures with the brewing industry. The construction of both of the buildings to the north of the trench suggests a

continuation of the postulated fence lines or property boundaries in the gardens of phase 5 (fig 6). Open Area 8 may have been a large yard associated with the two buildings — possibly a yard for a brewery.

In phase 7, buildings 3a and 3b appear to have remained unchanged, while buildings 4a and 4b were extensively modified. It is possible that this represents a change in use for the two, although further evidence was found for the working of copper alloy. The apparent strengthening of the northern and eastern foundations of building 4a may indicate the addition of a second, or possibly even a third, storey. The brick-floored room in the north-west corner may have been a shop, while the double hearth in building 4b may reflect commercial or domestic use. The hearths appeared to be related to the modifications in building 4a.

In trench 3, building 2 was also modified internally and it may still have been part of a brewery or maltings, as suggested for phase 6. The drain and soakaways associated with a probable extension to the north may have formed part of underfloor drainage serving a steeping tank beyond the limits of excavation. The new buildings added to the north — buildings 7a and 7b — were fragmentary and no evidence of their function was found. Conceivably they contained drying and sprouting floors for the barley. Both they and building 2 could have been part of a block of buildings marked on John Rocque's map of 1746, though again this sheds no light on the use to which the buildings were put. This is also true of building 8, which was added to the row in Tooley's Gate formed by building 5 and building 6a/6b.

The four buildings excavated in trench 4 phase 8 are clearly shown on Richard Horwood's map of 1799 (fig 15), where they are marked as domestic structures. The replacement of buildings 3b/4a with buildings 9a/b may suggest a change of use and ownership within this row. The previous association apparent between buildings 3a and 3b, and buildings 4a and 4b, appears to have ended in the 18th century with the construction of buildings 9a and 9b. Horwood's depiction of them as domestic buildings does not preclude the possibility of small shops or workshops, as he marked only warehouses, large factories, and stables as industrial structures.

Buildings 5, 6a/b, 8, 10 and 11 in trench 6 are also shown on this map to the north and south of Brewers Court with a large yard (Open Area 8) to the south (fig 15). It is probable that all these structures were in existence by the time of Rocque's map of 1746. Again with the exception of the east end of building 10, all the structures are marked by Horwood as domestic, although this may not always have been the case. It is possible that Open Area 8 was in use as a yard for wagons and brewers' drays. Building 10, fragmentary though its remains were, did not have the appearance of a domestic structure and may therefore represent a stable block for the brewery. The large cattle horncores found in the barrel-lined soakaway to the south of building 10 may also suggest that the yard was used additionally to marshal other livestock, while the timber bowling balls found with the horncores may also indicate at least an occasional recreational use of the yard.

Horwood's map also shows building 2 as three domestic structures adjacent to a large industrial complex which includes buildings 7a and 7b and may have constituted the main buildings of the brewery/maltings at this date.

Postscript

As noted above subsequent to the completion of this excavation and much of the text for this article, MoLAS has carried out further far more extensive excavations on this site directed by David Saxby in 1999. The results of these have been impressive and have included the already mentioned Roman revetment, a number of medieval fish ponds (one lined with the re-used side of a medieval galley), a number of medieval and early post-medieval buildings, and a large number of artefacts from both these periods. This phase of excavation on the site will be published in due course.

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