

**The upper Walbrook
in the Roman period**

by Catharine Maloney
with Dominique de Moulins



**The archaeology of Roman London,
Volume 1:
The Upper Walbrook valley in the
Roman period**



Frontispiece River landscape similar to the upper Walbrook as it may have been in prehistoric times

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by
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Front cover: Reconstruction by John Pearson of the upper Walbrook at 15–35 Cophall Avenue in the mid 2nd century

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Summary

This study traces the history of the upper Walbrook valley in the City of London from prehistoric to late Roman times by examining the evidence from six sites excavated in 1981-84. The report consists of ten parts: an introduction (Part 1); a study of the site evidence (Parts 2-6); a summary of the finds (Part 7); a multidisciplinary environmental analysis for one of the sites (Part 8); dendrochronology (Part 9) and the conclusions (Part 10).

The Walbrook was a network of southward-flowing streams, which converged into a main channel in the middle of the City before entering the Thames. Part 2 examines the evidence for the stream in its natural state. Streambeds were located at three of the sites in the study. At 15-35 Copthall Avenue a major tributary on the western side of the valley was identified; at 23 Blomfield Street a north-south section though the main stream was recorded, while waterlain sands and gravels at 4-6 Copthall Avenue were either part of the main stream or another tributary. Evidence from these sites has indicated modifications to the courses of the streams as previously proposed by Merrifield and RCHM. Within the wide valley of the upper Walbrook in the City, major streams had eroded their own valleys through the Thames Terrace Gravels and into London Clay as far north as Blomfield Street. The width of these valleys was in excess of 22m, 35m and 44m. For the first time, detailed information about one of the streams was provided from the excavation of the western tributary at 15-35 Copthall Avenue. Here the stream had created a wide arc as it altered direction from a west-east to north-south course. Up to 0.65m of valley fill had accumulated, with primary deposits consisting of gravels when the stream was fast-flowing, followed by the evenly-laid sandy silts of a much slower regime immediately prior to the early Roman period. By that time the silts had been colonised by trees and vegetation as the stream shifted eastwards. At 23 Blomfield Street only truncated sands and gravels of the main stream were recorded; although at 4-6 Copthall Avenue the presence of a stream was marked by the complete erosion of the Thames Terrace Gravels, very little deposition had occurred: a maximum of 0.3m of clayey gravels and sands and gravel.

Part 3, Period I concerns the development of the valley by the Romans who initiated a planned programme of reclamation and drainage in the late 1st-early 2nd century, though it may have begun at an earlier date on the sides of the valley. The streams were canalised by timber revetments or banks and marshy ground within the individual valleys was reclaimed by the dumping of clay or gravel. Streamlets were infilled or canalised and incorporated into a network of drainage channels which presumably linked up with the streams. At least two major north-northeast to south-southwest roads were constructed through the valley, postulated extensions of the Flavian street grid in the city. At 15-35 Copthall Avenue one of the roads apparently curtailed the western tributary. Gravel or timber paths were connected to the roads and provided access from within the valley. These roads were main routes from the centre

of the city, probably to the cemeteries and possibly also to areas of market gardening to the north.

Part 4 covers the 2nd and 3rd centuries (Period II) when many of the early drainage channels were infilled and buildings were erected on the now extensive, reclaimed land. These were generally constructed in the first half of the 2nd century, though one at 43 London Wall is dated to the early 3rd century and three at 4-6 Copthall Avenue are dated to the mid-late 3rd century. There is no precise dating from the demolition of the buildings, but it seems clear that they continued to be occupied in the 3rd century, with those at 4-6 Copthall Avenue possibly into the 4th century. Timber and clay were the materials used for buildings constructed on reclaimed ground, often on piles. Masonry buildings seem to have been confined to the higher ground overlooking the streambed. At 15-35 Copthall Avenue a number of complex hearths, ovens and scorched brickearth floors, confined to one half of a building, suggest that industrial activity was carried out here, with the other half perhaps domestic quarters. It is proposed that the expansion of the city was not the only reason for the development of the upper Walbrook, but also the need for an industrial area well served by communications and a water supply. An extensive metalled surface was laid out on the drier ground beside the former tributary at 15-35 Copthall Avenue, while the buildings were restricted to the damper reclaimed land, possibly because it was convenient to the supply of water. Drainage and water supply were initially maintained though there are signs that at some time during this period they were neglected. The roads were maintained; that at 15-35 Copthall Avenue appears to have been realigned further to the north. By the end of the 2nd century, however, the roads must have been affected by the construction of the defensive wall and were possibly linked with an intramural road. Evidence from a recently excavated site adjoining 4-6 Copthall Avenue to the north seems to indicate that the road hereabouts was disused by the late 3rd century.

Part 5 covers the activities of the later 3rd century and 4th century and the eventual abandonment of the upper Walbrook valley (Period III). Two sites, 15-35 Copthall Avenue and 43 London Wall appear to have been abandoned in the 3rd century for a period of fifty years or more but in the early/mid 4th century were re-occupied. At 15-35 Copthall Avenue, a series of pits - sharing a number of characteristics - may have had industrial functions; they were associated with a gravel surface linked with the road. Nevertheless, when this activity ceased, here and on all the other sites, the digging of drainage ditches and/or raising of the ground level implies that the ground was becoming wet. It is suggested that inside the City this was caused by a lack of maintenance of the man-made drainage system; the area was finally abandoned by the Romans in the 4th or mid-late 4th century. North of the city, where marshy conditions seem to have commenced not long after the construction of the defensive wall at the end of the 2nd century, it appears that the culverts which allowed the streams through the wall were unable to cope with the

quantity of material being carried down-stream and that much of this material may itself have derived from the reclamation dumps and embankments.

The Walbrook continued to influence this area of the City until relatively modern times and Part 6 is a summary of post-Roman development. The marsh seems to have begun forming in the Roman period outside the city wall, and eventually spread southwards above reclaimed ground in the former valleys of the streams. Re-occupation occurred as early as the Saxon period at Telegraph Street but not until the late 11th-early 12th centuries at 15-35 Copthall Avenue and 43 London Wall, where the cutting of ditches and dumping of clay successfully drained the ground by the 12th/13th centuries. Industrial activities, particularly leather and metalworking, were concentrated in this part of the city in medieval and post-medieval times. North of the defensive wall the marsh, after many attempts, was finally adequately drained in the 17th century.

Part 7 summarises the finds evidence. Most of the artefacts were deposited in the upper Walbrook valley as part of the reclamation process in ground raising dumps. Except in Period III, there were, in particular, large amounts of organic rubbish. Two sources for these artefacts are apparent: the households and workshops of the city generally, and leather and glassworking industries sited nearby. A glass furnace has recently been found on the west side of the valley. Finds from one of the buildings at 15-35 Copthall Avenue were, on the whole, typical of a household but there is some evidence that could associate the building with leatherworking and smithing. There is nothing to suggest that the stream was used for ritual purposes, as has sometimes been supposed, or that markets were set up in the area. When the coins, leatherwork and general finds assemblages from the sites in this study are compared with those from previous excavations in the Walbrook valley, it becomes clear that in the past finds were retrieved selectively; hence, any reference about the use of the area which is based on such collections, should be examined with caution.

In Part 8 the environmental evidence from 15-35 Copthall Avenue is considered. A multidisciplinary study consisting of analyses of seeds, pollen, insects, molluscs, ostracods and parasites (no diatoms were found in any of the samples taken) was made for the site of 15-35 Copthall Avenue in order to reconstruct the environment at various periods and suggest people's activities. Attempts were made at obtaining information from comparable periods and contexts using all or most of the types of evidence. Some general questions were answered by this environmental investigation: the changes in wetness through time, the type of vegetation and the degree of human impact could be traced as well as more detailed questions about individual contexts such as the conditions prevailing in the stream.

In the prehistoric period, all the evidence indicated that the environment was marshy and fairly natural and that the stream was clear and permanent.

The pollen and seeds from the samples of Period I, the earliest Roman period, suggested wet grassland or woodland with marshy areas. Cereal grains and chaff were also present. The insect fauna of Period I was varied and included a high proportion of common aquatic and strong synanthropes such as grain beetles and woodworms. They indicated a persistently wet environment and a strong human presence at the same time. Very few mollusc remains and no ostracods were recovered; this reinforces the picture of a less clean water environment in the channels than previously.

Similarly, both mollusc and ostracods were missing from the contexts of Period II, the Roman period associated with the buildings. The pollen and seed evidence gave comparable results, reflecting damp and disturbed conditions, while the insect assemblages were typically urban with outdoor species also present. The other contexts from Period II, pits, occupation surfaces and hearths, included ruderals indicating a fair amount of disturbance and many seeds of Gramineae especially in the occupation layers and hearth fills, probably reflecting the wide use people made of straw. Parasite eggs were found in one occupation layer. The evidence for human occupation and disturbance was therefore the predominant characteristic in this period. However, no real drying out of the environment could be ascertained.

The molluscs from the ditches in Period III included species suggesting stagnant water. No ostracods were found in the samples in this period. The insect assemblages were made up of outdoor, aquatic and synanthropes. The plant remains indicated a disturbed and muddy environment and damp conditions still existed but to a lesser extent than in other periods.

In Period IV, the mollusc and ostracod assemblages had very similar types of indicators including active swimming species and species typical of slow-flowing water. The molluscs were from a well-oxygenated, plant-rich environment and the ostracods indicated a semi-permanent or water-filled ditch. Similar conditions were shown by the insects: no synanthropes were present and the decomposer component was very small. Instead, the aquatic element, the water-side taxa especially, was well represented. The seeds of Period IV included fewer seeds of plants of the purely disturbed environment but on the other hand, more damp-loving and aquatic species than in the preceding period. It was also thought from an assemblage of possible segetal taxa that agriculture may have taken place in the area. But the overall picture for Period IV is that of a marsh undisturbed by human influence where sluggish water was running.

Résumé

Cette étude retrace l'histoire de la vallée de la Walbrook dans la Cité de Londres de la Préhistoire à l'époque romaine tardive. L'étude porte sur six sites fouillés entre 1981 et 1984. Le volume comprend dix parties: une introduction (1ère partie); l'étude des sites (2ème à 6ème parties); un résumé des objets archéologiques (7ème partie); une analyse multidisciplinaire de l'environnement de l'un des sites (8ème partie); la dendrochronologie (9ème partie) et les conclusions (10ème partie).

La rivière Walbrook était formée par un ensemble de ruisseaux coulant vers le Sud et convergeant au milieu de la Cité pour former un seul cours avant de se jeter dans la Tamise. Le ruisseau naturel est décrit dans la deuxième partie de ce volume. Son cours a été retrouvé dans trois des sites de cette étude. Au 15-35 Cophthall Avenue, un affluent important venant du côté ouest de la vallée a été retrouvé et au 23 Blomfield Street, on a relevé le cours principal dans sa partie nord-ouest tandis que les sables et graviers de 4-6 Cophthall Avenue représentaient le cours principal ou un autre affluent. Les indices obtenus sur ces sites montrent que le cours des ruisseaux a été modifié comme l'avait déjà pensé Merrifield et RCHM. Dans le bassin de la partie supérieure de la Walbrook au nord de la Cité à partir de Bloomfield Street, des ruisseaux importants ont creusé leur propre vallée à travers les graviers d'une terrasse de la Tamise et l'argile londonienne. La largeur des ces vallées est de 22m, 35m et 44m au moins. Pour la première fois, des indices détaillés sur l'un des ruisseaux ont été fournis par les fouilles d'un affluent de la rive droite au 15-35 Cophthall Avenue. Là, le ruisseau décrit une large courbe et change sa direction Est-Ouest pour couler du Nord au Sud. Des sédiments d'une épaisseur allant jusqu'à 0,65m se sont accumulés là, les couches de base sont faites de graviers formés quand le cours d'eau était rapide et sont recouverts par des limons sableux déposés régulièrement quand le régime du ruisseau est devenu beaucoup plus lent juste avant la période romaine ancienne. A cette époque, les arbres et la végétation ont colonisé le limon et le ruisseau a commencé à couler vers l'est. Au 23 Blomfield Street, on a seulement relevé les sables et graviers tronqués du cours principal; bien qu'au 4-6 Cophthall Avenue la présence du cours d'eau soit marquée par l'érosion totale des graviers de la terrasse de la Tamise, la déposition y a été faible, elle est d'une épaisseur maximum de 0.3m de graviers argileux, de sable et de graviers.

La troisième partie porte sur le développement de la vallée par les Romains. Ceux sont eux qui les premiers ont conçu un programme d'assèchement et de drainage à partir de la fin du premier siècle et du début du deuxième, bien qu'il soit possible que ce programme ait commencé plus tôt sur les bords de vallée. Les cours d'eau furent canalisés avec des revêtements de bois ou des talus, et les marécages entre les vallées ont été asséchés en y déchargeant de l'argile et des graviers. Les petits ruisseaux ont été bouchés ou canalisés et ils ont été inclus dans un système de canaux de drainage qui devaient sans doute rejoindre les cours d'eau. Au moins

deux routes dont l'une orientée nord nord-est à sud sud-ouest ont été construites dans la vallée elles représentent sans doute le prolongement des rues quadrillées de la ville de l'époque flavienne. Au 15-35 Cophthall Avenue, une de ces routes semble couper l'affluent de la rive droite. Des sentiers en gravier ou en bois rejoignaient les routes et fournissaient une voie d'accès à partir de l'intérieur de la vallée. Ces routes représentaient les voies principales venant du centre de la ville, menant probablement vers les cimetières et peut-être aussi vers les zones maraichères situées au nord de la ville.

La quatrième partie porte sur les deuxième et troisième siècles (Période II); à cette époque beaucoup de canaux d'origine se sont trouvés bouchés et l'on a construit sur une grande partie des terres asséchées. Les bâtiments ont été construits pendant la première moitié du deuxième siècle mais l'un d'eux au 43 London Wall est daté du début du troisième siècle et trois autres au 4-6 Cophthall Avenue sont datés du milieu ou de la fin du 3ème siècle. On n'a pas pu obtenir de dates précises pour la démolition des bâtiments mais il est clair que ceux-ci ont continué à être occupés au 3ème siècle; ceux du 4-6 Cophthall Avenue ont peut-être été utilisés jusqu'au 4ème siècle. Le bois et l'argile étaient les matériaux utilisés dans la construction, souvent sur pilotis, des bâtiments placés sur les terres asséchées. Les bâtiments en pierre semblent avoir été placés uniquement sur les hauteurs surplombant le cours d'eau. Au 15-35 Cophthall Avenue, on a retrouvé un certain nombre de foyers, de fours et de sols en terre brûlée dans une moitié du bâtiment seulement, ce qui fait penser que la se passait l'activité artisanale et que peut-être les pièces d'habitation se seraient trouvées dans l'autre moitié. Nous pensons que l'expansion de la ville n'a pas été l'unique raison du développement de cette partie de la vallée de la Walbrook mais qu'il y a eu aussi un besoin de créer une zone industrielle bien desservie par les routes et par l'eau. On a construit une étendue empierrée sur les terrains les plus secs parallèles à l'affluent trouvé au 15-35 Cophthall Avenue, tandis que l'on a placé les bâtiments aux endroits partiellement asséchés peut-être parce que l'accès à l'eau y était plus facile. Le drainage et l'arrivée d'eau ont d'abord été bien entretenus mais certains détails montrent qu'à un moment donné pendant cette période ils ont été négligés. Les routes étaient entretenues, celle de 15-35 Cophthall Avenue par exemple semble avoir été retracée plus au nord. A la fin du 2ème siècle, cependant, les routes semblent avoir été affectées par la construction du mur de défense et ont peut-être été reliées entre elles par une route intramuros. Des indices obtenus récemment dans un site voisin du 4-6 Cophthall Avenue au nord semblent indiquer que la route passant à cet endroit a été abandonnée à la fin du 3ème siècle.

Dans la 5ème partie de ce texte, on a décrit les événements à la fin du 3ème siècle et au 4ème siècle et l'abandon définitif de la haute vallée de la Walbrook (Période III). Il semble que deux sites, 15-35 Cophthall Avenue et 43 London Wall, ont été délaissés au 3ème

siècle pendant une période de cinquante ans ou plus ont été réoccupés au début ou au milieu du 4^{ème} siècle. Au 15-35 Cophthall Avenue, on a retrouvé une série de fosses qui se ressemblaient en plusieurs points et l'on pense qu'elles avaient peut-être eu une fonction industrielle; elles se trouvaient près d'une surface empierrée jointe à la route. Mais lorsque l'on a cessé d'utiliser ces fosses, à cet endroit comme sur tous les autres sites, le creusement de fossés de drainage ainsi que la surélévation du sol indiquent que le sol recommençait à être humide. On a donc émis l'hypothèse que la cause de ce retour à des conditions humides était que l'entretien du drainage artificiel dans la Cité avait cessé. Cette partie de la ville a finalement été abandonnée au 4^{ème} siècle, peut-être dans la deuxième moitié du 4^{ème} siècle. Au nord de la ville, là où les conditions marécageuses semblent avoir commencé à exister peu après la construction du mur de défense à la fin du 2^{ème} siècle, il semblerait que les conduits souterrains qui canalisaient les ruisseaux sous les murs n'ont pu remplir leur fonction à cause de la quantité de matière transportée par le cours d'eau et que beaucoup de cette matière provenait peut-être des remblais d'assèchement.

La Walbrook a continué à influencer cette partie de la Cité jusqu'à une époque relativement récente et dans la 6^{ème} partie de cette étude, l'on a fait un résumé de ce qui s'y est passé après la période romaine. Le marécage qui avait commencé à se former à l'époque romaine à l'extérieur des murs de la ville, s'est alors étendu vers le sud sur les terres qui avaient été asséchées dans les anciennes vallées des ruisseaux. Cette partie de la ville a été réoccupée dès la période saxonne à Telegraph Street mais pas avant la fin du 11^{ème} ou du début du 12^{ème} siècle à 15-35 Cophthall Avenue et au 43 London Wall; l'on a constaté que les fessés et les dépôts d'argile drainaient bien le sol aux 12^{ème} et au 13^{ème} siècles. Le travail du cuir et du métal était concentré dans cette partie de la ville au Moyen-Age et dans la période suivante. Au nord du mur d'enceinte, le marécage a été finalement asséché au 17^{ème} siècle après bien des essais infructueux.

On trouvera un résumé des objets archéologiques dans la 7^{ème} partie de ce volume. La plupart des objets avaient été déposés dans les remblais destinés à surélever le sol pour assécher les terrains dans le bassin supérieur de la Walbrook. A toutes les époques sauf pendant la Période III, les dépôts étaient surtout formés de matière organique. Les objets provenaient de deux sources: d'une part les maisons et ateliers de toute la ville et, d'autre part, les industries du cuir et du verre des environs immédiats. Un fourneau destiné à la fabrication du verre a été récemment retrouvé à l'Ouest de la vallée. Des objets provenant d'un des bâtiments du 15-35 Cophthall Avenue étaient dans l'ensemble typiques des maisons d'habitation mais certains indices font penser que ce bâtiment servait plutôt au travail du cuir et du métal. Rien n'indique que le ruisseau ait été utilisé pour des activités religieuses ou rituelles comme on l'a quelquefois pensé ou qu'il y avait des marchés dans cette partie de la ville. Quand l'on compare les pièces de monnaie, le travail du cuir et les objets en général qui proviennent des sites traités dans cette étude avec ceux des fouilles faites auparavant dans la vallée de la Walbrook, il est clair que les objets ont été autrefois ramassés d'une manière sélective; il en découle que l'on

doit traiter avec prudence les conclusions sur la fonction de cette partie de la ville fondées sur de telles collections.

Dans la 8^{ème} partie, l'on trouve une étude sur l'environnement de 15-35 Cophthall Avenue. Cette étude, d'ordre multidisciplinaire, comporte l'analyse des restes de plantes, du pollen, des insectes, des mollusques, des ostracodes et des parasites (aucun diatome n'a été préservé) retrouvés sur le site de 15-35 Cophthall Avenue. Cette étude vise à décrire l'environnement du site aux diverses époques ainsi que certaines activités des habitants. A cet effet on a tenté d'obtenir des indications provenant de périodes et de contextes comparables en se servant de tous les indicateurs qui y ont été préservés. Certaines des conclusions que l'on a tirées sont d'ordre général et portent sur les changements d'humidité d'époque en époque, le type de végétation aux diverses périodes et les effets de l'impact des activités humaines sur l'environnement; elles sont plus détaillées lorsqu'elles décrivent les contextes individuels et l'état du cours d'eau.

Pendant la période préhistorique, tout semble indiquer un environnement naturel, plutôt marécageux dans lequel un cours d'eau propre et clair est présent toute l'année.

Les pollens et les graines retrouvés dans les échantillons de la Période I, la période romaine la plus ancienne, proviennent de prairies humides ou de bois entourés de marécages. Des graines de céréales et des fragments de son ont aussi été retrouvés dans ces échantillons. Les restes d'insectes de la Période I étaient variés et comprenaient une proportion élevée d'espèces aquatiques et synanthropes comme par exemple certains scarabées et des vers de bois. Ils indiquent en même temps un environnement toujours humide et une forte présence humaine. Peu de restes de mollusques (et aucun ostracode) ont été retrouvés ce qui laisse à penser que l'environnement aquatique était devenu plus pollué.

On n'a retrouvé ni mollusque ni ostracode dans les échantillons de la Période II qui est celle des bâtiments de l'époque romaine. Les pollens et les graines ont donné des résultats comparables: la présence d'espèces adventistes montrent que le sol était humide et bouleversé par l'activité humaine; d'autre part les insectes appartenaient pour la plupart au groupement urbain, certains d'entre eux appartenaient au groupement dit de plein air. Les autres contextes de la Période II: les fosses, les sols d'occupation et les foyers comprenaient des plantes rudérales et de nombreuses graines de graminées, surtout dans les couches de sols d'occupation et de foyers, ce qui indique sans doute un usage répandu de la paille. Des oeufs de vers parasitaires ont été retrouvés dans un des sols d'occupation. L'effet humain est la caractéristique principale de cette époque mais il n'est pas possible d'affirmer que le sol soit alors devenu vraiment plus sec.

Les mollusques provenant des fosses de la Période III comprenaient des espèces typiques des eaux stagnantes. Aucun ostracode n'était présent dans les échantillons de cette période. Les insectes appartenaient à des espèces dites de plein air, des espèces aquatiques ou synanthropes. Les restes de plantes indiquaient des sols perturbés et boueux; les conditions humides sont donc toujours en évidence mais peut-être à un degré moindre qu'à d'autres époques.

Pendant la Période IV, les mollusques et les ostracodes comprenaient des indicateurs aux habitats et comportement semblables: ils appartenaient à des espèces de nageurs actifs et à des espèces typiques d'un cours d'eau au régime lent. Les mollusques provenaient d'un environnement bien aéré et riche en plantes et les ostracodes d'un fossé où l'eau était présente en permanence. Les insectes indiquaient des conditions semblables: aucune espèce synanthrope n'était présente

et il y avait peu de décomposcurs. Par ailleurs, les espèces aquatiques étaient nombreuses. Les graines de la Période IV comprenaient moins d'espèces rudérales mais plus d'espèces hydrophytes. Un certain nombre d'espèces adventistes messicoles indiquaient peut-être la présence de terres cultivées dans les environs. Mais en général, pendant la Période IV, l'environnement n'est pas trouble par les habitants de la villa et il est celui d'un marécage à travers lequel coule un lent cours d'eau.

Zusammenfassung

Diese Arbeit beschäftigt sich mit der Geschichte des oberen Walbrook Tals in der City of London von der prähistorischen bis zur spätrömischen Zeit. Hierzu werden die Ergebnisse von sechs Ausgrabungen zwischen 1981 bis 1984 zugrunde gelegt. Der Bericht zerfällt in zehn Kapitel: Einleitung (1); Darstellung der Ausgrabungsergebnisse (2-6); Zusammenfassung der Fundgegenstände (7); Multidisziplinäre Umweltsanalyse einer der Ausgrabungen (8); Dendro-Chronologie (9) und Schlußfolgerungen (10).

Die Walbrook bestand aus einem Netz von südwärts fließenden Bächen und Flüssen, die sich in der Mitte der City zum Hauptgewässer vereinigten bevor sie die Themse erreichten. Teil 2 untersucht die Spuren der Flüsse in ihrem natürlichen Zustand. Drei der Ausgrabungen enthielten Flußbetten. Ein größerer Nebenfluß wurde in 15-35 Cophthall Avenue auf der Westseite des Tales gefunden. Während in 23 Blomfield Street ein Nord-Südschnitt durch den Hauptfluß vorliegt, könnte der Flußbettsand und Kies in 4-6 Cophthall Avenue sowohl zum Haupt- als auch zu einem anderen Nebenfluß gehört haben. Die Funde von diesen Grabungen haben gezeigt, daß der Lauf des Flusses sich verändert hat, wie von Merrifield und RCHM schon früher angenommen wurde. In dem weiten Tal der oberen Walbrook, nördlich hinauf bis Blomfield Street, hatten größere Bäche ihre Betten durch die Kiesterrassen der Themse bis hinunter in die Lagen des Londoner Tons ausgewaschen. Die Breite dieser Täler erreichte mehr als 22m, 35m und 44m. 15-35 Cophthall Avenue hat zum ersten Mal Einzelheiten über einen westlichen Nebenfluß geliefert. Hier wo der Fluß seinen Lauf von West/Ost nach Nord/Süd änderte, bildete er einen weiten Bogen. Bis zu 0.65m starke Kiesschichten lagerten sich in einem schnell fließenden Bach ab, während später gleichmäßiger Treibsand und Schlamm auf einen viel langsameren Fluß kurz vor Beginn der früh-römischen Periode hindeuten. In dieser Zeit war das Marschland schon mit Bäumen und anderer Vegetation bewachsen, denn der Fluß hatte sich nach Osten verlagert. In 23 Blomfield Street haben auf Grund späterer Baueingriffe nur kleine Stücke der Sand und Kieslagen überlebt. Obwohl in 4-6 Cophthall Avenue der Flußverlauf durch die totale Auswaschung des Themsetalkieses belegt ist, hatte sich hier sehr wenig Material (0.3m toniger Kies und Sand) angesammelt.

Teil 3, Periode I zeigt die Entwicklung des Tales während der römischen Zeit, in der ein gezieltes Programm der Landgewinnung und Kanalisierung verwirklicht wurde. Dies geschah wahrscheinlich im späten ersten bis frühen zweiten Jahrhundert, entlang der Ufer jedoch mag es früher begonnen haben. Die Flußarme wurden mittels Holzverschalungen oder Dämmen entlang der Ufer kanalisiert und die Marschen innerhalb der einzelnen Täler wurden durch Auffüllen von Kies und Tonerde trockengelegt. Die Bäche wurden entweder eingefüllt oder kanalisiert und in das Drainagesystem, das wahrscheinlich mit den Flüssen verbunden war, eingegliedert. Mindestens zwei größere von Nordost nach Südwest verlaufende Straßen wurden durch das Tal gebaut, bedingt durch notwendig gewordene Erweiterungen des Straßensystems der Stadt. In 15-35 Cophthall Avenue verschmälerte dies wahrscheinlich den westlichen Nebenfluß. Kies- und holzbelegte Pfade verbanden die Straßen mit dem Tal. Die Straßen führten wahrscheinlich vom Zentrum zu den Friedhöfen und möglicherweise auch zu den Marktärten im Norden.

Teil 4 behandelt das zweite und dritte Jahrhundert (Periode II), während denen viele der früheren Drainagen eingeebnet und Gebäude auf den beträchtlichen Flächen des gewonnenen Landes errichtet wurden. Dieses geschah hauptsächlich in der ersten Hälfte des zweiten Jahrhunderts, außer in 43 London Wall, wo ein Haus erst ins frühe dritte Jahrhundert datiert wurde, und drei andere in 4-6 Cophthall Avenue, die erst aus dem mittleren bis späten dritten Jahrhundert stammen. Es gibt keine genaue Zeitangabe für das Ende der Bauphase, aber die Häuser scheinen durchgehend bis ins dritte Jahrhundert, die in Cophthall Avenue wahrscheinlich bis ins vierte Jahrhundert bewohnt gewesen zu sein. Die Baumaterialien auf dem gewonnenen Land waren aus Holz und Tonerde, die Fundamente standen oft auf Pfeilern. Steingebäude befanden sich nur auf dem höheren Gelände mit Blick über das Flußtal. Eine Reihe komplizierter Herde, Öfen und verbrannter Fußböden in einer Hälfte eines Hauses in 15-35 Cophthall Avenue lassen auf industriellen Gebrauch schließen, während der Wohnteil sich in der anderen Hälfte des Hauses befunden haben mag. Man glaubt daß die Ausweitung der Stadt nicht der einzige Grund für die Bauentwicklung an der oberen Walbrook war, sondern

eher der Bedarf für ein Industriegebiet, das gute Verbindung und Wasserversorgung hatte. Auf dem trockenen Land nahe den früheren Nebenflüssen in 15-35 Cophthall Avenue wurde eine weitläufige Kiesfläche angelegt, während die Gebäude, wahrscheinlich wegen der Nähe zum Wasser, auf dem neu gewonnenen, feuchteren Land standen. Während anfänglich die Drainagen und Wasserzufuhr gut unterhalten wurden, gibt es Anzeichen, daß sie nach einer gewissen Zeit vernachlässigt wurden. Die Straßen aber wurden weiter ausgebessert und die Strecke, die durch 15-35 Cophthall Avenue verläuft, wurde in nördlicherem Winkel neu verlegt. Am Ende des zweiten Jahrhunderts müssen die beiden Straßen jedoch vom Bau der Verteidigungsmauer betroffen und wahrscheinlich hinter der Mauer anschließend verbunden worden sein. Durch eine neuere Ausgrabung auf dem Nachbargrund, in 4-6 Cophthall Avenue ist bekannt, daß die Nutzung dieser Straße hier im späten dritten Jahrhundert aufhörte.

Teil 5 behandelt die Aktivitäten des späten dritten und vierten Jahrhunderts und das Aufgeben des oberen Walbrook Tales (Periode III). Zwei Gegenden, 15-35 Cophthall Avenue und 43 London Wall scheinen im dritten Jahrhundert 50 Jahre oder länger unbewohnt, jedoch im frühen und bis zur Mitte des vierten Jahrhunderts wieder besiedelt gewesen zu sein. Eine Anzahl von Gruben in 15-35 Cophthall Avenue weist gleichartige Besonderheiten und auf industrielle Nutzung hin. Sie mögen mit einem kiesbedeckten Platz und einer angrenzenden Straße in Verbindung gestanden haben. Am Ende dieser Art der Nutzung gibt es überall Anzeichen, daß der Boden nasser wurde, da entweder neu drainiert oder weiter aufgeschüttet wurde. Der Grund hierfür mag die Vernachlässigung des Drainagesystems innerhalb der City gewesen sein. Die Gegend wurde endgültig im vierten oder Mitte bis späten vierten Jahrhundert von den Römern verlassen. Im Norden der Stadt wurde es bald nach dem Bau der Verteidigungsmauer am Ende des zweiten Jahrhunderts sumpfig. Es scheint, daß die Wasserdurchlässe in der Stadtmauer nicht mehr das Treibgut bewältigen konnten, das möglicherweise auch von den früher angelegten Aufschüttungen und Dämmen gestamt haben mag.

Die Walbrook hat weiter fast bis in die heutige Zeit diese Gegend der City beeinflusst. Teil 6 (Periode IV) ist die Zusammenfassung der nachrömischen Zeit. Außerhalb der Stadtmauer hatte sich der Sumpf langsam nach Süden ausgebreitet und das früher gewonnene Land überschwemmt. In Telegraph Street finden sich Zeichen für eine Neubesiedlung in der Sachsenzeit. Aber erst im 11. und 12. Jahrhundert (in 15-35 Cophthall Avenue und 43 London Wall) scheinen die Entwässerungsgräben und Erdaufschüttungen der Drainierarbeiten zum Erfolg geführt zu haben. Jedenfalls waren hier in mittel- bis spätmittelalterlicher Zeit Leder- und Metallverarbeitende Industrie konzentriert. Die Marsch nördlich der Verteidigungsmauer wurde nach vielen Anläufen erst im 17. Jahrhundert erfolgreich trocken gelegt.

Teil 7 befaßt sich mit den Fundgegenständen aller Grabungen. Während die meisten Funde in den Aufschüttungen der Landreklamierung aus großen

Mengen organischen Abfalls bestehen, ist dies in Periode III nicht der Fall. Sie stammen hauptsächlich aus zwei Quellen, den städtischen Haushalten und Werkstätten im allgemeinen und auch aus der benachbarten Leder- und Glasindustrie. Vor Kurzem wurde ein Glasschmelzofen auf der Westseite des Tales gefunden. Aus einem der ehemaligen Gebäude in Cophthall Avenue waren die Funde im ganzen typisch für einen Haushalt, einiges jedoch weist auf Lederverarbeitung und Schmiedebetrieb hin. Es gibt keine Anhaltspunkte, daß der Fluß für rituelle Zwecke benutzt wurde, wie es früher vermutet wurde, oder daß es in der Gegend Märkte gegeben hat. Wenn man die Münzen, das Lederwerk und die anderen jetzigen Funde mit denen früherer Ausgrabungen an der Walbrook vergleicht wird einem klar, daß damals nur eine Ausgewahl einbehalten wurde. Daher müssen alle Äußerungen, die auf diesen Funden beruhen, mit Vorsicht betrachtet werden.

Im Teil 8 wird das Umweltmaterial aus 15-35 Cophthall Avenue untersucht. Um etwas über die Umwelt und die menschlichen Aktivitäten in den verschiedenen Zeitabschnitten herauszufinden, wurden Samen, Pollen, Insekten, Mollusken, Ostrakoden und Parasiten analysiert (es wurden überhaupt keine Diatome gefunden), und die Forschungsergebnisse vergleichbarer Zeiträume und Einzelheiten wurden herangezogen. Hieraus ergaben sich einige generalisierende Aussagen über den Wechsel des Nassergrades, der Pflanzenarten und des menschlichen Einflusses auf die Gegend, als auch der Bedingungen im Fluß.

In der vorgeschichtlichen Zeit weist alles darauf hin, daß die Gegend marschig und recht unberührt war und daß die Flüsse ganzjährig klares Wasser führten.

Pollen und Samen zufolge bestand das Land während Periode I, der frühen römischen Zeit, aus nassem Grasland oder Gehölzen mit marschigen Teilen. Es gab auch Getreidesamen und Spreu. Die Insekten Fauna war vielfältig, mit einem hohen Anteil der üblichen Wasserinsekten und starken Synanthropen wie Getreidekäfern und Holzwürmern. Sie weisen auf eine durchgehend nasse Umwelt mit gleichzeitig starker menschlicher Präsenz hin. Es gab nur wenig Mollusken und keine Ostrakoden. Dies bestärkt den Eindruck eines weniger sauberen Wassers als vorher.

Ebenso fehlten Mollusken und Ostrakoden in den Lagen der Periode II, der römischen Zeit der Bebauung. Pollen und Samen weisen ähnlich auf eine feuchte und gestörte Umwelt hin mit typisch städtischen Insekten. Die restlichen Lagen der Periode II gesammelt aus Gruben, Oberflächenansammlungen und Feuerstellen enthielten 'Ruderals' die auf starke menschliche Aktivitäten schließen lassen. Viele Kornsamens, besonders in Lagen, die sich während der Nutzung der Gebäude ansammelten, und von Feuerstellen deuten auf den reichen Gebrauch von Stroh hin. Auch Parasiteneier wurden in einer Lage gefunden. Die Periode II ist daher im wesentlichen durch Besiedlung und andere menschliche Eingriffe gekennzeichnet, während deren das Land nie richtig austrocknete.

Die Mollusken in den Gräben der Periode III enthalten Arten, die in stehenden Gewässern leben. Es wurden keine Ostrakoden gefunden. Von Insekten fand man sowohl Freiland- und Wassergattungen als auch

Synanthropen. Die Pflanzen ließen immer noch auf eine feuchte Umwelt schließen, wenn auch in geringerem Maße als früher.

Die Molusken und Ostrakoden der Periode IV sind sich sehr ähnlich, sie bestehen sowohl aus schwimmenden Arten als auch solchen, die in langsam fließendem Wasser leben und deuten auf eine sauerstoff- und pflanzenreiche Umwelt, und die Ostrakoden auf einen halb- oder ganzzeitlich wasserführenden Graben hin. Auf ähnliche Umstände

weisen die Insekten hin: es gab keine Synanthropen, man hätte sie finden müssen, denn der Zersetzungsanteil in der Erde ist sehr klein. Auf das überwiegende Wasserelement weist auch die Ufer taxa hin. Die Samen zeigen eine deutliche Zunahme von Sumpf- und Wasserpflanzen, während die 'Kultur' pflanzen abnehmen, wenn man von segetal taxa absieht, die auf landwirtschaftliche Nutzung hinweisen könnte. Im ganzen kann man sich die Landschaft als ungestörte Marsch mit langsam fließendem Wasser vorstellen.

1. Introduction

This report attempts to examine the early development and environment of the upper Walbrook valley in the City of London in the 1st to 4th centuries. It is based on the results of archaeological investigations of 1981-4 mainly in the western half of the valley at 2-3 Cross Key Court/15-35 Copthall Avenue/43-49 London Wall, 4-6 Copthall Avenue, 8 Telegraph Street and 23 Blomfield Street, an area which in recent years has been, and continues to be, subject to redevelopment. These sites provided evidence of the prehistoric streams of the Walbrook, and of the development, decline and changing environment of the area in the Roman period. For the first time detailed information about the nature of the prehistoric streams was forthcoming. This is important for, as this study will attempt to prove, interference in the natural drainage pattern during the Roman period radically altered the Walbrook valley, causing the stream to flood and eventually creating a marsh which was not completely drained until the 17th century. A study of the prehistoric stream and its environment not only provides part of the background to the early history of London but also highlights one aspect of the Roman achievement which, although it ultimately failed, nevertheless provided an impetus for the eventual reclamation of the whole of the Walbrook valley in the City.

Geological and topographical background (Figs 1 and 2)

London occupies part of the London Basin, a broad syncline of Chalk filled in the centre with Tertiary sands and clays; in the City, and indeed most of London, this Tertiary series or bedrock consists of London Clay. Above the bedrock lie the Pleistocene (Quaternary) fluvial deposits of the River Thames arranged in flights or steps of terraces. These terraces represent the remains of former floodplains of the river, the highest being the oldest with each terrace becoming progressively younger down the valley side. The complexity of the Pleistocene sediments in the Thames Valley has made the identification and correlation of the terrace sequence difficult and many attempts have been made, the most recent being that of the Geological Survey (1982) and Gibbard (1985 and 1988).

Only three of the terraces are relevant in the area encompassed by the City, and of the first a very little survives at the south edge of the second terrace (1 on Geological Survey, *ibid*, sheet TQ 38 SW). The second terrace (2 on Geological Survey) is that upon which most of the City is built (Fig 1). Data obtained from numerous archaeological sites in the City indicate that the surface level of this terrace lies at between c 9-11m OD. It is identified by Gibbard, Whiteman and Bridgland as the Wolstonian (367,000-128,000 BP) Mucking Gravel (1988, 3). The third terrace (3a on the Geological Survey) was traditionally classified as Taplow but Gibbard has shown that it is earlier than the gravels found at Taplow, Buckinghamshire and which he identifies as the Corbets Tey Gravel (*ibid*) (also

belonging to the Wolstonian stage). The southern edge of this terrace is situated in the northwest of the modern City, aligned northeast-southwest but outside the limits of the Roman city. Its surface is located at a level of c 15-16m OD.

The second terrace (Mucking Gravel) is, in the City, overlain by a sandy silt termed brickearth which formed in the late Devensian stage (32,000-10,000 BP) and is considered to be a combination of loess and waterlain deposits (*op cit*, 1985, 57). Its surface is generally found at a level of between 10.5-12.5m OD. These sediments formed an important source of building material in London in all periods.

In the City the terraces were dissected by the Fleet river and, to a lesser extent, the Walbrook, consisting of a network of streams which rose to the north, and a stream on the eastern side of the City. At the south edge of the 3rd terrace (Corbets Tey Gravel) London Clay is almost exposed, resulting in a spring line (Bentley 1987, 333-4 and fig 4). The main stream of the Walbrook, from flowing south-east through this terrace at Hoxton and Shoreditch, altered course to a south-westerly direction when it met the 2nd terrace (Mucking Gravel) and thence virtually followed this spring line into the City. It is probable that it was this spring line which also fed many of the tributaries of the Walbrook, the majority of which seem to have flowed into it from the west (*ibid* and Geological Survey, 1936). The valley was consequently widest in its upper reaches, its west side in the City broad and gentle, its east, steep, narrowing towards the Thames in the south (Fig 2). Although not as large as the Fleet river, the Walbrook was topographically important due to its dissection of the second terrace (Mucking Gravel) which created in effect two hills, Ludgate to the west and Cornhill to the east. Because of this it influenced the development of the city from Roman to post-medieval times, its morphology often determining the course of the major streets which crossed it. From the medieval period its main course also formed the boundary of most of the adjacent wards and parishes. Today it is channelled underground and only its outlet into the Thames at Dowgate can be seen.

Previous work in the Walbrook (Fig 2)

Archaeological recording in the Walbrook was carried out during construction work in the 19th and early 20th centuries. In the area outside the City observations were made on a number of sites. At 1-6 Finsbury Circus (Fig 2, Site 1) a depression 12m wide was considered to be a poorly-defined streambed with pebbly grey clay above the Thames terrace gravels; its fill, overlying the clay, was an extensive 0.3m thick layer of reeds containing Roman objects beneath a marshy deposit of medieval date (Lambert 1921, 97-8, 106-8). To the east at Eldon Street (Fig 2, Site 4) an east-west aligned stream was recorded, cutting through the gravel with a timber gutter along its south side and a Roman cremation urn on its south bank (Lambert 1921, 94-7, 107).

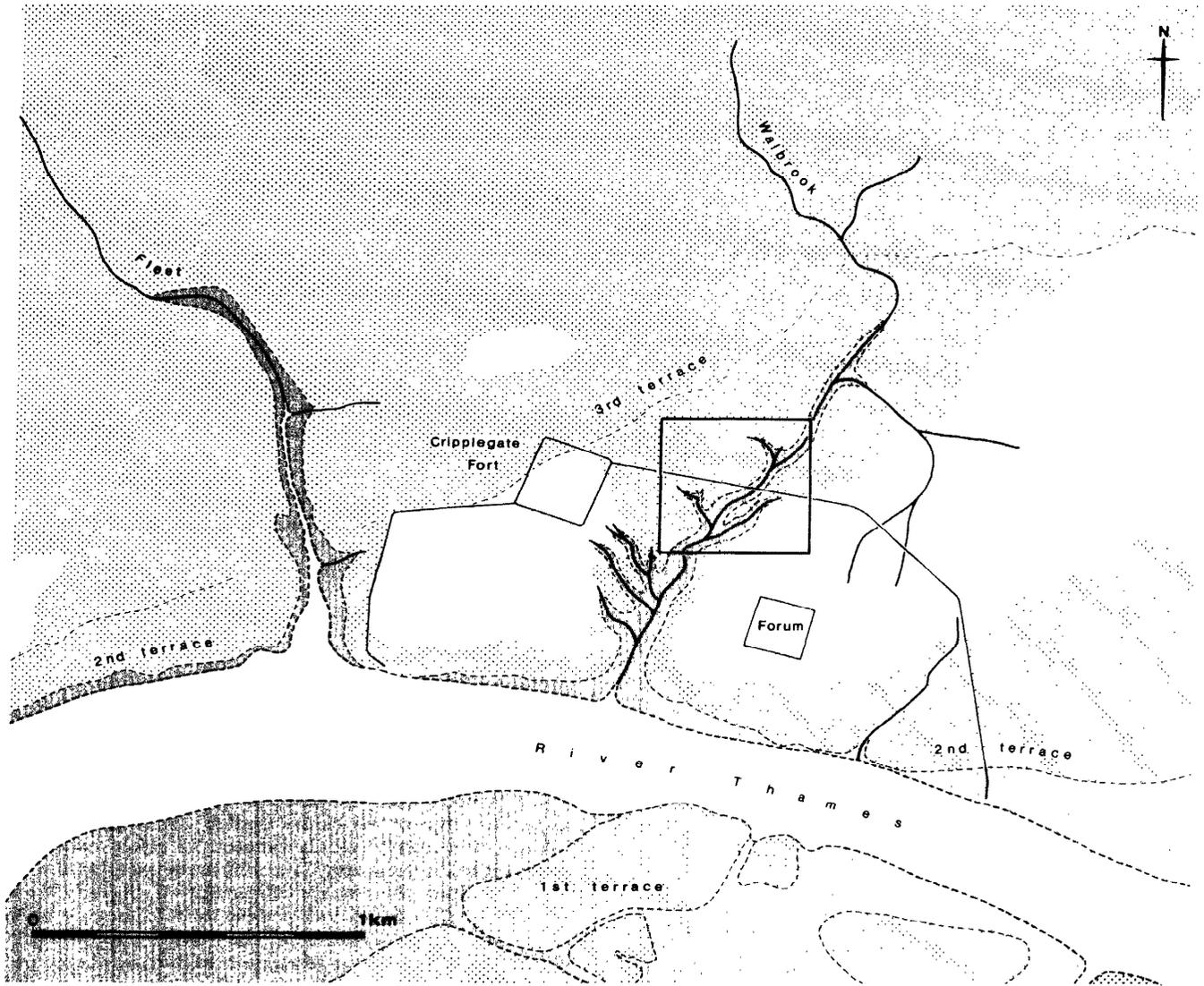
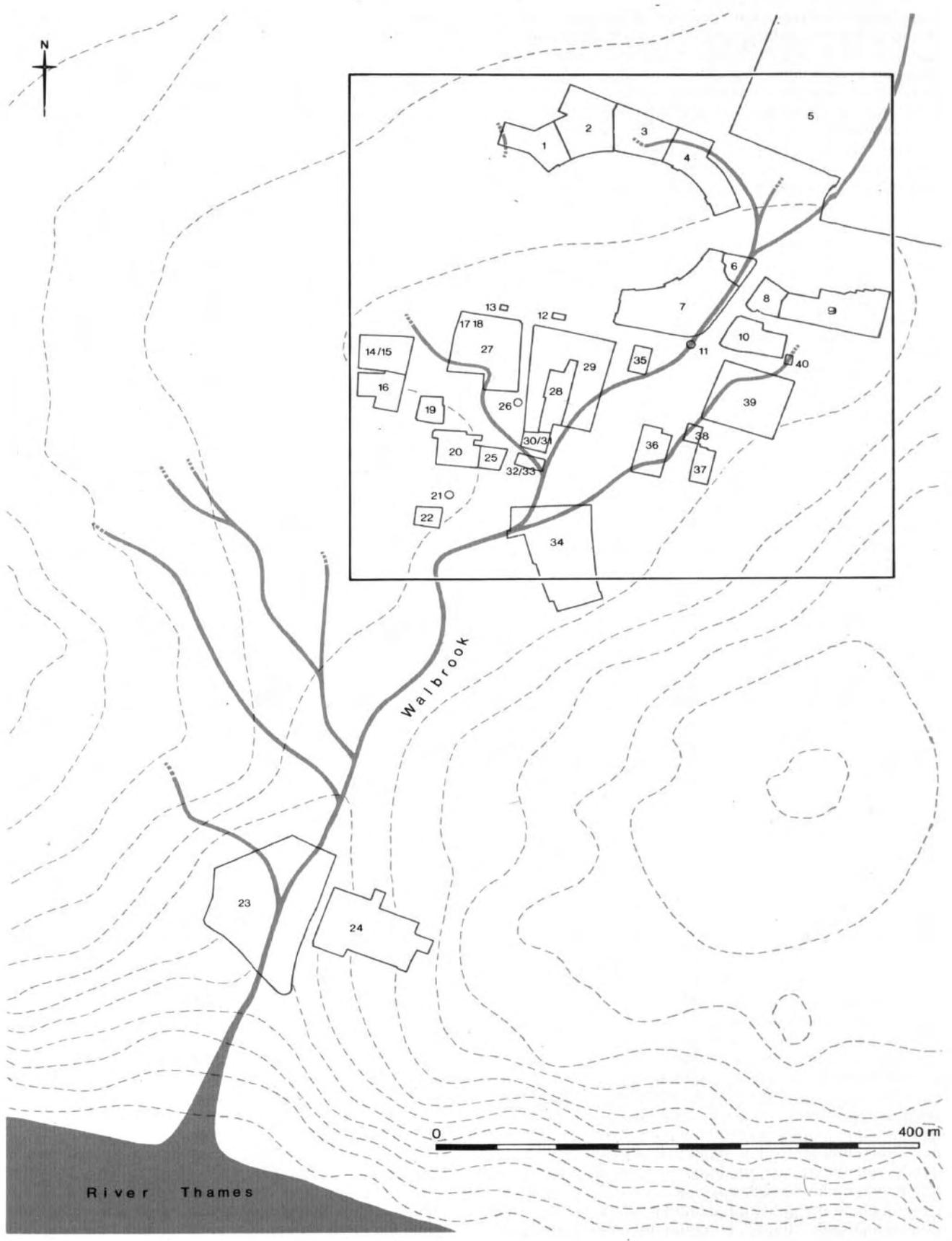


Fig 1 Geology of the City of London and surrounding area, showing Thames Terraces (stippled), brickearths (light grey) and alluvium (blue-grey). Intermittent traces of 1st terrace located along southern edge of 2nd terrace. Also shows limits of Roman town, main Roman features and study area. Based on Geological Survey (1936 and 1982), modified by D Bentley. Position of both banks of R Thames approximate. Scale 1:20,000

Fig 2 The study area in relation to the Walbrook and location of sites referred to in text, based on Ordnance Survey map Londinium (1983). Contours at 3ft intervals, (based on 1841 survey). An accurate survey of Roman ground levels has yet to be compiled

Key to Sites referred to in text:

(1) 1-6 Finsbury Circus; (2) Riverplate House/7-11 Finsbury Circus; (3) 12-15 Finsbury Circus; (4) 26-31 Eldon Street; (5) Broad Street Station (Broadgate); (6) Finsbury House/23 Blomfield Street; (7) 4 London Wall Buildings and 23 Blomfield Street; (8) 46-7 New Broad Street; (9) 35-45 New Broad Street; (10) Blomfield House/ 85-6 London Wall; (11) London Wall and west corner of Blomfield Street; (12) London Wall opposite No 57; (13) London Wall opposite Nos 45-50; (14) 55-61 Moorgate (1929); (15) 55-61 Moorgate (1987); (16) 49-53 Moorgate/72-4 Coleman Street; (17) 43 London Wall; (18) 44 London Wall; (19) 30 Moorgate; (20) 20-8 Moorgate, 1-4 Cophall Close, 10-11 Great Swan Alley; (21) Telegraph Street; (22) 8 Telegraph Street; (23) Bucklersbury House; (24) St Swithins House; (25) 5-7 Cophall Avenue; (26) Cophall Avenue; (27) 15-35 Cophall Avenue, 45-9 London Wall, the Coleman Street Ward School, Cross Keys House, 2-3 Cross Key Court; (28) Rear of London Wall; (29) 52-62 London Wall; (30) 10-12 Cophall Avenue (1906); (31) 10-12 Cophall Avenue (1987); (32) 4-6 Cophall Avenue (1904); (33) 4-6 Cophall Avenue (1984); (34) Angel Court; (35) 2 Throgmorton Avenue; (36) 9-19 Throgmorton Avenue, 21 Austin Friars; (37) 13-14a Austin Friars; (38) 22 Great Winchester Street; (39) Winchester House, Great Winchester Street; (40) All Hallows Churchyard, London Wall



A major stream was recorded at the north end of Blomfield Street (Reader 1903, 181-3) (Fig 2, Site 7). It consisted of a 0.3m thick deposit of sand, with 1.5m of sand and silt above, merging into peat. Apparently shallow, its west bank was not well defined and situated 21m west of Blomfield Street. This stream was traced further south at 4, London Wall Buildings, but here 'compartments' of timber planks set against piles driven into the stream fill were also recorded (Reader 1903, 187-96). The compartments were filled with 'earth and rubbish' above which horizontal timbers had been placed to form platforms. One of the structures consisted of two platforms separated by a plank-lined channel or tank, the latter filled with waterlain sands. Some years later an approximately north-south alignment of timber posts was recorded on the east side of Blomfield Street at 46-7 New Broad Street (Fig 2, Site 8), possibly marking the eastern edge of the valley here (RCHM 1928, 147). When the defensive wall was built at the end of the 2nd century, this stream was provided with a culvert through the wall (Fig 2, Site 11), replaced at a higher level when the original had become blocked up (RCHM 1928, 87-9 and Merrifield 1965, 306-7). Large numbers of human skulls have been found during excavation work in the Blomfield Street area (RCHM 1928, 15-16).

Inside the city wall the most westerly observations of a stream within the upper valley of the Walbrook were made at 55-61 Moorgate (Dunning 1929a, 199) (Fig 2, Site 14). Here gravel, presumably Thames terrace gravel, thinned out towards the eastern side of the site and was cut by shallow east-west running channels revetted with posts and planks. The channels were filled with grey mud and organic matter and covered by 1.5m of black mud containing Roman objects including leather and, in its upper levels, 4th century pottery.

The presence of a stream or streams is implied by black silts and/or peat at 30, Moorgate (Fig 2, Site 19) where black peaty silt overlay Thames terrace gravels (Hume 1951) and at 5-7 Copthall Avenue (Staff of the Guildhall Museum 1965, 135-6) (Fig 2, Site 25). Nearby the ground sloped rapidly down to the east at 20-8 Moorgate (Cottrill 1936) (Fig 2, Site 20). Just to the south in Telegraph Street, possibly at 11-16 (Fig 2, Site 21) two streams or ditches were recorded cutting into the Thames terrace gravels (Cottrill 1934).

One of the most extensive investigations was carried out by A Lane-Fox (1867, xxi-lxxxiii) at a site to the rear of London Wall on the east side of Little Bell Alley, the forerunner of Copthall Avenue (Fig 2, Site 28). He recorded 'Thames ballast' inclining north-south, overlain by 1.7-2.1 m of peat containing Roman remains, interspersed with 'kitchen middens'. A layer of 'blue mud' was also noted within the peat. Driven into the Thames ballast were numerous piles, some associated with planking, aligned north-south and east-west in curved rows and also circular clusters; from the sections it is clear that some at least had been inserted from a higher level in the peat. The peat was assumed to have been a natural growth during the Roman period and its great depth was puzzling. Seventeen human skulls were recovered, the majority from the bottom of the stratigraphic sequence.

Just to the south of this site, at 10-12 Copthall Avenue (Fig 2, Site 30) trenches for wall-footings in

1906 revealed London Clay overlain by 'undisturbed loam' at the west end of the site which gradually gave way to a streambed in the east (Norman & Reader 1906, 232). A depth of 1.5-1.8m of black mud then covered the site, within which a number of piles were noted. Earlier observations in 1904 at 4-6 Copthall Avenue to the south (Fig 2, Site 32) were similar, and from these two sites it was concluded that a main tributary of the Walbrook lay beneath Drapers' Gardens (Header 1906, 231-2). The redevelopment of the latter in the 1960s unfortunately went unrecorded. Also in Copthall Avenue, formerly Little Bell Alley (Fig 2, Site 26), a City Sewers Plan of 1851-2 records planking and piles (RCHM 1928, 115).

A stream flowing along the eastern side of the valley was located more recently at Great Winchester Street (Fig 2, Site 38) in a series of east-west shafts (Gould 1951, 151-54). In one shaft 7.3m deep the sub-soil of grey-blue clay was overlain by a layer of compressed vegetation with black clay above. Roman pottery was recovered from the lowest levels and a timber pile was observed in another shaft to the west. A 'dirty gritty soil' recorded in a western shaft may have been stream fill; 4m to the east the eastern edge of the valley was located as Thames gravels at a depth of 3.6m. Further north, at Winchester House (Fig 2, Site 39), black silt noted in the western half of the site must have been associated with this eastern tributary (Marsden 1963). It was probably this stream which was recorded by Norman and Reader as a depression, c 7.6m wide and c 0.9m deep, in the Thames terrace gravels beneath the defensive wall just west of All Hallows Church; in the footings of the wall, above this depression, a culvert was located (Fig 2, Site 40) (1906, 209-11 and pls xxv-vi).

In the early part of this century, when much of the evidence was obtained, the Walbrook was believed to consist of a probably tidal stream with little pre-Roman deposition and, in the north, of a valley 30.5m - 36.6m wide. During the Roman period, it was thought, buildings were erected on timber earth-filled platforms or on piles in or towards the sides of the streambed, with the stream itself canalised between the structures. Dumping would also have restricted the width of the stream, which was then revetted and provided a solid base for later buildings (RCHM 1928, 16). The marsh, noted everywhere in the upper Walbrook valley up to a depth of 2.7m, formed - it was argued - when the construction of the defensive wall effectively dammed the streams. Inadequate culverts through the wall supposedly became choked up resulting, north of the wall, in the accumulation of water and the creation of a swamp. Inside the city walls the checked stream would initially have been transformed into 'a sluggish almost placid water'. Further obstruction to a free-flowing stream was thought to have been caused by the many pile structures erected in the stream and by the dumping of refuse. Eventually, 'the water which spread itself along the north of the wall would have soaked under it, causing a broad swamp to exist also to the south of the wall for some distance' (Reader 1903, 183-4).

In more recent times excavations downstream at Bucklersbury House in 1953 (Fig 2, Site 23) have modified these early conclusions (Grimes 1968, 92-7). Here Grimes established that though the valley was wide the main stream was shallow and no more than

4.26m wide. This in fact refers to the canalised stream in the Roman period; as regards the prehistoric streambed, the published section is not very clear (*ibid*, fig 23a and b). The valley appears to have been wet and development during the Roman period was confined to revetting the channel of the stream as the water level repeatedly rose and caused the banks to flood. Behind the stream was a succession of dumps and floor surfaces, the latter related to timber structures. By the mid-late 2nd century the streambed had silted up and the revetment collapsed. Thereafter the ground continued to be raised but the stream was not revetted. This period is associated with the appearance of stone as well as timber buildings, including the temple of Mithras, now dated to the middle of the 3rd century (Merrifield 1983, 183). The latter continued in use until at least the mid 4th century. On the Bucklersbury House site, away from the stream, Grimes also found evidence of leatherworking.

This pattern, of repeatedly raising the ground level and revetting the channel of the stream to combat the rising water level, was confirmed further north at Angel Court in 1974 (Blurton 1977, 14-26) (Fig 2, Site **34**). Here a feeder of the Walbrook was located, its revetted or banked sides replaced at intervals as the stream continually silted up and flooded. This sequence spanned the late 1st/early 2nd century - late 4th century when the area flooded and was abandoned. The dating does not, however, fully agree with that from Bucklersbury; the sequence at Angel Court suggests that the stream continued to be canalised while that at Bucklersbury fell into decay in the mid-late 2nd century and became, as Merrifield suggests 'a mere runnel' (1965,87). In other areas of the Angel Court site another streambed, timber drains and timber and stone structures were recorded but for these there are neither levels nor reliable dating evidence.

Uses of the Walbrook valley

Definite evidence of leather and ironworking in the Walbrook valley was found at Bucklersbury but otherwise Merrifield (1965, 93) considered that, in the 1st and 2nd centuries, the banks of the Walbrook were used by craftsmen and traders, the numerous artefacts found on sites in the Walbrook resulting from their activity. Flimsy huts or booths seemed to represent the only form of building although, in the 3rd century, buildings of stone and timber, sometimes with mosaic floors, suggested that the lower reaches of the Walbrook had become a desirable residential area.

The presence of so many objects cast into the stream was also partly explained in terms of votive offerings (Merrifield 1983, 101-2; Marsden 1980, 74) but a recent examination of evidence from the lower Walbrook concludes that the majority of artefacts were derived from the dumping of rubbish which served to raise the banks of the stream (Wilmott, forthcoming). The large number of human skulls found in the upper Walbrook are an exception to this. Most of these were found by workmen in the late 19th and early 20th centuries in or near the stream, and it was generally accepted that they were victims of the Boudican

massacre in AD 60 (RCHM 1928, 15; Merrifield 1983, 56-7). A detailed examination of the skulls has, however, flawed this explanation and suggested in its stead, an association with the Celtic cult of the head, possibly involving votive offerings to the Walbrook (Marsh & West, 1981, 86-97; Bradley & Gordon, 1988, 503-7).

Background to the excavations

(Figs 2-4; Pls 1 and 2)

Redevelopment of properties in the upper Walbrook valley began in the 1980s, an area by and large untouched since the early part of this century. The Department of Urban Archaeology, Museum of London, recognised the archaeological potential of the area and initiated a series of investigations.

The first of the redevelopment proposals concerned a block of properties on the north-west corner of Cophthall Avenue which included 15-35 Cophthall Avenue, 45-49 London Wall, the Coleman Street Ward School, Cross Keys House and 2-3 Cross Key Court (Fig 2, Site **27** and Fig 3). Bore-hole surveys from the site were promising; in particular that from the unbasemented building, 2-3 Cross Key Court, suggested the location of a tributary of the Walbrook with archaeological stratigraphy above it intact up to ground level. This site offered, for the first time, the opportunity of examining under controlled conditions the nature of the stream and its environment and development from Roman to modern times. Formal excavations here also provided a control for a subsequent stage in which the recording of a much larger area would be confined to observations.

In 1981, the developer, Commercial Union Properties Ltd, permitted and generously financed excavations within the standing building of 2-3 Cross Key Court (OPT 81 TQ 3275 8148). A trench 3m x 15m was excavated to a depth of 7m over a period of one year (Plate 1).

The redevelopment of the whole site was undertaken in 1983-4 by Robert Fleming and Co Ltd, who funded the watching brief observations (KEY 83). Basements had destroyed the upper levels of the archaeological sequence but below them the mainly Roman strata were almost free of intrusions. The watching brief took place in two phases. In the first, archaeological recording was undertaken in exploratory holes and trenches for preliminary ground works. During the second and more important phase, the ground level was reduced in excess of 4m of which 3m consisted of mainly Roman deposits. In an area 60 x 50m the excavation of the site was completed at great speed and by working round the clock in seven and half days: archaeological recording was therefore limited (Plate 2).

These two sites are known as the *Cophthall Avenue* excavations; 2-3 Cross Key Court being the site of the controlled excavation, while 15-35 Cophthall Avenue/45-49 London Wall/Cross Keys House represents the watching brief area. Hereafter both these sites will be referred to as *15-35 Cophthall Avenue*, the controlled excavation and the watching brief respectively.

At 23 *Blomfield Street*, Finsbury House (FIN 81 TQ 3283 8155) (Fig 2, Site **6**; Fig 3) refurbishment of

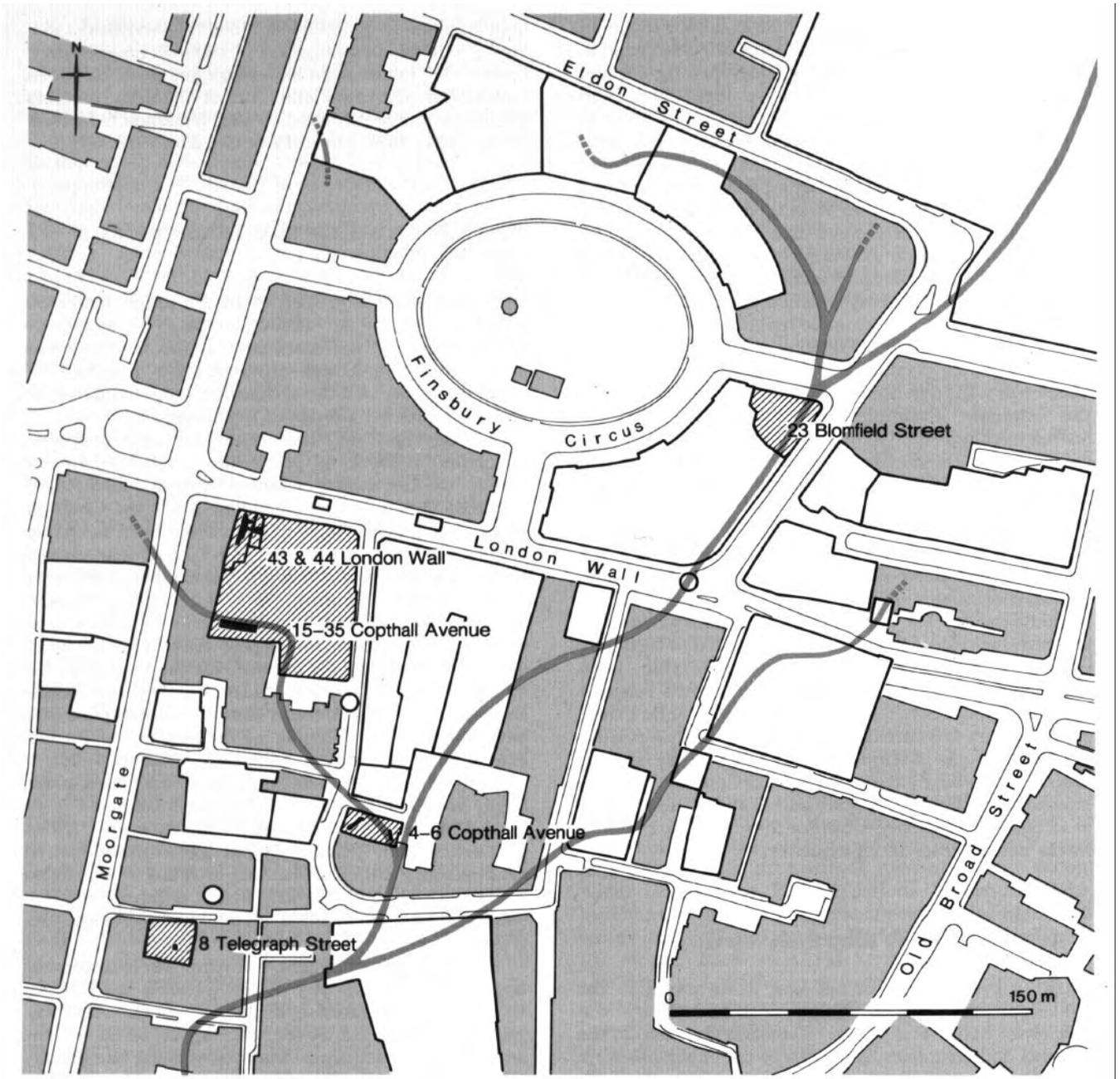


Fig 3 Plan of the study area showing modern streets and buildings (tone), six study area sites (hatched), maximum extent of areas of controlled excavation (black), sites referred to in text (blank). The outline of sites is extent at the time records were originally made, and not necessarily the same as that finalised by redevelopment. Reproduced from the 1987 Ordnance Survey 1:1250 map, with the permission of the Controller of HMSO, Crown copyright reserved.

the building involved total interior demolition and a certain amount of ground works. It was hoped that the position of the streambed found by Reader in 1903 would be located, together with any subsequent Roman activity. Machine excavation on the site was monitored in October 1981 but it was apparent that most of the strata had been disturbed.

In 1983 another listed building at *8 Telegraph Street* (TEL 83 TQ 3271 8136) (Fig 2, Site **22**; Fig 3) was refurbished and an opportunity to carry out a small excavation in the area of a proposed lift shaft was made possible and funded by the developers, Phoenix Assurance. An area 2.5m x 2.3m and 4.7m deep was excavated over a period of five weeks.

Three sites in close succession followed in 1984. At *43 London Wall* (LWA 84 TQ 32718153) (Fig 2, Site **17**; Fig 3), the developers, M J Gleeson Group Plc funded a ten-week excavation within the standing building. The site measured 14.5m x 2.8m divided into four areas (A-D) and was excavated to a depth of 2m. At *4-6 Copthall Avenue* (CHL 84 TQ 3279 8140) (Fig 2, Site **33**; Fig 3) archaeological investigations, after demolition, were financed by London and Paris Properties Ltd. Two trenches were machine excavated and recorded in October 1984. This was followed by a watching brief as trial trenches and reduction of the ground level took place in an area 22m x 12m. The final

part of the *Copthall Avenue/London Wall* investigations were then carried out in December 1984-January 1985 at *44, London Wall* (LDW 84 TQ 3272 8153) (Fig 2, Site **18**; Fig 3), financed again by Robert Fleming & Co Ltd. An area 3.8m x 3.4m was excavated to a depth of 2m in a two-week period (Fig 4).

In addition to the sites in the study area, a number have since been excavated in the upper Walbrook valley and, where relevant, their results included in this report. Five of these were situated outside the Roman city: *River-plate House/7-11 Finsbury Circus* (Fig 2, Site 2) (Askew 1988, RIV 87), *12-15 Finsbury Circus* (Fig 2, Site **3**) (Askew 1989, FIB 88), *Broad Street Station* (the Broadgate development, Fig 2, Site 5), where a series of excavations and recording of sections on this very large site were undertaken in 1985 (Malt 1987, LSS 85), *35-45 New Broad Street* (Fig 2, Site **9**) (Woodger 1988, NEB 88) and *Blomfield House/85-6 London Wall* (Fig 2, Site **10**) (Sankey 1989, BLM 87). Inside the city wall, *49-53 Moorgate/72-4 Coleman Street* was excavated in 1986 (Fig 2, Site 16) (Spence 1988, MOG 86) while the site to the north, *55-61 Moorgate/75-9 Coleman Street* (Fig 2, Site 15) was re-examined the following year (Drummond-Murray 1988, MGT 87). Another site recently re-examined was *10-12 Copthall Avenue* (Fig 2, Site **31**) (Lees 1989, COV 87). On the east side of the valley excavations took place at *9-19 Throgmorton Avenue/21 Austin Friars* (Fig 2, Site **36**) (Durnford 1988, TRM 86) and *13-14a Austin Friars* (Fig 2, Site **37**) (Dyson 1988, AUF88)

Organisation of the report and figure conventions (Fig 5)

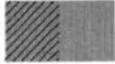
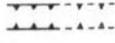
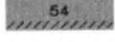
In Parts 2 - 5 of this report evidence from these sites is examined and its implications for the development and decay of the whole of the upper Walbrook valley in the Roman period considered. Part 6 commences with detailed evidence of the marsh at 15-35 Copthall Avenue in the immediate post-Roman period, because this formed naturally over a long period of time and was probably a direct consequence of Roman land management in the area; thereafter, post-Roman activity is summarized.

The evidence presented here is based on the site archive reports in the Museum of London. Of these the author wrote those for 15-35 London Wall and 44 London Wall (Maloney, C 1987), 23 Blomfield Street (1983), and 4-6 Copthall Avenue (1985); P Chitwood wrote 8 Telegraph Street (1983); and R Malt and C Spence that for 43 London Wall (1985) (this last site supervised by A Willmott). The evidence from all the sites has been grouped into *Periods* which are based on major changes in land use and broad contemporaneity. Thus evidence for the Walbrook in prehistoric times is presented in Part 2; Period I (Part 3) represents the earliest activity, that of reclamation and drainage in the early 2nd century; Period II (Part 4), the settlement of the area from the early-mid 2nd century to the 3rd century; Period III (Part 5), a decrease in activity followed by a resumption of drainage due to increasingly wet ground in the 4th century, and Period IV (Part 6),

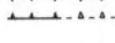
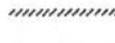
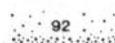


Fig 4 4-6 Copthall Avenue: a trench being recorded during the watching brief

Plan of geological deposits - fig 7 : showing found & conjectured

-  terrace gravels
-  fluvial deposits
-  streamlet bed
-  section & section figure number
-  limit of excavation
-  outline of site

Phase plans: showing found & conjectured

-  external surfaces
-  infill /levelling deposits
-  reclamation in Stream 1
-  suggested flow of water
-  drainage features
-  raised bank
-  posts & piles
-  revetment
-  fence line
-  wall
-  retained wall
-  threshold
-  hearths
-  pits
-  section & section figure number
-  building room number

Sections

-  marsh
-  occupation surfaces
-  gravel surfaces
-  dumped deposits
-  waterlain deposits
-  geological deposit -
terrace gravels unless otherwise stated
-  timbers
-  turves
-  context number referred to in text

Study area interpretive plans - figs 68, 104 & 115

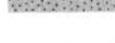
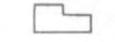
-  defensive wall : showing found & conjectured
-  stream & streamlet : showing found & conjectured
-  road
-  external surface
-  building
-  posts & piles
-  contours : 0.91 m (3ft) intervals
-  site outline
-  exact site location not recorded
-  insufficient evidence

Fig 5 Key to drawing conventions

the post-Roman development of the area (where this survived). The detailing of the stratigraphic sequence for Periods I-III is followed by a brief analysis of the dating evidence. Within the framework of the Periods, each site has its own, unique phasing structure and letter references for buildings but the identification of streams and roads respects the study area. Part 7 is a summary finds report; the multidisciplinary environmental evidence for 15-35 Copthall Avenue is examined in Part 8, Part 9 is a report on the dendrochronology and the conclusions are presented in Part 10.

In the text the terms ditch, gully, drain and channel - as well as stream - are used to denote drainage courses. A ditch or gully will refer to a watercourse that has been dug in the-ground, the difference between the two being that the former is larger, while drain will define a watercourse that is both flat-bottomed and lined or revetted with timber. The term channel will, in general, describe a watercourse which formed a stream, phase or part of a stream; it will also be employed when a drainage feature is not - or not clearly - cut into the ground surface but had been constructed by the erection of parallel banks.

Context numbers which appear in italics denote those that are discussed in the Summary Finds Report (Part 7) and those that were sampled for environmental and dendrochronological analysis (Parts 8 and 9).

The drawings within this report follow conventions developed and standardised by the Department of Urban Archaeology, the majority of which fall into the categories of location maps and plans, 'phase' plans, sections and interpretative 'period' plans. In this report the varied range of drawings has necessitated the use of different scales, although the number has been kept to a minimum and the same scale used within each drawing category. Figures 1-3 are the location maps and plans, 1 and 3 being presented at scales of 1:20,000 and 1:2500 respectively; Figure 2 is a location map and since its purpose is to identify the sites discussed in the report and illustrate their setting within the Walbrook valley it has no scale. On this map, sites marked with a circle cannot be located exactly. The phase plans, including the plans of sections (Figs 7b, 44b), are all presented at a scale of 1:200. They represent the evidence for each phase of a particular site with the exception of those for 15-35 Copthall Avenue (Figs 7a, 44a, 84 and 110) where, not only has relevant information from adjacent sites been included, but also evidence presumed to be of different phases which could not be identified over the whole of the site because of the nature of the watching brief (see p 5). The sections are at a scale of 1:40 and orientated south-north or west-east: a few are reproduced to scale from photographs. A thick line marks the period divisions which are identified for general reference at the side of the section. Interpretative period plans (Figs 25, 68, 104, 115), including that of the natural topography (Fig 25) are presented at a scale of 1:2500; two other comparative plans of the natural topography are at 1:5000 (Figs 26, 27). The remaining drawings which do not fall into the above categories include a wall reconstruction, a column sample, seeds, tables and diagrams; these are separately scaled.

Symbols used for the drawings vary according to their category, (see Key, Figure 5) though the symbols

employed in Figures 1-3 are identified in the captions). The outlines of the sites and excavated areas as presented in Figure 3 are used consistently throughout the phase and interpretative period plans: the outline of the excavated area shown on the phase plans always depicts the maximum area of controlled excavation, while the outlines of the sites which appear on the period plans depict the area of redevelopment. Relevant evidence from a section is represented in plan as a notional 0.2m wide strip which employs the same graphic symbol as that of the planned evidence; individual sections can be found in the report by reference to the number - which is a figure number - beside the strip, the number being situated on that side from which the section is viewed.

The way in which evidence is conjectured is also standardised. On the phase plans structural features, such as buildings and drains, are extended a notional 0.5m in the absence of supporting evidence but can be extended further where evidence exists; for example, floors recorded beyond the walls of a building or room of a building, walls implied by the position of an external surface, repetition of basic features such as buildings and alleys (Fig 84) and linear features such as roads, paths and streams. On the interpretative period plans selected site evidence is re-presented without further conjecture apart from roads and streams which are projected and apparent alignments continued. Other relevant features, such as the defensive wall, are also included. Relevant information from those sites not part of the study are annotated and where there is a lack of, or inconclusive evidence, a question mark is substituted.

Dating evidence and finds

(Fig 6)

As on some other sites in the Walbrook valley, the waterlogged reclamation dumps exposed during the controlled excavation at 15-35 Copthall Avenue yielded large quantities of pottery, glass, metalwork, leather fragments and wood. The other sites - where the trenches opened were smaller, or where only a watching-brief not a formal excavation was possible - were comparatively much less productive.

These finds have at least three quite separate research potentials: for imposing an **absolute** chronology on the stratified site sequences; for providing information about the functions of specific structures or features, or about the character of settlement in the area as a whole; and for improving knowledge of individual finds or groups of finds - whether it be their date, function or geographical distribution. The raw data for the third of these tasks, the extensive finds catalogues and illustrations that are published in traditional site reports, have been omitted from the present volume since its primary theme is geographical and historical. Many items will be published in forthcoming major volumes on finds from London excavations as a whole (see below), and, in the meantime, copies of detailed archive reports on the pottery (Davies 1986a-b; 1987a-c) and small finds (Groves 1987) may be obtained on written request from the Archive Officer at the Museum of London.

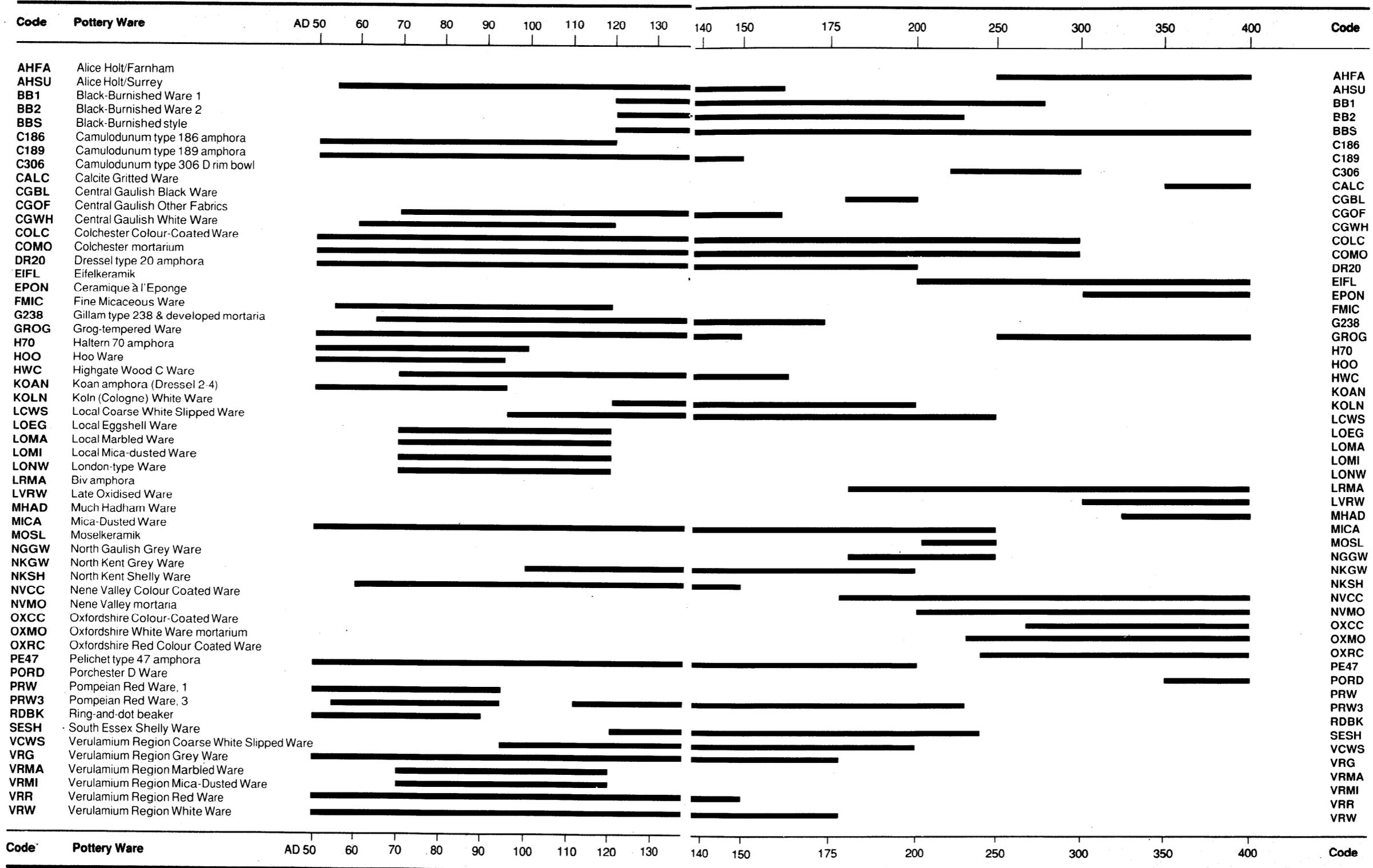


Fig 6 Summary of the main pottery wares found on the sites in the upper Walbrook valley

The second of the objectives outlined above, that of assessing functions, 'status' and 'character', is the task of Part 7. The dating evidence is summarised in three tables with associated commentary (one for each of the three main periods of Roman land use) and appears in Parts 3-5, immediately after the description of the features of each period and before the discussion. The information presented here includes dendrochronology (see below, p. 116), coins (identified by Jenny Hall, Museum of London) and stamped samian (identified by Brenda Dickinson). Unstamped samian, which was not found in such quantities as on many London sites, can add little to refine the main dating framework, and for this reason the tables contain no listing of the forms and sources. In most cases it is the coarse pottery which is the key indicator, although because of its sheer diversity it is also one of the most difficult groups of material to summarise adequately. The early Roman pottery (pre-Flavian - Antonine) from these sites, together with that from sites West and East of the Walbrook (see Perring & Roskams forthcoming; Williams forthcoming), is to be

published in a companion volume in the present series (Davies & Richardson forthcoming); work on a second volume, covering the later period, is in progress. These volumes will contain detailed descriptions of fabrics, a full catalogue of forms, and information about the characteristic composition of assemblages of different date. Here, therefore, it seems appropriate to include in the Tables only a list of the main constituent wares (those clearly residual have been excluded), the date range assigned to the group as a ceramic assemblage and, in the case of the 15-35 Cophthall Avenue site, data about the size of each group, expressed as a weight in kilograms. A key to the ware codes themselves is provided in Figure 6, which also shows the date range currently assigned to each ware. This information, it is hoped, will be sufficient for the reader to understand why each phase has been dated as it has, and, should there be in the future any major revisions of ceramic dating, for the reader to attempt some limited reassessment of the chronological scheme.

2. The Natural Topography

In the upper Walbrook valley the sub-soil consists of sandy gravels of the 10m floodplain terrace (Mucking Gravel) of the River Thames (hereafter referred to as terrace gravels) which overlies stiff fissured London Clay (p 1). The brickearth (p 1), having been eroded by the stream, only survives at the edge of the main or individual valleys.

The recent excavations have confirmed that the pre-Roman ground surface sloped gradually down to the south. No levels are available on undisturbed terrace gravels at 23 Blomfield Street (Site 6) but further north, at Broadgate (Site 5 Malt 1987), a maximum level of 10.6m OD was recorded and further south maximum levels of 9.5m OD at 35-45 New Broad Street (Site 9 Woodger 1988) and c 8.3m OD at 85-86 Blomfield Street (Site 10 Sankey 1989). At 43 London Wall (Site 17) terrace gravels lay at a maximum height of 8.6m OD while at the most southerly site in the area of study, 8 Telegraph Street (Site 22), a level of 6.7m OD was recorded. There was also a very gentle incline down from the west towards the centre of the valley: 8.1m OD at 15-35 Copthall Avenue (Site 27) and 7.7m OD further east in London Wall (Site 12). Further west, however, towards the edge of the Walbrook valley at 55-61 Moorgate (Site 15), terrace gravels were recorded at 7.5m OD sloping down towards the valley of a stream in the east (p 22) (Drummond Murray 1988). The east side of the valley was more abrupt than the west: at 13-14a Austin Friars (Site 37) it seems that the brickearth capping survived at a level of 8.62m OD (Dyson 1988).

Major tributaries of the Walbrook stream, revealed on three of the sites under consideration, cut through the terrace gravels down to and through London Clay. Examination of the evidence for these streams will be followed by a discussion of all the available information. The sites will be considered from west to east.

15-35 Copthall Avenue (Stream 1)

(Figs 7-23)

Geological deposits comprised orange and yellow sandy gravels overlying London Clay which, at its surface, had weathered to brown but was otherwise blue-grey in colour. The clay lay at a maximum level of 7.1m OD in the centre of the site where it was undisturbed; the terrace gravels, from a maximum level of 8.1m OD at the north end of the site, thinned out southwards until they terminated above the clay at c 6.5m OD (Fig 7). On the east side of the site however, the terrace gravels were continuous throughout the entire length of the site and a level of 7.5m OD on its eroded surface suggests that the ground here was almost level.

Above the terrace gravels a layer of clean brown silty sandy clay and fragments of plant material - possibly moss - was recorded in two sections (Figs 48, 49). A tributary of the prehistoric Walbrook (Stream 1) cut through the terrace gravels and London Clay at the south end of the site. The north edge was well defined (Fig 8) being traced for a distance of some 31m from the

west edge of the site at which point it curved round to the south in a wide arc. The south and west edges of the tributary lay beyond the site but at the far western side of the site London Clay was recorded sloping down from south-north (Fig 9; Fig 45), while at the west end of the controlled excavation weathered London Clay was not significantly overlain by waterlain deposits (Fig 23). This seems to indicate that the edge of the tributary, before it turned, lay not far to the south.

Where the streambed appeared to have been undisturbed, London Clay was recorded at the western end of the site at 6.0m OD, at the far eastern side of the tributary at 6.7m OD, and in the south at 6.5m OD. In a section near the north-eastern edge of the stream, where it altered its course, valley fill was noted at 6.3m OD at the bottom limit of the section (Fig 21). The lowest levels on London Clay were however recorded at the eastern end of the controlled excavation, at 5.85m OD, and its surface continued inclining down to the east beyond the limits of the trench. London Clay was here overlain by 0.7m of valley fill. The greatest degree of erosion therefore took place hereabouts, and because there was no appreciable deposition at the western end of the site, implies that the stream initially flowed more or less southwards at this point.

In time the stream seems to have increased in width eastwards until its floodplain was c 37m wide. Waterborne deposits which were noted beyond the banks of the tributary, above the terrace gravels, could have resulted from flooding.

North of the tributary, cutting into but not through the terrace gravels, streamlets, with possibly another to the east, were recorded in nine sections. It was not clear whether seven of these (Figs 10, 11, 12, 13, 14, 15 and 16) exposed the streamlets in cross or longitudinal section though presumably the streamlets followed a general southward course. In the remaining two sections (Figs 17, 18), situated just beyond the north bank of the tributary, four streamlets were however examined in detail together with another just to the south where a streamlet (1), cutting through London Clay, had eroded a new channel (2) (Fig 19). They were between 1.35-1.8m wide x 0.4-0.6m deep, bowl or slightly V-shaped in profile. Levels from the bottom of these streamlets range from 6.56m OD in the south to 7.06m OD and 7.23m OD further north. Four could have been contemporary and still active immediately prior to the Roman period and of these two had not accumulated any fill though it is likely that that shown on Figure 18 replaced an earlier streamlet. All these streamlets, entering the main tributary from the north, must have added considerably to its volume of water. They may help to explain why a wide arc was eroded on the north east meander of the tributary and why there was more down-cutting of the bed here than further south.

Within the banks of the tributary, valley fill consisted of well-bedded mainly grey sands, fine gravels and silts often containing rootlets. Near its banks bands or lenses of yellow and orange gravels and brown clay

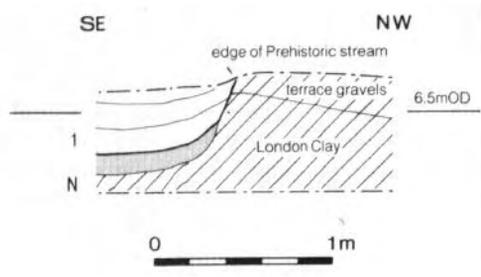


Fig 8 15-35 Copthall Avenue, watching brief: section

could be identified as terrace gravels and London Clay respectively, eroded from the banks but not carried in suspension in the stream (Fig 9).

A complete section through the streambed was not possible but two east-west sections situated towards the east side of the streambed were 7m and 9m in length (Figs 7, 20, 21, 22). They revealed that a width of at least 6m and 9m of stream fill had been deposited prior to the Roman period.

In the more northern of the two sections (Figs 20, 21) the west bank of the stream at this point was overlain by brown sandy gravels and grey-dark brown fine gravels (Fig 20). Further east buff-yellow gravel streaked with black sand, orange sand and banded light brown gravels all sloped down quite steeply to the east, implying that the eastern edge of the stream was still some way off (Fig 21). The sequence in the second section (Fig 22), situated c 8m to the south, was even clearer. There was no suggestion of any stream banks and the level surface of London Clay was overlain by pale orange yellow and grey streaked sand, pale yellow sand, dirty yellow sand and very fine gravels, and black organic silty clay. The earliest of these was traced westwards for a distance of nearly 9m. The sequences recorded in both these sections were truncated by artificially-cut channels which may imply a running stream at the beginning of the Roman period. This evidence would indicate a wide and shallow stream.

Although the streambed was recorded in many sections during the watching brief, the evidence was often only partial, and could not be recorded in detail for lack of time. A close examination was therefore only possible under the conditions of the controlled

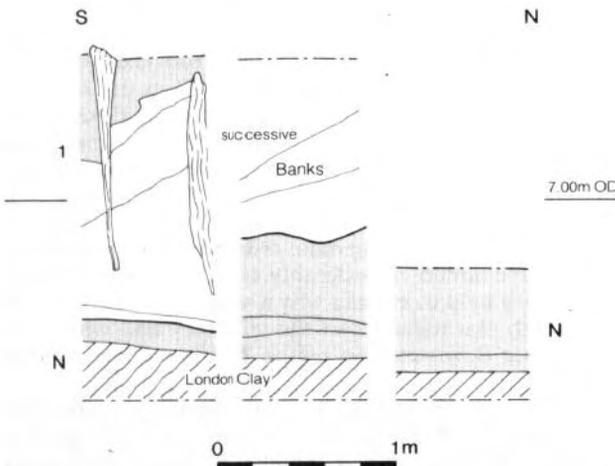


Fig 9 15-35 Copthall Avenue, watching brief: section

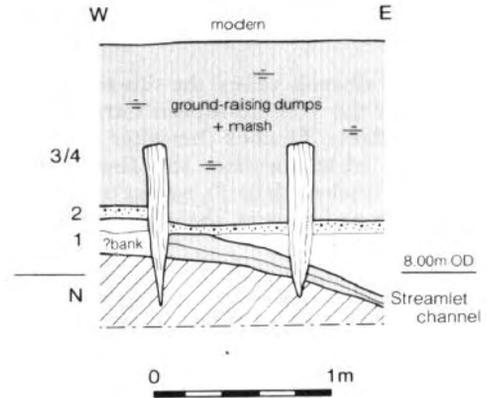


Fig 10 15-35 Copthall Avenue, watching brief: section

excavation. This demonstrated the fairly complicated history of an aggraded streambed which occupied the eastern two-thirds of the trench, and whose character changed during the course of its life.

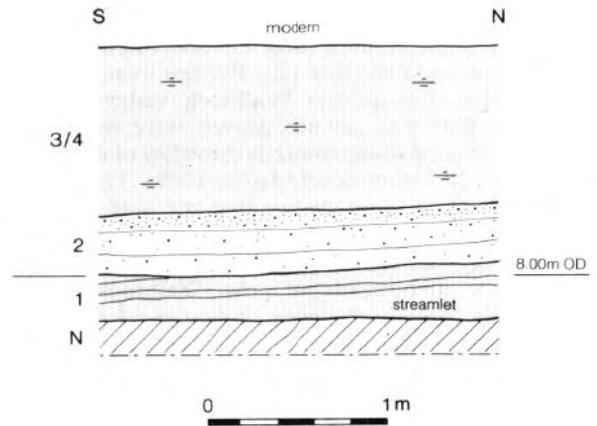


Fig 11 15-35 Copthall Avenue, watching brief: section

At the west end of the trench (Fig 23), the disturbed surface of London Clay lay at a maximum level of 6.6m OD and, as already noted (p 15), had accumulated very few waterlain deposits above it. This was cut by a channel 3m wide and 0.5m deep, orientated northwest-southeast, which contained brown fine gravelly sand and rootlets (OPT 785-6). Its western edge was truncated by another channel cutting from a higher level. This was 0.6m-1.1m wide and c 0.4m deep,

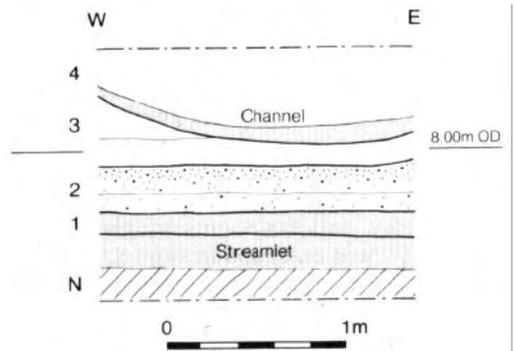


Fig 12 15-35 Copthall Avenue, watching brief: section

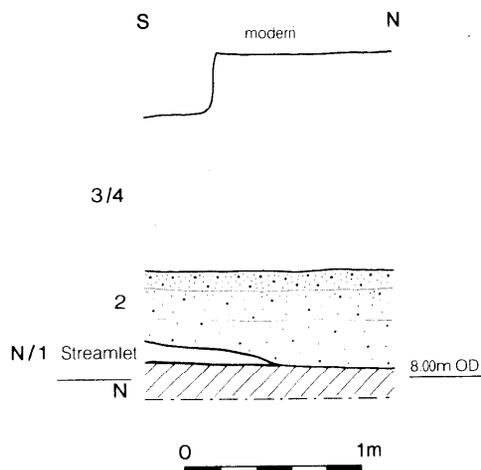


Fig 13 15-35 Copthall Avenue, watching brief: section

with two branches from the west and north meeting and flowing southwards (OPT 731). Within this channel lay brown fine gravels but more mixed organic clay deposits at its edges, the latter suggestive of flooding (OPT 711, 706, 705, 694, 703, 700, 692, 689, 675, 676, 673). The two uppermost deposits, (OPT 676 and 673), contained charcoal, leather and bone fragments.

To the east of channel 786 and sloping down to the east above weathered London Clay (Fig 23) were a series of brown/grey/dark grey gravel-based deposits containing rootlets (OPT 733-37, 739, 740, 742, 775, 776). These accounted for a maximum depth of 0.5m. The last of these layers (742) overlay the edge of the channel.

A sequence of blue-grey/grey/brown/yellow-brown sand and silt-based deposits, also containing rootlets, then overlay the eroded surface of the gravelly deposits (OPT 732, 741, 726-28, 730, 720, 654, 723). These were more horizontally bedded and extended further west than those below. A small channel (OPT 780) and possibly a second one cut through these sediments and were in turn sealed by a silty clayey layer (OPT 710, 717). A depth of up to 0.35m of these silts had accumulated.

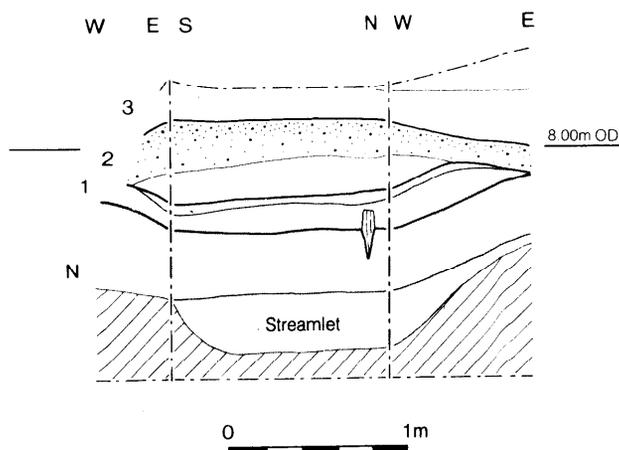


Fig 14 15-35 Copthall Avenue, watching brief: section

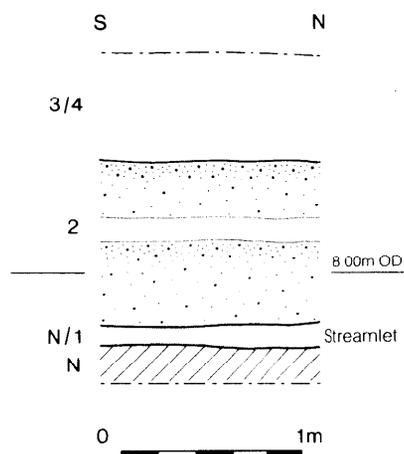


Fig 15 15-35 Copthall Avenue, watching brief: section

A third distinctive and more mixed group of deposits overlay the sands and silts at their western end. The majority of these were organic sandy silty clays, grey and brown-dark brown in colour. They included plant material - often still green - and the root systems and stumps of willow or poplar trees (see Fig 30); some layers contained a few small fragments of charcoal, glass and shell (OPT 724, 722, 674, 719, 712, 838, 718, 704, 707-709, 702, 715, 701, 829), (Fig 23). These deposits formed a surface which had a decided slope from 6.7m OD in the west to 6.3m OD in the south-east. The tree stumps were situated on the higher ground aligned in a north-northeast/south-southwest direction.

The earliest sequence of gravelly deposits in the main stream towards the east end of the trench indicates various phases of erosion, deposition and probable changes in direction of flow, although the general direction appears to have been south to south-east. Their character suggests a fairly fast-flowing stream. How this sequence related to the northwest-southeast orientated channel further west (OPT 786) is not clear. Because they both cut through the weathered clay the western channel may have been contemporary, flowing, like the main stream, to the south but since it was very different in character it is likely that the western channel pre-dated that to the east, at a time when the stream was faster flowing. It had, however, filled up before the last of the gravelly deposits were laid down in the main stream.

The second phase of the stream - horizontally bedded silts and sands - implies a mainly depositional period and a slower rate of flow and/or a change in the direction of flow. This is consistent with its progression westwards above the north-west to south-east channel. The two small channels (OPT 780) within the sequence suggest a temporary erosion of the streambed, perhaps occurring during periods of heavy rainfall.

In its final stages, organic material and clays were introduced into the waterlain sands and silts on the west side of the streambed. Willow or poplar trees and plants grew on the higher ground on a north-northeast/south-southwest alignment. The stream therefore appears to have shifted eastwards again, its west bank now formed by alluvial deposits, and colonised and stabilised by trees and vegetation. Some of the fills of the stream may

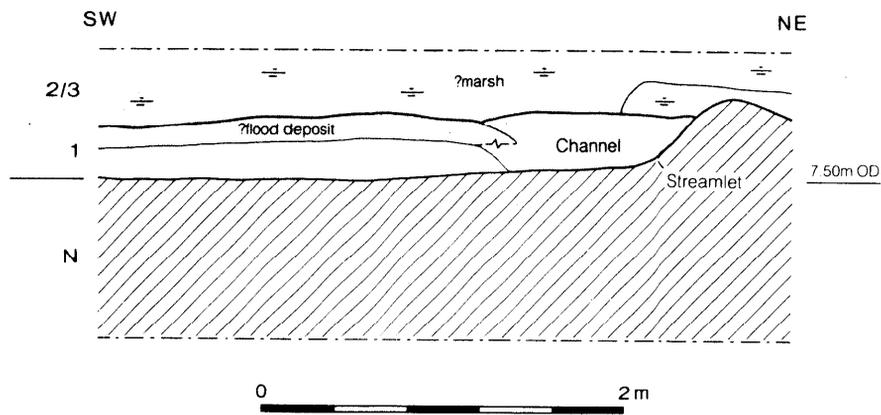


Fig 16 15-35 Cophall Avenue, watching brief: section

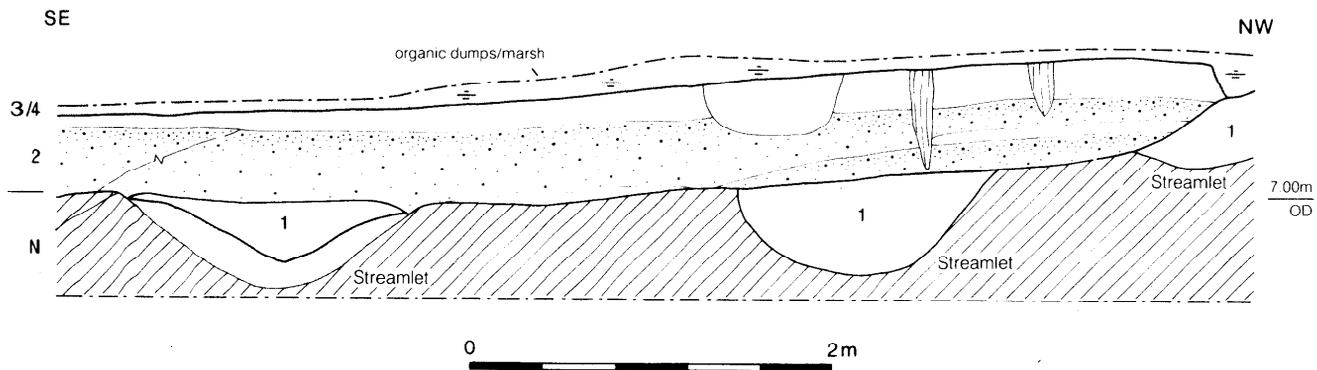


Fig 17 15-35 Cophall Avenue, watching brief: section

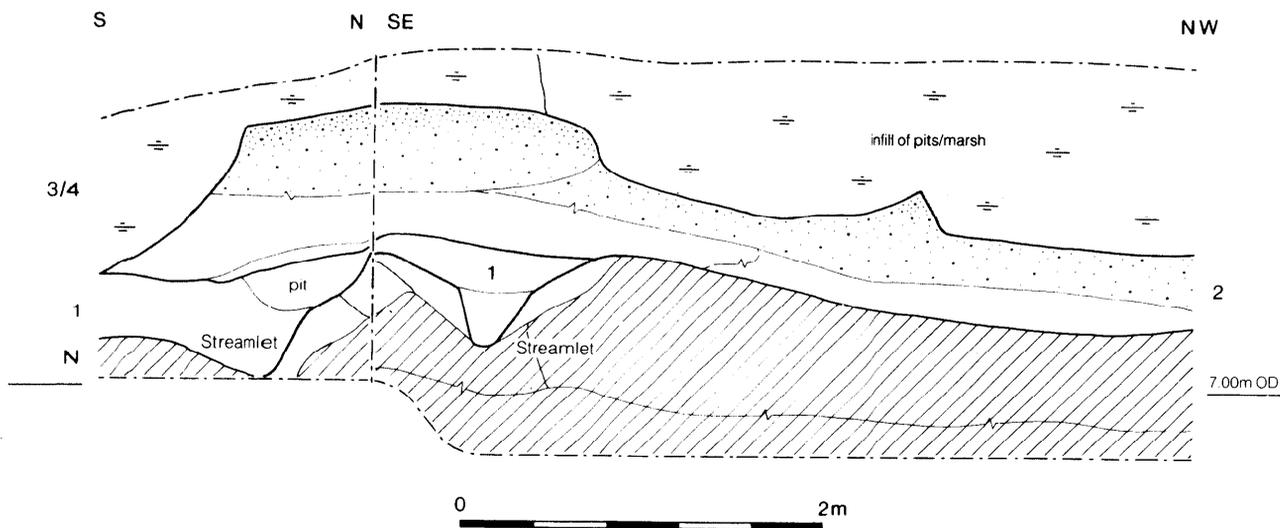


Fig 18 15-35 Cophall Avenue, watching brief: section

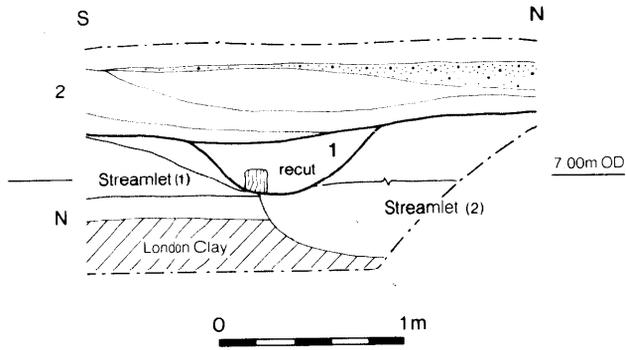


Fig 19 15-35 Copthall Avenue, watching brief: section

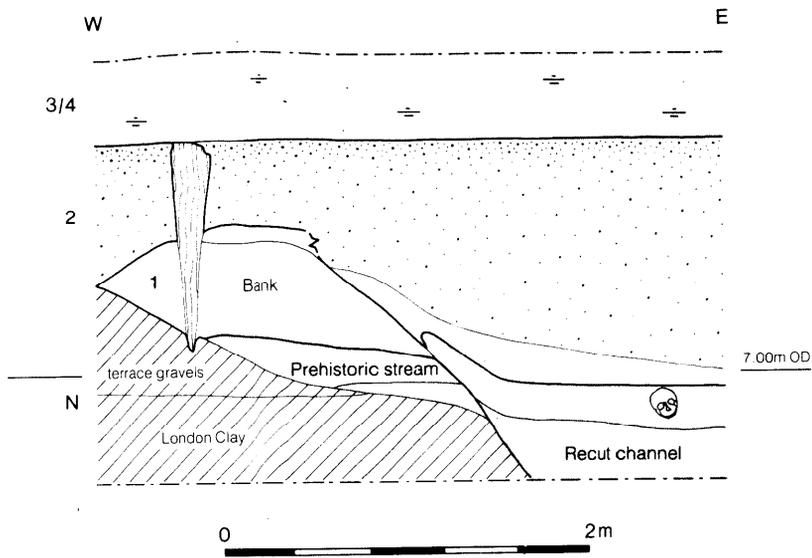


Fig 20 15-35 Copthall Avenue, watching brief: section

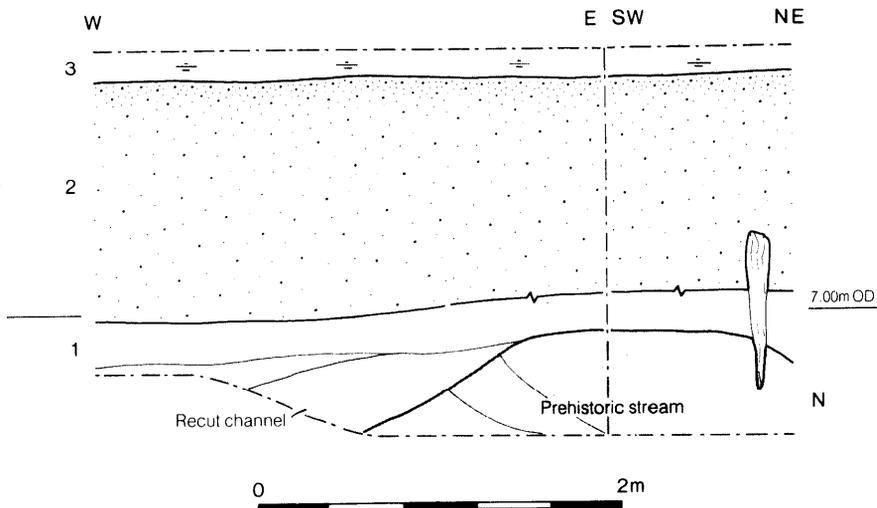


Fig 21 15-35 Copthall Avenue, watching brief: section

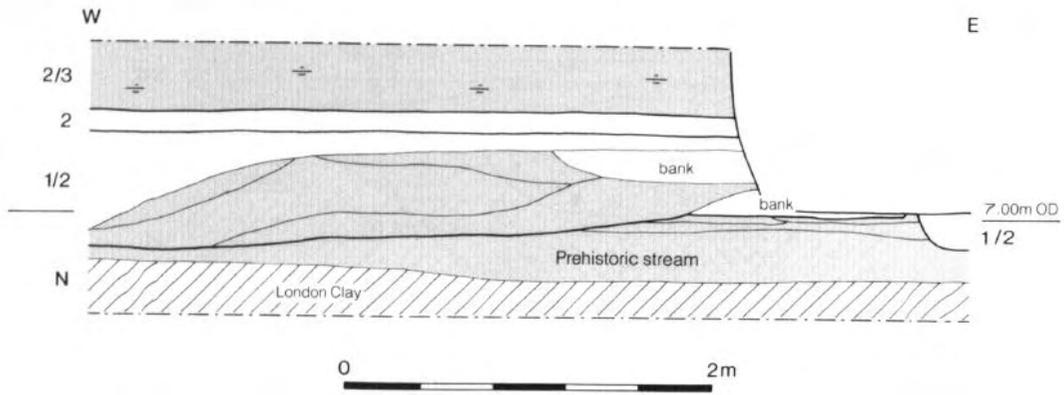


Fig 22 15-35 Copthall Avenue, watching brief: section

of course pre-date the bank, the formation of both being a continuous and gradual process. The forked channel to the west (OPT 731) could have been broadly contemporary with this stage of the stream, converging on it to the south. This suggestion is supported by the presence of a little cultural material in the west channel and in the latest deposits of the main stream. It was these deposits which produced the only datable material from the sequence of stream fills: glass fragments and a shale bracelet which are loosely dated to AD 40-200 (p 42).

The preserved vegetation and wood and the organic matter noted on the west side of the streambed in its final stage, are indications of a waterlogged site. They suggest that prior to and during the early part of

the Roman period, the recently formed west bank of the stream remained wet. Analysis of macroscopic remains, molluscs, ostracods and insects supports these conclusions, indicating a stream which flowed through a marshy area. It also confirmed that the environment was in a fairly natural state.

4-6 Copthall Avenue (Stream 2)

A thorough investigation of natural stratigraphy on this site was not possible but evidence was obtained from two bore-hole probes at the west and east of the site and from two sections (not shown).

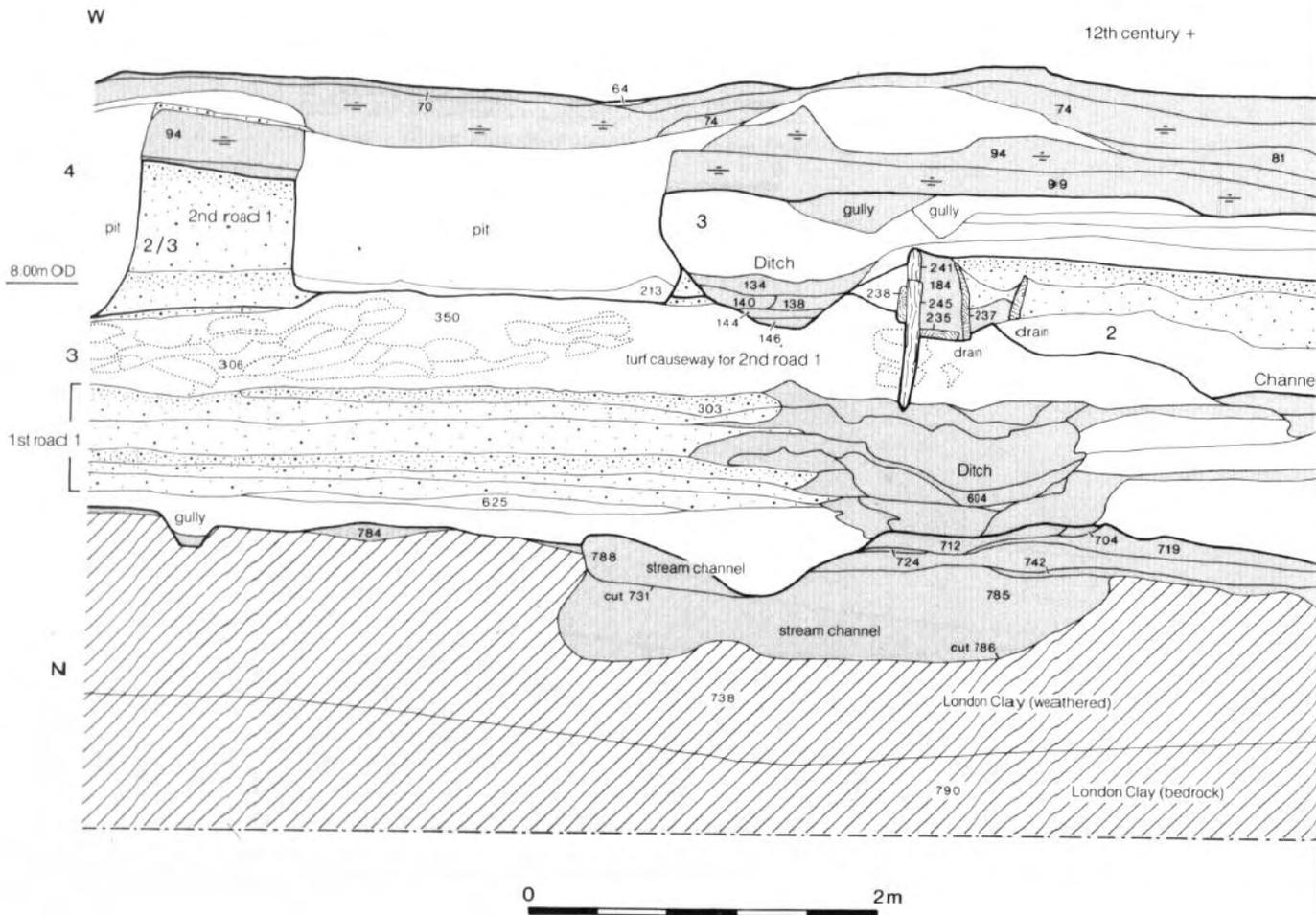


Fig 23 15-35 Copthall Avenue, controlled excavation: south section

Valley fill, consisting of grey clayey gravel and sand or gravel and coarse grey sand, lay at 6.1m OD in the west and 6.3m OD in the east. Below, London Clay was located at 5.8m OD (west) and 5.96m OD (east) but rose to 6.3m OD at the south end of the site where it was not overlain by stream deposits.

The lack of terrace gravels indicates that the entire site had been subject to erosion by a stream (Stream 2). The fill of this stream was at maximum 0.3m deep; levels from the bottom of the stream were slightly lower in the west than in the east but there was more deposition in the east. The differences were perhaps not great enough to be of much significance but, together with the lack of deposition at the south end of the site, may hint at a stream which immediately prior to the Roman period flowed north-east to south-west across the site.

23 Blomfield Street (Stream 3)

(Fig 24)

The limited watching brief on this site revealed substrata in only one, north-south aligned, section located 7m from the east edge of the site (Fig 24). Layers of yellow-buff sand and fine washed gravels were recorded above London Clay. These were probably stream fills (Stream 3). The surface of London Clay was recorded at a maximum level of 6.46m OD in the north, dropping suddenly to 6.26m OD at the south end of the section where there seems to have been more vigorous erosion. The stream gravels had been truncated at 6.6m OD, a maximum depth of 0.36m surviving.

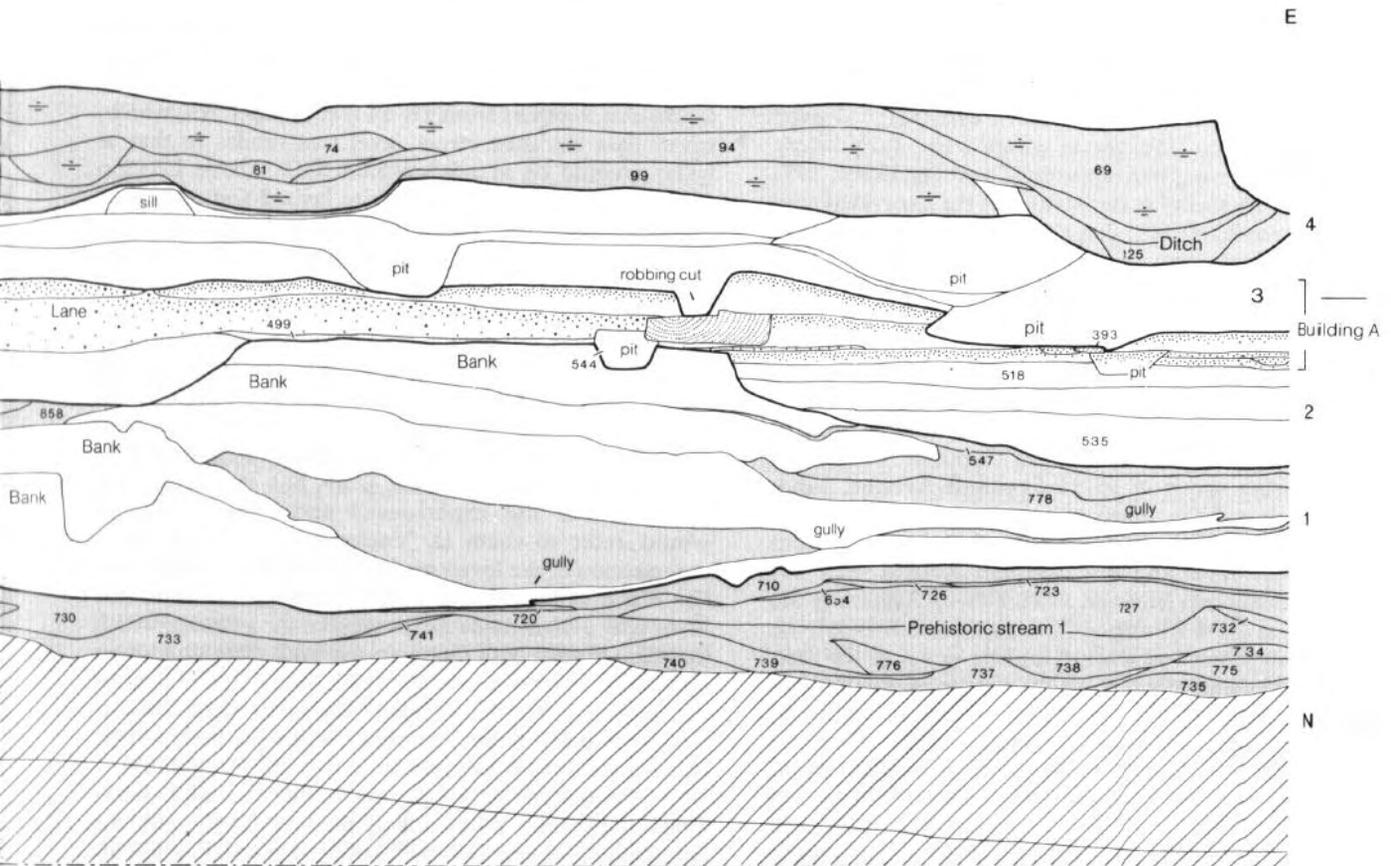
Discussion (Figs 25-7)

Stream 1 at 15-35 Copthall Avenue

The presence of a major western tributary of the prehistoric Walbrook cutting into terrace gravels and London Clay was demonstrated at the south end of 15-35 Copthall Avenue. It flowed eastwards before turning to the south, a course remarkably close to that of a tributary marked on the Geological Survey map of 1936 (N 5) (Fig 26) but at variance with that proposed by the Royal Commission (RCHM 1928, plans C and D) and Merrifield (1965, map) based on the ward boundary (Fig 27). If the ward boundary followed a tributary of the Walbrook its course must have been much altered by the medieval period (see Part 6).

The bed of the stream here was at least 15m wide across its western 'arm', and 44m east-west across the turn. Valley fills occupied a depth of up to 0.65m and a width of up to 9m in the west, for a distance of 37m across the turn of the valley, but it is difficult to assess the size of the running stream at any one time; the evidence suggests that it could have been at least 9m wide at the time that London was founded.

The edges of the tributary were well-defined though subject to erosion and occasional flooding. Within the depression, London Clay with virtually no waterlain sediments above it formed the west and presumably south bank of the stream at the point where it changed direction. Here evidence from the controlled excavation implies that the stream was initially fast-



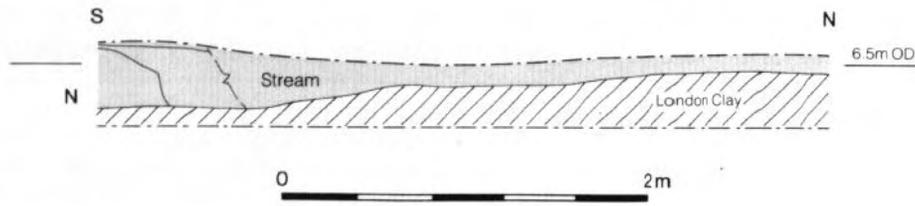


Fig 24 23 Blomfield Street: north-south section through Stream 3

flowing with much erosion and deposition of gravels. This was succeeded by a decrease in velocity when level sandy silts were laid down. Finally the stream shifted eastwards and its erstwhile bed was colonised by water- and damp-loving trees and vegetation, forming in its turn a new bank which nevertheless remained wet. During this final phase the presence of man in the area is detectable from the inclusion of fragments of glass, pottery and charcoal in the deposits.

The north bank of the stream was contiguous with the north side of the valley. Formed by erosion of the terrace gravels and London Clay, it was traced eastwards across the site for a distance of 31m where it curved round to the south. The greater depth of erosion and deposition in the west, together with the evidence from the controlled excavation which demonstrated the progression of the stream eastwards, suggests that the change of course gradually worked its way from west to east. A number of streamlets located to the north of the valley no doubt helped to erode the wide bend. These streamlets cut through the terrace gravels but not the underlying clay.

Evidence possibly of the same stream has been located to the west and south. At 55-61 Moorgate (Site 14) (Dunning 1929b), shallow east-west aligned channels were cut into gravel which was c 4.9m below street level. It was then reported (Dunning 1929a, 199) that river gravels lay at the bottom of the excavated area in the eastern half of the site, though there is no mention of them in the excavation report. A recent excavation on the same site (Site 15) confirmed that terrace gravels were present in both halves of the site though they sloped from 7.5m OD in the west to 6.7m OD in the south-east (Drummond-Murray 1988). This west-east slope, together with the evidence for later drainage systems, suggests the existence of a nearby stream, possibly the one located at 15-35 Coptball Avenue.

To the south of 15-35 Coptball Avenue, black peaty silt has been noted above terrace gravels at 30 Moorgate (Site 19) (Hume 1951) at a depth of 4.2m below street level and at 7 Coptball Avenue (Site 25) (Staff of Guildhall Museum 1965, 135-6). Adjoining the latter site, at 20-8 Moorgate (Site 20) (Cottrill 1936), the ground was observed sloping rapidly down to the east. As with the channels at 55-61 Moorgate, these deposits may have been associated with later drainage activity, but it also seems likely that the incline of the strata and the deposits were related to the length of a stream found at 15-35 Coptball Avenue, or in the case of 30 Moorgate and even of Nos 55-61, to a branch of the stream. An eastward slope was also noted on the terrace gravels during excavations at 8 Telegraph Street (Site 22); this may have been related to the Coptball Avenue tributary.

The course of the Coptball Avenue tributary (Stream 1) could thus have flowed more or less southwards to Tokenhouse Yard (Fig 25) though see below (p 24) for a different interpretation.

Stream 2 at 4-6 Coptball Avenue

Grey sands and gravels above London Clay indicated the streambed of a tributary of the prehistoric Wallbrook further to the east. Because of the limited recording opportunities, it was not certain whether these deposits represented a shallow stream or the edge of a much deeper one perhaps situated to the east of the site, although the London Clay sloped very slightly down to the west. Earlier observations in 1904 on this site (Site 32) and that to the north at 10-12 Coptball Avenue in 1906 (Site 30) (Norman and Reader 1906, 231-2) suggest that the ground sloped down to the east. On the latter site (Site 30) Norman and Reader recognized the west side of a streambed, composed of washed gravel and sand which became deeper towards the east, overlying London Clay. It was not made clear however through what the stream cut. London Clay is stated as being at a depth of from 18-24 feet (5.5m-7.3m) which, given that the then street level was similar to that of today, would be at c 6.8m-5.0m OD. Above London Clay at the west end of the site lay c 3 feet (0.9m) of 'undisturbed loam' which shelved gradually eastwards where it gave way to stream deposits. The latter became deeper, up to 6-7 feet (1.8m-2.1m) towards the east end of the site. Because there is no indication of the location of the heights taken on London Clay, it seems reasonable to suggest that the greater depth was recorded at the east end of the site where the streambed was situated. It can thus be calculated that the layer of undisturbed loam in the west lay at c 7.7m OD. Terrace gravels would be anticipated above London Clay but it seems very unlikely that the experienced and accurate Reader would refer to them as 'undisturbed loam'. From a comparison of the levels and of the sequence recorded to the south at Nos 4-6 in 1984, it is suggested that this loam was a man-made embankment for a stream which had first removed all the terrace gravels through erosion and then, prior to the occupation of the area in Roman times, had gravitated towards the east end of the site. The absence of terrace gravels on this site has recently been confirmed by excavations in 1987 (Lees 1989).

To the north, properties to the rear of London Wall (Site 28) were demolished in 1866 and the archaeological features recorded by Lane-Fox (1867, xxi-1xxxiii). This was a large site, 55.8m from north to south and the information recorded was very imprecise;

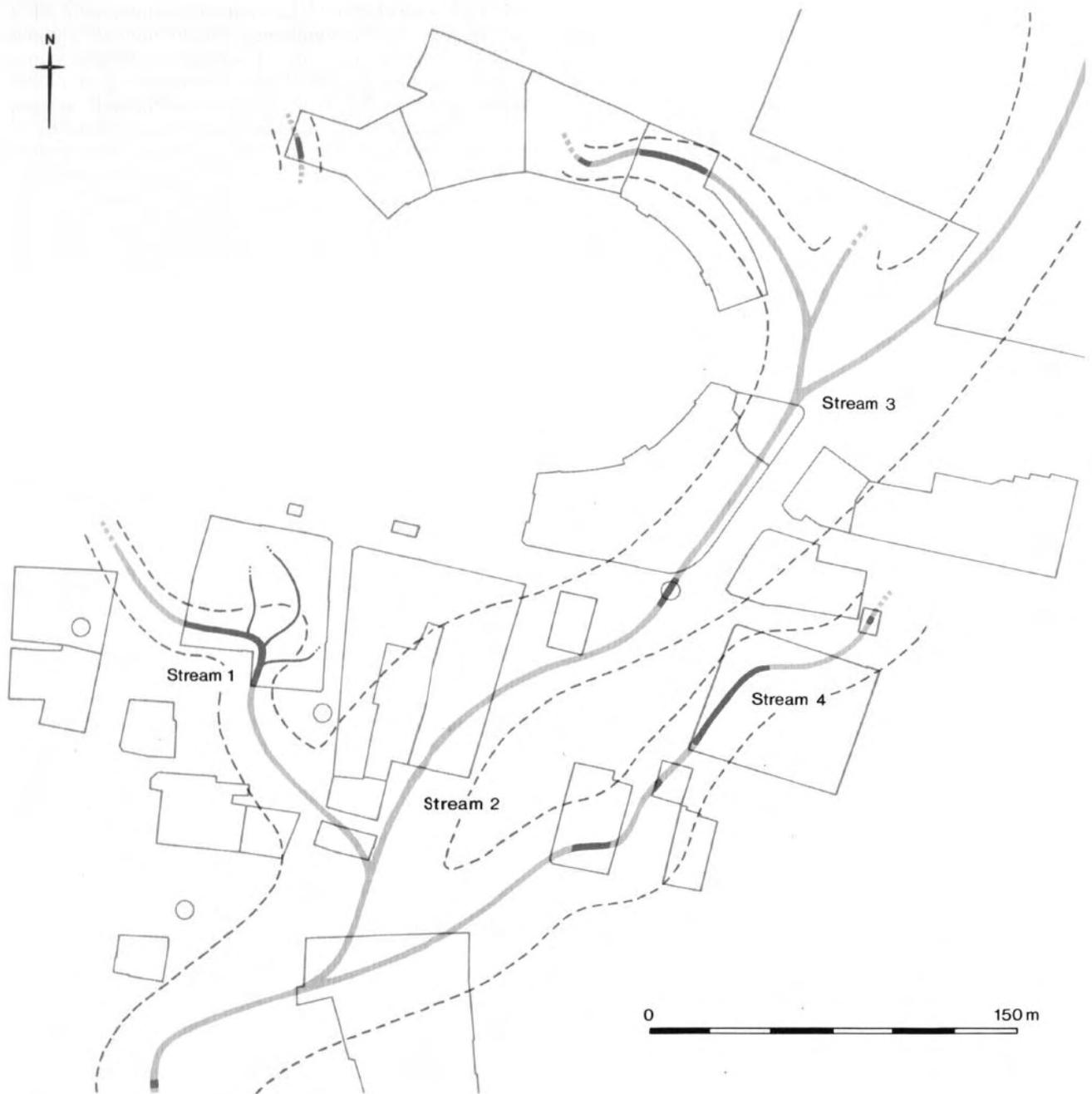


Fig 25 Suggested course of prehistoric streams in the upper Walbrook valley in relation to sites discussed in the study area. Blue represents found or observed stream, lighter blue, conjectured stream, and pecked lines the extent of the valleys

there are, as a result, serious difficulties of interpretation. No stream deposits were recorded. Terrace gravels described as 'gravel similar to Thames ballast' were apparently observed over the complete length of the site, which sloped down from north to south, but the stated depths of 17-22 feet (5.2m - 6.7m) or approximately 7.1m - 5.6m OD seem far too low. At these depths on the adjacent Copthall Avenue sites, London Clay was overlain by valley fill but it seems doubtful that Lane-Fox could have mistaken stream gravels for terrace gravels which in this area are generally quite distinctive. Because terrace gravels were

located a short distance to the west at 15-35 Copthall Avenue and because, as already seen, they were not present at 10-12 Copthall Avenue to the south, it is considered likely that terrace gravels existed over much of Lane-Fox's site but that they had thinned out before the south edge of the site. If the depth of deposits has to be accounted for, however, a stream or streams filled with eroded terrace gravels is implied. Test pits examined recently on this site have revealed fluvial deposits (D Lees LOW 88, pers comm).

The evidence from these three sites is thus inconclusive. Reader's information from 4-6 and 10-12

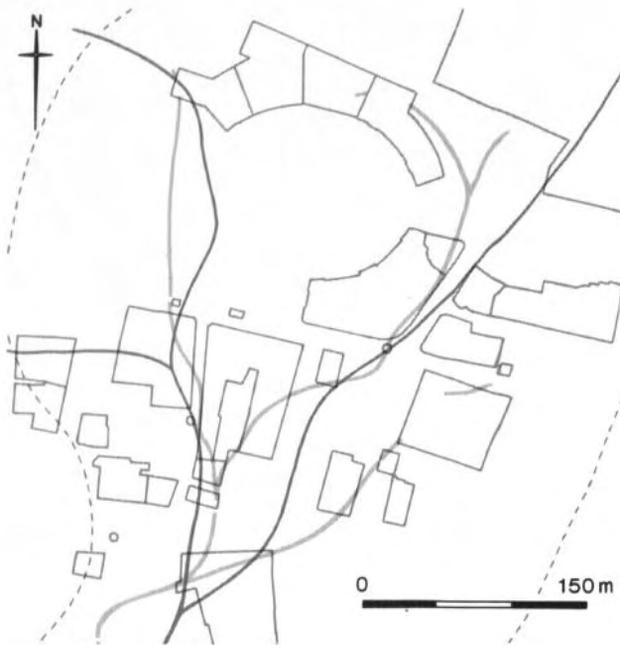


Fig 26 The course of the upper Walbrook as conjectured on the Geological Survey of 1936

Copthall Avenue indicates a north-south aligned stream. This could have been part of the main Walbrook (Stream 3) as suggested by RCHM (1928) and Merrifield (1965, map) (Figs 25, 27) but could equally have been part of a tributary with a more direct southerly route. It is also possible that it was connected with the western tributary (Stream 1): the southward slope of the terrace gravels at the south end of Lane-Fox's site (Site 28) may have marked the north bank of a stream which would then, presumably, have meandered southwards again. More recent evidence from Nos 4-6 is ambiguous but does allow for the possibility of a northeast-southwest course at this point, a course which is not inconsistent with the evidence from the sites to the immediate north.

To the south this stream could have joined with Stream 1 from 15-35 Copthall Avenue, and/or continued southwards to Tokenhouse Yard. If the north-south alignment is accepted, then it could have flowed southwards to Angel Court

Stream 3 at 23 Blomfield Street

Evidence of a prehistoric stream on this site confirmed that found at London Wall Buildings immediately to the south (Site 7) (Reader 1903, 181). Here the streambed was composed of a 0.3m thick layer of fine sand lying above terrace gravels, with 1.5m of sand and 'carbonaceous silt' above. At its deepest point the bottom of the stream was recorded at a depth equivalent to 6.7m - c 6.3m OD, if the street level was similar to that of today - and therefore compatible with the level of the stream at 23 Blomfield Street, although terrace gravels had been completely eroded at the latter site. The west side of the stream was noted as being shallow and poorly defined. Piles observed on the opposite side of the street at 46-7 New Broad Street (Site 8) (Waddington 1925)

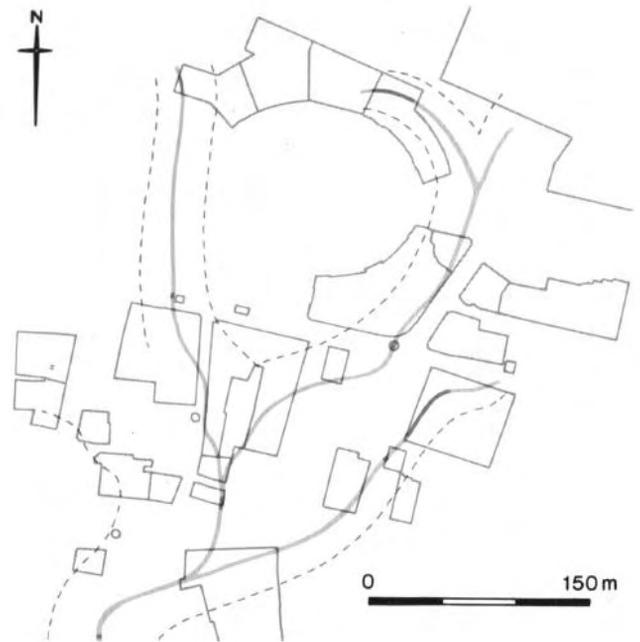


Fig 27 The course of the upper Walbrook, after Merrifield (1965)

seem to confirm Reader's estimation of a valley 35-36m wide.

At the site of Broad Street Station (the Broadgate development) (Site 5) (Malt 1987) to the north, a shallow basin seems to have been formed by numerous streamlets which cut into the terrace gravels and London Clay in prehistoric times. Over a distance of some 50m a depression was recorded which sloped from c 10.0m OD in the north-west to c 7.0m OD in the south-east. A succession of waterlain sands, gravels, clay and silts built up to a depth of approximately 1m. Channels varied in width up to 3.6m and their positions shifted over the course of time; probably more than one was active simultaneously.

Allowing for the different degrees of erosion in the streambed, there is consistent evidence for a major stream, perhaps braided, which flowed southwards from Broadgate and then ran parallel with Blomfield Street on its west side. A culvert through the defensive wall at the south end of Blomfield Street (Merrifield's W31, Site 11) marks the position of this tributary in the Roman period and is consistent with the alignment of the prehistoric stream.

Evidence for the course of this stream south of the defensive wall is lacking. It could have flowed south-west as suggested by Merrifield (1965) (Fig 27), but perhaps a more logical course would have been southwards to link up with the tributary noted at the east side of the Walbrook valley under a culvert through the defensive wall at All Hallows Churchyard (Site 40) (Norman & Reader 1906, 209-11 and pls xxv-vi), at 22 Great Winchester Street and at Winchester House (Sites 38 and 39) (Gould 1951, 151-4; Marsden 1963). The presence of a stream here was implied by the absence of terrace gravels above the London Clay which was overlain by a layer of compressed vegetation at a depth of 7.3m, sealed by alluvial mud. A streambed (Stream 4) was recorded during excavations in 1986 at

9-19 Throgmorton Avenue, 21 Austin Friars (Site **36**) where a 3m wide stream was found cutting through the sandy gravels of earlier stream deposits (Durnford 1988). Its north-east to south-west alignment would suggest identification with those lengths noted in Great Winchester Street. The postulated confluence of the eastern tributary with that of the Blomfield Street stream could have been to the north or the south-west of 9-19 Throgmorton Avenue. Current excavations just to the south at 22-25 Austin Friars have exposed the east bank of Stream 4 (D Dunlop and D Shotliff AST 87, pers comm); the survival on this site of brickearth above the terrace gravels indicating that the east edge of the valley lay very close to the stream here. Brickearth was also located at 13-14a Austin Friars (Site **37**), confirming the relative steepness of the Walbrook valley's eastern side in the Survey of 1841 (see Fig 2).

At Angel Court (Site **34**) a feeder of the Walbrook was recorded in a section at the north end of the site (Blurton 1977, 16 and fig 2). It was only c 0.7m wide x 0.25m deep so that it is not likely to have been a continuation of Stream 4, judging by the evidence from 9-19 Throgmorton Avenue (above). This streamlet appears to have cut through natural brickearth at 6.9m OD which is a rather low level for brickearth. Scant attention was paid to the geological strata and therefore it is possible that the brickearth was in fact waterlain silts. On the west side of the site (Area B), where the confluence of the main stream (Stream 3) and the eastern tributary (Stream 4) is proposed, silts and gravels of the floodplain were observed, while some 30+m to the south natural gravels were recorded (*ibid*, 21-3). Levels were not noted.

3. Period I Reclamation and Drainage -

Mainly Early 2nd Century

In the late 1st-early 2nd centuries there began a transformation of the upper Walbrook valley as the Romans sought to rationalise the natural drainage system and reclaim the low-lying ground beside the streams. Streams were reduced in width and their courses stabilised, altered or diverted. At the same time the depressions formed by the streams began to be filled in and a network of ditches provided for the displaced drainage. Two north-east to south-west aligned roads were constructed, forming main routes through the valley, and gravelled and timber paths provided access within the area itself.

The initial results of attempting to re-organise the natural drainage system were not successful and it is suggested that this, rather than a rise in the level of the Thames (Merrifield 1983, 146) caused the silting and flooding of the Walbrook. The necessary amends were made however, and control over drainage was eventually achieved by c AD 120.

Evidence from pollen, macroscopic and insect remains from 15-35 Copthall Avenue reflects the attention now given to this area by the Romans in an environment increasingly disturbed by dumping, the cutting of drainage ditches and construction and use of the road, but was nevertheless marginal in character. It also suggests a wet grassy landscape (Part 8, p 103).

15-35 Copthall Avenue: controlled excavation

Phase 1 - ?1st century AD (Fig 28)

Two drainage features represent the earliest activity on the site but may not have been contemporary (Fig 28). A small gully 0.2 - 0.3m wide and a maximum 0.2m deep, aligned north-east to south-west, cut into stream

deposits. It was filled with waterlain silts and sands. East of this and parallel with it was a ditch, c 1.2m wide, 0.35m deep, which cut through an earlier prehistoric channel. Apart from one yellow-brown gravelly deposit on its eastern side, it contained no fills and was therefore either open for a short time or thoroughly cleared out. Two stakes on either side of the ditch may have been marking-out posts or part of a fence (OPT 696). There was no datable material for this phase except a timber stake which post-dated c AD 34 (OPT 721, pp 118).

Phase 2 - early 2nd century (Figs 29, 30)

A series of dumps composed of dark brown silty clays, brown-grey organic clay containing leather off-cuts (Part 7, p82) and light blue-grey clay, infilled the Phase 1 ditch and levelled up the ground (Fig 29). They were capped by a layer of pebbles in a clay matrix which formed the base for the surface of a north-east to south-west orientated road. Composed of very compact pebbles in brown clay, the road surface lay at c 6.85m OD.

At the same time trees on the banks of the stream were cut down and a dump of clean light blue-grey clay with a little additional material infilled the stream and covered the banks, raising the ground level by as much as 0.4m to 6.8m OD in the west, level with the road, and 6.6m OD in the east.

To the east of the road a drainage system was laid out (Fig 29). This comprised a roadside ditch with two parallel ditches at right angles to it, one of which drained into the roadside ditch, while the other, embanked with grey-brown silty, sandy pebbly clay on its south side, drained south-eastwards (Fig 30). Yet another ditch drained eastwards (Fig 41a).

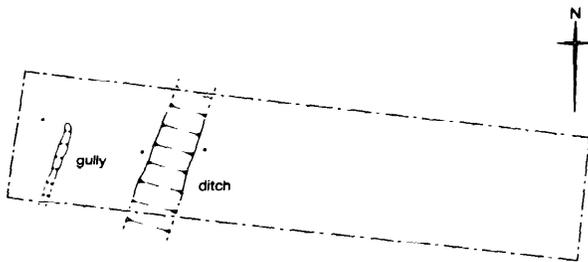


Fig 28 15-35 Copthall Avenue, controlled excavation: plan of Phase 1 features

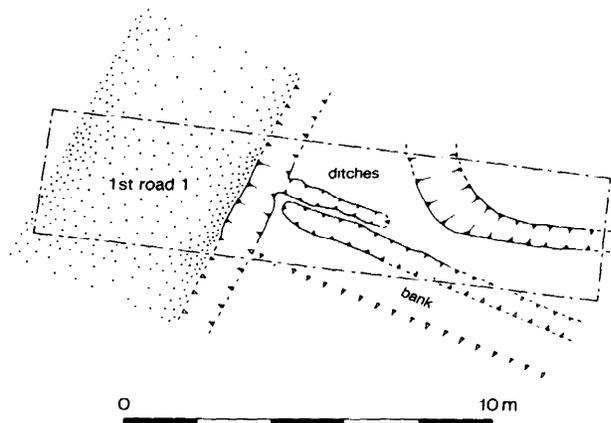


Fig 29 15-35 Copthall Avenue, controlled excavation: plan of Phase 2 features



Fig 30 15-35 Cophthall Avenue, controlled excavation: view looking east of Phase 2 ditches cutting through clay infill of a tributary of the Walbrook. The ditch on the left drained into the roadside ditch, that on the right drained eastwards. In the foreground can be seen remains of sawn off trees. Scale in units of 0.10m

Phase 3 - early 2nd century (Fig 32)

All the Phase 2 ditches silted up. The eastern edge of the road was eroded and its ditch, although mostly truncated, showed signs of silting: very thin bands of tan and dark grey fine sands, and grey, brown and buff silts, sands, organic matter and pebbles. The two parallel ditches silted up with intermixed brown-grey silts, sands, clays and organic matter (OPT 646, 642), (Fig 31). They eventually overflowed, causing localised flooding. The bank which bordered the southernmost ditch (Phase 2) was eroded and consequently, before the ditch had completely silted up, it was raised using redeposited silts, by at least 0.15m to a maximum level of 7.01m OD, the top retreating southwards as a result.

The banks of the ditch to the north were also raised by the dumping of mainly brown and dark grey clay to a maximum level of 6.87m OD (Fig 41a). Grey-black sands, silts, clays and organic material in bands and 'swirls' filled the ditch which was then re-cut.

The whole area east of the road - including the banks - finally flooded, the evidence suggesting that flood deposits accumulating above the easternmost ditch gradually intermingled with those further west which were more rapidly deposited.

Phase 4 - early 2nd century (Fig 32)

The road was resurfaced at c 6.95m OD and its ditch recut. Two timber uprights were set just inside the east edge of the road; the tops of both were chamfered with a mortise on their east sides, suggesting that they were re-used timbers (OPT 485, 679). Organic silty sandy clays (Fig 23) accumulated in the ditch and erosion and flooding of the road edge resulted in a second re-surfacing at c 7.00m OD. Silting in the ditch and erosion continued however until the ditch overflowed, the sediments encroaching some way onto the road.

The Phase 3 bank was heightened some 0.25m and extended northwards above one of the silted up ditches. A substantial timber post associated with this rebuild may have helped to stabilise the bank (OPT 276). At the foot of the bank, now composed of sandy gravel, the east-west ditch was apparently recut to allow drainage into the roadside ditch. This may have been connected with a possible ditch to its north: both were severely eroded. Probably at the same time as the roadside ditch, these ditches became choked up, causing flooding at the foot of the bank. A temporary measure to assist the drainage of the flooded area was then provided by a small gully which drained south-east (Fig 23).

Phase 5 - early-mid 2nd century

(Figs 33, 34)

A poor quality surface of coarse sandy gravel above levelling layers raised the road to 7.18m OD, sloping down to the east.

In a north-east to south-west orientated section to the west of the trench two squared upright timbers may have marked the western edge of a ditch.

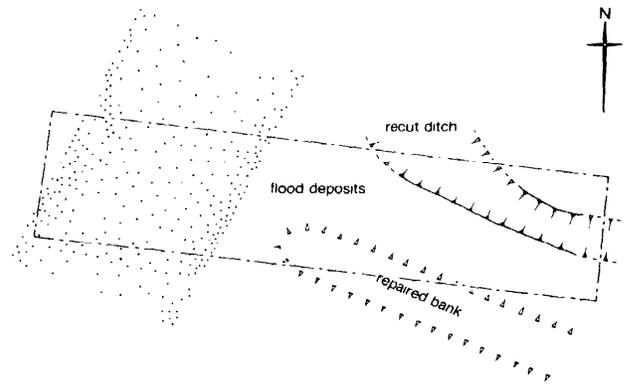


Fig 31 15-35 Cophall Avenue, controlled excavation: plan of Phase 3 bank rebuild and ditch recut

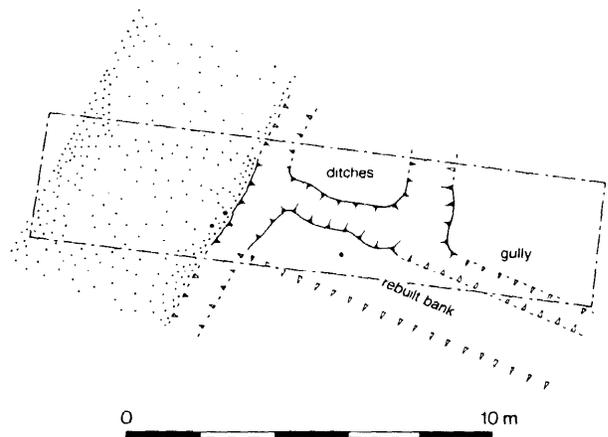


Fig 32 15-35 Cophall Avenue, controlled excavation: plan of phase 4 features

The ditch along the eastern side of the road was recut but both its west and east banks were angled towards the gully to the east (below). Its north-west edge was revetted with a post and plank structure. It would thus seem that the greater volume of water had been received into the ditch from the east rather than from the north. After the road was repaired and some silting had occurred in the ditch, a small embankment was formed along its western edge, probably upcast from the ditch.

The Phase 4 gully was infilled and the area levelled up for a rebuilding of the bank which was advanced northwards again. A much eroded ditch at the foot of the bank was recut after it had silted up and overflowed (Figs 33, 34). This recut was fed by a severely eroded southward draining ditch, probably a replacement of that of Phase 4 but whose immediate predecessor could not be recognized. These ditches are likely to have drained into the roadside ditch. Further east another drainage channel was cut at the foot of the bank, draining eastwards. It is possible that it replaced and completely destroyed an earlier one. Eventually the

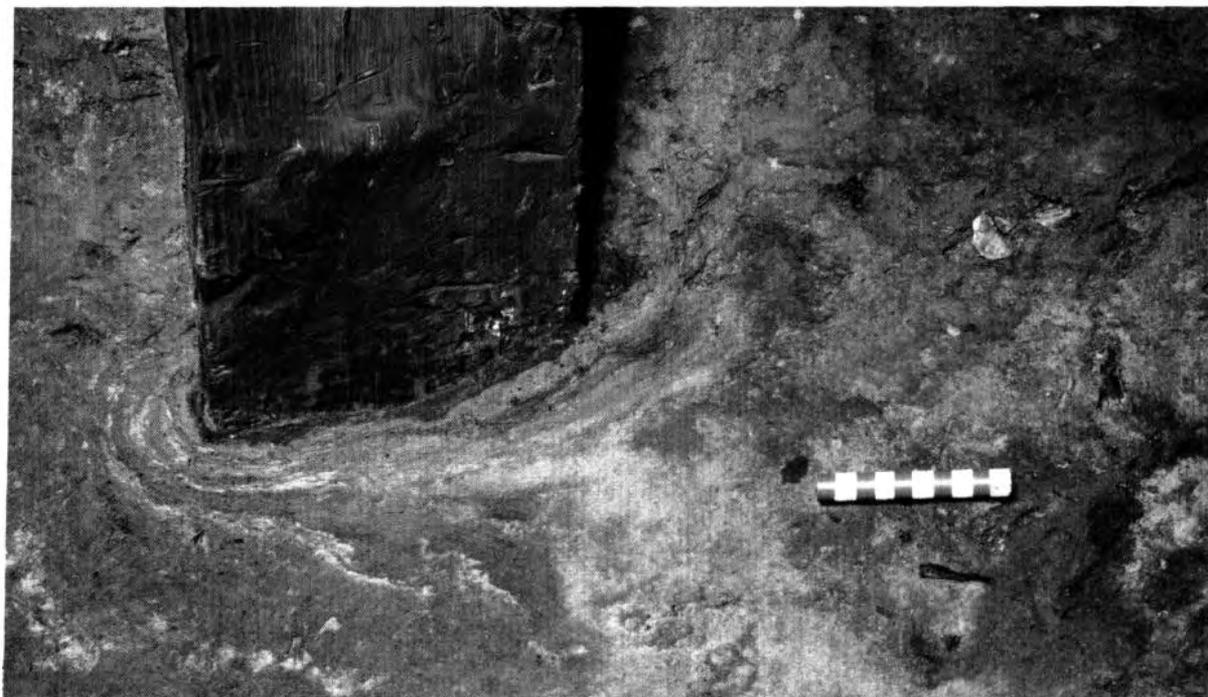


Fig 40 15-35 Cophthall Avenue, controlled excavation: detail of pile against bank of Phase 6 channel showing eddying effect around it. Scale in 10mm units

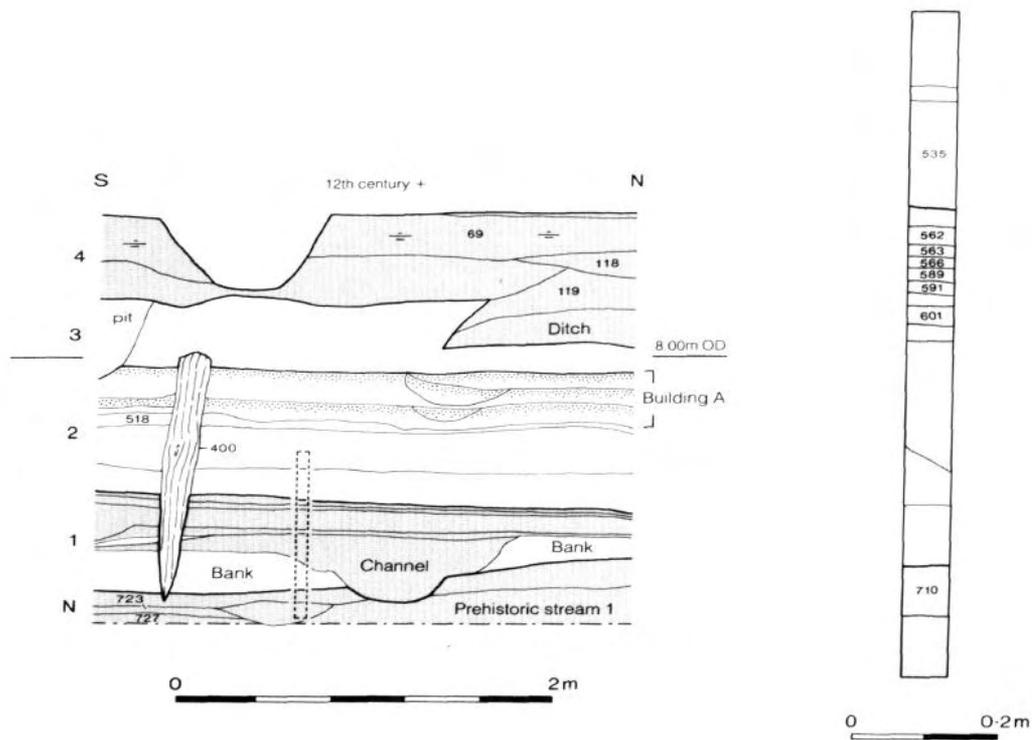


Fig 41 15-35 Cophthall Avenue, controlled excavation: east section (a). Broken lines mark position of column sample for environmental analysis, shown enlarged (x4) in (b)

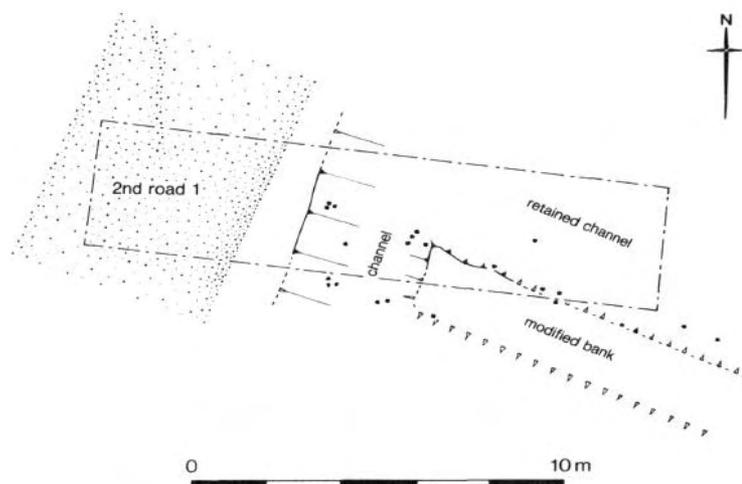


Fig 42 15-35 Cophall Avenue, controlled excavation: plan of Phase 7 features

Phase 7 - early-mid 2nd century (Figs 42, 43)

The road was completely re-built as a causeway some 0.45m higher, well beyond any danger of inundation (Fig 42). Its foundation was composed of stacked turves laid upside down and, towards its east side, sandy silty clay and turves which were banked to form the eastern edge of the causeway (OPT 306, 350), (Fig 43). Analysis

of the macroscopic remains from the turves suggests that they were derived from a very damp area (Part 8, p 103). A raft, mainly of branches, twigs and discarded timber (OPT 413), carried the main body of turves, roughly corresponding to the position of the road metalling. The first surface, laid above a levelling layer of sand, was composed of pebbles in a matrix of clay at a maximum level of 7.95m OD.

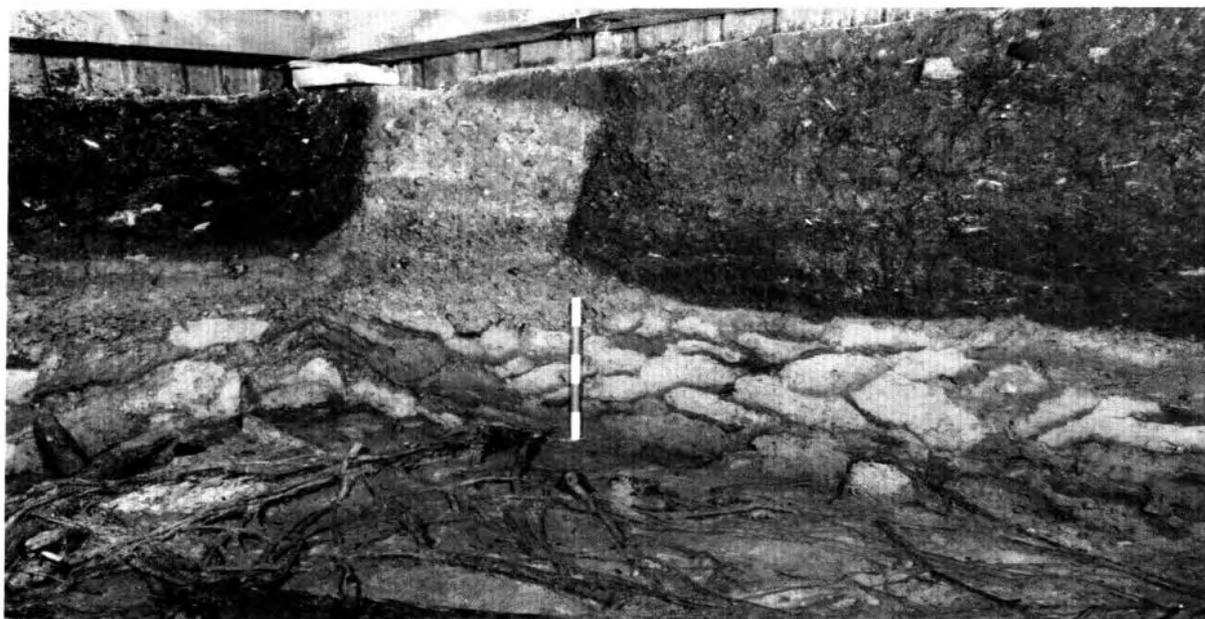


Fig 43 15-35 Cophall Avenue, controlled excavation: Phase 7 road with brushwood raft viewed in plan, turf foundation and metalled surfaces (including those of Period II) viewed in section but largely destroyed by two medieval pits. Scale in units of 0.10m

The Phase 6 drainage channel was retained but its fills were levelled off and its bank cut back to allow adequate drainage at the foot of the causeway.

15-35 Cophall Avenue: watching brief and 44 London Wall - 2nd Century (Figs 44-57)

The watching brief produced much valuable evidence which both complemented that of the controlled excavation and placed it into a wider context. The evidence was, however, recorded in widely dispersed sections and because there were many phases of activity during this period it has not been possible to reconstruct a detailed sequence, although the broad outline is clear (Fig 44). Only very small groups of pottery were recovered (below, 42) so that the dating of the sequence is problematic.

A section which extended northwards from the controlled excavation and was only recorded in photograph, showed that in the valley of the stream the ground level was raised with dumps of gravelly clays (Fig 45). Composed of bands of pebbles in brown clay, the road was laid directly onto London Clay at the south end of the section (Figs 45, 46) and can be compared with that of Phases 2-4 of the controlled excavation (Figs 29, 31, 32); presumably it continued northwards over the gravelly dumps. Darker, less pebbly material overlay these road surfaces and is equivalent to the poor quality surfaces of Phases 5-6 of the controlled excavation (Figs 33-5, 38). This road was associated with a timber-revetted drain or ditch on its west side and here its upper edge was retained by a timber beam. A thick deposit of silt and organic material then covered the road and drain and represents the causeway of Phase 7 of the controlled excavation.

Beyond the valley of the stream the road was recorded in test pits as sequences of banded, compacted gravels. It was laid onto the de-turfed terrace gravels (Fig 47) or directly onto the ground surface (Figs 48, 49). The east edge of the road was marked by a ditch recorded in section (Fig 47) and at the north end of the site, in plan (Fig 44). The west edge was steep, as recorded in Figure 48 but at 44 London Mall to the north, a shallow north-east to south-west aligned cut feature may have represented the west edge of a ditch (Fig 87).

On either side of the road reclamation dumps began to infill the valley of the stream and natural drainage was replaced with ditches or channels, their banks often consolidated or revetted with timber. To the west of the road in Figure 9 a channel seems to have been created when a clay bank, retained by timber posts or revetting, was constructed onto the valley floor, the latter at the same time being cut away to the south. Thereafter successive stages of banking were built up and advanced southwards. This may have connected with two, possibly three, rows of large timber stakes aligned north-south which were probably either related to drainage or were supports for a superstructure (Fig 44). The remains of two timber stakes, driven into the sloping surface of London clay, could have been part of a revetted channel (Fig 45). Also on the west side of the

road but beyond the valley of the stream, a north-east to south-west aligned ditch or channel was cut into the terrace gravels (Fig 50). This was probably linked with the channel further south. It was recut on a slightly altered alignment, the fill of which contained pottery dated to AD 100-200. The evidence from the controlled excavation would suggest that these ditches and channels were interrelated with the roadside ditch. It is possible that a culvert was constructed to transport the waters of the stream beneath the road but no evidence for this was observed.

Presumably beneath the east side of the road, reclamation dumps were recorded at the edge of the valley (Fig 8). There is some evidence that the infilling and drainage of the valley was staged. In the 'turn' of the stream its gently sloping west bank was built up with grey-blue clay and the channel recut, perhaps deeper than it had been (Fig 20). Sandy gravels and black silty clay accumulated within the channel, the uppermost of which contained a black-stained human skull. Another human skull was found in this area, the mottled clayey silt adhering to it indicating that it had lain in a drainage channel. The east side of the stream here was recut further to the west through earlier stream deposits; there was no trace of any banking which may have been eroded (Fig 21). A further constriction of the stream occurred when blue-grey clay was dumped above the latest of the stream deposits on this east side. Timber posts recorded in both sections may have represented fencing.

Further south the east edge of the stream was again observed to have been advanced inwards, to the west. A bank, composed of redeposited terrace gravels, was erected on the streambed and was later renewed at a higher level where it seems to have slipped forward above waterlain sandy gravels (Fig 22). Further west along this section and only recorded in photograph, an embankment was formed of redeposited terrace gravels, apparently held in place by revetting. This would have created, in effect, two presumably parallel channels. The stream here was then infilled with organic matter and a channel 2m wide x 1.12-1.45m deep was cut through it and through valley fill (Figs 51, 52). This channel was traced over a distance of 16m in a north-south direction sloping down from north to south (Fig 53). At its south end the channel, clearly cutting through the prehistoric stream, may have been recut. Timber stakes were located on its west and east sides and these were probably the remnants of revetting. The channel was eventually infilled with blue-grey clay (Figs 51, 52, 53). Blue-grey clay was also noted in the south-west above valley fill, sloping down to the east (Fig 54). At the south end of the site the ground level was raised and the earlier channel replaced with another, possibly revetted, channel 0.30m deep (Fig 53). No replacement channel to the north was recorded: this particular length of the channel seems to have become redundant, and it is likely therefore that the replacement channel in the south provided an outlet for the drainage from the west. These modifications cannot be closely dated. The organic infill contained pottery dated AD 100-200 (Fig 51) but stratigraphically later pottery from a deposit below a land drain (Period II) is dated AD 120-160.

At the south end of the site a north-west to south-east alignment of four single and two groups of double stakes were recorded, their tips embedded in the

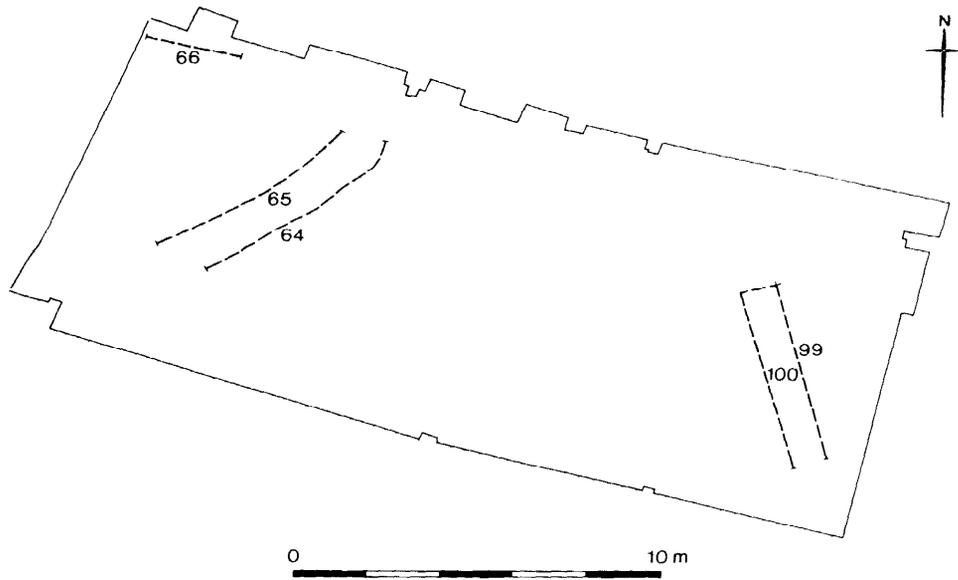


Fig 44b 4-6 Copthall Avenue: plan of sections

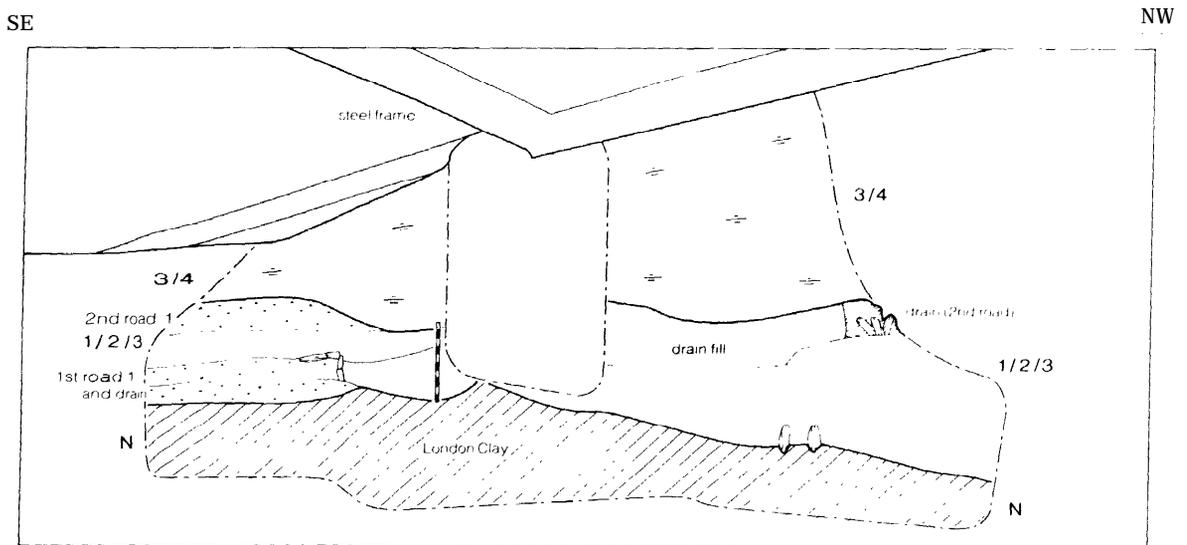


Fig 45 15-35 Copthall Avenue, watching brief: section through the west side of the first and second Road 1. Scale in units of 0.10m from photograph

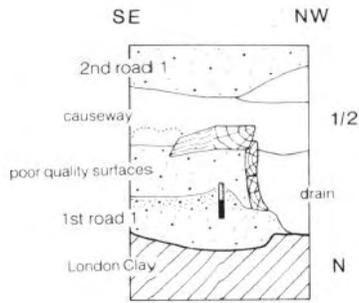


Fig 46 15-35 Copthall Avenue, watching brief: section through the west edge of the first Road 1. Scale in units of 0.10m from photograph

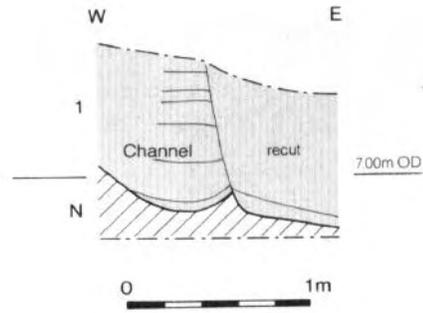


Fig 50 15-35 Copthall Avenue, watching brief: section

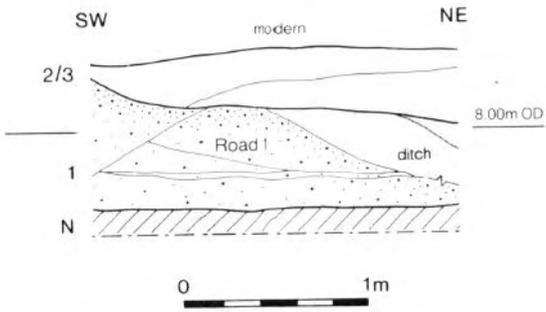


Fig 47 15-35 Copthall Avenue, watching brief: section

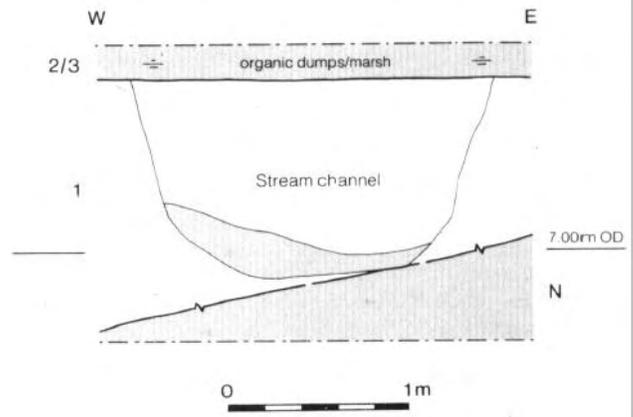


Fig 51 15-35 Copthall Avenue, watching brief: section

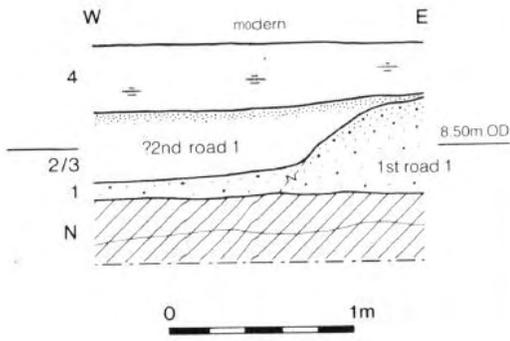


Fig 48 15-35 Copthall Avenue, watching brief: section

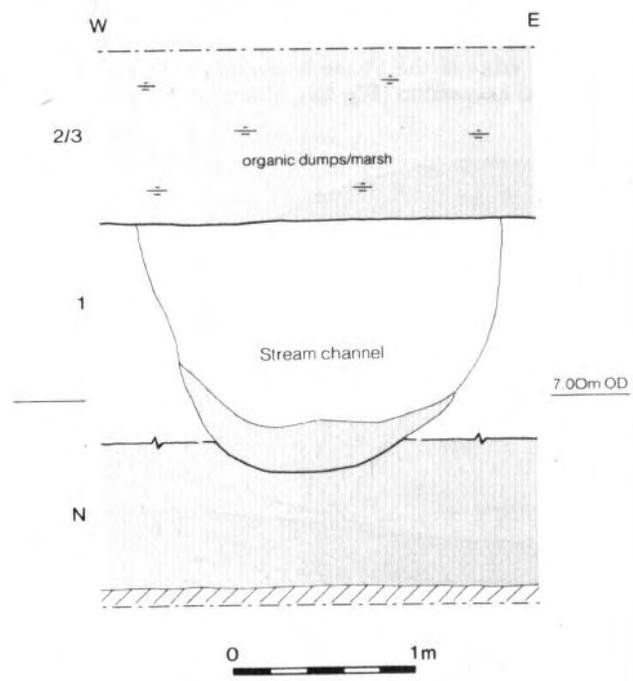


Fig 52 15-35 Copthall Avenue, watching brief: section

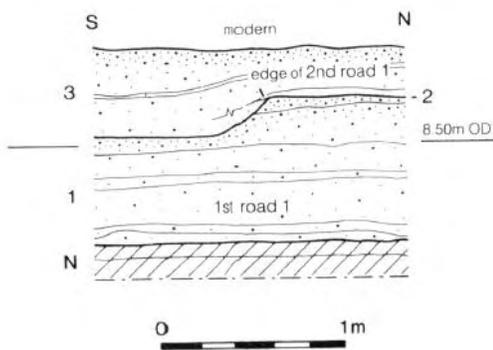


Fig 49 15-35 Copthall Avenue, watching brief: section

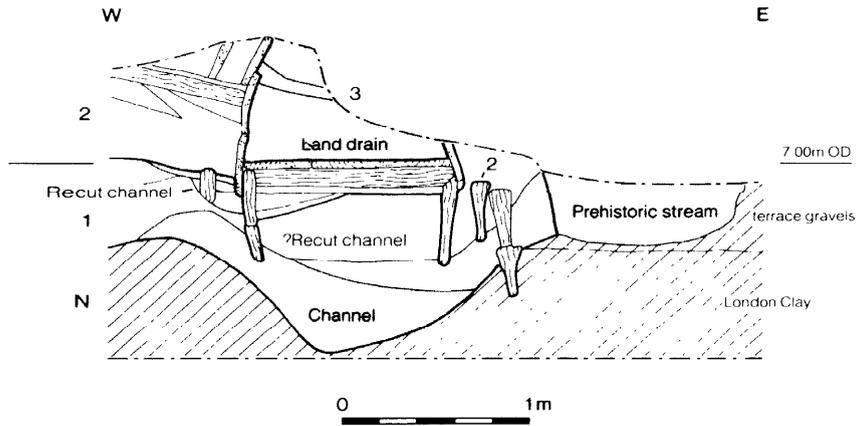


Fig 53 15-35 Copthall Avenue, watching brief: section showing prehistoric streamlet cut through by deeper channel in Period I. Timber posts on east side of channel were probably supports for revetting. This channel may have been recut before it was infilled, the ground level raised and another ?revetted channel cut. Finally, a timber land drain, constructed from a much higher level, superseded the channels (Period II)

London Clay (Fig 44). This row of stakes shared the alignment of the Phase 5 timber path of the controlled excavation, suggesting that they were the remains of a similar feature or a revetment, the two separated perhaps by another drainage channel. The clay dump noted above (Fig 54) may have been infill behind this ?revetment.

To the south-east of the controlled excavation a channel was created to the north of a clay bank (Fig 55), while just to its north-east the remains of a possible banked and revetted channel c 1.1m wide and orientated west-northwest/east-southeast was observed (Fig 44). These channels were probably connected with those recorded in the controlled excavation. Near the east side of the road a row of substantial posts or piles above an earlier embanked channel may have marked the northern edge of the Phase 6 drainage channel of the controlled excavation (Fig 56). The fact that four of the

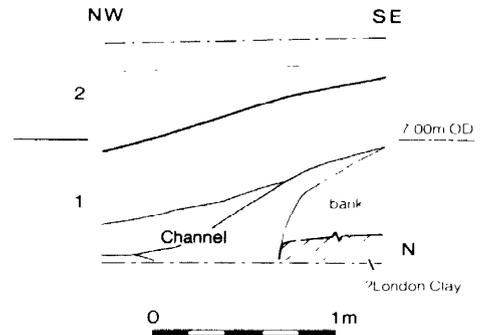


Fig 55 15-35 Copthall Avenue, watching brief: section

seven uprights were grouped into pairs could indicate that they were piles which once carried a superstructure, perhaps similar to that of Phase 5. Nearby, in a section only recorded in photograph, a bank of gravelly clay could represent the edge of a drainage channel aligned east-west, or more likely north-west to south-east (Fig 89). Further north, gravel was deposited above the sloping surface of the terrace gravels, apparently creating an embankment to a shallow channel to the south (Fig 88). The embankment had clearly been affected by erosion and flooding. Along the north bank

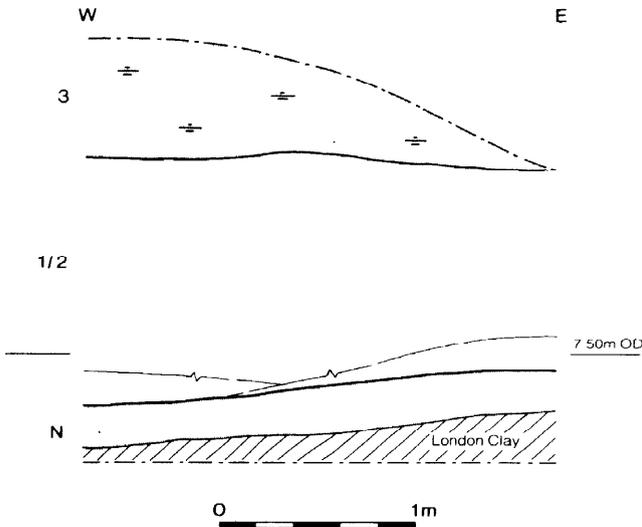


Fig 54 15-35 Copthall Avenue, watching brief: section

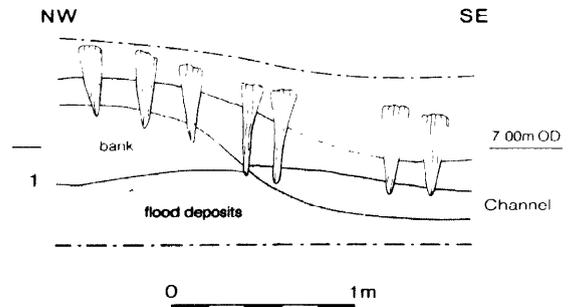


Fig 56 15-35 Copthall Avenue, watching brief: section

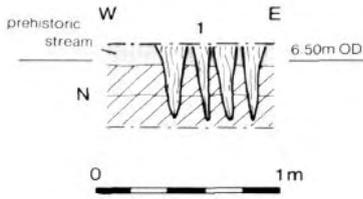


Fig 57 15-35 Cophall Avenue, watching brief: section showing possible revetment supports driven into streambed

of the stream an east-west row of timber stakes driven through stream deposits may have been the remains of a revetment (Fig 57), possibly linked with the recut of a streamlet to the west (Fig 19). Numerous other timber stakes were recorded in the valley of Stream 1, the majority of which must have been associated with drainage channels.

Beyond the edge of the valley, streamlets entering the tributary along its northern bank were infilled with brown or blue clay; the presence of roots in these deposits indicates that they were colonised by plants (Figs 17, 18). To the west of these infilled streamlets the sloping ground surface was levelled up but apparently subject to flooding (Figs 86, 91, 92). The remaining prehistoric streamlets were retained (Figs 10-15), though sometimes modified: dumps of grey-brown silty clay heightened the bank of one streamlet (Fig 10) while another was reduced in width with an infill of blue clay, this latter subsequently flooding its new bank (Fig 16).



Fig 59 43 London Wall: one of the Phase 1 ditches (402), looking north-west. Scale in 0.10m units

43 London Wall

Phase 1 - ?2nd Century (Figs 58, 59)

Two drainage ditches were cut into the terrace gravels, one aligned north-west to south-east, c 1.5m wide x

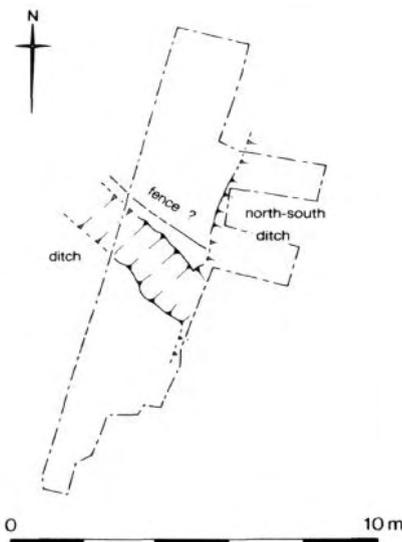


Fig 58 43 London Wall: plan of Phase 1 features

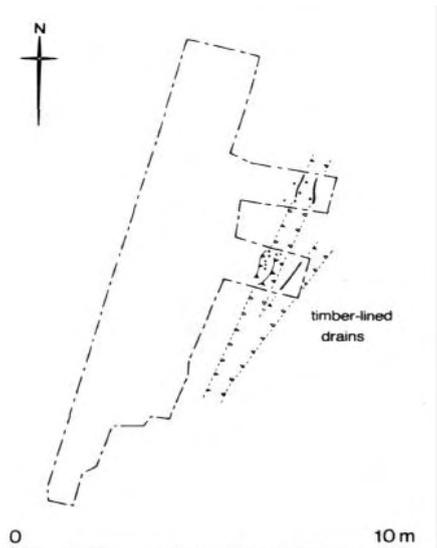


Fig 60 43 London Wall: plan of Phase 2 features

0.5m deep with a fence or boundary marker along its northern edge (Figs 58, 59), the other aligned north-south but truncated. These ditches may have been contemporary; if they were, the two ditches must have joined at the edge of the site.

Both were infilled with silty clay and the area on the west side of the site levelled up to c 8.1m-8.6m OD.

Phase 2 - 2nd century (Fig 60)

The north-south phase 1 ditch appears to have been replaced with a timber-lined drain c 0.17 wide (Fig 31). At its south end the drain seems to have been repaired. Some stakes which do not directly relate to the drain may have represented supports for a fence.

A second timber-lined drain, aligned north-east to south-west, lay to the east. This could have been contemporary with that to the west; they probably converged to the south of the excavated area.

Both drains contained waterlain deposits. Small groups of pottery loosely dated Phases 1 and 2 to AD 120-200 and it is possible, therefore, that the Phase 2 drains were in fact associated with Period II activity.

8 Telegraph Street - early 2nd century (Fig 61)

Grey gravels and clay raised the ground surface c 1m to a level of 8.1m OD. They were contained to the north by an east-west aligned post and plank revetment. The posts were rectangular or triangular in cross-section, some measuring up to 0.2m x 0.22m x 1.2m in length; the only surviving plank measured 0.16m x 0.25m x 0.81m. Around and to the north of the posts, occurred grey-green clay and grey silty clayey sand and pebbles which are interpreted as packing.

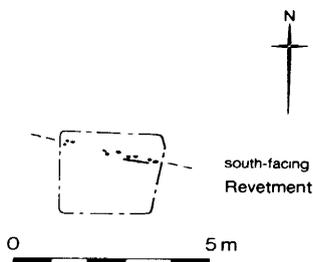


Fig 61 8 Telegraph Street: plan of Period I features

4-6 Copthall Avenue

Phase 1 - early 2nd century (Figs 62, 64-7)

Extensive dumping of grey-blue clay and/or organic material raised the ground level above the flood plain of the stream by c 1m, to 7m-7.4m OD (Fig 99). No dating evidence was recovered from these layers.

In the western trench a gravelled external surface - possibly a pathway - was resurfaced twice up to a level of 7.5m OD (Fig 62). It was retained to the south by an east-west aligned wattle revetment (Fig 64) which, together with a bank of grey clay lying some 0.6m to the south, probably formed the sides of a drain or channel. The bank, recorded in the east section (Fig 64) but not in the west section (Fig 65), may also have formed the east side of a north-east to south-west channel, although it could merely have been eroded. A post and plank structure which collapsed or was destroyed during subsequent dumping could have been the remains of a revetting for this channel (Fig 64) or another channel to the south, parallel with the wattle-revetted channel.

In the eastern trench a clay surface was laid directly onto the artificially raised ground, at the same level as the first gravel surface to the west (Figs 62; 99; 100). It was raised two times, the third surface - through which a pit was cut - being at the same level as the final gravel surface in the west trench, c 7.7m OD (Figs 99; 100).

On the west side of the site a north-east to south-west road was identified. Only its east side was revealed, consisting of a make-up layer and four-five bands of grey, blue and brown gravel or gravel in a matrix of clay (Fig 66). The surfaces, which appeared to have been cambered, ranged from 7.64m OD to a maximum 7.95m OD. A timber-revetted drain 0.34m wide x 0.4m deep bordered the road (Figs 62; 66).

Below the eastern edge of the road lay a peaty deposit which probably represented the early dumping that was carried out on the site (above). No dating evidence was recovered from the road deposits but a comparison of levels indicates that it is likely to have been contemporary with the postulated pathway and the drainage system to its east.

Phase 2 - early-mid 2nd century (Fig 63)

The east-west channel was filled and floor surfaces or levelling layers of clay and of gravel were laid above (Figs 63; 64, 65). Above these another gravelled surface extended above the infill as far as and level with the top of the bank at c 7.7m OD (Fig 65). In the east trench, the ground level was raised c 0.45m OD (Fig 100). This bordered a ditch to the south, 0.7m deep, at least 2.5m long (Figs 99; 100) which may have replaced a similar feature associated with the earlier surfaces.

23 Blomfield Street (Fig 68)

A north-south alignment of three timber posts was recorded towards the east side of the site (Fig 68, Site 6) traced over a distance of 5m. These were almost square in cross-section, an average 180mm x 170mm; the tops of the posts had been broken but one survived to a length of 1.07m. They had been driven into London Clay at a level of c 6.4m OD but it was impossible to determine whether buff-yellow sandy gravels above the clay pre- or post-dated the posts. They were probably supports for a revetment bordering the stream, but no dating evidence was recovered and the timbers themselves could not be dated by dendrochronology.

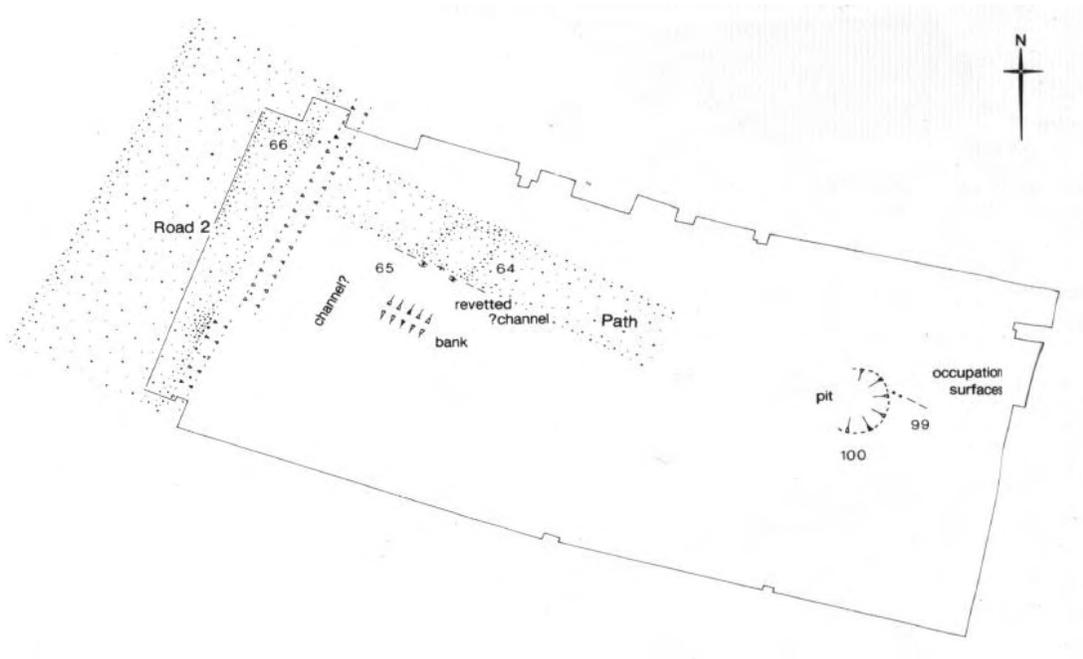


Fig 62 4-6 Copthall Avenue: plan of Phase 1 features

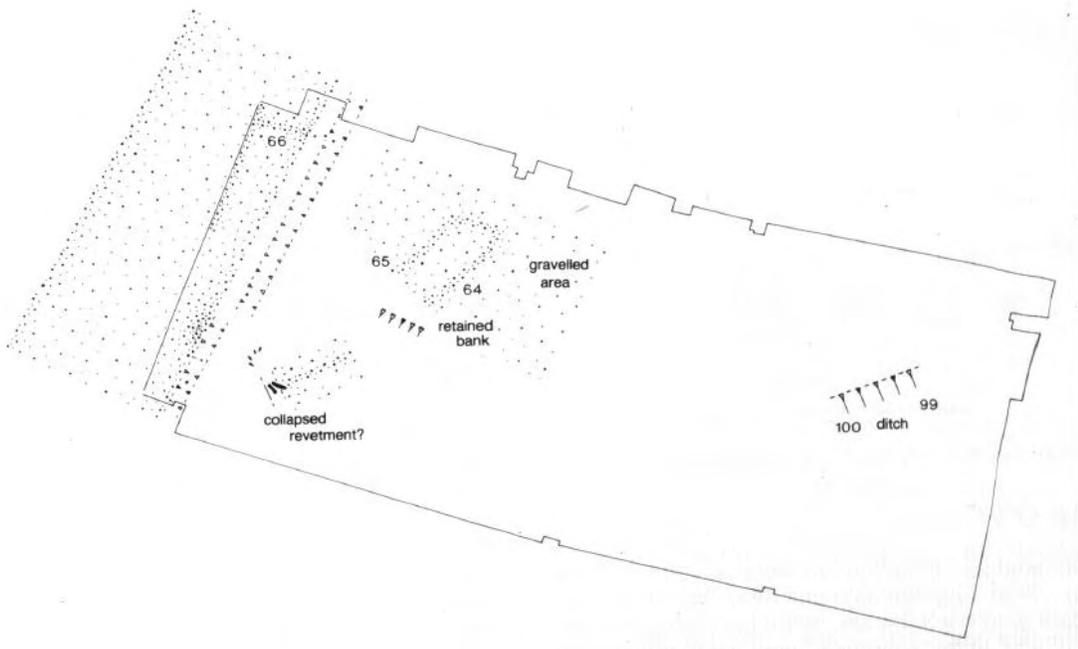


Fig 63 4-6 Copthall Avenue: plan of Phase 2 features

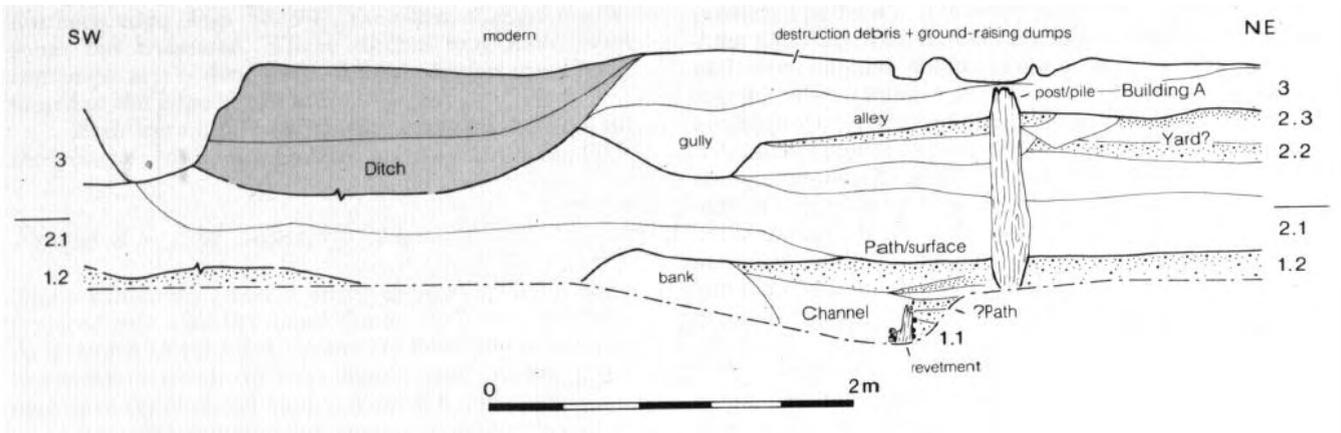


Fig 64 4-6 Cophall Avenue: west trench east section

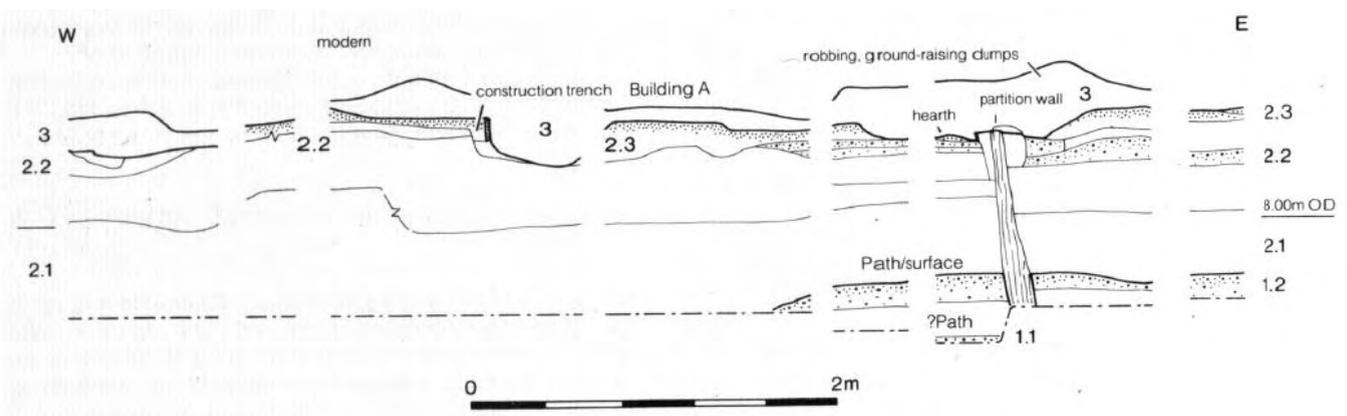


Fig 65 4-6 Cophall Avenue: west trench west and north section

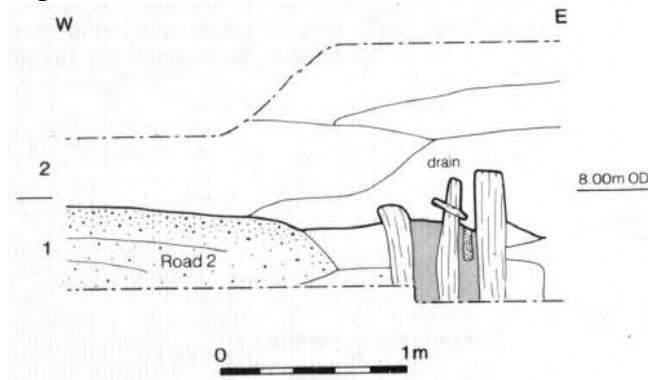


Fig 66 4-6 Cophall Avenue: east-west section

Dating (Fig 67)

Dendrochronology provides important information about the 15-35 Cophall Avenue site, but otherwise precise dating evidence for this period is scarce. Coarse pottery is the main indicator, and this should be interpreted cautiously; the groups are very small and, since no evidence of contemporary occupation was found on any of the sites, it is likely to have been redeposited on at least one occasion. For these reasons, although the general chronology is clear enough, it is impossible to define exactly each of the phases of rapid localised change that took place on the main sites.

Bottle glass sherds and a shale bracelet fragment trodden into the natural ground surfaces indicate casual use, probably in the 1st century AD. Taken as a whole, however, the evidence suggests that none of the area was systematically developed before the very end of the 1st century (although the first phase at 15-35 Cophall Avenue is essentially undated), and that some parts of it may not have been developed until the second quarter of the 2nd century. At **15-35 Cophall Avenue** the main recognizable differences in the ceramic assemblages are between Phases 2-4, which contain coarsewares typical of the Trajanic period in London, and Phases 5-7, which contain Black-Burnished wares and Colchester and Cologne finewares vessels which appeared in London for the first time in c AD 120. At first sight the dendrochronological evidence suggests a similar division, but the one exactly-dated timber (679), a post which was felled in AD 86/7 and was found incorporated in a fence beside the Phase 4 ditch, had clearly been reused from an earlier structure. Of the Phase 5 timbers, at least one (407) cannot have been felled before AD 106 at the earliest. It is possible, therefore, that as many as 20 or 30 years separated Phase 4 from Phase 5, but in the absence of more precise dendrochronological information or larger pottery groups it seems safer to conclude that the sequence on the site proceeded in roughly equal stages from the 90s to the 120s. A clear *terminus ante quem* is provided by dendrochronological

Phase	Dendrochronology	Coins	Stamped samian	Other pottery	Suggested date for phase
15-35 Cophthall Avenue, controlled excavation (OPT 81)					
Natural ground surfaces				--	bottle glass fragments (two) shale bracelet fragment ? 1st c.
1	?AD 34 +				? late 1st c
2			--	AHSU, DR20, FMIC, HOO, HWC, LOMI, LONW, VCWS, VRG, VRW group size 1.6 kg date AD 90 - 120	late 1st/early 2nd c
3				AHSU, DR20, FMIC, HWC, LONW, VRW group size 0.7 kg date AD 90 - 120	late 1st/early 2nd c.
4	AD 86/7 AD 81 +			HWC, LOMI, VCWS, VRW group size 0.3 kg date AD 90 - 120	late 1st/early 2nd c.
5	AD 106 +			AHSU, BB1, DR20, FMIC, HWC, KOAN, LOMI, NKSH, PE47, RDBK, SLOW, VRG, VRW group size 3.7 kg date AD 120 - 140	early/mid 2nd c
6				BB2, CGQF, DR20, FMIC, GROG, HWC, KOLN, LOEG, PE47, VRW group size 2.1 kg date AD 120 - 140	early/mid 2nd c
7	AD 69 +		SABINUS III La Grauf Dr 15/17 or 18 AD 65-80 FELIX I La Grauf Dr 15/17 or 18 AD 50-70	AHSU, BB1, BB2, CGWH, COLC, DR20, FMIC, HOO, HWC, KOLN, LOEG, LOMA, LOMI, LONW, MICA, NKSH, PE47, PRW, RDBK, VCWS, VRG, VRMI, VRW group size 4.2 kg date AD 120 - 140	early/mid 2nd c
15-35 Cophthall Avenue, watching-brief (KEY 83)					
—		Domitian As AD 85		AHSU, BB1, BB2, GROG, HWC, LOMA, PE47, VRW date AD 120 - 160 +	early/mid 2nd c.
44 London Wall					
—					no dating evidence ? early 2nd c
43 London Wall					
1				BB2, DR20, HWC, VRW date AD 120 - 160 +	early/mid 2nd c
2				BB1, BB2, DR20, KOAN, PE47, VRW date AD 120 - 160 +	early/mid 2nd c.
4-6 Cophthall Avenue					
1				BB1, BB2, COLC, HOO, HWC, VRG, VRW, VCWS date AD 120 - 200	early 2nd c. and later
2				BB2, DR20, HWC, VRW date AD 120 - 200 +	early 2nd c. and later
Telegraph Street					
—				AHSU, DR20, HWC, LOEG, LOMI, LONW, PE47, VRW date AD 120 +	early 2nd c.

Fig 67 Summary of dating evidence for Period I

analysis of timbers from Period I I Phase 6 (p 118); these, it is suggested, must have been felled by AD 138 at the latest.

At **Telegraph Street** the initial raising of the ground surface is dated by an imitation Black-Burnished ware jar to AD 120 or later, but on the remainder of the sites the very earliest activities are undated. Many of the finds came from the silting of cut features, such as the drainage ditches at **43 London Wall** or the roadside ditch located in the 15-35 Copthall Avenue watching-brief, and provide evidence of the date at which those features were open and in use. Neither at **43 London Wall** nor at **4-6 Copthall Avenue** can differences be detected between the Phase 1 and Phase 2 assemblages, and in all cases the pottery suggests a *terminus post quem* of c 120.

Discussion (Fig 68)

15-35 Copthall Avenue, 43 and 44 London Wall

At 15-35 Copthall Avenue the western section of the Stream 1 was infilled with clay so that a road (1) could be constructed across it (Fig 68). This is dated c AD 90-120. The exact plotting of the road is, however, problematic because of the differences in the levels of recording (that is, in the watching brief) and because there was a further complication in the presence of similarly compacted gravel surfaces (Period II, Part 4). Ditches and revetted channels too, even if apparently adjacent to and on the same alignment as the road, may not be reliable indications of it. The evidence can be accounted for in three ways: the road changed direction towards its north end from north-east to south-west to a more north-south alignment, it widened dramatically towards the north end of the site; or it shifted westwards during Period I (compare Figures 44 and 84). The most consistent evidence favours the latter solution. The earliest road therefore, was aligned north-east to south-west, about 5.5m wide; the second road was realigned north-northeast/south-southwest, about 5m wide. It was maintained up to the mid-late 4th century (see Part 5). This road could have been the main axis of communications up the west side of the Walbrook valley from a junction with the major east-west road beneath modern Cheapside. It is therefore also likely to have crossed the east-west King Street/Ironmonger Lane road (shown on OS 1983).

A network of interconnecting ditches and channels was dug on either side of the road to cater for the displaced stream. Some of these were embanked, some revetted and in the main seem to have been parallel with or at right angles to the road.

To the east, the north-south section of Stream 1 was restricted to a narrower channel, its artificial clay or gravel banks probably being revetted. Drainage north of the main tributary was rationalised, some streamlets being infilled while others were retained. Evidence from both the watching brief and excavations at 43 London

Wall indicates that additional drainage was provided on the west side of the road by ditches cut into the terrace gravels. These seem to have been independent of the roadside ditch. The success of this drainage system is discussed below.

The detailed evidence from the controlled excavation illustrates that drainage management in this area underwent frequent modifications throughout this period from c AD 90-120. The basic pattern, however, remained largely unchanged: channels were eroded, silted up and overflowed, and were then recut at a higher level and their eroded banks consolidated and raised. The number of channels was reduced, although the alignment remained constant, until in the final phase there was one wide channel at right angles to the roadside ditch. This expedient seems to have been successful.

These later phases (5-7) of drainage are dated c AD 120-140, but a date closer to c AD 120 can be suggested by reference to the Period II building (p 42). A dendrochronological date of c AD 138 was provided from the timbers of a drain which was later than two phases of major modifications to the building (below, p 50). Some time before AD 138 must be allowed therefore for both the building's construction and use and development of the drainage system.

These modifications do not appear to have been the result of a phased drainage programme. The frequent overflowing of the ditches and channels, the frequent of the road and the sometimes temporary measures taken to alleviate flooding, indicate that for some time the drainage provision for the blocked-in Stream 1 was inadequate. The lack of proper drainage provision was probably also exacerbated by the casual dumping of refuse. Further rapid silting of the channels, following erosion of the dumped deposits that formed the banks and initially the bottom of the channels, suggests that the volume and/or velocity of water was underestimated.

Towards its eastern side, the wide canalised stream was infilled and replaced with a deep narrow north-south channel. This modification can only loosely be dated to the 2nd century. It was eventually filled in, being apparently no longer necessary in the northern stretch since there was no replacement. At the south end of the site, however, another channel was cut at a higher level, perhaps an outlet for drainage from the west.

Timber drains, dated by pottery to c AD 100-120, were located during the re-excavation of 55-61 Moorgate (Site 15). These may have been associated with the management of Stream 1 further downstream (Fig 68).

Three human skulls were found at 15-35 Copthall Avenue: one in a canalised stream, one in a drainage ditch beside the road, dated AD 120-140 and the other embedded in material typical of channel fills. The skulls, besides being stained grey-blue, had a shiny surface and they were all from young adult males (B West, pers comm). These features are characteristic of human skulls found in the Walbrook, those surviving from earlier excavations having been examined recently (Marsh & West 1981).

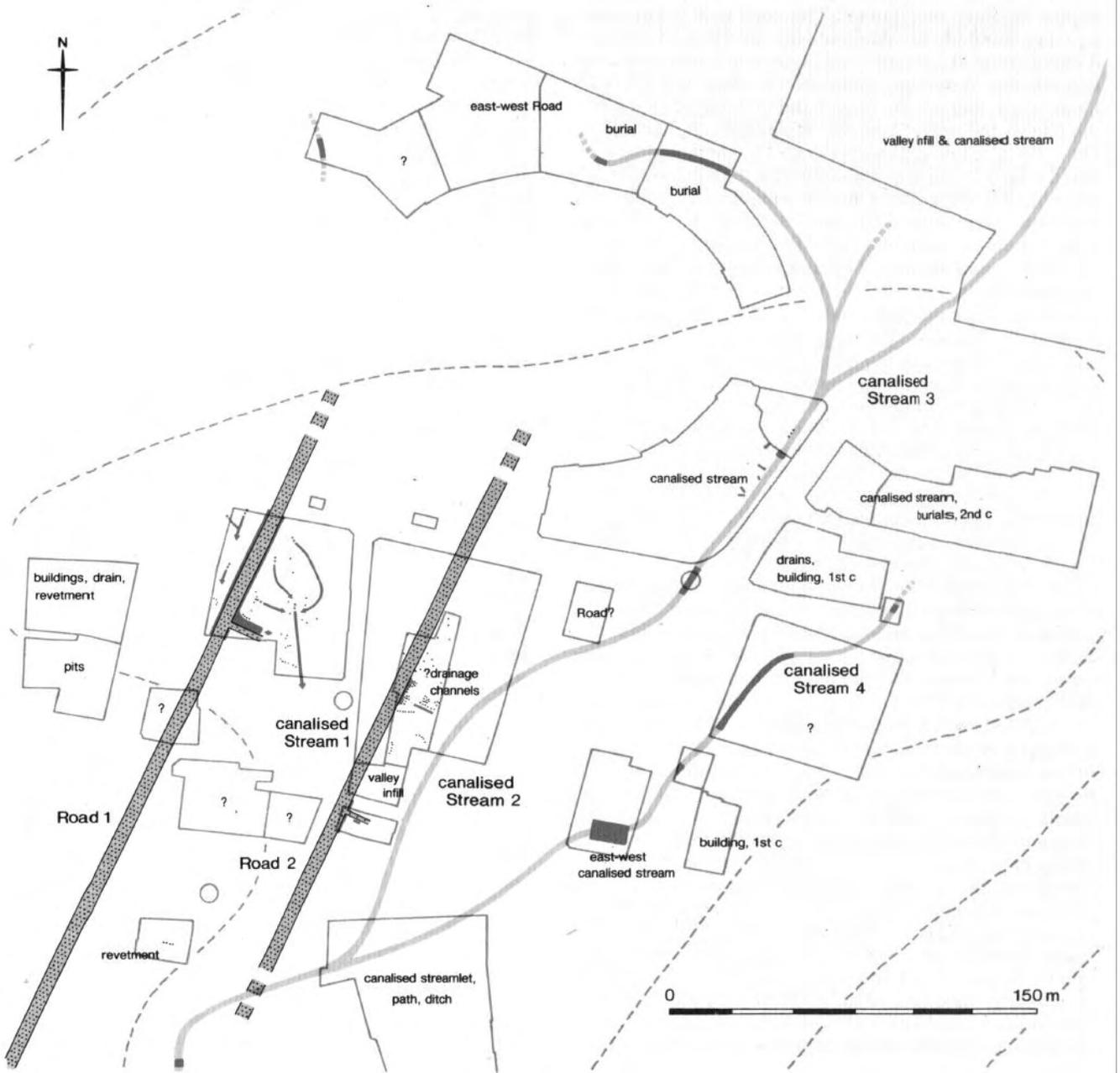


Fig 68 Study area: plan of Period I features (early 2nd century)

8 Telegraph Street

At Telegraph Street to the south the ground level was raised c 1m with gravels and clays, contained by an east-west timber revetment. This took place c AD 90-120. Since this site was already on the higher, drier ground towards the west side of the valley, this revetment and dumping may not have been primarily concerned with reclamation. Road 1 must have passed within a few metres to the west of this site.

4-6 Copthall Avenue

The west side at least of the stream at 4-6 Copthall Avenue (Stream 2) was infilled and the ground level thereby raised c 1m. No dating evidence was obtained from this infill. A north-east to south-west road (Road 2), bordered by a timber revetted drain, was probably linked to a gravelled north-west to south-east path revetted with wattlework. Interconnecting ditches provided drainage for the area to the south: these do not

appear to have overflowed. The road and drain were also revealed at the adjacent site of 10-12 Copthall Avenue (Site 31), where it was associated with two clay and timber buildings, constructed after AD 110 (D Lees, pers comm). On one of the published plans for the site to the rear of London Wall (Site 28; Lane-Fox 1866, fig 2) a row of posts is parallel to the alignment of Road 2 and is likely to have marked a timber-revetted drain on its west side. Current excavations (1989) on this site have located the west side of the road and established its width of c 7.5m (D Lees and A Woodger LOW 88, pers comm). This road seems to have been approximately parallel with that found at 15-35 Copthall Avenue, some 70m to the west, and was constructed in AD 120-140.

As discussed in the preceding section (p 22), the 3 feet of undisturbed loam recorded just to the south at 10-12 Copthall Avenue in 1906 (Site 30) (Reader 1906, 232), is considered to have been dumped material to both form an embankment to the stream and to raise the ground level within the depression which it had created. The suggested level of c 7.7m OD is comparable with that of the raised ground surface at 4-6 Copthall Avenue and very closely comparable to the levels of the road and 'path' in particular; indeed it must have included the road. This layer of undisturbed loam lay above London Clay, giving way to stream deposits in the east. Such an interpretation has been confirmed at Site 31 where the earliest recorded sequence of archaeological deposits consisted of dumped clay c 1m thick at a level of c 7.9m OD (Lees 1989).

To the north (Site 28) (Lane-Fox 1867, lxxii-lxxv and figs 1-4), some at least of the 'peat' recorded over the whole site, together with the blue mud, must have represented dumping to raise the ground level though whether they also infilled a stream is open to question. Many of the posts and post and plank alignments, some north-east to south-west, some east-west, must also have been the remains of revetted drainage channels cut into the dumps; one of these post alignments clearly marks the drain on the east side of Road 2 (Fig 68). It is quite possible that some of the east-west alignments were connected with the drainage network to the west. The complicated sequence at 15-35 Copthall Avenue - and indeed Lane-Fox's own section drawings - indicate that more than one phase of drainage was represented here.

A sequence typical of the upper Walbrook sites was excavated to the south and east at Angel Court in 1974 (Site 34) (Blurton 1977). The earliest phase apparently consisted of a north-east to south-west aligned streamlet which overflowed in the late 1st-early 2nd century (*ibid* fig 2, 20-21). As a result it was contained by timber revetting held in place by an extensive dump of clay up to 0.9m thick. Beside the revetted stream a gravel path c 2.38m wide had been laid at a level of c 7.7m OD, dated to the early-mid 2nd century. This was cut by a north-west to south-east orientated ditch which must have converged on the canalised streamlet. The layer which is interpreted as an overflow deposit of the streamlet (20c), however, is

actually contained within the revetted stream and therefore post-dates it.

This sequence is very similar to that found on the Copthall Avenue sites: a dump of clay which raised the ground level - doubtless in the depression caused by the streams - and the banks of a now canalised stream. In this example the stream appears to have been smaller than its successor. If this were the case (and as discussed in Part 2, p 25, this may not have been the full extent of the streamlet since geological strata were not examined or described), an enlarged stream would imply that streamlets or ditches to the north-east had been directed into it. The gravel path bordering drainage features at Angel Court and its level is also closely comparable with the proposed arrangement at 4-6 Copthall Avenue. It may be that the Angel Court path was connected with Road 2.

The watching brief at Blomfield Street could add very little to the evidence recorded here at the beginning of the century when timber compartments were found, filled with earth and rubbish and topped by platforms (Site 7) (Reader 1903, 179-81, 187-95). Two of these platforms formed the sides of a timber-lined channel, or perhaps of a tank. Whatever the interpretation of this structure, it is clear that it was constructed on the bed of Stream 3 which must therefore have been canalised or diverted.

That the main Walbrook stream (Stream 3) was canalised, and further north too, has been recently confirmed by excavations at Broadgate (Fig 2, Site 5; Malt 1987). Here c 0.7m of clay and gravel was dumped above the numerous stream channels to a level, initially, of c 7.9m OD and later to c 9.1m OD, at the same time creating a channel - which remained unrevetted - c 1.6m wide. Pottery recovered from the interface of the two banks is dated AD 180-300 (p 69). At 35-45 New Broad Street (Site 9), dumps of brickearth, loosely dated to the 2nd century, levelled up the slope down to the east-side of Stream 3 (Woodger 1988). To the south, at 85-86 London Wall (Site 10), drainage ditches were dug in the 1st century but here succeeded by a timber building and drain, also dated to the 1st century (Sankey 1989).

Recent excavations at 9-19 Throgmorton Avenue (Site 36) (Durnford 1988) have also demonstrated that a similar drainage programme was undertaken on the east side of the Walbrook valley in the late 1st-early 2nd century. The north-east to south-west course of the Stream 4 was infilled and realigned east-west in a timber-revetted channel. This was later replaced by a north-east to south-west channel, its banks made up of dumped clay and gravel upon which a timber trackway had been laid.

Thus, during Period I, reclamation within the valleys of the Walbrook streams - a major undertaking - was begun. The natural drainage pattern was reorganised as courses were restricted in width and re-directed; streamlets disappeared or were rationalised within the framework of a new, superimposed drainage system. Flooding was the initial result at 15-35 Copthall Avenue, but by c AD 120 was sufficiently under control to allow the developments of Period II.

4. Period II Buildings - Early 2nd-3rd Centuries

By c AD 120 drainage was sufficiently under control for further development of the upper Walbrook valley to take place, which, it is proposed, was part of the planned development of the city. The canalised tributary streamlets and drainage ditches were infilled and the area now became available for the construction of buildings, both on the reclaimed floodplains and on the drier ground beyond. At 15-35 Copthall Avenue the buildings were contemporary with a very large gravelled area. Evidence from Copthall Avenue indicated that the buildings had both a domestic and an industrial function. Very close proximity to a water supply seems to have been an important factor in the siting of buildings on the less favourable reclaimed ground rather than on higher ground. The Walbrook streams were presumably still canalised, though the western tributary (Stream 1) now survived only as a land drain. Beyond the streams, drainage (and water supply) was maintained by the construction of timber-lined or revetted drains.

Evidence from macroscopic and insect remains confirms the urbanisation of the area, though suggesting that the environment was still wet (Part 8, p 110).

15-35 Copthall Avenue: controlled excavation

A timber building (A) was constructed beside and on the same alignment as the Period I road (though the latter may have shifted westwards, see Part 3, p 42). Well-correlated evidence to the immediate south and east and, for the road, west of the controlled excavation was recorded during the watching brief and will therefore be included here. The west, east and south walls of the building were located, establishing its length of 12m, the north wall was not found, but evidence from the watching brief (p 56) suggests a width of 4m.

The external walls of this building had been erected on timber baseplates, laid onto the Period I piles; two survived *in situ*. Inside the building, where the arrangement of rooms was frequently modified, partition walls were supported by timber ground-beams, two survived *in situ*. Floors were composed of beaten clay or brickearth, often scorched. They were also very worn with use and regularly relaid. So many surfaces were recorded that only those associated with another activity are included here; likewise not every feature is described.

The building was erected directly above uncompact organic fill (Phase 1): these eventually compressed and the building subsided. Levels in and around the building were thus subject to considerable variation.

Phase I - early-mid 2nd century

The drainage channels on the east side of the road were filled in over a period of time with highly organic dumps

of mainly domestic rubbish and industrial wastes (OPT 518, 523, 535), (Figs 23; 41). Within these dumps were a number of timber posts and stakes which had no obvious function (OPT 270 reused, 273, 274 reused).

Phase 2 - early-mid 2nd century (Fig 69)

A building was constructed on the Phase 1 infill, its west wall represented by a robber cut, presumably for a ground-beam or baseplate which may have been supported on the Period I piles (Fig 69). No trace of the south wall was found. A north-south partition wall dividing the structure into two rooms (i and ii) was marked by the remains of a slot - the south end of which abutted on an earlier, Period I pile - and by the alignment and straight western edge of the first clay surface. No surface survived in Room i which contained two hearths, dome-shaped in section, and composed of baked clay on a bed of charcoal (OPT 406). Another possibly unused hearth was composed of mortar. In Room ii a second floor surface contemporary with a partition which divided this room, was cut by shallow pits, the sides of one being burnt and sandy, and containing charcoal and burnt twigs. The clayey silt infill of one of these pits was sampled (OPT 477). Nearby three stakes formed a triangle which could have been drawn together to form a structure from which a vessel, for example, could be hung. At this stage the building was set back c 4.5m from the road, the intervening area remaining apparently undeveloped although an external surface composed of large tile fragments - a yard or a path - lay to the south. A path could have provided access to the building from the road, any ditch or drain beside the road perhaps being spanned with timber.

Phase 3 - early-mid 2nd century (Fig 70)

Two partition walls were later dismantled and a shallow pit containing charcoal, burnt wood and slag was cut through. This end of the north-south partition was then re-instated (Fig 70, Room iii). The limits of two floors surfaces suggest a partition between this room and one to the south (Room iv) where a threshold of tile fragments marks the position of a doorway either between Rooms iii and iv or onto the Phase 2 tiled external surface. There were three hearths in Room iii, two of which were subrectangular, composed of hard, burnt clay; one of them overlay a sunken hearth containing clay and pebbles - both burnt - and carbonised twigs. The third hearth was constructed of large tile fragments embedded in clay within a bowl-shaped cut. Situated very close to this hearth was a stake which may have helped support a superstructure or have been one of a pair of supports spanning the hearth.

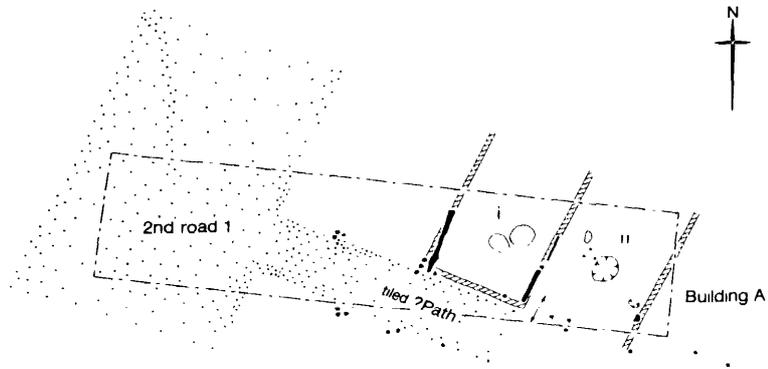


Fig 69 15-35 Copthall Avenue, controlled excavation: plan of Phase 2 features

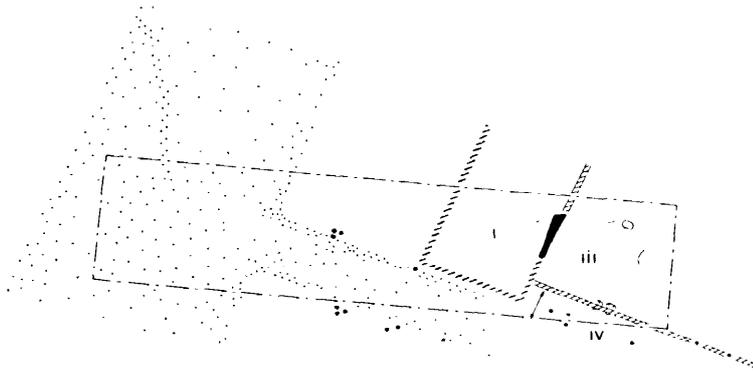


Fig 70 15-35 Copthall Avenue, controlled excavation: plan of Phase 3 features

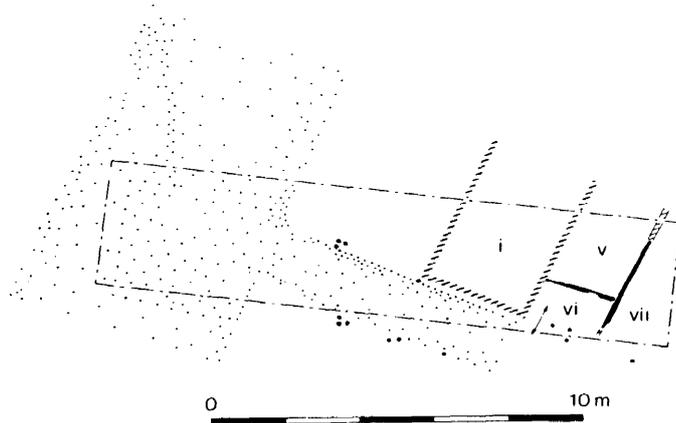


Fig 71 15-35 Copthall Avenue, controlled excavation: plan of Phase 4 features

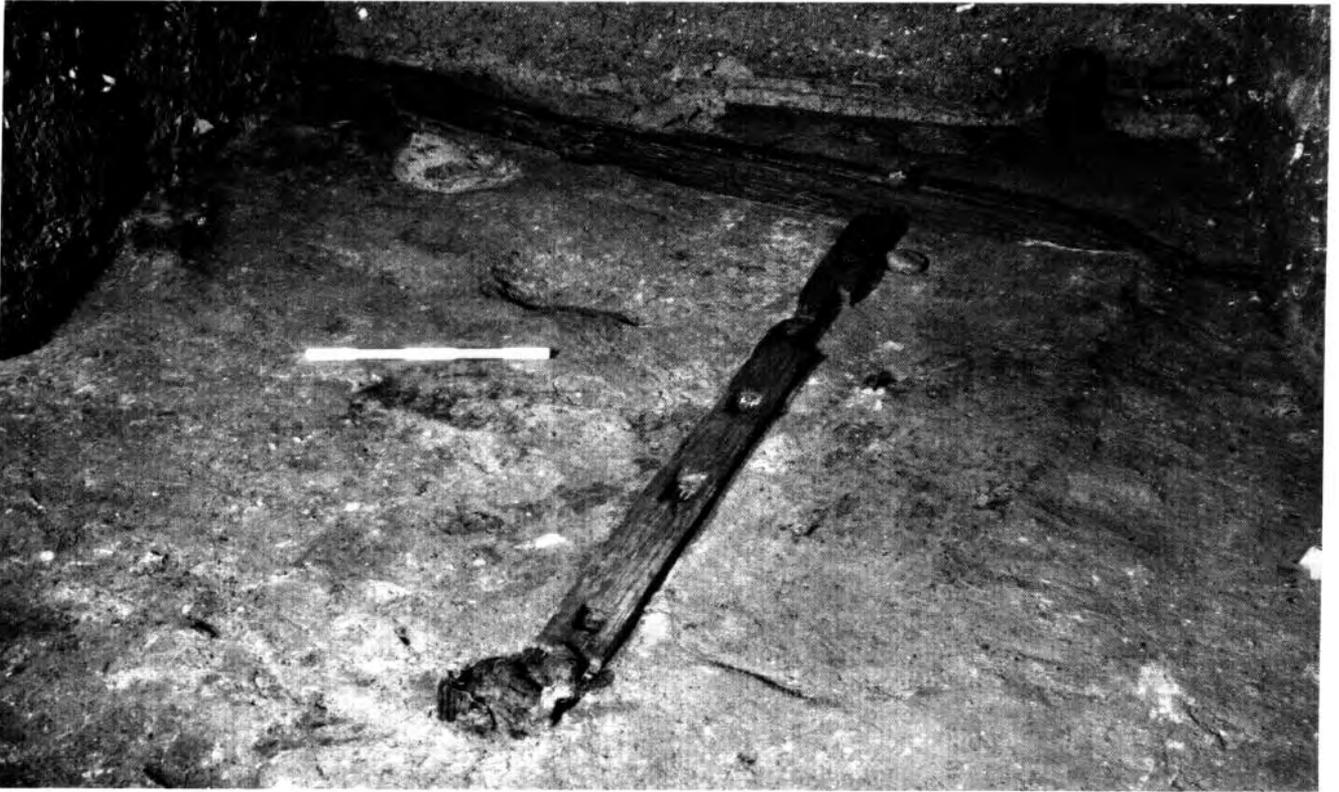


Fig 72 15-35 Cophthall Avenue, controlled excavation: timber ground-beams in Building A (411, 393) which would have supported partition walls between Rooms v, vi and vii (Phase 4). The pile in the foreground was reused from Period I

Phase 4 - early-mid 2nd century

(Figs 71, 72)

The partition between Rooms iii and iv was dismantled and two new walls erected to create three rooms (Figs 71; 72, Rooms v-vii). They were represented by oak ground-beams set in very shallow slots. The best preserved of these (OPT 411), (Fig 72) had five mortices aligned along its upper face. It was retained on its west side by one of the Period I piles and on its east side by the second beam (OPT 393). This was very weathered but six mortices were discernible, together with three very decayed timber uprights or tenons. Apparently connecting the mortices were two parallel grooves which contained decayed wood and clay, while part of the beam was covered by a deposit of brickearth. This evidence suggests that the fabric of the walls was composed of wattle and daub (see discussion, p 65 and Fig 105). In Room v hearths to the north and east already described may have been, constructed or continued in use, but Room vi was the most intensely occupied before its west wall was dismantled. From Room vi an occupation surface composed of dark grey sandy silt was sampled (OPT 433).

The road meanwhile had been repaired and resurfaced a number of times; its surface, often cobbled,

was compacted and cemented. A row of stakes may suggest a property boundary. It is quite likely that a drainage ditch existed beside the road but, if so, all trace of it had been removed by a large Period III ditch. Because of this ditch it was not possible to relate the road directly with the building but a small group of pottery dates re-surfacings up to a level of 8.2m OD to c AD 120-140.

Phase 5 - early-mid 2nd century

(Figs 73, 74)

The south and west walls of the building were demolished and rebuilt (Fig 73). Outside the building the ground surface was levelled up and a gravelled surface laid down. Evidence from the watching brief indicates that this was at least 1.8m wide; it may therefore have been a lane. The organic silty fill of a pit within its make-up was sampled (OPT 544). At its west end, a poorly preserved oak plank set on edge in a cut c 0.53m wide x 0.43m deep was parallel with and only 0.30m east of a later timber drain; this may therefore have represented an earlier drain or timber-revetted gully. The south wall of the building was re-erected, its baseplate laid onto the piles of the Period I timber path

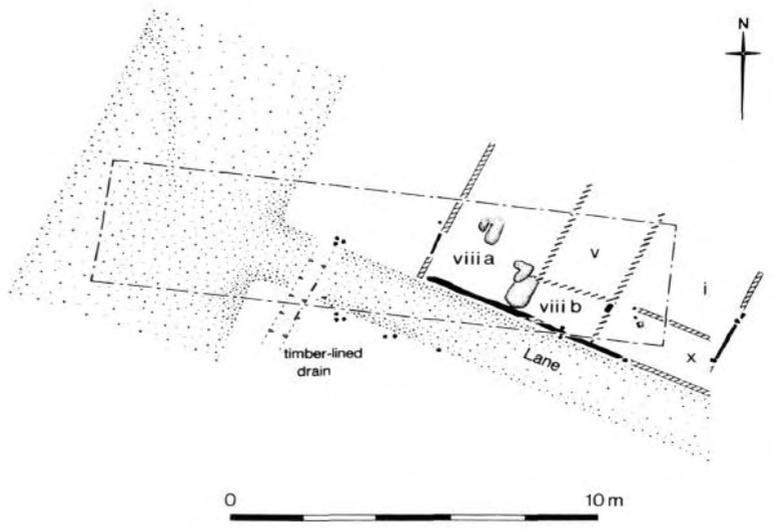


Fig 73 15-35 Cophthall Avenue, controlled excavation and watching brief: plan of Phase 5 features

(Fig 74). All that survived of the west wall was a scrap of timber aligned with a small timber upright (but see Phase 6). The east wall of the building, recorded in the watching brief, was represented by a timber ground-beam and two substantial posts or stakes aligned north-east to south-west. These were abutted on their west side by internal surfaces.

Inside the building a short-lived rectangular hearth consisting of compacted burnt brickearth on a slab of hard clay and sand was constructed above the dismantled partition between Rooms i and vi. How access was gained to the east part of this room (Room viii b) while the hearth was functioning, is not known. Within the westernmost room (viii a) were three sunken hearths. One of these was hard and burnt with a ledge at a slightly higher level and a deeper cut, thinly coated with charcoal and silt, at its north end. It was filled with decayed organic matter, sand and brickearth, including large fragments of charcoal (OPT 388). Next to this the



Fig 74 15-35 Cophthall Avenue, controlled excavation: detail of Phase 5 baseplate (279) laid onto Period I pile (408). Scale in 10mm units

second, smaller sunken hearth contained charcoal fragments and twigs stuck together and very light in weight. One side of the third, roughly L-shaped sunken hearth was stepped down a deeper subcircular base. Its fill contained med-large sized fragments of charcoal, slag and flint pebbles.

In Room ix to the east two timber posts (ash and oak) were erected, one of which may have been structural (OPT 400). The position of posts, in both the controlled excavation and watching brief suggests that this room was partitioned at its south end (Rooms ix and x). A repair to the h-south partition wall was represented by a possible post-pad.

Phase 6 - mid- latnd century

(Figs 75, 76)

An addition to the building extended it westwards towards the road (Fig 75) No walls were found but they were implied by the clay surfaces (OPT 214) which mirrored the alignmentshe building and respected two groups of piles retained from the path of Period I and a post on its west side (OPT 573). Timber staining and a piece of decayed timber at the eastern edge of the surfaces may have represented either a replaced wall here or the Phase 2 wall

In the extension (Room xi), a small infilled pit was truncated by two sunken hearths which were separated by a narrow ridge (Fig 76) The deeper, more northerly hearth was lined with a thin layer of grasses and/or rush (Part 8 p 108) and its silt1 contained fragments and whole twigs of charcoal and lenses of burnt brickearth (OPT 222); from this 'arm' extended 0.2m. Both hearths then contained large flint pebbles, slag, charcoal and burnt tile fragments in a silty fill which also included charred cereal grains (OPT 215, Part 8 p 110).

Outside the building gravelled surface or lane was re-laid to a level of 8.17m OD and a timber-lined drain was constructed, replacing the possible Phase 2 drain (OPT 235, 237, 239, 240, 241, 245). It

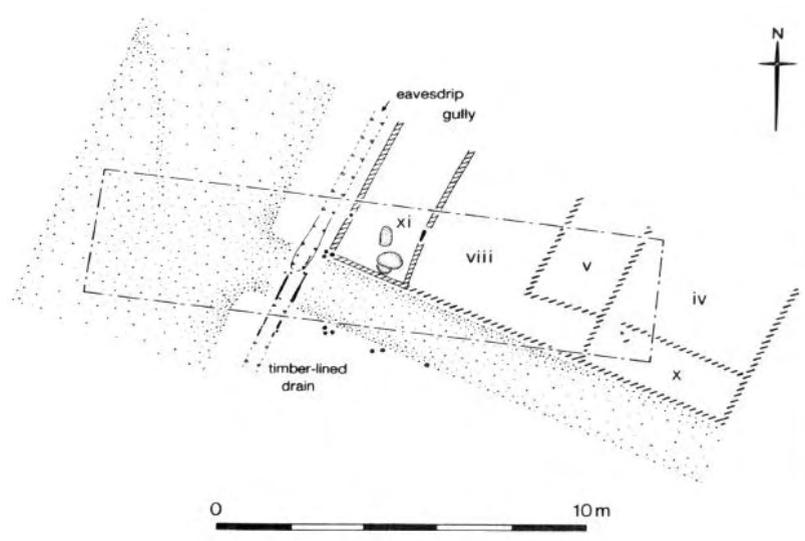


Fig 75 15-35 Cophthall Avenue, controlled excavation: plan of Phase 6 features

measured 0.4m wide x 0.4m deep, the sides and bottom being lined with oak planks, the former retained by rectangular posts. This drain was linked with a shallow timber-revetted gully to the north which measured 0.40m wide x 0.20m deep. It was orientated along the west edge of the building, probably an eavesdrip gully. Timbers from the drain have been dated by dendrochronology to c AD 138 (p 63) while pottery from the gravel and silt fill of the drain (OPT 184) is dated c AD 140-200.

Phase 7 - late 2nd-mid 3rd century (Fig 77)

The walls between Rooms v and viii were dismantled and the larger room thus created (Room xii), was resurfaced.

A flimsy partition or screen, represented by a thin strip of wood above and continuing the alignment west of the earlier east-west wall, seems to have divided the central room (xiia and xiib, Fig 77). All the sunken



Fig 76 15-35 Cophthall Avenue, controlled excavation: detail of sunken hearths (216, 501) in Room xi (Phase 6). Scale in 0.10m units

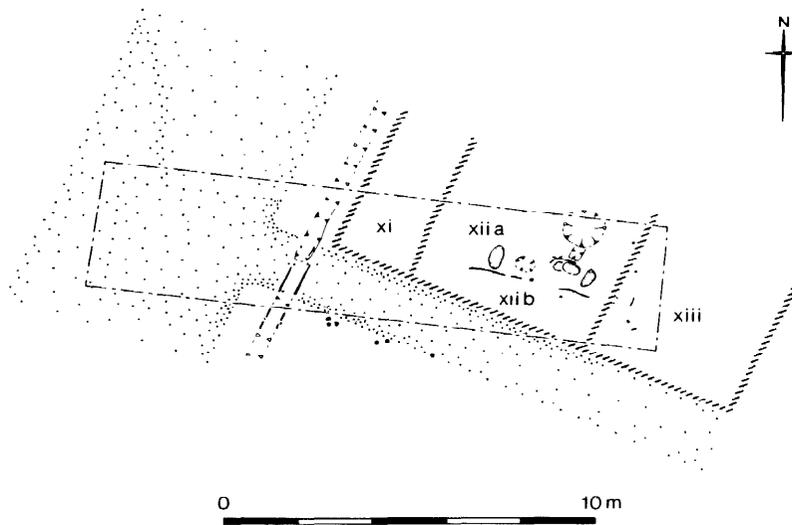


Fig 77 15-35 Cophthall Avenue, controlled excavation: plan of Phase 7 features

hearths and pits were confined to the north side of this partition. Two sunken hearths, not contemporary but both containing organic matter, brickearth, sand and pebbles - all burnt - and fragments and twigs of charcoal, were enclosed on two sides by the remains of strips of wood and twigs, perhaps a screen or support for a superstructure (OPT 355). A similar fill was contained within another sunken hearth, the sides of which were coated with burnt sand (OPT 344) while, towards the west side of the room, a bowl-shaped sunken hearth with a shallower 'arm' was filled with vivianite-encrusted gravelly silt and charcoal (OPT 257). A shallow, rectangular, vertically-sided cut may have held a container; its fill consisted of dark organic silt, (OPT 367). This was cut by a possible rubbish pit which contained decayed organic matter and silt (OPT 363).

To the east the suggested partition between Rooms ix and x seems to have been removed (Room xiii). A new floor surface was laid which, in the north, partially covered the ground-beam of the wall between this and Room xii. Evidence of intense activity at the south end of Room xiii consisted of a much-truncated sequence of scorched floor surfaces and a brickearth hearth base set into which was a sunken hearth.

Phase 8 - late 2nd-mid 3rd century

(Fig 78)

The northern end of the partition wall between Rooms xii and xiii was demolished (Fig 78). After a small sunken hearth filled with burnt organic material was dug, it was replaced with a much larger one with a shallower cut on one side containing hard, burnt sand, brickearth and silt. A new brickearth surface was laid, much of it burnt (OPT 338), which was associated with the destruction of a complex of shallow, flat-bottomed pits. The first of these, a large, irregularly shaped pit, contained a second, smaller pit at its bottom. Neither appeared to have been used but they were inter-related to a slab of very hard brickearth, scorched in places,

which filled the pits. A third pit with a shallower 'arm' at one end was then cut into the slab, its sides and surrounds very hard and burnt, and its primary fill containing burnt brickearth and ash. Four stakes in the north-east, south-east, and south-west (two stakes) and a slot may represent supports for a superstructure, probably an oven.

Phase 9 - late 2nd-mid 3rd century

(Fig 79)

The remainder of the partition between Rooms xii and xiii was removed to create a large room (xiv), and a portion of the south wall of the building was dismantled, probably for a doorway onto the yard or lane outside (Fig 79). Two sunken hearths were recorded, the earlier of the two being shallow and circular, its silty fill including charcoal and vivianite (a phosphate of iron) (OPT 258). The later hearth was cut on two levels, its silty fill contained charcoal, burnt daub, slag, vivianite and bones (OPT 255); the surface here was scorched.

At this stage deposits of sandy silt were heaped over the eastern half of the baseplate of the building's south wall, both inside and out. The occupation sequence clearly continued however, even covering the banked deposits inside the building. It is possible that this represented an attempt to prevent the walls becoming damp. The western half of the wall is likely to have been treated in the same way, but here the internal and external deposits had been truncated (below, Phases 10 and 11).

Phase 10 - late 2nd-mid 3rd century

(Fig 80)

The partition between Rooms xi and xiv was replaced and a new internal wall erected on an earlier north-south alignment, its ground-beam set into the retained south wall of the building, (Rooms xv and xvi; Fig 80).

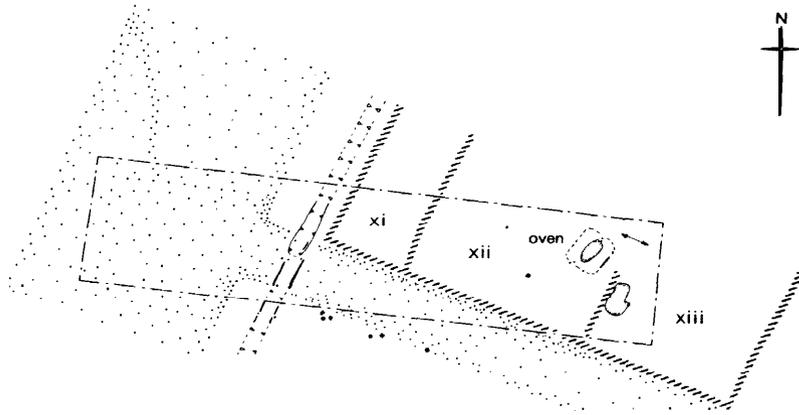


Fig 78 15-35 Copthall Avenue, controlled excavation: plan of Phase 8 features



Fig 79 15-35 Copthall Avenue, controlled excavation: plan of Phase 9 features

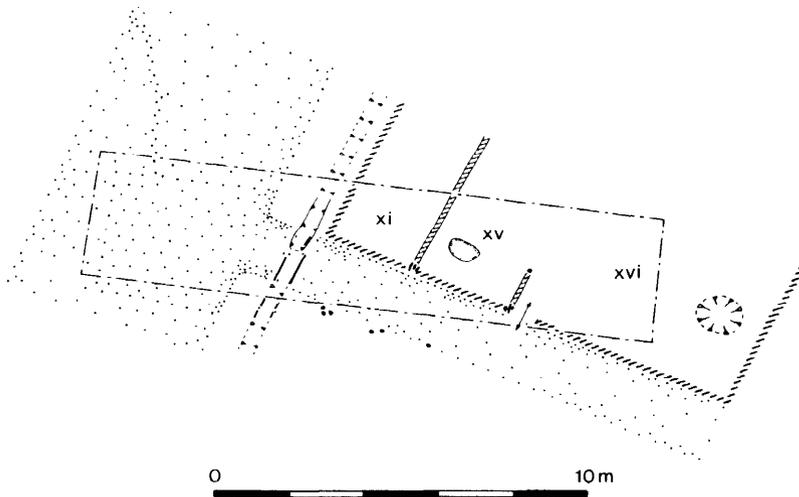


Fig 80 15-35 Copthall Avenue, controlled excavation: plan of Phase 10 features

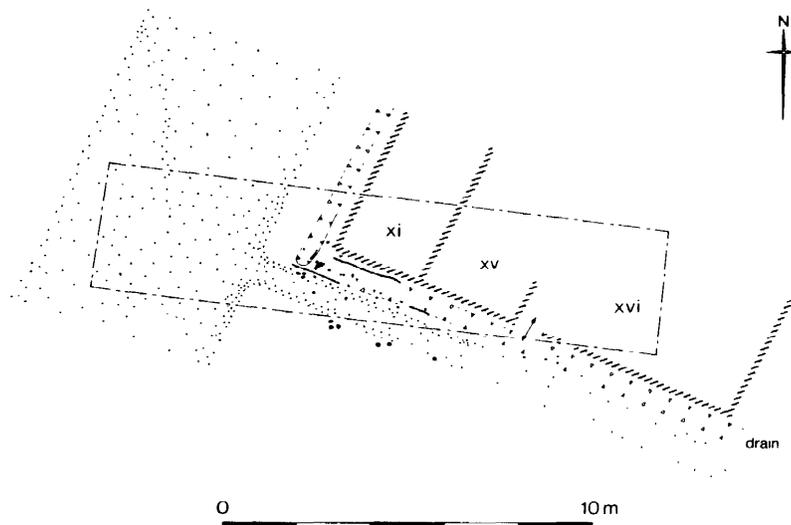


Fig 82 15-35 Cophthall Avenue, controlled excavation: plan of Phase 11 features

The poor quality surface of Rooms xv and xvi was associated with only one sunken hearth complex consisting of a small, shallow pit at the bottom of a much larger one. Neither appeared to have been burnt. To the east, in Room xvi or possibly xiv, a sizeable pit was recorded in the watching brief.

There was evidence of renewed activity in Room xi but here the sequence was truncated. It is clear, however, that in contrast to Rooms xv and xvi at this stage, the floor surfaces were superior: clean, compacted and/or scorched brickearth with one possible timber floor (OPT 191). The latest surface lay at a level of 8.1 m OD.

Phase 11 - late 2nd-mid 3rd century (Figs 81, 82)

A timber-revetted trench or, more probably, drain was inserted into the external surface along the edge of the building (OPT 247, 248, 277), (Figs 81, 82) the Phase 6 drain having been blocked off with the aid of timber stakes (OPT 242, 244). This drain seems to have been connected with the Phase 6 gully which was still open, possibly cleaned out, but it is not clear how this would have functioned since the gully was at a lower level. There was no evidence of erosion or silting within the drain, suggesting that only small quantities of water were involved and that it had a short life. A number of stakes located within the drain (including OPT 269) imply that either it may have had some specific function associated with activity within the building or that it replaced an earlier drain.

This drain, or a predecessor, could have been constructed during an earlier phase and indeed it seems possible that it was associated with the covering of the baseplate in Phase 9.

Phase 12 - 3rd Century (Fig 83)

The drain and gully were infilled - the infill including discarded timbers (OPT 246, 263) - and what appear to be internal surfaces were laid above, as far west as the most western of the partitions, and possibly indicating some sort of addition to the building (Fig 83). The edges of internal and external surfaces recorded in the watching brief suggest the position of the walls of this addition. A new external surface was laid.

Pottery from the infill could provide only a very broad date of AD 200-300 for the disuse of the channel and possibly for the laying of the surface. No dating evidence was obtained for the latter.

The pit recorded in the watching brief (Phase 10) was infilled and surfaces laid above; these subsided into the pit. In another section to the east of the controlled excavation, a possible hearth, 0.48m wide, was located in the latest of a sequence of floor surfaces. Eventually the building was dismantled, robbing cuts for the walls being recorded in the controlled excavation and the watching brief. The site was then cleared.

The road continued to be repaired and resurfaced with rammed, cemented gravel, on occasion cobbled; the last good surface may have been cobbled with ragstone blocks. Evidence from a section to the immediate south-west of the controlled excavation indicates that the west edge of the road had been extended; a timber stake recorded in this section may have been the remains of revetting. Pottery dates the latest resurfacings to c AD 240-350, but there was no stratigraphic link between these re-surfacings and the building. It is therefore quite possible that the latest surfaces post-dated the building. A depth of 0.8m eventually accumulated for this period and Period III of the road. The dating evidence for the building suggests that it was occupied for a remarkable length of time, over 100 years and possibly more. A discussion of its uses follows on page 67.



Fig 82 15-35 Cophall Avenue, controlled excavation: Room xi (floor surface on which scale rests), bordered to south by Phase 11 revetted drain (247,248). Period I reused piles can be seen left of centre, Phase 7 gully left of and below piles. Scale in 0.10m units

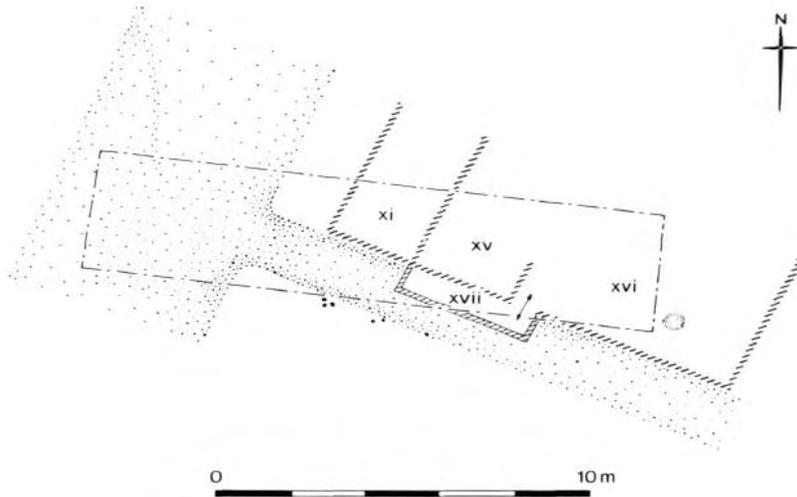


Fig 83 15-35 Cophall Avenue, controlled excavation: plan of Phase 12 features

15-35 Copthall Avenue: watching brief and 44 London Wall mid-late 2nd century (Figs 84, 93, 94)

All the drainage channels and the canalised stream seem to have been infilled (Fig 84). Within the depression of the former stream this infill comprised organic material similar to that recorded in Phase 1 of the controlled excavation (Figs 19; 53-6; 89). Peaty material shown in Figures 51 and 52 could have been organic dumps of this period, part of a marsh formation, or both. The very small groups of pottery from these infills are dated AD 120-200.

The road was continually re-surfaced but also seems to have been moved to the west. In a section near the controlled excavation, the causeway of the Period I road and subsequent re-surfacings, extended westwards beyond the earlier drain (Figs 45, 46). A new timber-lined drain was constructed at a higher level and also further to the west (Fig 45). To the north, three posts recorded in a test pit, probably mark the continuation of this drain. Its fill and the west side of the road was recorded in section (Fig 85). Thick deposits of compacted gravels in a clay matrix, representing the road, were noted in a section to the north (Fig 86). Northwards again, in another section, slightly pebbly peaty material, 0.30m-0.40m thick, covered the steep edge of the Period I road (Fig 48). This seems an unlikely road surface and yet evidence both to the north and south indicates that it should have been: this must remain an inconsistency in the evidence.

Further north, excavations at 44 London Wall revealed good evidence for the west side of the road (Site 18). The postulated Period I ditch was infilled and the road laid above and to its west (Plate 4). The road was composed of pebbles in a matrix of silty clay, capped by heavily compacted gravels with a cambered, cobbled surface at 8.5m OD (Fig 87). Bordering the road on its west side was a timber-revetted ditch 1.5m wide x 0.7m deep, the west side of which had been cut away. The ditch silted up with dark grey-blue black silty clay and was recut (Fig 87).

To the east of the excavations at 44 London Wall, evidence from the sections seems to indicate that the east side of the road was cut back (Fig 49). The position of an east edge of the road, briefly recorded some 25m to the south during ground reduction, seems to confirm the new alignment of this edge of the road.

On the east side of the road the internal and external surfaces of a building, closely comparable with those recorded in the controlled excavation, were observed in section (Fig 88). The north edge of the building, 14m north of the southern wall of that revealed in the controlled excavation (Fig 84), was marked by a pair of substantial timber uprights related to a series of levelling layers, brickearth floors, occupation layers and a pit on its south side, with gravelled surfaces on its north side. A third timber post inserted at a later date may represent a repair. An east-west aligned plank recorded a short distance to the north seems to define the edge of the gravelled surface and could have been the remains of a drain bordering an alley on its north side (Fig 84). In another section to the south-east, a series of

brickearth floors and occupation deposits above organic dumps infilling a Period I ?channel (Fig 89) overlapped a gravelled external surface, possibly another alley. The presence of this external surface, together with the position of two posts to the south, indicates that there were at least three buildings on this site altogether (A-C), the dimensions of which were c 12.0m x 4.0m, with the northernmost (C) and possibly the middle (B) buildings being 10.0m x 4.0m. The width of the alleys is suggested as being 0.6-0.7m (Fig 84).

At the south end of the site, the Period I drainage channel was also infilled and the ground levelled up with organic material, but here a timber drain replaced the earlier revetted channel (Figs 53, 90). It was traced over a distance of 12m, aligned approximately north-south and measuring 1.2m wide x at least 0.97m in height (it had been disturbed at a level of 7.88m OD). The sides were constructed of planks set on edge while the bottom plank was supported by beams or planks 110mm thick. Pottery from a levelling layer for the drain is dated AD 120-200, while pottery from one of the organic dumps is dated c AD 120-160. A sample from a plank, thought to represent the east side of this drain at its northern limits, was taken for dendrochronological analysis (KEY 1392). To the north of this section organic/peaty material overlay the infilled stream (Fig 22). It may represent continuing infilling, merging into marsh deposits.

Beyond the edge of the prehistoric tributary, but including the canalised stream in its turn, gravel surfaces were laid, at the same time infilling all the surviving streamlets and canalised stream (Figs 10-15; 20, 21) (P15). These were not at a uniform level but seem to reflect the natural contours. The function of two timber stakes apparently associated with the gravel surface in Figure 10 is not known. Above the streamlets and canalised stream the gravel appears to have been used as permeable infill and levelling, besides its function as a surface: it was over 1m thick above the canalised stream (Figs 20, 21). Further west, where parts of a section approximately 30 + m long could be examined, the gravels were composed of several bands of compacted gravel, clearly metalled surfaces (Figs 91; 92) (P15). Just to the east of the buildings a sequence of six metalled surfaces with occupation deposits were dated by pottery to AD 120-160 (Fig 17). These, however, and a surface above a Period I streamlet (Fig 19), were at a lower level than those recorded elsewhere and may have been laid at an earlier date (no pottery was recovered from the surfaces exposed in other sections). It is also suggested however that the ground here could have been terraced; in part of the same section to the north, gravelled surfaces (Fig 18) - but poorer in quality - were recorded at a higher level though the latest of these must have post-dated the well-metalled surfaces to the south. These latter were sealed by material which contained pottery also dated AD 120-160. A large pit for the disposal of animal bones was sealed by these surfaces but post-dated the infilling of the streamlets (Fig 84).

On the west side of the road metalled surfaces at comparable levels to those on the east side were recorded (Fig 85; Figs 93; 94). A timber-lined drain, aligned north-west to south-east was inserted into the latest surface (Fig 93) and probably flowed into the roadside drain.

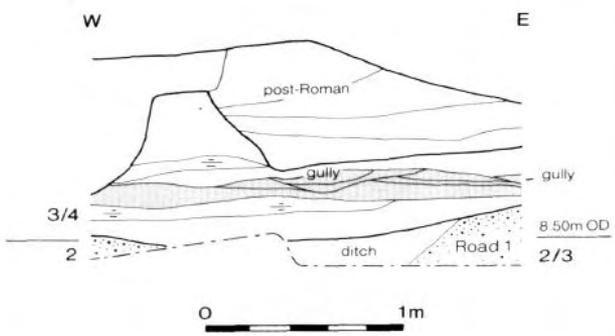


Fig 85 15-35 Copthall Avenue, watching brief: section

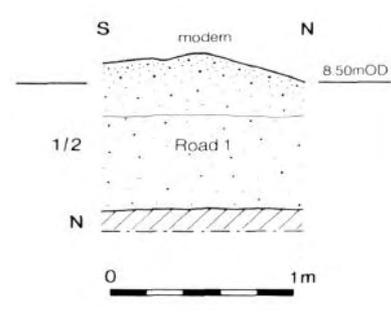


Fig 86 15-35 Copthall Avenue, watching brief: section

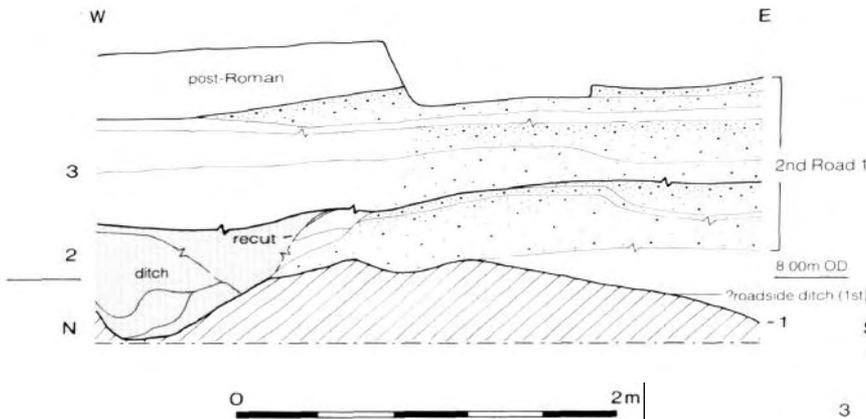


Fig 87 44 London Wall: east-west section

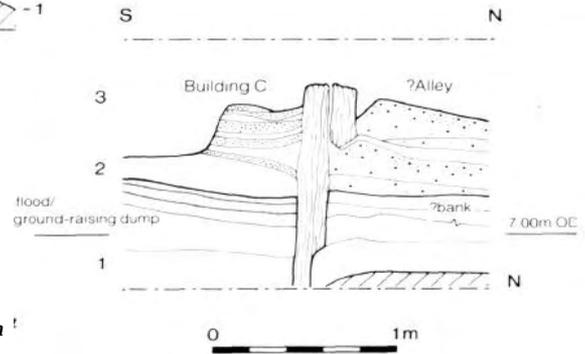


Fig 88 15-35 Copthall Avenue, watching brief: section †

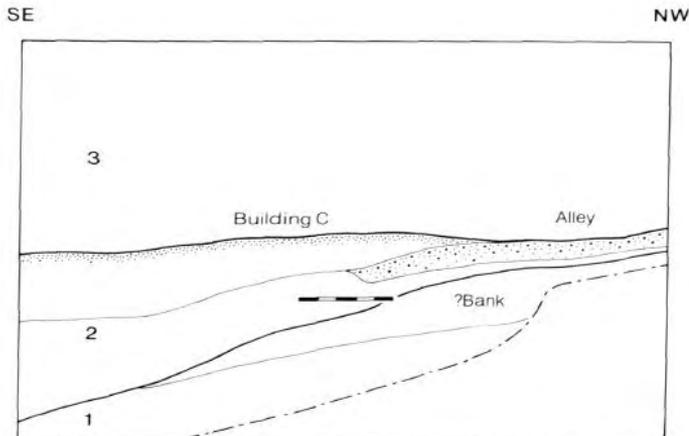


Fig 89 15-35 Copthall Avenue, watching brief: section. Scale in 0.10m units from photograph



Fig 90 15-35 Copthall Avenue, watching brief: timber land drain, looking south. Period I infilled channels and timber supports can be seen below the drain. Scale in 0.10m units

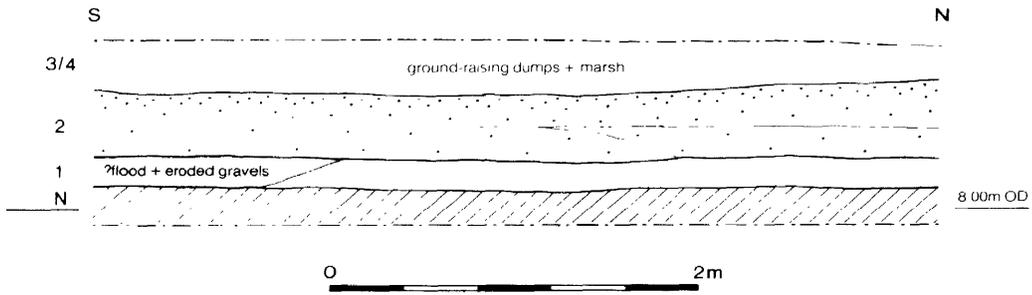


Fig 91 15-35 Copthall Avenue, watching brief: section

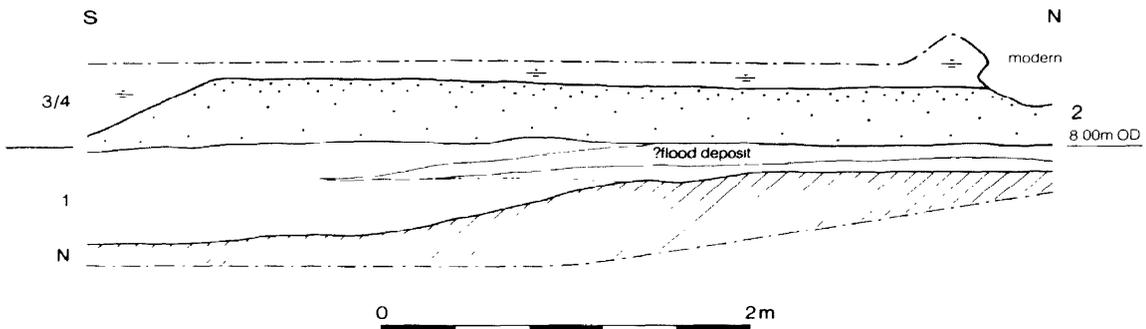


Fig 92 15-35 Copthall Avenue, watching brief: section

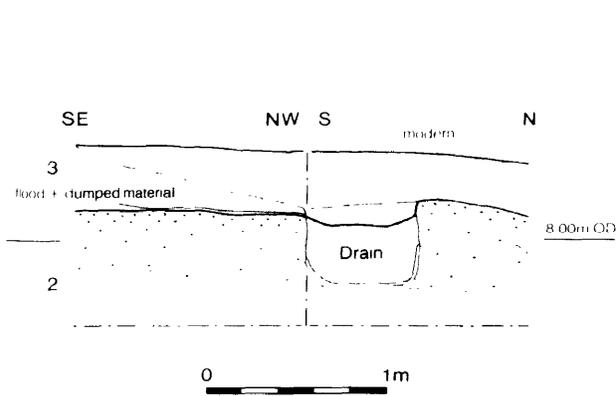


Fig 93 15-35 Copthall Avenue, watching brief: section

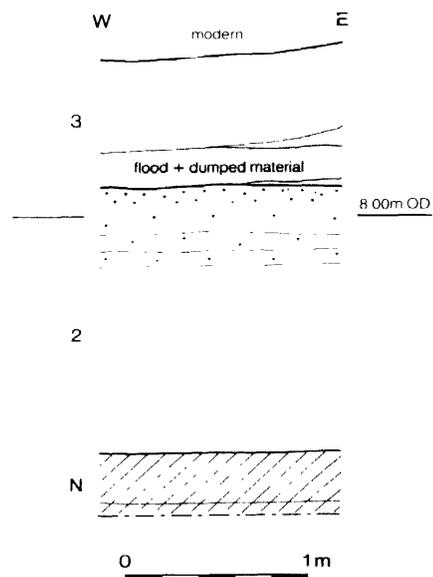


Fig 94 15-35 Copthall Avenue, watching brief: section

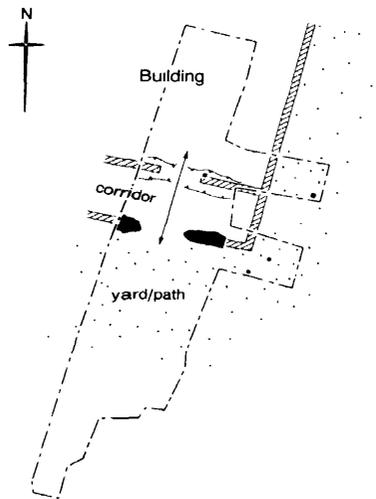


Fig 95 43 London Wall: plan of Phase 1 features

43 London Wall

Phase 1 - early 3rd century (Fig 95)

The Period I drains were infilled and the ground levelled up for the construction of a timber building at a level of c 8.6m OD. Its south wall was represented by an east-west construction trench into the fill of which three timber posts had been set; the wide spacing between two of these posts suggests a doorway. Parallel with, and a short distance to the south of this wall, the remains of a brickearth sill may imply a covered corridor c 1.4m wide with an entrance-way c 1.1m wide opposite the doorway suggested in the south wall; the 'corridor' itself was gravelled. The east wall of the building is implied by an external gravelled surface only 0.8m beyond the recorded eastern limit of the south wall. Three rectangular posts were located in this gravelled area, two of which seemed to continue the alignment of the walls of the building. To the south of the building a surface was formed by the levelling deposits which comprised pebbles in a clay matrix.

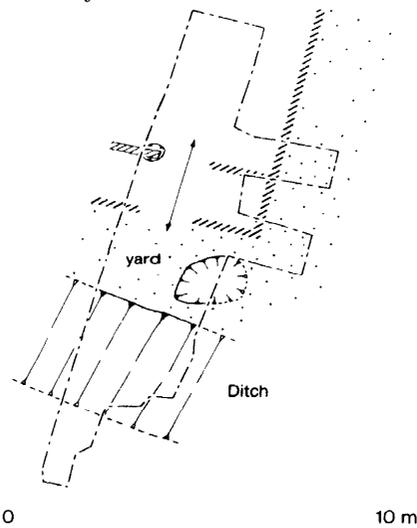


Fig 96 43 London Wall: plan of Phase 2 features

Phase 2 - c mid-late 3rd century (Fig 96)

A repair was made to the south wall of the building represented by a postpit close to one of the Phase 1 postholes. This was probably a replacement of an original wall or door support. Within the building, the floor was resurfaced. Outside, a new gravelled surface was laid to the south of the building; it was then cut by a pit (possibly refuse) and a very substantial east-west ditch, at least 2-3m wide x 1m deep. The ditch contained waterlain material.

Pottery from the Phase 2 surface is dated mid-late 3rd century, that from the ditch, late 2nd-early 3rd centuries and therefore residual.

8 Telegraph Street

Phase 1 - early-mid 2nd century (Fig 97)

A substantial stone-founded building was constructed on the same alignment as the earlier revetment (Fig 97). The remains of its north wall consisted of six courses of rough-hewn ragstone, 0.8m in height x 0.6m in width, bonded with sandy mortar. At its east corner a possible post-setting was aligned with a row of north-east to south-west orientated timber uprights; these may represent the remains of a portico. The stone wall and the timber upright alignment enclosed a make-up layer or surface of crushed white mortar.

Pottery from the initial dumps is dated AD 120-140/60 but a very small quantity was collected.

Phase 2 - mid/late 2nd century (Fig 98)

The ground level was raised and the Phase 1 building re-built, its east wall superseded by a 'plinth' of ragstone and flints which abutted the north wall. A sequence of make-up layers and floor surfaces of mortar and brickearth within the building accounted for a depth of c 0.5m, the latest surface associated with numerous small stakeholes.

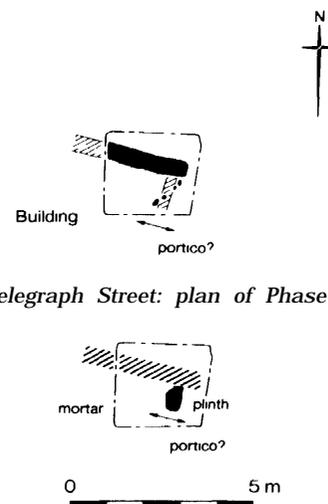


Fig 97 8 Telegraph Street: plan of Phase 1 features

Fig 98 8 Telegraph Street: plan of Phase 2 features

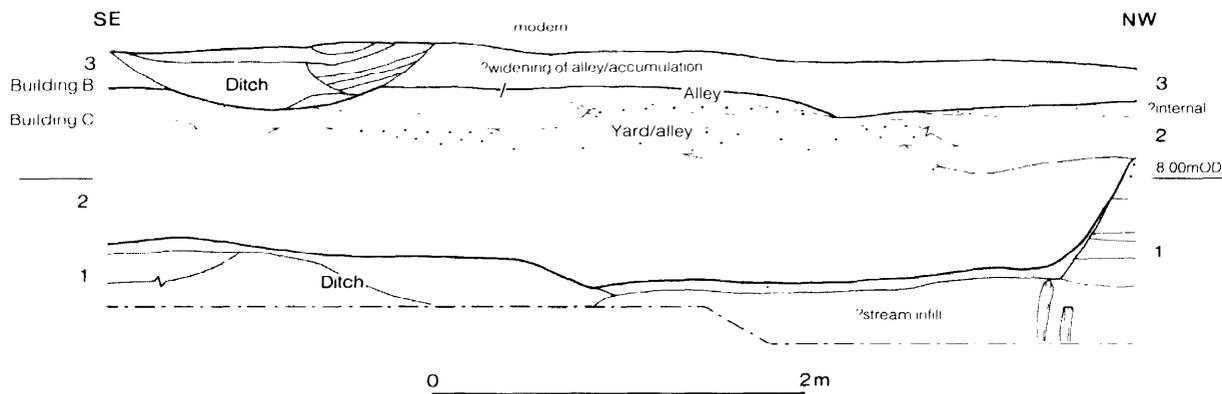


Fig 99 4-6 Copthall Avenue: east trench west section

The construction of the Phase 2 building, containing residual pottery, is dated by reference to the underlying dumps (see above) and dumps outside the building which are dated c AD 150 or later. The building was robbed in c AD 240-300.

4-6 Copthall Avenue

Phase I - mid-late 3rd/mid 4th centuries (Figs 99, 100)

The Period I surfaces were covered and the drainage channels infilled with highly organic clayey silts (Figs 64; 65; 99; 100). This filling in of the channels was carried out over a long period of time and initially is likely to have been casual. Dumps and probably natural accumulation of organic clays, some of which contained brickearth, burnt daub and mortar (Fig 66), also sealed the east edge of the Period I road.

Phase 2 - mid-late 3rd/mid 4th century (Fig 101)

A series of make-up layers (Figs 64; 65; 99; 100) above the Phase 1 dumps apparently prepared the site for the erection of timber and clay buildings. In the western trench, clay surfaces (Figs 56; 113; 114) probably represented floors within a building one wall of which was aligned north-west to south-east (Building A). On its north-east side was a sequence of external gravelled surfaces. In the eastern trench a similarly aligned building (B) is implied by clay and scorched brickearth floor surfaces (Figs 99, 100) which were bound by an external gravelled surface to the north-east, a yard or possibly an alley.

Phase 3 - mid-late 3rd/mid 4th centuries (Fig 102)

In the western trench the external surface was built over as the Phase 1 building was extended northwards, its north-east wall being retained (Fig 102). The south-

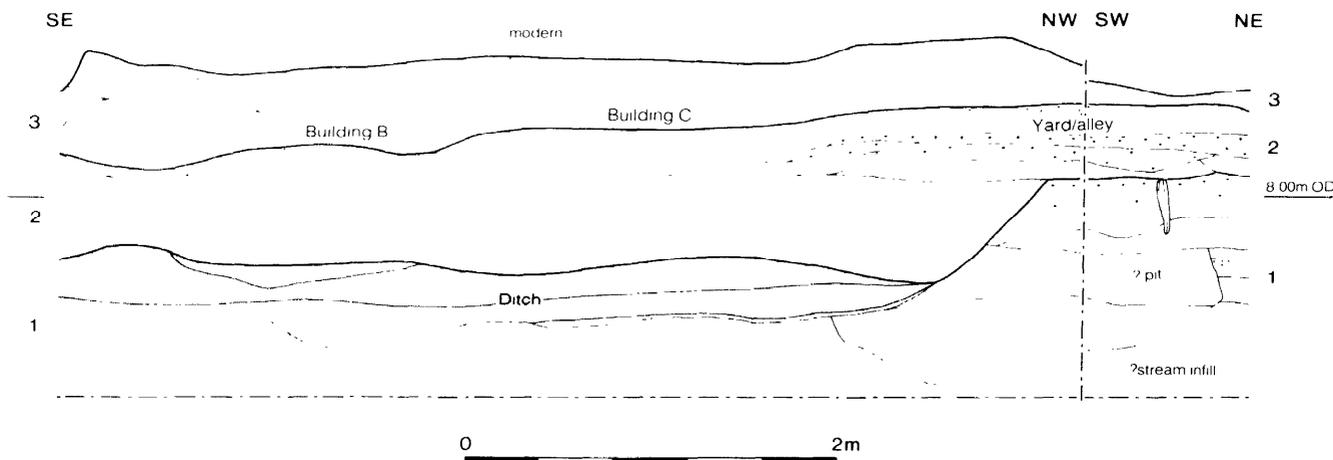


Fig 100 4-6 Copthall Avenue: east trench north and east section

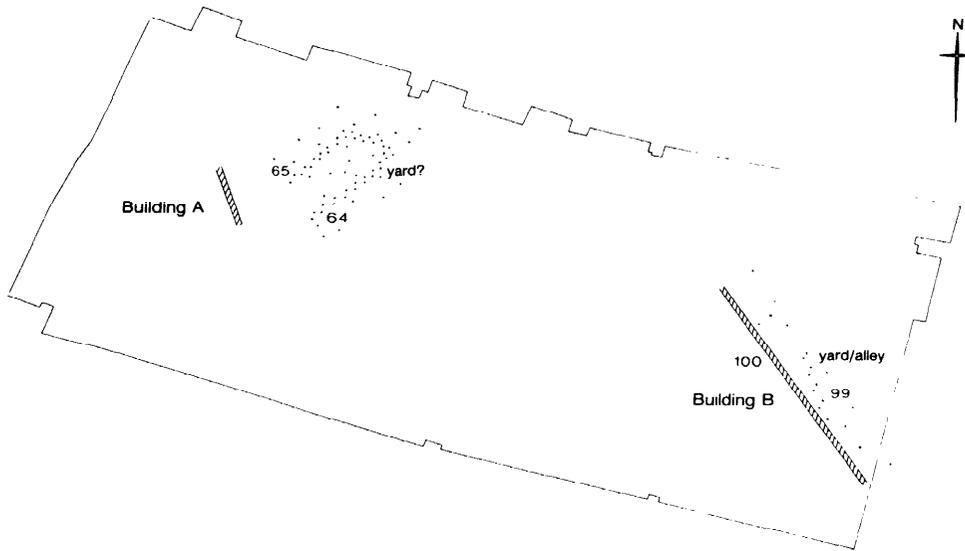


Fig 101 4-6 Copthall Avenue: plan of Phase 2 features

eastern edge of the building was represented by a north-east to south-west orientated row of pairs of substantial timber uprights and a construction trench (Fig 65). Inside the building a pair of timber posts, which separated floor surfaces composed of compacted clay or brickearth, probably indicated a partition wall (Fig 64). A gravelled yard or alley was laid on the south-east side of the building, bordered by a gully, perhaps an eavesdrip (Figs 64; 102).

It is not clear whether the external walls of the building were supported by posts or whether they were carried on piles: the level of the tops of the upright timbers was higher than the surfaces but the latter could well have subsided as the soft dumps of Phase 1 compressed.

In the east trench Building B seems to have been demolished. A surface (Figs 99; 100) 0.5m wide, composed of well-laid gravels and aligned approximately north-south, may have been an alley at least on the east side of a building (C), and possibly between two buildings which were represented by floors of clay. A layer of gravelly clay then overlay the alley and possible internal surface to the south, suggesting either a deliberate widening of the alley or the accumulation of tread. The walls of these buildings and their partitions were implied by the common termination points of many of the floors and occupation layers; nothing survived of the walls which were presumably dismantled and removed.

Pottery dates these buildings and the dumps to the mid 3rd- early 4th centuries. The infill in the channels, however, also contained dumps dating to the 2nd

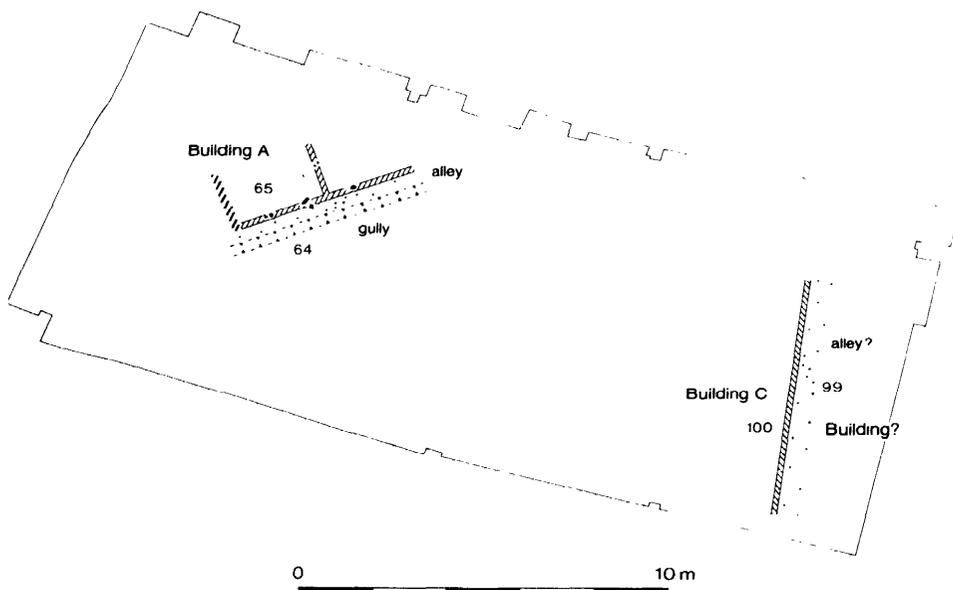


Fig 102 4-6 Copthall Avenue: plan of Phase 3 features

century, possibly implying that these were partly infilled in the 2nd century and that the site was abandoned until the mid 3rd-early 4th centuries (though see Discussion).

Dating (Fig 103)

This period may span as many as two hundred years, from early in the 2nd century, through the 3rd and into the 4th century. A similar sequence of drainage ditch infilling - levelling - building construction/habitation was observed in most parts of the study area, but the rate of development varied from site to site. This chronological variation is interpreted further below, in the general discussion of the settlement pattern in the Walbrook valley (pp. 120-122).

At **15-35 Copthall Avenue**, the site where the dating evidence is fullest and most precise, a very large group of pottery indicates that Phase 1 probably began in the 120s. Stamped samian vessels and Black Burnished wares provide *termini post quos* of 110 and c 120 respectively, and it is even possible that some of the pottery, which is severely burnt, was damaged in the Hadrianic Fire and redeposited on the site. The following four phases seem to have passed rapidly, because dendrochronology suggests a *terminus ante quem* of 138 for the construction of the Phase 6 drain. Four timbers from the drain are consistent in having outer rings dating between 70 and 86, and if it has been correctly deduced that only the sapwood has been removed from them (p. 118), then the latest possible felling date is the year 138. Pottery from the fill of the drain shows, on the other hand, that it continued in use into the mid/late 2nd century.

Dendrochronology is of little help in dating the remaining phases on the site, but the appearance in Phase 7 of late Black Burnished Ware 2 forms and a Camulodunum type 306 D-rim bowl, and in Phase 11 of a North Gaulish Grey Ware pentice beaker, place these phases in the late 2nd and the 3rd centuries respectively. The latest road surfaces (Phase 12) contained Nene Valley colour-coated wares, together with Alice Holt/Farnham and Black Burnished Ware 1 flanged bowls, and so will have remained in use through the 3rd, if not into the 4th century. The final history of the building is less certain, but it seems most likely that it was dismantled shortly after the early 3rd-century modifications (Phases 10-11), and that its site was left unoccupied until the ground level was raised again in the second half of the 4th century (Period III, below p 70).

Very few datable finds were recovered from the watching-brief at **15-35 Copthall Avenue**, and the sequence cannot be reconstructed in detail. Most activities which can be dated - in particular, the initial ditch-infilling and the laying of metallised surfaces to the east of the buildings - were associated with 2nd century pottery, which suggests that development here may have proceeded at a similar rate to that in the main, controlled excavation area. The erection of the buildings followed not long after the reconstruction of the road on a more northerly alignment. This is dated by a large group of pottery from silt layers in the roadside ditch at **44 London Wall**, which shows that the ditch had been cut

and the road was in use during the second half of the 2nd century.

At **Telegraph Street** a very small group of pottery from the initial levelling dumps suggests that the stone building may also date from as early as the first quarter of the 2nd century. Pottery from further dumps, outside the building but preceding Phase 2, date its reconstruction to c 150 or later; and, to judge by the presence of an Oxfordshire mortarium, it was probably dismantled in the second half of the 3rd century.

On the other two sites, however, the buildings seem not to have been put up until later. The make-up layers beneath the timber building at **43 London Wall**, and the fill of its construction trench, yielded a late form of Black Burnished Ware 2 bowl and a Black Burnished Ware 1 bowl with incipient flange - pottery types that did not appear until the early 3rd century; the pit outside the building (360) cannot have been backfilled until even later, for it contained a late 3rd-century coin, a radiate copy. Similarly, at **4-6 Copthall Avenue**, although one group of virtually complete pots (from context 15) suggests that infilling may have begun in the middle of the 2nd century, the pottery from the remainder of the levelling dumps (Black Burnished Ware jars with obtuse lattice decoration, Alice Holt/Farnham and Nene Valley wares) indicates that the process was not completed, in preparation for building, until the second half of the 3rd century. The structure itself may have remained in use into the 4th century, although the finds provide no clear terminal date.

Discussion (Figs 104, 105)

15-35 Copthall Avenue and 44 London Wall

At 15-35 Copthall Avenue drainage channels, the canalised stream and streamlets were all infilled. Very little pottery, however, was retrieved and most of it was in small groups so that dating evidence for this period is unsatisfactory.

In the former tributary the infill consisted of dumps of organic material; evidence from the controlled excavation demonstrated that this eventually subsided. Pottery from these dumps range in date from AD 120-200; comparable material from the controlled excavation is dated AD 120-140.

The evidence seems to suggest that Road 1 - or part of it - was moved a little to the west and realigned on a more north-northeast/south-southwest axis to that of the earlier road (see p 42). Drainage was provided by timber revetted ditches or timber lined drains, the differences suggesting that drainage beside the road was the responsibility of individual property occupiers. No drain was recorded in the section adjacent to the west end of the controlled excavation though here the awkward angle of the section, together with erosion at the edge of the road, may have obscured its profile. A timber stake could have marked the position of the east side of a drain. During this period the road was regularly repaired and resurfaced and up to c AD 350 (Period III, Part 5).

Phase	Dendrochronology	Coins	Stamped samian	Other pottery	Suggested date for phase
15-35 Cophthall Avenue, controlled excavation (OPT 81)					
1	AD 69-114	—	MALCIO, Montans, Dr 37, AD 110-45 BALBINUS, Les Martres, Dr 18/31, AD 110-25 DAGOMARUS, Les Martres, Dr 33a, AD 100-125 MANDIULUS, La Grauf, Dr 15/17 or 18, AD 60-85	AHSU, BB1 , BB2 , BBS , COLC, COMO, DR20, FMIC, G238, GROG HWC, KOLN, LOFG, LOMA, LOMI LONW , NKGW, NKSH, PE47, RDBK VCWS , VRMI, VRR, VRW group size: 25.3 kg date: AD 120-140	early/mid 2nd c
2-5	AD 66 +	—	—	AHSU, BB1 , BB2 , DR20, FMIC GROG, HWC, KOLN, LOEG, LOMA LOMI, LONW , NKSH, VCWS , VRW NVCC (intrusive) group size: 10.0 kg date: AD 120-140	early/mid 2nd c
6	AD 96 +	—	MATERNUS III, Lezoux Dr 33, AD 125-50	AHSU, BB2 , DR20, HWC, KOAN PE47, VCWS , VRW group size: 3.4 kg date: AD 140-200	early/mid 2nd c (use of drain mid/ late 2nd c.)
7-8	—	—	BUCCULA, Lezoux Dr 33, AD 140-80	BB1 , BB2 , BBS , C306 , DR20 H70, HWC, LOMI, NKGW, NKSH SESH, VCWS , VRW group size: 4.8 kg date: AD 180-260	late 2nd c
9	—	—	—	BB1 , BB2 , DR20, HWC, KOAN MICA, PE47, RDBK, VCWS , VRW group size: 2.8 kg date: AD 180-260	late 2nd c.
10	—	—	?, Les Martres Dr 18/31R, AD 100-20	AHSU, BB1 , BB2 , BBS , C306 DR20, HWC, LOMI, MICA, NKSH PE47, RDBK, VCWS , VRW group size: 2.6 kg date: AD 200-60	early 3rd c
11	AD 81 +	—	—	AHSU, BB1 , BB2 , BBS , DR20 HWC, KOAN, LCWS, LOMI, NGGW NKGW, NKSH, PE47, RDBK, RHOD VCWS , VRR, VRW group size: 5.0 kg date: AD 200-300	early 3rd c
12	—	—	—	AHFA , BB1 , BB2 , HWC, NVCC VCWS group size: 1.0 kg date: AD 240-350	mid/late 3rd c or later
15-35 Cophthall Avenue, watching-brief (KEY 83)					
—	—	—	—	BB1 , BB2 , DR20, HWC, NKSH VCWS , VRMA, VRW date: AD 140-200	drainage ditch infilling probably mid 2nd c. other features undated
44 London Wall					
—	—	—	—	BB1 , BB2 , COLC, HWC, KOLN MICA, NVCC , PE47, SAM (DR 3 18, 18/31, 37, 45), VCWS VRW date: AD 140-200	mid/late 2nd c

Fig 103 Summary of dating evidence for Period II

Phase	Dendrochronology	Coins	Stamped samian	Other pottery	Suggested date for phase
43 London Wall					
1				AHSU, BB1, BB2, C186, CGBL, CGWH, DR20, FMIC, H70?, HWC, KOAN, KOLN, LCWS, MICA, MOSL, NKSH, PE47, VCWS, VRW date AD 200+	early 3rd c
2		radiate, late 3rd c		AHFA, BB2, CGBL, DR20, MICA, NKSH, OXMO, PE47 date AD 250-300	late 3rd c
4-6 Cophall Avenue					
1				AHFA, AHSU, BB1, BB2, COLC, DR20, HWC, NVCC, OXRC, VCWS, VRMI?, VRW date AD 250-400	late 3rd c
2				VCWS date AD 40-200	late 3rd c or later
3		Trajan sestertius AD 98-117		BB1, BB2, C306, CGBL, COLC, DR20, KOLN, MOSL, NVCC, OXMO, PE47, VRW date AD 250-350	late 3rd - early 4th c
Telegraph Street					
1				BB1, COMO, GROG, HWC, LOEG, LOMI, LONW, VCWS, VRW date AD 150-200	construction ?early 2nd c : external dumping pre-Phase 2 mid/late 2nd c.
2				BB1, BB2, DR20, HWC, KOAN, LOMI, LONW, MICA, NKSH, OXMO, PE47, VCWS, VRW date AD 240-300	late 3rd c

Fig 103 continued

Timber buildings were erected beside the road on its east side above the levelling dumps and covering an area 14m x 12m (Fig 104). The controlled excavation provided the details of one of these buildings (A). It was constructed on timber baseplates, laid onto the piles of the Period I path, and therefore was not aligned with the Period II road but with that of Period I. The evidence suggests that the walls were of wattle and daub or timber.

Two of the baseplates (oak) found in situ measured 0.18m wide x 0.07m and 0.12m deep. One of the baseplates could not be retrieved but on the other mortices were cut along its length apparently 0.14m-0.18m apart and measuring 0.22-0.32m x 0.11m, but probably distorted through decay. Into these timber studs could have been set which either carried a wall-plate or tie beams, or supported the infill of the wall. Perring suggests that the former method of building may imply a box-framed construction (Perring & Roskams forthcoming). If the size and spacing of the mortices is presumed to be accurate, however, a vertically timbered wall is more likely. Botanical evidence suggests that the roofing material could have been wheat-straw though it is considered more likely that the evidence derived from the floor covering (p 110).

Partitions were supported on oak ground-beams set in very shallow slots (though the slots could have resulted from the downward pressure of the walls).

They were rather smaller than the baseplates, but also had a series of mortices cut into their upper face. One of the ground-beams - apparently reused timber - was particularly well preserved (411); it measured 1.94m long x 0.12m wide x 0.07m deep and five mortices were spaced 0.27m - 0.37m apart. The other surviving ground-beam (393) was in a very poor condition but supplied more information about the construction of the wall itself. It measured at least 3.35m in length by c 0.16m wide x c 0.14m deep. Decayed mortices were visible and, in addition, the remains of small timber uprights which could have been either the tenons of more substantial uprights or uprights which supported the infill of the wall. Apparently interconnecting the mortices were two parallel grooves aligned along the length of the ground-beam, that on the west side being 20mm wide x 40mm deep, that on the east side being 10mm wide by 60mm deep, though the fashioning of such grooves probably resulted in a considerable variety of depths (Fig 105). Both grooves were filled with decayed wood and clay. These grooves may have anchored vertical rods for wattle panels while the timber studs supported the horizontal rods. The uprights could have been retained in position either by the insertion of wedges into both grooves or by the upright occupying the mortise and overlapping the grooves. A clay and brickearth-based daub is suggested by the fill of the grooves and by a deposit of clean brickearth surviving on the upper face of the ground-beam.

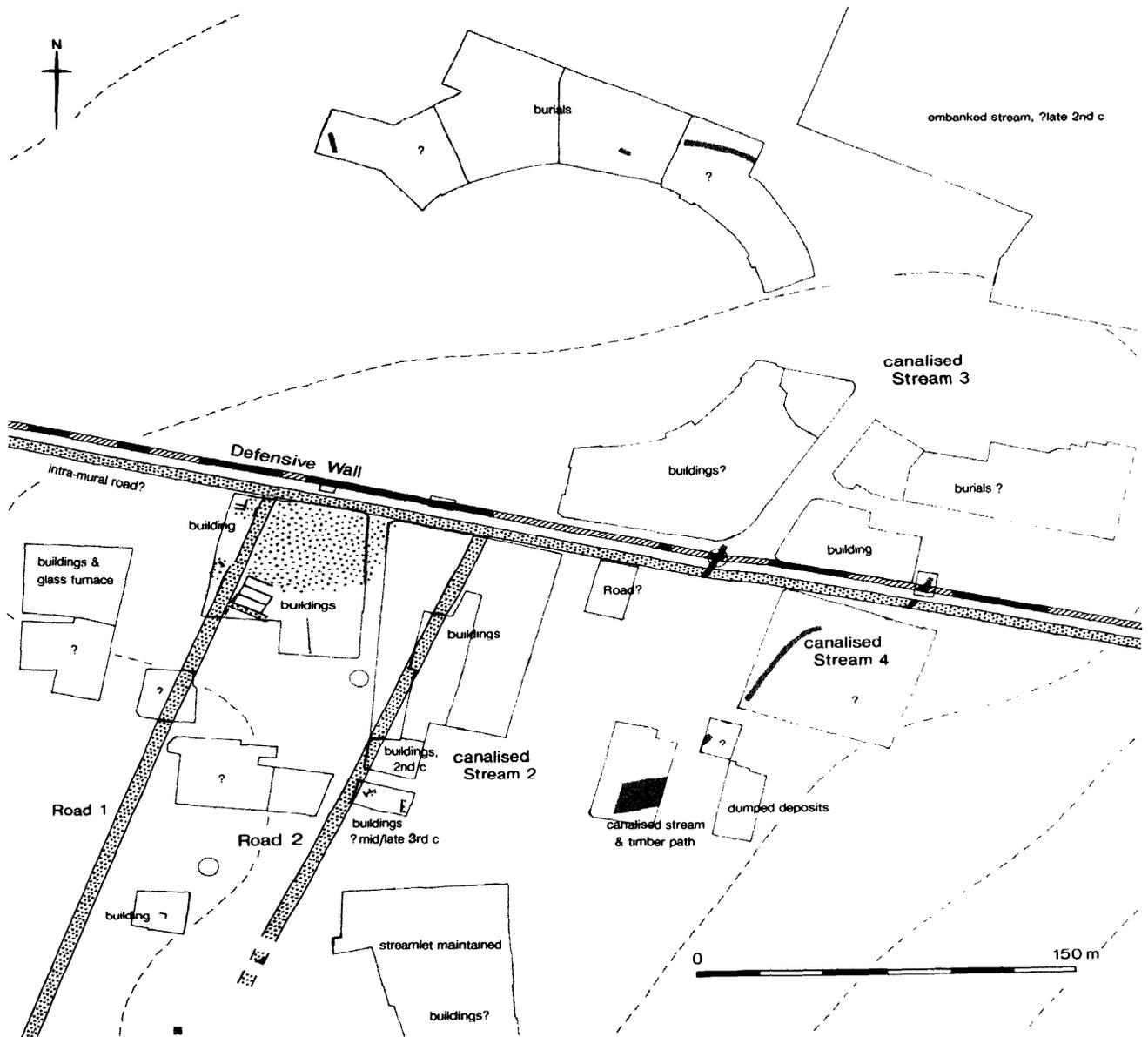


Fig 104 Study area: plan of Period II features, c late 2nd century (unless otherwise stated)

In its earliest phases (1-5) rooms within the building were narrow and frequently modified. A drain and gully were inserted on the west side of the building in c AD 140 (Phase 6), probably at the same time as a western extension was added to the latter. Larger rooms were created thereafter and in Phase 9 the south wall of the building was opened up. Floor surfaces declined in quality in the eastern rooms in Phase 10, in contrast to those in the western room. A revetted drain or sump was inserted into the external surface along the south edge of the building in Phase 11, perhaps connected with activities within the building. In its final Phase, 12, the south end of the building may have been extended westwards or a covered floor surface added outside the building above the infilled drain and gravelled surface.

Within the building the rooms were characterised by the number of hearths, pits and scorched floor surfaces. Many of the pits had either been burnt and/or contained burnt material, especially charcoal and sometimes slag, implying that these were sunken hearths. They were often constructed on two levels or had a shallower 'arm' extending from the main pit, possibly as flues. Some, constructed as slabs or bases of baked clay, may have been ovens, particularly where evidence of a superstructure survived. Strategically positioned stakes and slots containing decayed wood imply that these were built of wattle and daub.

There are indications that the west and east sides of the building were occupied differently. The greatest proportion of pits, hearths and ovens was situated in the

5. Period III: Late Roman Developments - 4th Century

At 15-35 Copthall Avenue maintenance of the road continued, external surfaces were laid and a sequence of large regular pits was dug, the latter possibly associated with an industrial activity. Period II buildings at 4-6 Copthall Avenue were demolished and the evidence from all sites indicates that drainage was becoming less effective: dumping to raise the ground level and the digging of drainage ditches was resumed. Macroscopic, insect and parasite remains from 15-35 Copthall Avenue indicate an urban environment and damp muddy conditions (Part 8, p 112).

15 - 35 Copthall Avenue: controlled excavation

Phase 1 - 4th century (Fig 106)

The ground level east of the road was raised some 0.25m by means of a dump of pebbly clay. Its surface was cut by two pits, one of which was regular and c 1.5m in diameter (Fig 106). It is likely that a ditch was cut beside the road, if so it would have been truncated.

Phase 2 - mid-late 4th century (Fig 107)

Two large cut features - possibly construction cuts - were filled with a gravelly clay that included a great quantity of furnace lining (Part 7, p 84). In the west this material became the foundation for a good external surface, composed of compacted gravel in a clay matrix, which was raised some 0.3m above the adjacent ground to the level of the road; at the same time the road was repaired and resurfaced along its eastern edge. This surface terminated in the east, and was perhaps unfinished, and here the foundation material was used as a surface. A ditch, 1.5m wide x 0.75m deep and probably revetted (OPT 130), was dug beside the road. Such a substantial ditch was obviously designed to drain off more water than could be expected from the road; this, with the raised surface, suggests that the ground was wet.

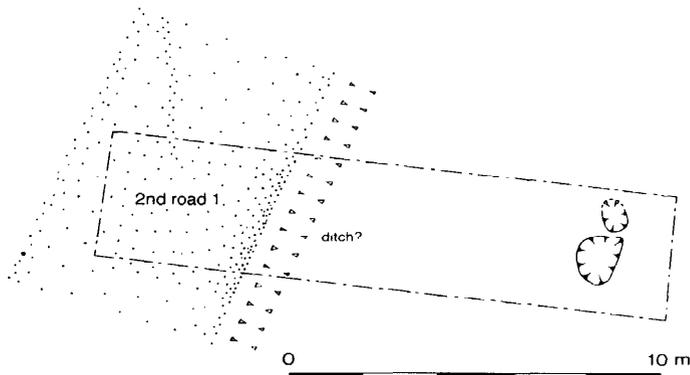


Fig 106 15-35 Copthall Avenue, controlled excavation: plan of Phase 1 features

Phase 3 - mid-late 4th century (Fig 107)

Four pits, three of them intercutting an earlier similar pit, shared a number of characteristics which suggested that they may have been connected with an industrial process (OPT 172) (Fig 107), though no indication of this was apparent from the finds (Part 7, p 84) or macroscopic and insect remains (Part 8, p 111). They were cut into the poorer surface of Phase 2 which could have been laid specifically for them. They were all fairly large - 1.5m + in diameter or 2.2m + in length, 0.4-0.5m deep and, apart from the latest pit, contained a number of fills which had accumulated over a period of time, the earliest of which was always a thick layer of organic silty clay with lenses of sand. The surface associated with the pits was then raised to the same level as the adjacent, better quality surface and sealed the pits.

Organic clayey silt had meanwhile accumulated in the bottom half of the roadside ditch (OPT 133, 134, 138, 140, 144, 145, 146, 147), macroscopic, insect and mollusc remains suggesting muddy, almost stagnant water (Part 8, p 112).

phase 4 - mid-late 4th century (Fig 108)

The ground level to the south of the external surfaces was raised with dumps of clay and pebbles which partly infilled the roadside ditch at the same time. A possible structure was built, partly on the Phase 2 raised surface which was cut away, and partly on a sill consisting of banked pebbles and tile fragments in a matrix of clay (Fig 108). Aligned north-south, this feature abutted the Phase 2 surface. No internal surfaces survived but a pit may have marked the position of a post.

Phase 5 - mid-late 4th century (Fig 109)

The Phase 4 structure was short lived for it was soon dismantled and, south of the Phases 2 and 3 surfaces, the ground level was raised again (Fig 109). East of the structure the dumps were of rubble and clay while above

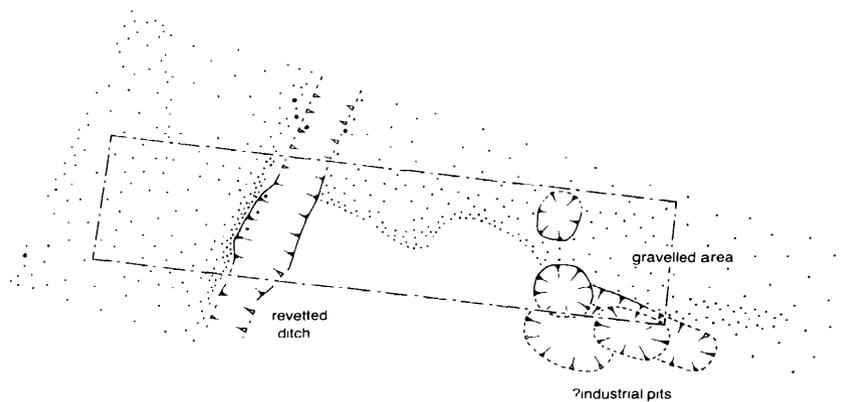


Fig 107 15-35 Cophall Avenue, controlled excavation: plan of Phase 3 features

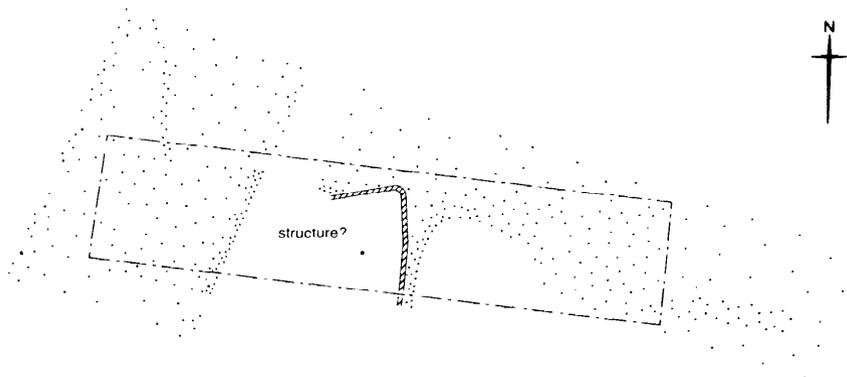


Fig 108 15-35 Cophall Avenue, controlled excavation: plan of Phase 4 features

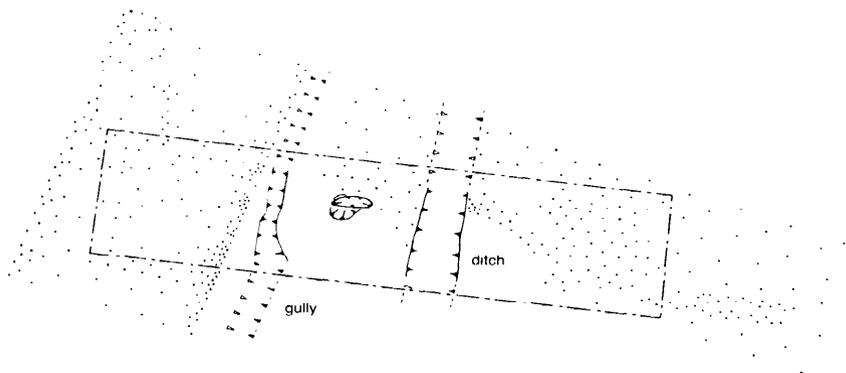


Fig 109 15-35 Cophall Avenue, controlled excavation: plan of Phase 5 features

it and beyond they consisted of silty clay which may have included waterborne material.

Beside the road, a crude gully was dug, replaced quite quickly with another which became silted up. Further east a shallow north-south aligned drainage ditch was cut through the east end of the raised surface of Phase 2, while a pit encroached onto its western side. Both the ditch and the pit were recut.

Analysis of the large number of insect remains from and the character of the peaty till of the pit (OPT 110) suggests that it accumulated slowly (Part 8 p 111).

15-35 Cophthall Avenue: watching brief and 44 London Wall

(Figs 110, 111)

In many sections dumped deposits, usually of clay with a high ferruginous content, sealed the sequences of occupation surfaces representing buildings (Figs 88; 89) and the gravelled surfaces towards the north and east sides of the site (Figs 12-15). In the south the land drain had fallen into disrepair and eventually silted up (Fig 53; 111). Only one piece of pottery dated AD 70-180 was recovered from its truncated fill, a date not dissimilar to that for the construction of the drain. A section very close to the drain indicated that clay dumps raised the ground level here c 0.4m. The gravelled surface in two sections were sealed by organic dumps but these are considered from their level and dating (p 56) to have been of an earlier date (see Period II) (Figs 17; 19).

There are indications from some sections that peaty deposits filled large regular cut features (Figs 17; 19; 92). Whether these were Roman or medieval is not clear.

Dumps were recorded close to both edges of the road (Figs 10; 47; 91-4); often they included peaty material (Figs 10; 91; 92) suggesting a degree of wetness. Above the west edge of the road a layer of clay is considered from its level of c 8.61m OD to have been Roman in date, (Fig 85). Generally, dumping seems to have occurred in all areas of the site except where the former stream changed direction, and southwards (Figs 20-2). Towards the north end of the site, the eastern edge of the Period I road was covered by compacted gravels which were truncated at a level of 9.05m OD (Fig 49). They also extended beyond the edge of the road and can possibly be compared in the controlled excavation with the raised external surface of Phase 2.

At 44 London Wall dumps of similar ferruginous clay raised the level of each resurfacing of the road (Fig 87). These ground raising dumps, which were not confined to the road, were all dark in colour, sometimes containing visible organic material, orange ferruginous material and freshwater snail shells, suggesting that they became waterlogged. Two of the resurfacings were rather basic or had worn away (Fig 87), and did not extend as far west as the original edge, however, one of the latest re-surfacings extended beyond the west edge of the road. The level of the road was thus raised on four separate occasions, a depth of over 0.5m, to a level of 9.16m OD before truncation.

43 London Wall (Fig 110)

The demolition of the Period II building was followed by two main phases of dumping over the entire site (Fig 110).

Phase 1 - 4th century

Grey dark-grey silty clays which contained a light ferruginous content and soft red-brown woody material were laid. Two stakes had been inserted into the top of this dump sequence.

Phase 2 - 4th century

Dumping continued with deposits very similar to those of Phase 1 but contained a proportion of gravel suggesting that a degree of stability was required. Towards the east the dumps were less gravelly, even darker in colour (dark grey-black) and contained organic matter.

The dumps raised the ground level to c 9.3m OD, a depth of over 0.5m; deposits above this level were closely comparable but contained medieval pottery.

A clear break in the sequence of dumping demonstrates that it was not deposited in one major operation. Small groups of pottery from these dumps are dated c AD 313-400.

8 Telegraph Street (Fig 112)

Dumped deposits consisting basically of grey silty clays sealed the robbed Period II building and a crude drainage channel, north-west to south-east, was cut from its surface.

Pottery from the dumps and the channel is dated c AD 120-250, earlier than that of the robbed building (AD 240/300) and therefore residual. This sequence of dumps and drainage channel following demolition of buildings is common to all the sites in the study.

4-6 Cophthall Avenue

Phase 1 - late 3rd-4th centuries

The Period II buildings were dismantled (Figs 64; 65; 99; 100) and a series of dumps raised the ground level by 0.4m - 0.5m (not illustrated). In the western trench these dumps were composed of grey and brown silty clays, often containing small building debris fragments and suggesting destruction debris (Figs 64; 65). In the eastern trench they consisted of dark grey silty clays, obviously waterlogged (Fig 99). Here the dumps were cut by a pit or ditch (Fig 99).

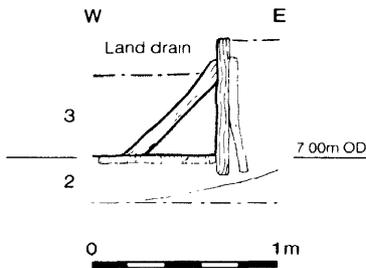


Fig 111 15-35 Copthall Avenue, watching brief: section

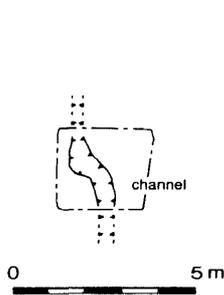


Fig 112 8 Telegraph Street: plan of Period III features

Phase 2 (Fig 113)

Two substantial ditches, clearly designed for drainage, were cut into the dumps. These ditches ran north-east to south-west (Figs 64; 113) and west-northwest/east-southeast and unless they stopped short, must have interconnected. One of them was later re-cut (Fig 100). They contained naturally accumulated fills of organic clays with very few inclusions. No dating evidence was recovered.

Dating (Fig 114)

This period belongs broadly to the 4th century, but any refinement of the basic framework is beset with problems. None of the sites produced very many finds, and the bulk of those were coarse pottery sherds, mostly locally-made, which are not susceptible to close dating. Very few stratified sequences of 4th century Roman pottery from London have been studied until recently, and the detailed chronology of fabrics and forms is yet to be evaluated. More precise evidence is provided chiefly by coins - which in some cases may be residual, just as much of the pottery clearly is - and by pottery types imported from outside the London region and dated on sites elsewhere.

At **44 London Wall** the latest road surfaces and associated dumps may date from as early as the late 3rd century. Three radiate copies were found within them, and the Oxfordshire wares are not those typical of the latest (post-350) output of that region. The material from the Phase 1 deposits at **15-35 Copthall Avenue**, which includes a radiate coin and an imitation DR 45 *mortarium* in Oxfordshire ware, might also be given a late 3rd/early 4th century date were it not for the occurrence of sherds from a Calcite Gritted Ware jar. Current theory dates this to 350 or later, but future study may ultimately prove it to have been introduced earlier. Phases 2-5, on the other hand, can be confidently assigned to the second half of the 4th century on the grounds of their containing Porchester D type pottery.

The dumps observed in the watching-brief at **15-35 Copthall Avenue** are assumed to have been deposited in the 3rd or 4th centuries, even though they contained only residual sherds, but those on two of the other sites have exclusively 4th century dates. At **43 London Wall** they contained a coin of Constantine, which provides a *terminus post quem* of 313-6, and at **4-6 Copthall Avenue** they overlay the demolished Period II building, the final phases of which are dated to the late

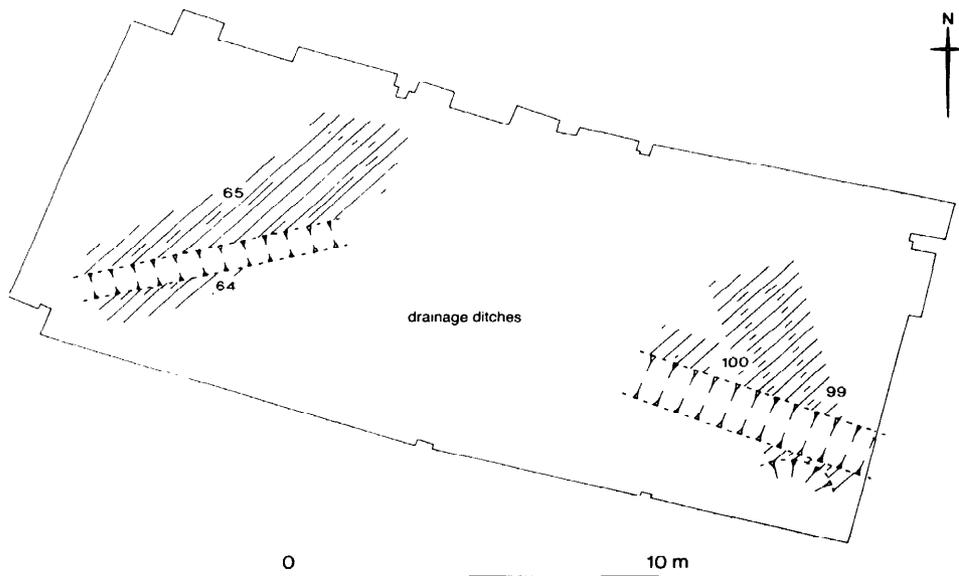


Fig 113 4-6 Copthall Avenue: plan of Phase 2 features

Phase	Dendrochronology	Coins	Stamped samian	Other pottery	Suggested date for phase
15-35 Cophthall Avenue, controlled excavation (OPT 81)					
1	—	Radiate, late 3rd c ?Radiate, late 3rd c	—	BB1, BB2, BBS, CALC COMO C306 DR20 HWC KOLN, LOMI MHAD MOSL NKGW, NKSH, NVCC NVMO, OXCC OXMO, OXRC PE47 PRW3, RDBK, RHOD, VCWS VRW date AD 300-400	4th c
2	—	Antoninus Pius, As, AD 143-4	none relevant	BB1, BB2 BBS, COLC DR20 HWC, KOLN, LOMI, MOSL, NKSH, NVCC, OXMO PE47 PORD, VCWS, VRW date AD 350-400	mid/late 4th c
3	—	—	none relevant	AHFA BB1, BB2, BBS, CALC DR20 EPON?, FMIC HWC KOAN LVRW MHAD?, MICA, MOSL, NGGW NVCC OXMO OXRC, PE47 PORD VCWS VRW date AD 350-400	mid/late 4th c.
4	—	—	—	AHFA BB1 BB2 BBS CGBL COLC, COMO DR20 EIFL HWC LRMA, MHAD, MICA, MOSL, NVCC NVMO OXMO OXRC PE47 VCWS VRW date AD 300-400	mid/late 4th c
5	--	Tetricus I, AD 270-3 Carausius?, radiate AD 286-93	—	AHFA BB1 BB2 BBS CALC CGBL DR20 EIFL? GROG KOAN NKSH NVCC NVMO OXCC OXMO OXRC PE47, PORD VCWS VRW date AD 350-400	mid/late 4th c
15-35 Cophthall Avenue, watching-brief (KEY 83)					
—	—	—	—	Roman residual	3rd/4th c ?
44 London Wall					
—	—	Radiate copies (three), late 3rd c	—	AHFA BB1, BB2, BBS DR20 LCWS NVCC OXMO PE47 VCWS VRW date AD 240 400	late 3rd c. or later
43 London Wall					
1	—	Radiate copies (five) late 3rd c Constantine I, follis, Constantine I? AD 310+ ?	—	AHFA BB1 DR20 LCWS NVCC? OXCC OXMO OXRC PE47 VCWS early medieval (intrusive?) date AD 300-400	early 4th c
2	—	—	—	AHFA BB1 BB2 COLC DR20 KOLN MOSL NVCC PF47 RDBK VCWS VRW date AD 300-400	early 4th c. or later
4-6 Cophthall Avenue					
1	—	—	—	AHFA BB1 HWC NVCC date AD 250-400	early 4th c. or later
2	No significant dating evidence	—	—	—	—
Telegraph Street					
No dating evidence					

Fig 114 Summary of dating evidence for Period III

3rd/early 4th centuries (see above, p. 63); on neither site, however, were there finds to prove that the sequence necessarily extended into the second half of the 4th century.

Discussion (Fig 115)

15-35 Copthall Avenue

The reason for the abandonment of the buildings in the 3rd/mid 3rd century is not understood, but it may be that the buildings had become uncomfortably damp or that the reasons for their siting in the area were no longer relevant.

Activity re-commenced at 15-35 Copthall Avenue when the ground level was raised some 0.25m (Phase 1); the east side of the road was repaired and brought up to the same level as a raised external surface on its east side (Fig 115). A substantial ditch, cast beside the road and the external surface, was clearly designed to carry more than surface run-off (Phase 2) though environmental evidence indicated near stagnant water (Part 8 p 112). Evidence from 44 London Wall suggests that the last good road surface extended westwards beyond the edge of the Period II road.

The Phase 2 raised surface may have been associated with an industrial process, for a succession of large distinctive pits were cut from that part of the surface furthest from the road. Within the dumped foundation of the surface were found large quantities of furnace-lining which suggests that it was derived from the area. Thereafter, although pits were dug throughout this period and some sort of structure was built in Phase 4, activity was mainly confined to drainage, particularly beside the road, and the dumping of clay and gravels to the south of the raised surface (Phases 4-5). Environmental evidence from the controlled excavation testifies to continuing occupation and wetness of the area (Part 8 p 112).

Successive dumping, drainage ditches and gullies and the raised surface of Phase 2 are suggestive of drainage problems. Because there were no flood layers, the problems are considered to have been caused by the ground becoming saturated with water.

Dumped deposits were noted in many sections exposed during the watching brief. The buildings were sealed by dumps of clay, as were the gravelled surfaces on the east side of the site and possibly the land drain in the south. On both sides of the road dumps were recorded, sometimes above peaty deposits. These peaty deposits may also have been dumped or they could have represented *in situ* waterlogged deposits, either case indicating wet ground conditions. The dumps may therefore have been attempts at reclamation.

43 and 44 London Wall

Evidence from 43 and 44 London Wall also implies that ground conditions had become wet. At 44 London Wall the road was re-surfaced above four separate dumps which altogether raised the ground level by over 0.5m. This corresponds closely to a similar level of dumping on the adjacent site, No 43. Darker, more organic

deposits above and in the vicinity of the Period II roadside ditch suggest that water continued to accumulate here. Saturated ground - also confirmed at No 44 by the freshwater mollusc shells within the dumps - presumably prompted the raising of the contemporary ground level and the resurfacing of the road. Characteristics of the dumping, common to both the Roman and medieval dumps (organic matter, ferruginous material, mottling), were probably the result of waterlogging.

From this period at 44 London Wall, there is only one good group of pottery dated c AD 260-300 from the earliest of the dumps. At 43, London Wall, however, the contemporary dumps are dated c AD 313-350/400.

Further south the resurfacings of the road at 15-35 Copthall Avenue were not laid onto raised ground in the way that they were at 44 London Wall. Here the road was always much higher than the surrounding ground level (apart from the Phase 2 raised surface and that suggested towards the north end of the site) and there were no indications of drainage problems before c AD 350-400.

8 Telegraph Street and 4-6 Copthall Avenue

A similar sequence was recorded at Telegraph Street. Some time after c AD 240-300, the ground level was raised and a small drainage channel cut. Following the demolition of the buildings at 4-6 Copthall Avenue, the ground level was artificially raised by means of dumping, probably in the 4th century. Two drainage ditches cutting into these dumps could have been Roman or medieval. Just to the south at Angel Court (Blurton 1977) late 4th century water-borne silts, with a possible pathway between them, covered the entire site.

To the north of the city wall (constructed c AD 190-220) ground conditions may have degenerated more quickly than those to the south. A small excavation against the north of the wall took place in 1982 in a telecommunications hole in London Wall street (Site 12) (Pye 1985). Here a peaty deposit pre-dated the wall but seems to have been a fill within a ditch. Above this another sequence of peaty deposits had built up against the outer face of the wall: one of these is dated c AD 70-200. This evidence suggests that ground conditions, if not marshy before the construction of the wall, became so soon afterwards.

Further north at Broadgate (Site 5) (Malt 1987), some time after the city wall was built, the creation of a marshy or swampy environment was represented by the filling of the main stream channel with peaty clays containing freshwater mollusc shells. Further archaeological excavations to the north of the wall are needed before the date for the onset of the marsh here can be confirmed. The evidence from London Wall and Broadgate, however, does seem to support Reader's thesis (1906, 184) that the wall effectively became a dam, either because the culverts were not cleared out and silted up, or because not enough were provided. Silting would have been aggravated by rapid erosion. On this side of the wall at least, the result would be an accumulation of water which eventually led to the development of a marsh.

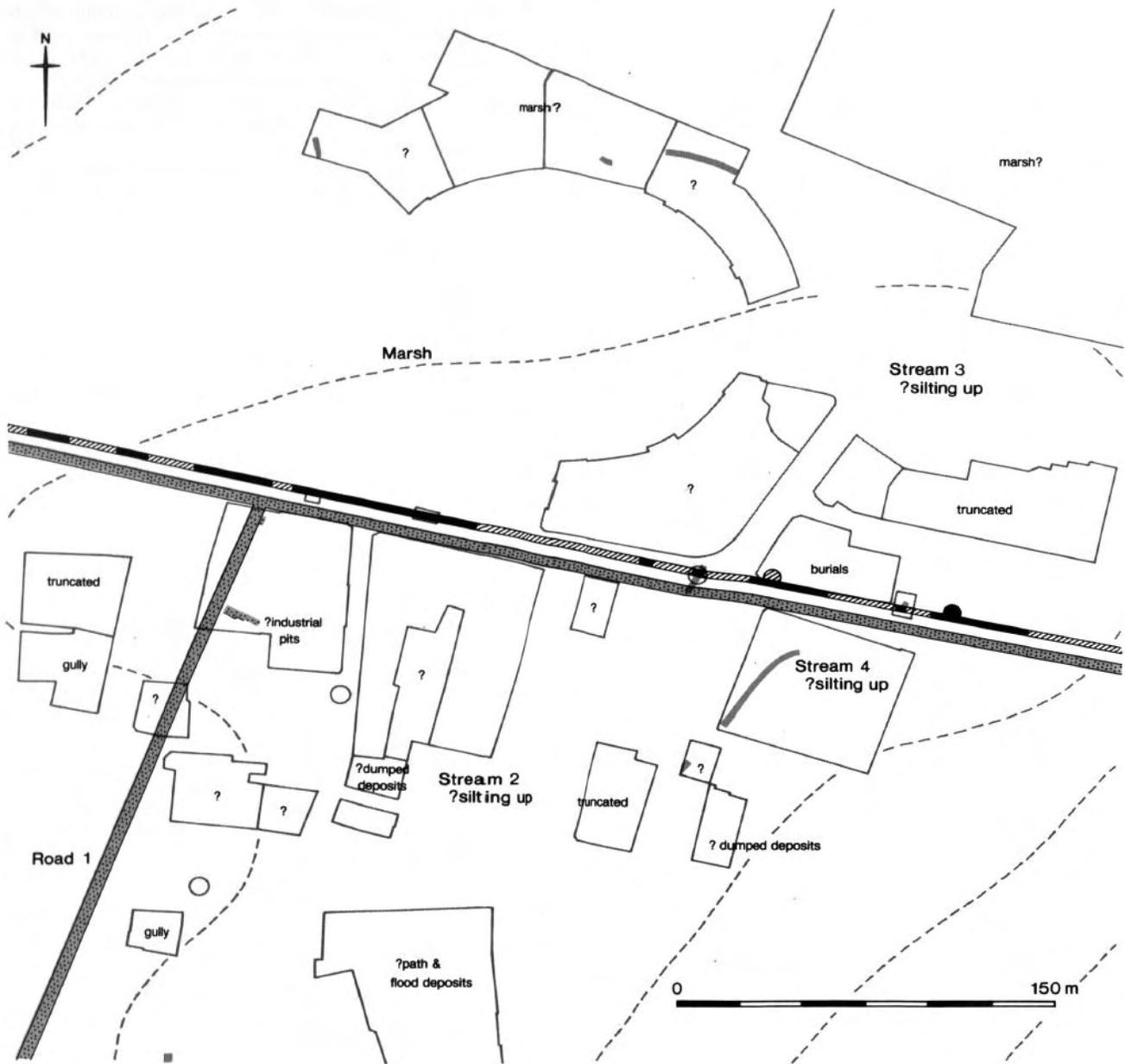


Fig 115 Study area: plan of Period III features, c mid 4th century

6. Period IV: Post Roman Development - a Summary

15-35 Copthall Avenue: controlled excavation

The abandonment of the site was marked by the formation of a marsh. The earliest of the marsh deposits contained both mid-late 4th century and 11th century pottery. Because these deposits were naturally formed and would have grown over a long period of time and, because their formation was directly linked with the Roman occupation of the site, this part of the post-Roman sequence is presented in detail. Thereafter the development of the site will be summarised.

Phase 1 - 11th-mid 12th century

The site, including the Roman road, was covered by a blue-grey peaty clay which contained rootlets and, at its lower levels, lenses of plant remains and aquatic mollusca (OPT 99) (Fig 23). This is typical of the lower levels of a waterlogged marshy formation in which the finest particles sink to the bottom. A crude shallow channel and a large pit had been cut in this peaty layer.

Phase 2 - 11th-mid 12th century

Grey clay containing 'strands' of ferruginous material and freshwater mollusca was dumped onto the marshy deposits, infilling the Phase 1 channel and pit. Above it, an area of pebbles in a matrix of the same clay may have been the remains of an external surface. To the east a large north-west to south-east aligned cut feature, the purpose of which is not clear, was filled with this clay (Fig 41). It probably acquired its characteristics from waterlogging.

Phase 3 - 11th-mid 12th century

Dark grey-black peaty clay which contained freshwater mollusca and plant remains sealed all earlier features (Fig 23, OPT 94). In places it was rust-red where it had oxidised.

This clearly demonstrated marshy conditions in which plant life decayed *in situ* in waterlogged ground. A pit, the only feature associated with this peaty deposit, had gradually filled by this means.

15-35 Copthall Avenue: watching brief

Peaty deposits were in the main observed in the former valley of the tributary, representing the development of marshy conditions. These deposits formed the uppermost levels of the surviving archaeological

sequence and on excavation were either beyond reach or had been rendered dangerously unstable by their soft texture; they were therefore summarily recorded.

In most sections in the centre of the site (Figs 17; 18; 91; 92) very peaty deposits sealed the gravelled surfaces.

All sites in study area (Fig 116, 117)

Marshy deposits were not noted on any of the other sites in the study area, though the medieval sequences had been truncated at 44 London Wall and 4-6 Copthall Avenue. It is probable that the course of former streams influenced the colonisation by marshy deposits of the upper Walbrook valley south of the defensive wall. Evidence from the sites in the area of study indicates that reoccupation first occurred at the southern end of the upper Walbrook valley at Telegraph Street. Here, ground conditions seem to have been as wet as sites further north and dumping re-commenced in the Saxon period. This was followed by a wattle and daub building of the same date.

The steady formation of marshy deposits at 15-35 Copthall Avenue (controlled excavation) - represented by deposits which ranged from strong-smelling black organic silt to red-brown fibrous organic matter (OPT 64, 70, 74, 81) - was interrupted by a brief period of what may have been industrial activity. Four large, deep pits, one at least of which had been lined with wattle, were dug into what would have been the relatively dry ground of the Roman road, and the surrounding area surfaced (Fig 23). They were infilled in the early 12th century with organic matter including numerous leather off-cuts (OPT 82, 213). Two cut features recorded in the watching brief appear to be similar: they were large, deep and cut into a Period II gravel surface (Fig 18). Here and elsewhere the Roman pattern of reclamation by means of ground raising dumps and drainage ditches continued as though the intervening centuries had not passed, the wet ground even resulting in comparable deposits (Period IV). At 15-35 Copthall Avenue and 43 London Wall where the later sequence survived (besides Telegraph Street), both dumping and the cutting of ditches re-commenced in the late 11th-early 12th century. Macroscopic, insects, mollusc and ostracod remains from the peaty fills of a ditch at 15-35 Copthall Avenue - probably contemporary with the ?industrial pits (above) - (OPT 69, 218, 119, 124 and 131) (Fig 41) indicate that the environment was wetter, possibly with some slow-running water, and more natural than it had been during the Roman period (Part 8, p 114). These findings are therefore compatible with a marshy environment that had been allowed to develop unchecked over seven centuries. Interestingly, however, there is a hint of cultivation in the area (Part 8 p 112).

Reclamation or attempts at reclamation of the marsh is well attested in the historical record though the references are to the 'moor' outside the city's walls,

Moorfields. Here the marsh was evidently much more persistent. First mentioned by Fitzstephen writing in the 12th century (Stow 1970, 380), the ditches were re-cast in 1415 when the Moorgate postern was built but Moorfields must have remained wet for in 1512 the mayor 'caused divers dikes to be cast... with bridges arched over them, and the grounds about to be levelled... but yet it stood full of noisome waters' (Stow *ibid*). These attempts continued until the early 17th century when the ground level was successfully raised for the last time.

Inside the walls the evidence from 15-35 Copthall Avenue and 43 London Wall indicates that, though the marsh persisted for a while after re-occupation on the former site, determined efforts produced comparatively dry ground by the 12th-13th centuries. Inside the walls the Walbrook had been re-established as a network of streams and was extensively employed as ward boundaries (Stow 1970; 158, 167, 214, 224, 232, 234-5, 248,253). A fair amount of documentary evidence about medieval conditions in the Upper Walbrook has been collated by Tony Dyson (1977, 15-6). The upper Walbrook was evidently very wet and marsh like, even as far south as Angel Court (Site 34). At the north end of



Fig 116 15-35 Copthall Avenue, watching brief: blocked-in medieval culvert on London Wall frontage. Scale in 0.10m units

15-35 Copthall Avenue, beneath the pavement of London Wall, a stone arch was located on the line of the Coleman Street ward boundary (Fig 116) and has

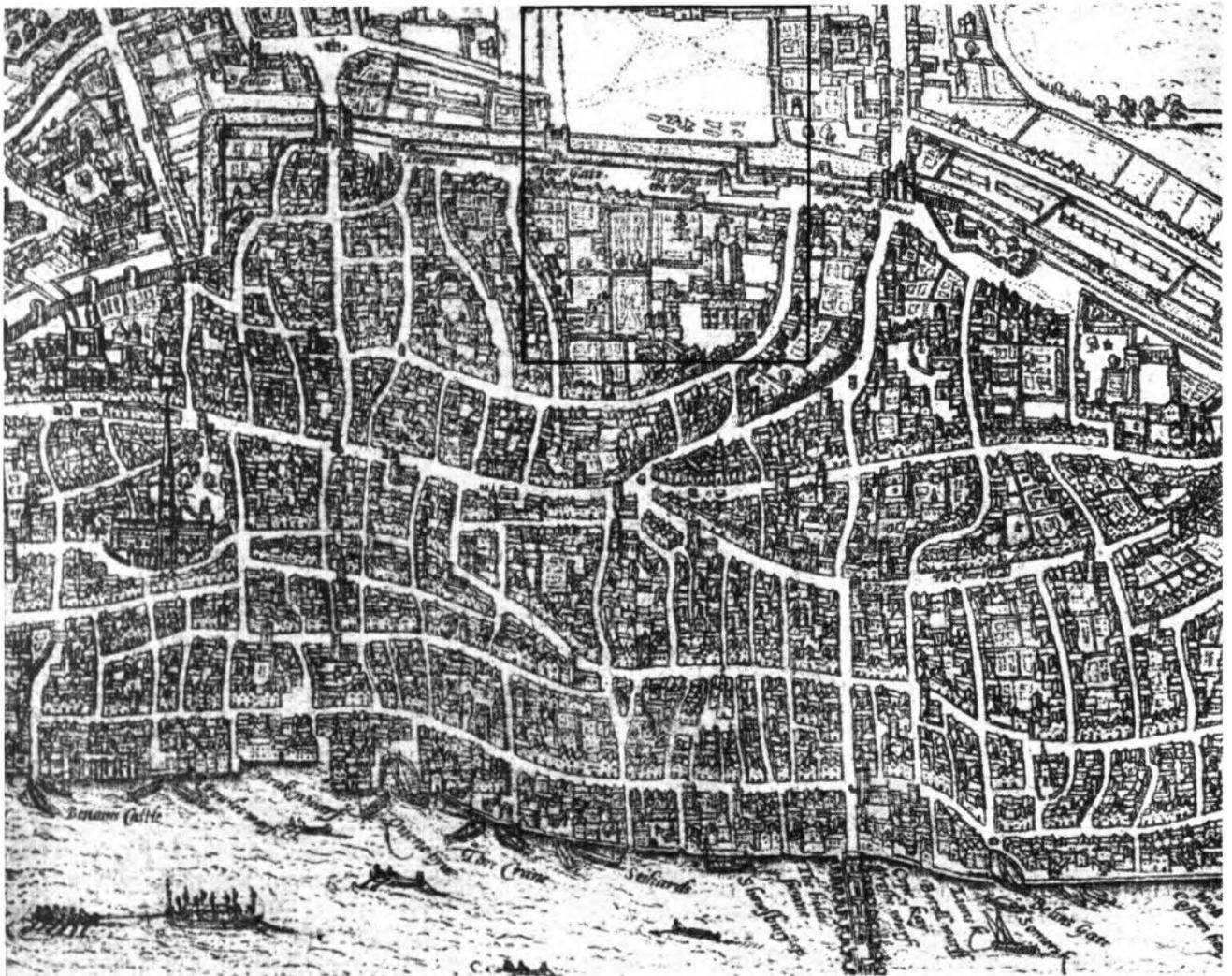


Fig 117 Detail of map of the City by Braun and Hogenburg (1574 German Atlas of European Cities first published 1572), showing upper Walbrook area (outlined) largely undeveloped

recently been found just to the north of the site in the defensive wall (Site 13) (T McKinder LWL 87, pers comm). It has been provisionally dated to the 15th century or later and presumably represents a culvert for the passage of a Walbrook tributary. This tributary is marked as the Common Sewer on a plan of part of the site by Ralph Treswell in 1614 (Schofield 1987, fig 31). Its location bears no resemblance to the prehistoric stream because, as this study demonstrates, this had been blocked in the Roman period and replaced with a sequence of channels and drains which were eventually either filled in or silted up. The course of the stream as defined by the culvert and the Coleman Street ward boundary was formed after the Roman period in dumped and 'marsh' deposits. A post-Roman channel, either naturally or artificially formed, was, however, recorded above a well-buried prehistoric streamlet (Fig 12); its location may identify it with this medieval tributary (see plan of sections, Fig 7b). During the medieval period the streams were gradually bridged over until the Walbrook became an underground stream (Stow 1970, 15).

As in the Roman period, the upper Walbrook valley became an area for industrial activities. This in part presumably reflected the poor nature and therefore low value of the land but on the periphery of the city, where unpleasant smells could be tolerated, this was a suitable area. A good water supply could also be exploited. At 15-35 Cophall Avenue large, regular pits dated to the 11th/12th centuries (above) may have been associated with a tanning industry; the upper Walbrook was for a long time associated with the leather trade. In the later medieval period curriers, for example, were noted by John Schofield as having lived in the Parish of St Stephen Coleman Street as 'an early nucleus' and from there spread to the parishes along the northern limits of the city (Schofield 1989). Leathersellers Buildings are marked on Horwood's plan of 1799 in the forerunner of Cophall Avenue. Between the 12th and 15th centuries the site was utilised for the production of bronze and, in particular, bronze buckles (Armitage *et al*

1981). Schofield has also noted that 'Of the metalworking trades, the founders concentrated in four northern parishes (St Lawrence Jewry in the west to St Mary Lothbury in the east)' during the 15th-16th centuries. In a series of late medieval wills, founders in the city numbered 29 (15th century) and 19 (16th century); curriers numbered 19 and two for the same periods (*ibid*).

From the end of the medieval period a slow transformation of the upper Walbrook took place as streets and dwellings were built. The draining of the 'Moor' north of the city wall in the 17th century hastened this transformation. Properties in the area fronted onto the well-established streets of Coleman Street, Broad Street and London Wall, the poor ground conditions probably accounting for their extensive gardens (Fig 117). Gradually properties came to be built behind these frontages with access via a number of alleyways. Little Bell Alley, the forerunner of Cophall Avenue, is shown on Ogilby and Morgan's map of 1677. At 15-35 Cophall Avenue, the only site in our area of study where the strata survived, this period is represented by ground raising dumps, garden soil, yard surfaces and pits, the latter mainly in north-south rows and often superimposed, suggesting property boundaries.

During the 19th century Moorgate street was laid out, Little Bell Alley was replaced with Cophall Avenue and larger properties began to appear. Much of the Cophall Avenue site was occupied by the Coleman Street Ward School. This change was noted in the archaeological record by the different alignment of the services represented by brick drains and a sewer pipe. A great number of ceramic ink-pots were found in backfill material, providing a clear link with the school.

By the later part of the 19th century the area was extensively developed specifically for office accommodation although the school was re-built in 1894. It was buildings dating from this period that were demolished in the 1980s and provided the opportunity for archaeological investigations.

7. Summary Finds Report

by J Groves

Introduction

The finds from the 1981-4 excavations are of particular importance in considering usage of the upper Walbrook valley because, prior to 1981, the only other site subject to modern excavation techniques was that at Angel Court (Fig 2, Site 34) (Blurton & Rhodes 1977). They provide, therefore, an excellent comparative assemblage and a reliable means of testing theories based on the evidence from earlier sites.

Period I (reclamation and drainage)

Domestic and personal items form the largest category of finds. Within this category, leather shoes (fragments of approximately 180) are the most common item, followed by sherds from nearly 70 glass vessels, mostly in 'self-coloured' greens or blues and forming an unremarkable assemblage. Ribbed flagons or jars, bowls and square bottles are the identified forms. There is a diverse range of other personal/domestic items including an amber bead, a pair of copper-alloy tweezers, a shale couch leg, a bone pin and a copper-alloy brooch.

Some of the finds are indicative of industrial processes. Leatherworking is represented by leather offcuts from shoe production. These have a notable concentration in the road foundation (OPT 81, Phase 2, 625), and indeed this layer was so thick with the material that it seems likely that the work-shop which produced it lay nearby. Two double-sided wooden combs with bowed ends and coarse and fine teeth may be associated with the leather industry for a comb of the same type, excavated at *Vindolanda*, had animal hairs, probably from cattle, attached (Birley 1977, 123-4; pl 60). This has led to the suggestion that this type of comb was used in the tanning process (*ibid*). Previous evidence for leatherworking in the Walbrook valley was found at Bucklersbury House by Grimes (1968, 96-7) in the form of a pegged-out hide on a hut floor.

Boneworking is represented by at least 17 cattle scapulae with pieces sawn from the blade, and by four other examples of bone/antler waste. There is a scattered distribution of woodworking waste, predominately oak, with some concentration (33 pieces) from one of the road surfaces (OPT 81, Phase 6, 303). Since oak is a very durable wood it is normally used for heavy construction work and may, therefore, be evidence of building activity.

Potentially more significant are seven pieces of glassworking waste. Waste of a similar type - which includes raw 'bulk' glass, droplets from working, waste from the ends of blowing-irons ('moiles'), and occasional fragments of furnace structure - has recently been excavated on a number of other sites in this area, and although it is possible that it was taken from

elsewhere in the city to be dumped here, the large quantities that have been recovered suggest that the glasshouse was actually situated nearby. A small quantity (75gm) of furnace lining is also present in Period I and although it is not possible objectively to determine the industrial process that produced it, its association with glassworking waste suggests it may have come from a glass furnace (J Bayley, pers comm). The remaining evidence for industrial activity consists of a crucible fragment and a few pieces of iron slag which have not been scientifically analysed.

A wooden writing tablet with a broad central groove, 23mm wide, is a possible indicator of commercial activity. This type of tablet, which was part of a triptych, was often used to record business transactions, the function of the groove being to accommodate seals (Chapman 1978, 397-400; figs 182, 183). Fragments of three other writing tablets were also recovered, which, together with an iron stylus, may similarly have had commercial or administrative functions. The presence of the Roman army in London is represented by a few leather finds - in particular, parts of tents, a saddle and a shield cover - but it is not known whether these came from the nearby Cripplegate fort or were redeposited from elsewhere in the city.

The only votive object found was an antler amulet from one of the road surfaces (OPT 81, Phase 6, 303). In addition to peripheral holes for suspension or attachment it has a drilled central hole which would have held a carved bone phallus (S Greep, pers comm). Phallic objects were regarded by the Romans as good luck charms (Johns 1982, 62), but it is very unlikely that this was deposited as a votive offering: it was found on a road surface and, besides, here the natural stream of the Walbrook had been filled in and replaced by artificial drainage by the time of its deposition.

The pottery, as might be expected of material redeposited in make-up layers, consists mainly of small sherds, sometimes crushed and abraded. The remaining finds are building materials - bricks, tiles, *tesserae*, painted wall-plaster, nails and window glass, all in small quantities. This material is so mixed and fragmentary that it is unlikely to have derived from the demolition of any single building and must have been redeposited.

It seems, therefore, both from the largely mixed quality of the finds generally and from the fragmentary condition of the pottery and building materials, that the assemblage consists mainly of redeposited rubbish which was dumped in the Walbrook valley as landfill. The source was probably households and workshops in the surrounding area and/or the City generally, but the only finds which may with any certainty be related to activities in the immediate vicinity are the glassworking and leatherworking waste. The survival of a relatively large quantity of leather and wood reflects the very waterlogged conditions of the site and the high proportion of material from the road surface itself shows clearly that the area was still subject to flooding.

Period II (buildings)

Levelling deposits at 15-35 Copthall Avenue (Phase 1)

These deposits contained by far the majority of the finds from Period II. As in Period I, domestic or personal items dominate the small finds assemblage, with parts of 45 shoes and sherds from nearly 50 glass vessels being the most common types. The vessel glass is very similar to that from Period I, whereas the other finds in this category include six bone pins, two needles, a copper-alloy furniture handle, an iron brooch, an iron knife and two glass beads.

Most types of industrial waste present in Period I recur here. Glassworking (13 waste fragments), boneworking (16 fragments, including 13 cattle scapulae), leatherworking and woodworking are attested, and there are parts of two crucibles. One of these was used for brass melting, while another was possibly used in gold refining. Two wooden handles, one of which is bound with cloth, appear to be from tools rather than ordinary knives, and may thus be regarded as further evidence of crafts and industries.

Again as in Period I, these deposits contained writing-tablets (two) and styli (five). The large number of styli indicates the extent to which written records - chiefly, no doubt, bureaucratic or commercial - were used in early Roman London. The Bucklersbury House site in the lower Walbrook valley yielded an even greater number (16), but there they were found in a layer which is thought to represent clearance from a nearby blacksmithy; besides the styli, there were large quantities of ironworking waste and thousands of scrap iron objects which had apparently been salvaged for re-processing (Hume 1956, 67; Wilmott forthcoming).

The religious life of the city is further represented at 15-35 Copthall Avenue by two ceramic figurines. One is of Venus, the other is probably a Mother Goddess. Their presence in the make-up dump with general domestic rubbish suggests that they may have belonged originally to domestic shrines and been discarded with other refuse. Finally, there is one find, a wooden bobbin, which possibly falls into the military category. This may be a fastening for a tent door and is paralleled at Angel Court (Chapman 1977, 67; fig 20, no 487). The building material is very similar to that from Period I. Window glass is absent but there are two pieces of a wooden window frame. Only two other examples are known from Britain: from Angel Court (Chapman 1977, 67; and fig 21, no 491) and from Cramond, Scotland (N Holmes, pers comm). Another rare item is a glass *tessera*. This would have been used to pick out details on a floor or wall mosaic, or, possibly, as decorative inlay in a piece of furniture.

The pottery assemblage differs from that of Period I in that it consists of much larger sherds, some of which join to form complete vessels. This might be explained partly by the soft, loosely-filled nature of the deposit, and partly by the fact that the material had not been redeposited. Nevertheless, it is likely that the pottery was brought in from elsewhere in the City, since two contexts (499 and 518) contain mostly burnt sherds which may be from properties destroyed in the Hadrianic Fire.

Overall, therefore, the finds from this deposit are very similar in character to those from Period I, but without the notable concentration of leather waste. Household rubbish, at least some of it redeposited, is again the most likely source.

Building A at 15-35 Copthall Avenue

The pottery assemblage is small, unexceptional and typical of a standard household. As in Period I and the Phase 1 levelling-deposits, the 'small finds' largely fall into the domestic/personal category. There are sherds from nearly 20 glass vessels, a bone die, three bone pins, a copper-alloy nail cleaner, an iron bucket loop, an iron needle and a stud. In addition, there is an iron staple and a split pin - objects which might be expected in a timber-framed building - an iron stylus and an awl. The latter is possibly a leatherworking tool, home-made from a nail bound with leather rings to form a handle. The nail shank has a square section for most of its length but is more rounded towards the tip. This object possibly links the building with leatherworking.

The occupation surfaces and pits within the building yielded some other residues of industrial processes, including a small quantity of smithing slag (1504g), seven pieces of glass waste, and nearly a kilogram of furnace lining. The latter is of the same nature as that from Period I (see p 00). Although the quantity of smithing slag from the building is small, it is possible that smithing was undertaken here; the absence of similar material in earlier groups tends to suggest that it is not redeposited. Since workshops were probably kept clean large amounts of metalworking residues would not be expected to be found in workshop areas in any great quantity but are more likely to occur in secondary deposits as a result of dumping. It seems unlikely that the hearths in the building were used for smithing because they were at floor level; it is normally thought that Roman smiths would have used a waist-level hearth (J Bayley, pers comm).

Other evidence for industrial use of the building is also inconclusive. The material is possibly residual, having been brought to the surface from the underlying layers when, for instance, the internal pits were dug. The presence of similar material in earlier contexts reinforces this interpretation. As mentioned earlier (above, p 82), the interpretation of the furnace lining is problematical.

Finds from other buildings and features in the study area

The buildings excavated on the remaining sites were themselves devoid of associated finds apart from small quantities of pottery and building materials and, at Telegraph Street, a stone mortar. Other features of this period contained a range of finds very similar to that described from the building at 15-35 Copthall Avenue, though in much smaller quantities. Among the domestic/personal items are about 20 glass vessel sherds, fragments of bone pins or needles, fragments of approximately 10 shoes, three coins and an iron key.

Industrial processes are represented by iron slag (not analysed), and glass, leather and woodworking waste. There are also five crucibles, three of which were probably used for melting debased silver. Of the others one was used for assaying/refining small quantities of silver; the other for melting gold. The small assemblage of building material is mixed and fragmentary. It is unlikely, therefore, to come from the demolition of buildings in the immediate area and is probably redeposited.

Period III (late Roman developments)

The 'small finds' form a small assemblage composed of personal /domestic items similar to those found in the earlier periods. There are, however, only a few shoes and no wooden objects. The industrial debris is also similar to that from the earlier deposits although leather and woodworking waste are absent. Much of this material, which includes almost 7000g of furnace lining (see p 70) from the ground raising dump (OPT 81, Phase 1) and foundation deposits (OPT 81, Phase 2), can be presumed residual. The scarcity of leather and wooden finds, however, may reflect a real change in the nature of dumping and occupation in the area because the environmental evidence <see p 112) indicates that conditions were still suitable for the preservation of organic material.

The pit finds give little indication of function. The primary fill of the trench and interconnecting pit (OPT 81, Phase 2, context 183) contained a crucible used for assaying/ refining small quantities of silver, in addition to two pieces of glassworking waste (almost certainly residual), a stone hone, a few fragments of vessel glass and some building material and pottery. The remaining pits contained no more than pottery and building material.

There are 20 coins from Period III: 16 late 3rd century (mostly radiate copies); two early 4th century, one 2nd century and five unidentifiable (also Fig 114). This compares with a total of only three coins from the whole of Periods I and II, but, as Reece has shown (1972, 269-76), a sharp increase in coin-loss during the late 3rd century is normal on many Romano-British sites. The upper Walbrook sites may thus be seen as conforming to a general trend, whereas those previously excavated in the lower Walbrook - whose identified coins are almost exclusively 1st and 2nd century - deviate from it. This discrepancy is to be explained either by the fact that the late Roman layers had been removed on sites such as Bucklersbury House before archaeological observation began, or by the likelihood that untrained building-site workers would fail to

recognise (or have no interest in) the small, often poorly-made, coins of the later Roman empire (see further, Hall in Wilmott forthcoming).

Conclusions

A remarkable contrast emerges when the material from Angel Court (Blurton & Rhodes 1977, 56-7) and the present sites is compared with that from earlier Walbrook excavations. The greatest proportion of the 'small finds' from recent sites are leather items, whereas previous excavations - at Bucklersbury House, for instance - produced an extremely high proportion of metallic finds and comparatively little leather, or indeed, pottery. This contrast is almost certainly explained by a difference in collection-policy. During the early excavations, which were essentially watching-briefs, only the more complete leather objects were retained. It is also apparent that the workmen were selective in the retrieval of finds - shiny metallic objects obviously having more attraction than other materials. The site notes written at the time reinforce this explanation, since they include references to vast deposits of leather (Wilmott forthcoming). There is certainly a major disparity between what was actually present and what was collected.

Although there are a few finds from the present sites which may be assigned to the 'military', 'business/administration' and 'votive' categories, most are 'domestic/personal' in character. They certainly would not support the hypothesis that the Walbrook - or, at any rate, the upper reaches of it - was either a busy market area or a stream used for ritual purposes. The sites produced various types of industrial debris, but this does not necessarily imply that the immediate area was the source of it all. Recent excavations have shown that in the 1st and 2nd centuries the central parts of the city were densely built up and, rather than dig pits, it may have been common practice to take rubbish to outlying, more deserted, areas for disposal. The only industries which definitely seem to have been situated in the area are glassworking (waste found on a number of sites nearby), leatherworking (very large deposits of waste material and a tool possibly used in leatherworking) and, perhaps, blacksmithing (smithing slag from Period II building). Nevertheless, it is impossible to prove conclusively from the finds that any of the buildings or pits were industrial.

Finally it is of interest to note that the material dumped during Periods I and II is, perhaps, largely from a different source from that of Period III for the organic finds, which are so prominent in the earlier periods, occur only in small quantities in Period III, despite the prevalence of waterlogged conditions.

8. Environmental Analysis

edited by D de Moulins

Parts 2-6 of this study examine the evidence from a number of sites in the upper Walbrook valley; this part, however, considers only one site, 15-35 Copthall Avenue (OPT 81). It was not possible to carry out environmental investigations on all the sites. During the controlled excavation of OPT 81, the preservation of organic material was found to be excellent. Macroscopic plant remains such as whole leaves of box, *Buxus sempervirens*, were hand picked from the deposits and willow or poplar tree stumps uncovered and - as described above (Part 7) - many leather and wooden objects were preserved. A preliminary investigation of the soil samples showed that the preservation of seeds and insects was equally good.

This project was the first multidisciplinary investigation of the environmental evidence for London. The location of the site on a tributary of the Walbrook made it important, the topography and environment of the valley being a major consideration of the archaeological studies in this area (Part 1). The stratigraphic deposits ranged from pre-Roman to modern times with pre-Roman, Roman and medieval periods represented. The good preservation of the organic remains by waterlogging meant that the character of the natural landscape before the Roman occupation, the conditions of the streams, and the evolution of the landscape at various later stages, might be determined. It was expected that a study of different types of environmental evidence would allow the possibility of tracing some human activities and evaluating the human impact on the environment of this marginal area. This account of the environmental studies of 15-35 Copthall Avenue has been compiled using the various specialists' reports. The reports themselves can be found in the archives of the Environmental Archaeology Department (Museum of London), the insect archive report can also be found at the Ancient Monuments Laboratory, Historic Buildings and Monuments Commission and at the Environmental Archaeology Unit, University of York (EAU).

The biological remains

In order to carry out this investigation, it has been necessary to examine as many different remains from plants and animals as possible. At 15-35 Copthall Avenue pollen and macroscopic remains of plants, insects, molluscs, ostracods and parasites were analysed. Some samples were studied for diatoms but all proved negative. The interpretation of these biological remains presents some problems when they are found in an urban context. Many of these have been discussed by a number of authors in Hall and Kenward (1980; 1982) and a few additional points are made below (pp 87-9).

Two column samples were taken for pollen analysis of which one was studied by Dr R Scaife (HBMC). Besides its well-established position in the study of palaeoenvironments and its value in providing a

regional background to human activities, pollen analysis also has a role to play in the description of the local human environment. In urban deposits it does, however, present problems of interpretation because of the difficulty, among others, in distinguishing the local from the regional input of pollen. The origin of the local input could be from a great number of sources and therefore reflect many activities (Greig 1982; and below p 88). Pollen analysis may also reinforce the results obtained from other evidence used to reconstruct the natural environment. The pollen column used for this study came from the base of the east section (Fig 41 a and b). The samples analysed from it were from an early flood horizon (OPT 601) from Period I, two channel silt deposits above it (OPT 589, 591), also from Period I and two organic dump deposits (OPT 523 and 535) of Period II.

Plant remains from waterlogged deposits can give indications of the local vegetation around a site. The evolution of the vegetation through time and the impact of human activities may be recorded by changes in composition of the plant remains through the deposits. They can also be interpreted as indicating certain human activities linked with food transport, diet or animal husbandry. The preservation of the botanical macroscopic remains by waterlogging was excellent throughout the deposits. As a consequence, their analysis has been possible for many sampled contexts and includes all the periods uncovered during the excavations at 15-35 Copthall Avenue. Their study therefore provides a background against which the other evidence can be compared.

Seeds and fruit are the part of the plant most commonly recovered from the deposits; other plant parts have been recovered and mentioned whenever possible but they are less often identifiable than seeds. However, seeds do not represent the whole plant in a straightforward way and their interpretation in terms of the reconstruction of the environment is difficult. Utilising more than one type of evidence to confirm a conclusion is therefore important. The problems posed by the interpretation of botanical evidence have often been pointed out, in particular by Green (1982) in his studies of medieval urban material.

Plant remains preserved by charring usually yield information about diet and human activities such as food preparation, crop processing and rubbish disposal that may have taken place on the site. Some evidence of this type was recovered from 15-35 Copthall Avenue, chiefly from the pits, hearths and floor surfaces associated with the building in Period II but charred remains were also sporadically present in other layers. The analysis of the plant remains was undertaken by Anne Davis and Dominique de Moulins (Museum of London).

The analysis of insect remains from urban archaeological deposits rests on the known habitat preferences of the identified species in order to reconstruct the environment (Fisher 1943; Kenward 1978, 1982). Some beetles are associated with a specific

plant species or with decaying matter and many species are synanthropic, *ie*, closely associated with habitats created by human activities, including human dwellings. A number of urban studies have been carried out in York, Amsterdam and Oslo but few in London so far. The insect remains used in this study were extracted from the same samples as those of the plants and, although less abundant, were recovered from all periods and most types of context. Their analysis was carried out by Enid Allison and Harry Kenward (EAU York).

The study of mollusca, land and water snails, is used in the reconstruction of palaeoclimates and microenvironments to illustrate the zonation of habitats and for their direct exploitation as a food resource. On an urban site such as 15-35 Copthall Avenue, the evidence obtained from molluscs might add to the information from other biological remains in order to reconstruct the scenery of the pre-Roman environment and the conditions prevailing in the channels and ditches. Similar studies have been carried out before, in the London Wall area (p. 114). The molluscs were not very abundant at 15-35 Copthall Avenue. They were recovered from contexts which had been identified as including molluscs when sorting for plant remains and insects. They were found in 15 of the contexts from all periods except for Period II. Their analysis was carried out by Dr Richard Preece (Cambridge University, Quaternary Department).

The presence of ostracods, small aquatic crustaceans with marked ecological preferences, can indicate the conditions prevalent in a body of water and, combined with the evidence of the aquatic molluscs and plants, would help to define the aquatic environment. All the species found at 15-35 Copthall Avenue prefer slow-flowing water courses if not standing water of lakes and ponds. The slightest current flow is sufficient to sweep away ostracods, which are poor swimmers. Ostracods moult their shells through their period of growth from egg to full grown adult (about eight growth stages) and the presence of several growth stages or moults in the studied samples is sufficient to speak of quiet, undisturbed waters. Current flow would separate small from larger valves as they have a hydrodynamic difference within a stream flow. The ostracods were sorted from the samples used for the mollusc analysis and were studied by Dr Eric Robinson (University College London). Only five of these samples, which came from the pre-Roman period and Period IV, contained ostracods.

The study of parasites of the human intestine is usually related to the presence of people in any environment; in an urban environment, it can tell us much about the state of cleanliness of the town which, of course, has implications concerning the state of health of its inhabitants. A number of samples from all periods were studied for parasite eggs. The purpose of the study was not to determine if the local population was infested with intestinal worms; widespread infestation has already been demonstrated by previous work on Roman and medieval material (Kenward et al 1986; Pike 1975). Instead, the samples were examined to see if the presence of parasite eggs indicated the disposal of or contamination by faeces in the channels and ditches on

the site, and if the concentrations obtained reflected the level of human disturbance and occupation during the various periods. Of a total of 17 samples studied only six were found to contain parasite eggs; these came from all the periods except for the pre-Roman period. The study of the parasite remains was carried out by Clare de Rouffignac.

Methods

Sampling on site

Many samples (c 150) were taken for environmental analysis. Most of the sampling was carried out by the excavation team though the environmentalists from the DUA often visited the site and kept in touch with the excavation. The samples were all 'judgement' samples taken when a layer or a deposit seemed promising. Two ten kilogramme samples of soil were collected in plastic bags from each sampled deposit and stored for later analysis. The samples were kept moist in sealed plastic bags and none had dried out by the time they were processed.

The soil samples came from all archaeologically defined periods on the site and from a variety of identifiable layers or contexts including the following: valley fills; peat or marshy deposits; channel and ditch sediments; the foundations of roads or of raised surfaces; levelling dumps; and surfaces associated with industrial activity. Other samples were taken from the building in Period II and included surface or occupation deposits, hearth fills and pits; still others were thought to be garden soil or from the fills of pits.

Sample selection

A system of priorities was established to assist in the selection of samples for analysis from the large number available. It was considered important to cover all the archaeological periods so as to observe changes through time, and to analyse samples from the junctions between periods. Many samples specifically associated with human activities and the building were also analysed.

Addressing topographical and environmental questions has been a major priority of the archaeology of the Upper Walbrook, particularly determining the position and extent of the Walbrook streams and the period and extent of the marsh revealed in earlier excavations in the area. Priority was therefore given to the organic and marsh deposits, which included layers from both Roman and medieval periods and to the natural valley sediments and channel and ditch fills. Most of the samples from these deposits were fully analysed, with the insect and molluscs remains providing additional complementary information to the botanical evidence.

In total, 65 samples were studied representing all periods and deposit types. Most of these produced plant and insect remains but the other remains were less ubiquitous.

Processing techniques

The processing and extraction of pollen and molluscs from the samples followed standard procedures (Sparks 1961; Evans 1972; Moore & Webb 1978). The ostracods were recovered from five of the samples used in the molluscan analysis. The parasite eggs were extracted from 2g of sample disaggregated in 28ml of 0.50% sodium triphosphate solution and the suspension filtered through a 250 µm mesh sieve. 0.15ml aliquots of the filtrate were then examined under a light microscope at x100 magnification. A minimum of two aliquots were examined per sample; all eggs were identified to species where possible, counted and their condition noted (see Jones, A K 1985) and the egg counts per sample used to calculate the number of ova per gram (opg) of soil.

The recovery of seeds and insects was carried out in two stages. The first stage was undertaken soon after the excavation, using a standard 1kg of sediment; 25 samples were sorted. They proved to be very rich and the work was consequently so time consuming that it was decided to sort an initial 250g of soil from the remaining samples (Badham & Jones 1985). In order to standardize the results, a target number of 500 seeds for all the samples was aimed at (van der Veen & Fieller 1982) rather than a standardized amount of soil (Orton 1983) and further subsamples were analysed until the target number was reached. The insect fragments were sorted from the same samples and the same quantities as the plant remains.

The seeds were identified using a low power binocular microscope at magnifications up to x50 and with the help of the seed collection of the Museum of London, the collections at the Institute of Archaeology, London, and the Botany Department of the Natural History Museum. Some identifications were also made or confirmed by Alan Hall from the Environmental Archaeology Unit (EAU), University of York and by Mark Robinson from the University Museum, Oxford. The plant remains were analysed by computer using ecological and usage groupings compiled from various sources (Clapham et al 1962; Grigson 1958; Sinker et al 1984). The insects were identified using a low power binocular microscope, standard works (Kloet & Hincks 1964, 1977) and the insect collections at the EAU, University of York.

Presentation of the data

The lists of seeds from the study are tabulated in Figures 118, 119 and Figures 131-5. They are arranged in taxonomic order following Clapham et al 1962. Figure 118 is a summary table of the results of the analysis for waterlogged plant remains by period and by context type; all the samples in each context type have been added together within each period. The charred remains are listed in Figure 119, which gives a summary by period and context type. The data for waterlogged and charred plant remains are also shown in Figures 131-5 (Appendix), where they are arranged by context number, context type and period.

Figure 120 illustrates the seeds which were most characteristic of the 15-35 Cophthall Avenue samples.

They were not the most numerous but had some ecological significance, appeared in many of the contexts, or, as in the case of *Satureja hortensis*, were a first find from Roman levels in London.

The pollen data are presented in Figure 121 as counts of pollen for each species or type within each of the five samples studied. A list of *Coleoptera* (beetles) and *Hemiptera* (bugs) recorded from each period is given in Figure 122 and micrographs of some fossils are presented in Figure 123. A list of other invertebrates recorded from the insect samples is given in Figure 124. Figure 125 lists the number of ostracod valves and carapaces for each species by sample and Figure 126 the occurrence of mollusc finds within each period. The parasites are listed on Figure 127. A summary table of the environmental samples studied, listing their phasing, the contexts from which they come and the preserved material within them can be found in the Appendix (Fig 136).

Problems posed by pollen and waterlogged seeds from archaeological contexts

A site such as 15-35 Cophthall Avenue presents two problems to the environmental archaeologist. One problem is archaeological and common to all categories of environmental evidence, and the other is purely botanical.

The archaeological problem is that of an urban environment, much disturbed, much trampled over and perpetually altered, which causes objects and remains to be constantly moved from their place of origin. This problem is also particularly relevant to plants both because certain plants favour disturbed ground and also because people's continuous activity in and around towns contributes to the disturbance and encourages the transport of certain plants or seeds. Plant transport and the distribution of their various parts on the site is itself of archaeological interest but makes the search for a 'natural' vegetation in such an urban environment problematic.

Greig (1982) has discussed in detail the problems associated with interpreting pollen spectra from urban archaeological contexts. He has drawn attention to the usually diminutive presence of tree pollen from contexts such as those analysed here as well as those from wells, ponds and ditches. As noted below, at 15-35 Cophthall Avenue tree pollen values are low and therefore difficult to interpret. The tree pollen may be representative of local growth but it is swamped by herb pollen from local sources (natural or human component, see Greig 1982). Considering the nature of the deposits analysed, a local source for much of the tree pollen seems most plausible and it is thus impossible to ascertain clearly the nature of the regional woodland. Similarly, the shrub taxa found may be of local origin, forming an important component of waste ground in, and fringing, the urban area.

As noted by Greig (1982; also Scaife 1982a) pollen spectra from urban archaeological sites are characterised by high percentages of *Gramineae*, *Compositae* and *Leguminosae* pollen. Since it is not possible, on pollen

evidence alone, to separate wild *Gramineae* to even genus or tribe, it is not possible to be specific about the source of these high grass pollen values. However, it is now widely accepted that, in urban contexts, such grass pollen must come from a number of sources. These range from, and may include, relatively natural growth in glades, waste ground and other urban niches. Human sources are also important and may include animal feed, bedding, floor coverings, thatch and roofing turves. The pollen of grasses and herbs in hay may readily pass through the gut of animals and remain in the dung. The latter of course can be a prime constituent of urban organic dumps and may thus contribute substantial quantities of pollen to such contexts. A similar mechanism is also evident through the human digestion of bread, which may contain quantities of trapped pollen of cereal and associated weed taxa from the cereal husks (Robinson & Hubbard 1977). This pollen becomes incorporated in faeces and ultimately in the deposits in latrines, river channels and on waste ground - that is, in all areas where faecally-contaminated waste was dumped (Greig 1979, 1982; Scaife 1982a, 1986). Thus, in organic dump deposits, pollen taphonomy is extremely complex and the interpretation of the pollen spectra from such urban contexts presents many problems which relate to the differing modes of pollen derivation and burial. Greig (1982) has noted the differences in the pollen spectra obtained from Roman and medieval urban sites. In the former he has noted the preponderance of a *Gramineae*/local pollen spectra, whilst the latter have cereal/human generated pollen characteristics (*ie* cereal pollen of the secondary derivation noted above).

Similarly, the taphonomy of seeds can be quite complex. One factor is the differential preservation of seeds. This is sometimes due to the repeated drying and wetting of the sediments, often an anthropogenic effect which destroys the more fragile seeds. Furthermore, the sort of adventitious plants encouraged by people are often cosmopolitan, tolerant of many conditions and have very efficient ways of reproducing. They often produce great numbers of seeds: for example *Stellaria* spp (chickweeds) produce 2200-2700 seeds per plant; *Capsella bursa-pastoris* (shepherd's purse), 3500-4000 seeds per plant; *Hypericum* spp (St John's wort) 26,000 - 34,000 seeds per plant and *Juncus* spp (hard rush) 200,000-234,000 seeds per plant (Salisbury 1961).

Archaeobotanists have noted that as a result most of the seed lists from waterlogged urban deposits all over Europe are very similar (Green 1979). The problems of residuality and of long range transport have also been noted (G Jones *et al* in press).

Another factor to take into consideration is the longevity of seeds in the earth. Seeds with a hard coat are more likely to survive than others, so if some time elapses before waterlogging then hard coated seeds will be overrepresented. Experiments on buried soils of known dates (Carter 1987) have shown that species of *Carex* spp (sedges), *Sambucus* sp and *Urtica* spp (nettle) survive longest. Similar resilience can be expected of the *Polygonum* (knotweed) and *Rumex* (docks) which have hard seed coats.

Other botanical factors that complicate environmental reconstruction include plant and seed behaviour. One of the most obvious points about

dispersed seeds which is not always stressed is that they are found underground, therefore hidden, while we are aware of and use the vegetation above ground. This simple point is important because the events underground do not exactly reflect those above ground (Fenner 1985; Harper 1977).

How do seeds arrive in a particular spot? They may, after travelling some distance, drop off the feet or fur of animals; be carried by insects such as ants; or be dropped by birds. Adaptations such as pappuses or bladders enable the seeds to be transported by air or water. The seeds of *Chamaenerion angustifolium* (rosebay willowherb) or *Cirsium arvense* (creeping thistle) may today be seen floating over the City of London. Human interference is also important in seed dispersal of palatable or useful plants. So apart from the local vegetation, the origin of many of the seeds present at any one spot and making up the seed bank can be quite varied.

Another mechanism which ensures that the seeds may have a chance to grow in a particular spot is dormancy. This is a period during which seeds actually wait for the right conditions of temperature, humidity and light level to prevail before they can germinate (Harper 1965). Seeds remain dormant for varying lengths of time and at different times of year and among them, those from plants producing very large numbers of seeds, remain dormant for long periods (Grime 1979). The situation underground is therefore very complex and soil samples are likely to include all sorts of seeds which have no direct relevance to the vegetation at any one time. It has been said (Major & Pyolt in Fenner 1985) that there is no complete description of an area without knowing the composition of the seed bank because the seed bank represents an historical record: some of the past conditions, the present one and potentially the future.

Seedlings also face hazards of predation or of competition. Not many reach the adult plant stage and reproduce. Plants therefore produce large numbers of seeds many of which are supernumerary in the seed bank.

The various ways in which plants reproduce must also be taken into account. Plants do not rely solely on seeds for reproduction and many will do so more successfully in a vegetative way through roots or stolons. Annual plants may thus be over represented in the seed bank by comparison with biennials or perennials.

From the discussion above, it follows that the numbers of seeds recovered from the soil may bear little relation to the number of seeds on the plants above ground. There is a tendency for small-seeded plants to set a very large number of seeds down and for those plants to be of the opportunistic 'quick set type'. This tendency is reflected in assemblages where a great many *Chenopodiaceae*, *Polygonaceae*, *Urticaceae* and *Juncus* spp are often present. But it can also be seen that many fragile seeds are absent, for instance, the very small *Caryophyllaceae* which are relatively fragile are usually present in low numbers. Therefore, presence of a species is as important in an assemblage as abundance. On the other hand, because seeds can be carried in such diverse ways, it is probably best not to give too much weight to those which appear in the assemblages in ones and twos. Numbers of seeds must therefore be treated with

caution but should not be disregarded altogether. One encouraging result of this study was that when comparing the results from the various samples belonging to a context type, for instance, those from the channel, it was found that there was a certain consistency in numbers from sample to sample for any one species with a high number of seeds. The same consistency could be observed between subsamples.

Trends for change in the natural vegetation have been looked for but special attention has also been given to man-made features where the situation may be less complicated than in nature, although their interpretation may also be very difficult.

Analysis by period

Prehistoric period

Evidence for this period comes from macroscopic plant remains, insects, molluscs and ostracods recovered from samples taken from the natural valley fills. No pollen was analysed for this period. The contexts that contained seeds and insects were: OPT 709, 712 and 719; 723 included a few insect fragments and a very few seeds (above pp 17 and see Fig 23). Molluscs were present in 709 and 712 and both molluscs and ostracods in 719.

Seeds of ruderal plants common in damp habitats, as well as the usual ubiquitous ruderals, and many other species of damp environments and two fully aquatic species, were found in all the samples. The fully aquatic species were *Chara* sp (stonewort) and *Zannichellia palustris* (horned pondweed).

Species which are usually found growing in water include *Ranunculus* subgenus *Batrachium* (water crowfoots) and *Rorippa nasturtium-aquaticum* (water cress). Plants of damp or marshy areas are *Montia fontana* (blinks), *Ranunculus sceleratus* (celery-leaved crowfoot), *Glyceria* sp (flote-grass), *Myosoton aquaticum* (water chickweed) and *Eleocharis palustris* or *uniglumis*. *Zannichellia palustris*, although most frequently found in brackish water, also occurs in completely fresh water and cannot, on its own, be regarded as evidence for brackish conditions.

The very small insect assemblages were rich in 'outdoor' forms and aquatic taxa were also recorded from these samples. No synanthropes were present. Although small, these assemblages suggest that the deposits in the natural valley formed before nearby human settlements had reached urban density; otherwise insects typical of Roman occupation sites (Kenward & Morgan 1984a; 1984b; Kenward *et al* 1986; Kenward & Allison 1987) would be expected as part of the 'background fauna'.

Some aquatic molluscs and a few hygrophilous land snails occurred in these levels. The freshwater gastropod *Lymnaea stagnalis*, found only in these levels, suggests that the water body in which the sediments formed was not subject to seasonal desiccation. A small assemblage of ostracods found in sample 719 included a free-swimming species, *Cypridosis vidua*, a burrowing species, *Candona neglecta* and a species associated with plants, *Ilyocypris bradyi*, indicating that fairly fresh aquatic conditions were prevalent.

The biological evidence therefore suggests that the stream found at 15-35 Copthall Avenue was in the pre-Roman period clean and clear and supported aquatic plants and animals. It must have run through a fairly natural marshy area relatively free of human influence, as indicated by the damp loving plants, hygrophilous land snails and outdoor and aquatic insects. These findings confirm the deduction made on site that the stream must have been fairly free-flowing although maybe not fast-flowing.

Period I (reclamation and drainage)

The channels and ditches typical of this period are described above pp. 26-34. Pollen from some of the channel fills was extracted from the base of the column sample (OPT 601, 589 and 591; see Figs 41a and b). The results of the analysis gave a very low arboreal pollen count of *Pinus*, *Alnus* and *Quercus*, probably the product of long distance transport. Most of the 61 pollen taxa found at the site are represented in this period and make up a diverse herbaceous pollen. A number of possible sources are represented, including wetlands, meadow/grassland, ruderals and cereals and associated segetals. Many of the taxa present also undoubtedly represent the by-products of materials used in the urban environment of Roman London and are therefore only indirectly representative of those habitats noted above. It is likely that the pollen of cereals and weeds often associated with arable land resulted from the dumping of a range of organic debris. Of those taxa recorded, the following may be representative of arable and waste ground areas nearby: Cereal, *Chenopodium* type, *Spergula* type, *Plantago* major type, *Hornungia* type, *Sinapis* type, *Convolvulus*, *Polygonum aviculare*, *Artemisia*, *Malva* type, *Polygonum persicaria*, *P. aviculare*. The cereal elements are undoubtedly of the human component category described by Greig (1982) and probably largely derive from straw being, human and/or animal faeces or nearby crop processing activities. In all samples, *Gramineae* is the overwhelmingly dominant taxon followed by *Compositae* spp, *Plantago lanceolata* and *Papilionaceae* spp. The remaining taxa represent a diverse range of herbs but only occur sporadically or were recorded as a single grain (Fig 121). *Filipendula*, *Succisa*, *Lychnis* type, *Hydrocotyle*, *Sparganium* type and *Caltha* type are representative of a damp/fen habitat. These may be indicative of a stream channel. Many of the pollen taxa are not referable to a lower taxonomic level. The pollen spectrum for this period therefore shows both the natural vegetation and a human input.

The plant macrofossils (Fig 131) from the channel and ditch fills (OPT 642, 646, 601, 604, 547, 562, 563, 564, 588, 591, 593; Figs 23; 41) belong to ecological groupings reflecting both the natural environment and human activities and disturbance. Among the latter, a great increase in ruderals such as *Chenopodium glaucum* or *rubrum* and *Urtica dioica* showed that the ground had become disturbed. These samples also contained many glume bases of wheat, especially in 604 (Fig 23), and many seeds of *Ficus carica*. The channel deposits also included seeds of plants from woodlands or hedgerows. Wild fruits from a woodland environment or hedgerows

9. Tree-Ring Dating

by J Hillam

The samples (Fig 128)

A total of 47 tree-ring samples from 15-35 Copthall Avenue were analysed at the Sheffield Dendrochronology Laboratory. Forty-six were from the controlled excavation (OPT 81) the other was from the watching brief (KEY 83). The controlled excavation samples consisted of two groups, 37 samples sent originally for analysis and a further nine samples sent at a later date in the hope of refining the initial dating. Figure 128 gives details of only the measured samples in phase order. There were duplicate samples from contexts 276 and 320 whilst 247 was made up of five pieces of wood. There was a single timber 1382 from the watching brief which is also reported here.

The samples were prepared, measured and cross-matched as outlined by Hillam (1985; Hillam & Morgan 1986). Twelve of the original samples were rejected prior to measurement, either because they had insufficient rings (130, 241, 408, 485, 529, 696), or because their rings were knotty or unclear (237, 249, 263, 272, 275, 277). None of the 1986 samples were suitable for measurement. The ring width data from all the measured samples are stored at the Sheffield Dendrochronology Laboratory, where they can be consulted.

Examination of the ring patterns from the duplicate samples showed that those from context 320 derived from the same timber, but those from 276 may have come from different ones. The ring widths of the 320 sequences therefore were averaged, and the mean (320M) used in subsequent analysis. The two 276 sequences were not meaned; they were labelled 276 and 276B. The five samples from 247 appeared to have come from the same timber. Their ring sequences were also averaged, resulting in a 111-year sequence, 247M.

The measured samples had between 39 and 111 rings (Fig 128), with the majority having 40-60. Two radii from 721 were measured in order to obtain the maximum number of rings and the most representative ring sequence. The resulting 721M had 39 rings which it was hoped would be sufficient to date the sequence reliably.

The dating (Fig 129)

The ring sequences were compared visually, one against the other, as a means of establishing the cross-matching. At the same time, they were also tested against dated reference chronologies using a computer program (Baillie & Pilcher 1973). The Roman chronology (City/Southwark 88), which covers the period 252 BC - AD 255 was used for this latter process, although the Swan Lane Roman master (Groves & Hillam 1987) was occasionally used as a check. (City/Southwark 88 is made up of sequences from various sites in the City and Southwark; it was compiled by I Tyers, and contains

data supplied by Fletcher, Hillam, Morgan and Tyers - see also Sheldon and Tyers 1983. Swan Lane is an unpublished sequence, prepared at Sheffield from the Swan Lane Roman timbers). The visual and computer comparisons resulted in two groups, each containing ring sequences that cross-matched with each other. These were averaged to give two site master curves, OPT1 and OPT2. These two curves matched each other with a *t*-value of 5.1. They, along with 679, were then combined to produce a single site master, OPT3. Unmatched sequences were tested against OPT3, and four more found to cross-match. A final site master curve of 15 sequences (OPT4) was then made (Fig 129). Two, and possibly three, other sequences were later found to match. These were 235 and 238, both of which matched other sequences, and the short sequence 721 M, which gave a *t*-value of 5.5 with OPT4. Despite this relatively high value, and the fact that it seems to match with some of the individual ring sequences, the dating of 721 must be regarded as tentative because of its short ring pattern.

The Copthall Avenue ring sequences generally showed good correlation with the City/Southwark chronology (Fig 128), although agreement with the Swan Lane master was not as high, and agreement between the individual Copthall sequences was sometimes low.

OPT4 gave *r*-values of 9.3 and 4.6 with City/Southwark and Swan Lane respectively when the Copthall curve covered the period 45 BC-AD 96. From this, dates for the individual samples could be deduced.

The sample from the watching brief dated to 72 BC-AD 59. It matched with Roman sequences from London and elsewhere in England (Fig 128).

Interpreting the tree-ring dates

The tree-ring results are summarised in Figure 129. The interpretation of the tree-ring dates (*ie* the estimation of felling and construction dates) is hampered by the lack of sapwood on all but two of the dated timbers. Lack of sapwood is a common problem, particularly in the analysis of Roman timbers from the City of London (*eg* Hillam 1986). Where a few sapwood rings remain however, the date of felling is calculated using the sapwood allowance of 10-55 rings (Hillam *et al* 1987). In the complete absence of sapwood, the felling date is quoted as a *terminus post quem* by adding the minimum sapwood allowance of 10 rings.

The two dated Copthall samples with sapwood were both thought to be reused. 679 seemed to have its entire complement of sapwood rings, *ie* only the bark was missing, and was therefore felled in the winter of AD 86/87. 270 has 7 sapwood rings, giving a felling range of AD 69-114.

The timber from the earliest gully on the site (Period I Phase 1) 721 has a tentative date of 15 BC-AD

Context number	Archaeological context	Total rings	Sapwood rings	Average ring width (mm)	Maximum dimensions (mm)	Date span	t value to CS88	Sketched cross-section
15-35 Cophall Avenue, controlled excavation (OPT 81)								
Period I								
phase 1								
721	stake	39	—	1.89	70 x 55	15BC-AD24	5.5	
phase 4								
276	post	101	—	1.25	120 x 90	30BC-AD71	5.1	
679	reused post	65	29	2.07	140 x 65	AD22-86	5.0	
phase 5								
250	pile	77	—	1.86	200 x 145	—	—	
261	pile	44	—	2.62	115 x 65	10BC-AD34	3.8	
318	pile	86	—	2.72	240 x 85	45BC-AD41	5.6	
319	pile	42	—	5.46	235 x 140	—	—	
320	pile	100+	—	2.14	230 x 140	+38BC-AD62+3	4.5	
407	pile	89	—	2.32	220 x 130	AD8-96	4.1	
phase 7								
413	stray	62	—	2.05	165 x 90	3BC-AD59	6.3	
Period II								
phase 1								
270	reused post	102	7	1.13	115 x 90	37BC-AD65	4.0	
phase 4								
411	ground beam	59	—	2.05	115 x 75	3BC-AD56	5.0	
phase 5								
400	post	59	—	2.55	155 x 130	—	—	
phase 6								
235	drain plank	58	—	1.99	210 x 30	AD26-83	2.9	
238	drain plank	52	—	1.66	195 x 45	AD35-86	4.2	
240	drain	70+	—	1.80	130 x 70	AD16-85	2.7	
245	drain	53	—	2.68	160 x 95	AD18-70	4.9	
262	drain	55	—	2.46	155 x 70	—	—	
phase 11								
242	stake	49	—	2.57	140 x 110	AD23-71	4.2	
244	stake	48	—	2.35	120 x 110	—	—	
247	drain plank	111	—	1.28	fragments	—	—	
248	drain plank	57	—	1.14	70 x 40	16BC-AD41	5.3	
269	stake	53	—	2.07	120 x 90	—	—	
298	drain post	51	—	2.58	130 x 70	AD20-70	4.2	
15-35 Cophall Avenue, watching-brief (KEY 83)								
Period II								
1382	drain plank	131	—	?	?	72BC-AD59	6.2	

Fig 128 Summary of measured tree-ring samples from 15-35 Cophall Avenue. Samples listed in site, period and phase order with sketch cross-sections. CS88 is a composite Roman chronology, see text for details

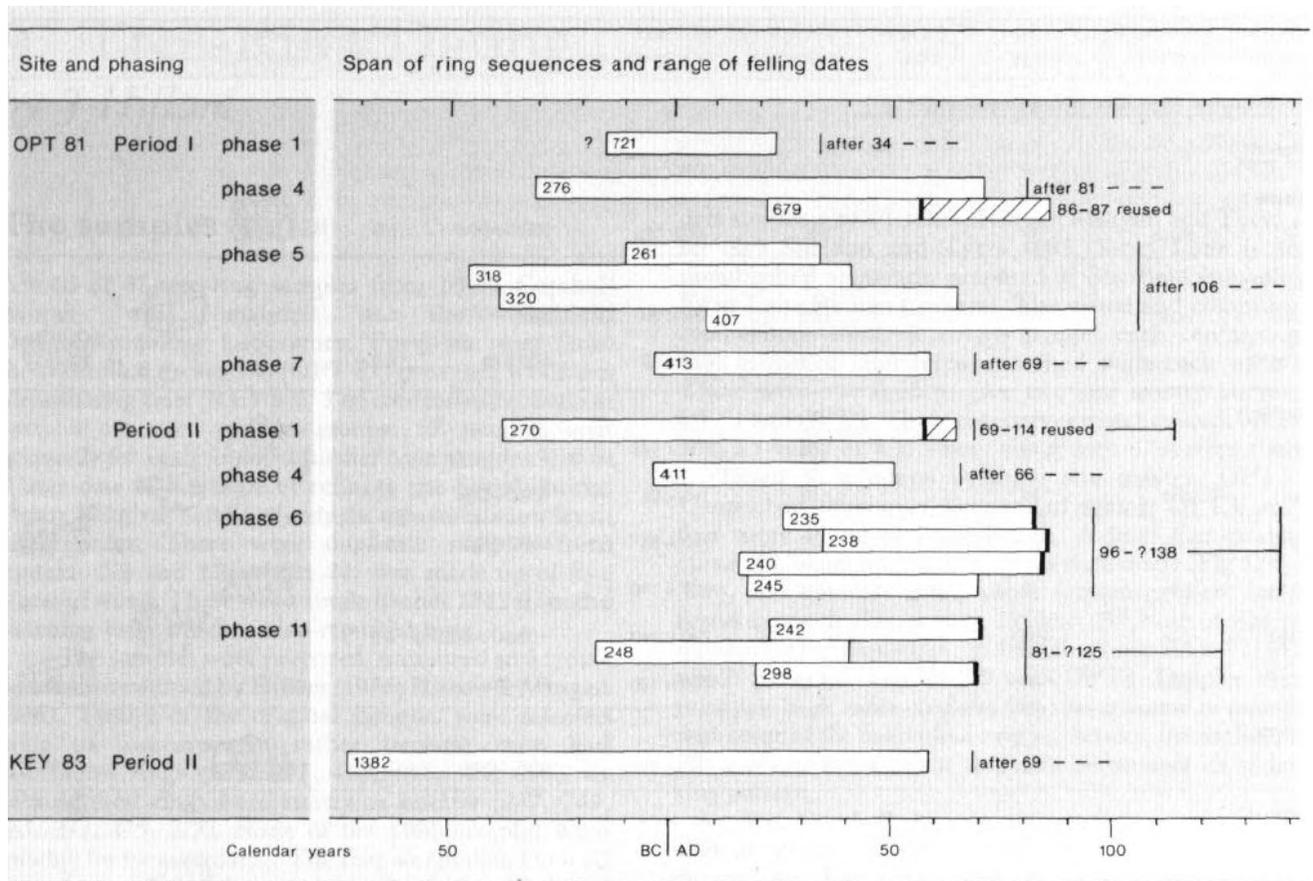


Fig 129 Bar diagram showing relative positions of all dated tree-ring samples from 15-35 Copthall Avenue, plus felling ranges for each phase. Note that 721 is not firmly dated. White bar: heartwood; hatching: sapwood

24. This would give it a *terminus post quem* for felling of AD 34. Period I Phase 4 is represented by 679 and 276/276B, which were felled in AD 86/87 and AD 81 respectively, but 679 was probably reused. Four timbers were dated from Period I Phase 5; they were felled after AD 106. The stray timber 413 assigned to Period I Phase 7 was felled some time after AD 69.

The timber from Period II Phase 1 270 was felled between AD 69 and AD 114, but was probably reused, whilst the sill-beam from Period II Phase 4 (411) was felled after AD 66. The four dated timbers from the drain (Period II Phase 6) have outer rings dating between AD 70 and AD 86. This suggests that only the sapwood has been removed when the timber was converted into planks or post (see also Baillie 1982), which would give a felling date after AD 96 and probably before AD 138. Similarly the Period II Phase

11 timbers were felled after AD 81 and probably before AD 125.

The watching brief timber dates to 72 BC-AD 59 and was also felled after AD 69.

Conclusion

Although only 26 samples from Copthall Avenue were suitable for measurement, 18 of these (19 if 721 is included) have been dated, despite the fact that most of them have less than 100 rings. Estimation of felling and construction dates has proved difficult because of the absence of sapwood. A *terminus post quem* for felling has been calculated for each of the groups, and at least one timber was felled in AD 86/87, although this was probably reused.

10. Conclusions

Natural topography

A study of the prehistoric Walbrook is crucial to an understanding of the stream in the Roman period. In the past the valleys of the stream and its tributaries have been mistaken for streambeds and very little differentiation has been made between the prehistoric, Roman and medieval streams. Recent archaeological investigations in the upper Walbrook valley have made possible for the first time a study of the natural topography and the prehistoric stream.

Within the valley of the upper Walbrook the ground surface inclined gently down to the south and from the west side of the valley towards the centre. Its east side was comparatively steep. The terrace gravels were dissected by the main Walbrook stream (Stream 3) and at least two major tributaries (Streams 1 and 4). Stream 4 also seems to have cut through brickearth. These were fed by numerous streamlets (Fig 25). Stream 2 may be considered either as a third tributary or as part of either Streams 1 or 3. These major streams had eroded their own shallow, wide depressions or valleys through the terrace gravels and into London Clay approximately from Blomfield Street southwards: Stream 1, 44m+, Stream 2, 22m+ and Stream 3, 36m+, but about 50m wide at Broadgate.

Fine gravels were deposited on the bed of Stream 1 and subsequently, silty sands. During the period of gravel deposition the stream appears to have been fairly fast-flowing. The channels shifted over the course of time: at Copthall Avenue a wide bend gradually moved eastwards, its former channel becoming a backwater. The width of the running stream at a particular time is thus difficult to establish, though there is some evidence that the western tributary (Stream 1) could have been 9m+, and the eastern tributary (Stream 4) 3m immediately prior to the Roman period. Some flooding occurred at the edges of the western tributary's depression but otherwise the ground surface beyond the depression seems to have been dry. Stream 1 at 15-35 Copthall Avenue appears to have been fairly slow-flowing but clean, and supported aquatic plants and animals. Damp-loving plants, hygrophilous land snails and outdoor and aquatic insects demonstrate that it flowed through a marshy landscape which was on the whole wet.

This study modifies the courses of the tributaries as put forward by Merrifield (Fig 27) and casts doubt on the use of medieval ward boundaries as indicators of the course of a prehistoric or Roman stream. It is suggested here that the westernmost tributary stream, rather than flowing southwards from 1-6 Finsbury Circus (Fig 2, Site 1) and crossing the site of 15-35 Copthall Avenue along the line of the ward boundary before it joined the main stream (Fig 27), may have flowed eastwards from the valley side, turned southwards at 15-35 Copthall Avenue and thence continued on this course to Tokenhouse Yard where the upper valley narrowed into the lower Walbrook valley (Fig 25). There is a possibility however that it joined Stream 2 north of

Tokenhouse Yard. Evidence for the course of Stream 2 is not conclusive: it could have flowed north-south at 4-6 Copthall Avenue but there are some indications that it meandered south-west here. This may have been the main Stream 3, but it is possible that the latter flowed approximately southwards to confluence with the easternmost tributary, Stream 4, to the north or south-west of 9-19 Throgmorton Avenue (Site 36).

Period I - late 1st early 2nd century

The development of the upper Walbrook valley generally began in the late 1st - early 2nd centuries with an ambitious programme of reclamation and drainage. The ground level of the depressions of the streams was raised by the massive dumping of clay, mainly, but also gravel, intermixed on occasion with organic material. These dumps at the same time constricted the course of the streams into much narrower channels and formed the banks of the now canalised streams. A stretch of the western tributary (Stream 1) was entirely infilled so that a road could be constructed across it, while part of the course of the eastern tributary (Stream 4) was altered from north-east to south-west to east-west. Some tributary streamlets were completely infilled. A network - possibly a grid - of ditches was provided, not only in the partially infilled depressions, but also in the higher adjacent ground. At 15-35 Copthall Avenue the infilled stretch of Stream 1 was replaced with an interconnecting system of ditches which, on the east side of the road, drained south and east, presumably into the retained stretch of canalised stream; drainage on the west side of the road was directed southwards. Both canalised streams and ditches were revetted with timber, though not always: Stream 3 at Broadgate (Site 5) was simply embanked with the dumps (Malt 1987) but a little to the south in Blomfield Street it was revetted.

This development took place in c AD 90-120 at 15-35 Copthall Avenue (Site 27), 43 London Wall (Site 17) and Telegraph Street (Site 22). At 4-6 Copthall Avenue (Site 33) this stage is dated c AD 120 but no pottery was recovered from the initial dumps or the earliest channels and surfaces. The pottery sequence from the Angel Court site to the south (Site 34) (Blurton 1977) starts in the late 1st-early 2nd century and it is therefore suggested that dumping at 4-6 Copthall Avenue is likely to have been contemporary with that on nearby sites. This conclusion is supported by the late 1st-mid 2nd century dates for the infilling of the valley and construction of buildings at the adjacent site 10-12 Copthall Avenue (Site 31). At 55-61 Moorgate (Site 15) drains which preceded the construction of a building are provisionally dated to c AD 100-120 (but a building on the site pre-dated this). North of the city at Broadgate (Site 5) the main Walbrook stream was similarly canalised, though it apparently remained unrevetted; this took place possibly sometime before the end of the 2nd century (Malt 1987). Evidence from an excavation at Dowgate Hill House, 14-16 Dowgate Hill, seems to

indicate that drainage works were also undertaken at the mouth of the Walbrook in the early-mid Roman period. A sequence, very familiar in the upper Walbrook, of a clay bank and associated drainage channel (east-west), successively repaired and replaced, was found here (Shea 1987).

Throughout the early part of the 2nd century this reclamation and drainage system would appear to have been largely inadequate for three reasons. Clay, in particular, and gravel were introduced in massive quantities into the upper Walbrook, which must ultimately have forced the water level to rise. Secondly, the streams were restricted to very much smaller channels and, finally, the provision of additional drainage channels was underestimated. These three factors triggered off a frequently repeated cycle: erosion of the dumped material that made up the banks, leading to rapid silting up of the channels and their overflowing, followed by more dumps to raise the banks beside the recut ditches. An additional factor in the impedance of drainage would have been domestic rubbish which found its way into the channels and is indicated by the condition and mixed nature of the finds and possibly reflected by the charred remains and decomposer insects found in the channels at 15-35 Cophthall Avenue,

This silting, recutting and rebuilding continued at 15-35 Cophthall Avenue and 4-6 Cophthall Avenue, (Sites **27** and **33**) until c AD 120-140. Silting of the channels at 43 London Wall (Site **17**) is also likely to have occurred at this time though there is only a broad date range of c AD 120-200. Thus later timber-lined drains dated c AD 140-200 were contemporary with the period of building activity at Site **27** during which drainage was still necessary though not so extensive as previously.

The plant and pollen evidence from the channel samples of Period I at 15-35 Cophthall Avenue reflect a damp, even wet grassy landscape, much more disturbed and urban in character than in the prehistoric period. This last characteristic is especially emphasised by the insect evidence. The environment may then have been altered, not only by the cutting of drainage ditches but also by the dumping of rubbish and by either a form of market gardening or the transportation of goods into town.

At the beginning of the period of reclamation two metalled roads were constructed, both on a north-east to south-west alignment. The one discovered at 15-35 Cophthall Avenue (Road 1, Site **27**) was a major road at the west side of the valley. This road was constructed in two phases where it crossed the infilled western tributary of the Walbrook, the first consisting of rammed gravel on a foundation of clay and leather waste. After continual flooding of the road in the former valley of the stream, it was rebuilt on a causeway of turves and silty sands, carried on a raft of brushwood. Botanical evidence indicates that the turves were probably not derived from the immediate area but transported thither from a wetter environment.

The rebuilt road was laid slightly further west and on a more north-northeast/south-southwest alignment than that of the earlier road. Lying parallel with the Cripplegate fort to the west, this and Road 2 were probably an extension of the *Flavian* street grid on the city's western hill, linked with the Cheapside and Ironmonger Lane streets to the south and north

respectively (Ordnance Survey, 1983). It seems likely that these roads were the main routes through the middle and upper Walbrook valley, possibly serving a cemetery to the north of the city. Cremations have been noted at Site **4** and, more recently, burials dating to the early 2nd century were found at 7-11 Finsbury Circus (Site **2**) (Askew 1988), and one burial predating an early 2nd century road was recorded at 12-15 Finsbury Circus (Site **3**) (Askew 1989). 2nd century burials have also been recorded at 35-45 New Broad Street (Site **9**) (Woodger 1988). Road 1 may also have provided access to the city from areas of cultivation where market gardening and cereal production could have been carried out. A third road, aligned either north-east to south-west or north-west to south-east was located at the north end of Throgmorton Avenue in 1880 (Site **35**) (Merrifield 1965, gazetteer no 143).

It is likely that the pathways of gravel which bordered drainage channels, as at 10-12 and 4-6 Cophthall Avenue, and Angel Court (Sites **31**, **33** and **34**), or of timber, as at 15-35 Cophthall Avenue and 9-19 Throgmorton Avenue (Sites **27** and **36**), were part of a network, linked with the roads, that provided access to all parts of the valley.

The construction of roads and pathways and the scale of reclamation in the upper Walbrook valley are indicative of a public works programme which aimed to both control the stream and to utilise as much land as possible within the city, in this case probably to create an industrial zone as well as space for domestic habitation. Evidence of the utilisation of rivers and of land reclamation by the Romans is well known. A recent study of eight sites in the Severn Estuary has demonstrated that systematic drainage of the wetlands was undertaken in the Romano-British period (Allen & Fulford 1987, 237-84). Pottery dates from three of these sites suggest that drainage could have commenced in the 2nd century and continued to the 4th or 5th centuries (ibid, 278). Evidence of primitive ironmaking occurred on all sites and one (Ley Pill) provided evidence for a glass industry (ibid, 275-7).

Modifications and improvements to the drainage system in the upper Walbrook appear to have been successful so that around AD 120-160 the number of channels could be greatly reduced and the ground within the depressions of the streams further levelled up. Material from these contexts was highly organic and contained the largest groups of finds. These seem to consist of the rubbish from households and workshops. It is these dumps which characterise so much of the sequence of deposits in the Walbrook and probably account for some at least of the great depth of peat noted by Lane-Fox at Site **28**. For a time the upper Walbrook valley must have become an area designated for the disposal of rubbish in order to infill the drainage channels and level up the ground surface.

Period II - early 2nd century - mid/late 3rd century

The drainage and reclamation of Period I seems partly to have been in preparation for building construction in the wet areas of the upper Walbrook valley. At 10-12 Cophthall Avenue (Site **31**) the two may have been

simultaneous. Most of the buildings were erected in the first half of the 2nd century though at 55-61 Moorgate (Site **15**) a building has a date range of AD 70-120 (Drummond-Murray 1988), one of the two buildings situated outside the 2nd century defensive wall at 85-86 London Wall (Site **10**) has a *terminus post quem* of AD 50 (Sankey 1989) and one at 13-14a Austin Friars (Site **37**) is provisionally dated to sometime after the first half of the 1st century (Dyson 1988). Presumably building construction could take place in the 1st- early 2nd century whenever the ground was high enough and dry enough, generally towards the edges of the valley. Initial building construction is dated to c AD 120-140 at 15-35 Copthall Avenue (Site **27**), and c AD 120-150/160 at 8 Telegraph Street (Site **22**). The building located at 43 London Wall (Site **17**) was rather later in date, AD 180-230. Buildings found on the recently excavated site of 10-12 Copthall Avenue (Site **31**) have been provisionally dated to the 2nd century and may have been occupied into the 3rd century (Lees 1989). A second period of construction beside Stream 2 took place at 4-6 Copthall Avenue (Site **33**) in c AD 250-300/350, after this site had apparently been abandoned in the mid-late 2nd century, but there may not have been much of a time lapse and this was an exception. There was no close dating evidence for the final phases of the buildings at 43 London Wall, 8 Telegraph Street and 15-35 Copthall Avenue (Sites **17**, **22** and **27**) but those at 43 London Wall and 15-35 Copthall Avenue were occupied in the 3rd century while the stone building at 8 Telegraph Street was robbed in the mid-late 3rd century. It is worth noting, however, that at 55-61 Moorgate (Site **15**) the latest building was abandoned in c AD 180 and dumped deposits above are provisionally dated to c AD 200-250 (Drummond-Murray 1988). Modern basemending had truncated these dumped deposits so that it is not known whether buildings were subsequently erected as at 4-6 Copthall Avenue.

Buildings were constructed both on the drier ground adjacent to the streams as at 8 Telegraph Street and 43 London Wall (Sites **22** and **17**) or on reclaimed land as at 15-35 Copthall Avenue, 10-12 Copthall Avenue (Sites **27** and **31**) and, later in the 3rd/4th centuries, at 4-6 Copthall Avenue (Site **33**). The foundation of the building at 8 Telegraph Street was initially constructed of part stone and part timber, becoming entirely stone-founded when it was rebuilt some time after c AD 140-160. One of the buildings excavated at 55-61 Moorgate (*ibid*) appears to have had a masonry foundation at least while substantial masonry buildings with tessellated floors are currently being excavated at 22-25 Austin Friars (D Dunlop and D Shotliff AST 87, pers comm). Masonry buildings, therefore, tended to be located on the higher, more stable ground adjacent to the streams. Elsewhere the buildings were of timber or timber-framed and, where they were situated above the uncompacted fills of the channels at 15-35 Copthall Avenue and probably 4-6 Copthall Avenue, the external walls were supported on piles. The buildings nevertheless eventually sank as the fills compressed. Floors were composed of beaten clay or brickearth; at 8 Telegraph Street some were of mortar.

The samples of Period II came from Building A at 15-35 Copthall Avenue: occupation surfaces, hearths

and pits. These contexts contained most of the charred remains for the site. Some of the botanical remains have been interpreted as evidence for straw floor covering.

A building with *opus signinum* floors was recorded at Angel Court (Site **34**) and Roman buildings were uncovered during the re-investigation of 55-61 Moorgate (Site **15**). It is likely that some of the 'platforms' at Blomfield Street (Site **6**) and piles at the site to the rear of London Wall (Site **28**) also supported buildings. At 15-35 Copthall Avenue a vast gravelled surface extended back from the road and the buildings to the north and east; gravelled surfaces were also laid on the west side of the road.

During this period Road 1, having shifted a little to the west at the end of Period I, continued to be regularly maintained, its drainage probably provided by the property owners. In AD 190-220 the defensive wall which enclosed the city on its landward side (Maloney J 1983, 104) must have curtailed this and Road 2 at the northern limits of the city if, as proposed (Part 3), it had originally continued northwards. There is no record of a gateway in this stretch of the defensive circuit until the medieval period so that the main upper Walbrook roads, while they may have been linked with a postulated intra-mural road, must have become in the main access roads (*ibid* 97, 98). North of the wall, evidence from Broadgate suggests that further embankment of the main Walbrook Stream (3) in c AD 180-300 took place as part of a rationalisation of the drainage system when the city wall was erected (Malt 1987).

Drainage and probably a water-supply were ensured by the digging of new ditches, timber revetted drains and a major land drain, though these were much fewer in number than had previously been the case. At 15-35 Copthall Avenue the scale of the surfacing and the size of the land drain imply planning and execution by the city's authorities. It would follow therefore that the development of the upper Walbrook during this period was a planned development and not a peripheral, piecemeal growth.

The evidence from seeds and insects for this period at 15-35 Copthall Avenue indicated a typically urban environment where the ground was fairly disturbed but still damp.

Just to the south-east of Angel Court, at Kings Arms Yard, the tributaries of the upper valley had united with the main stream, the course of which was now approximately southwards to the Thames. The width of the prehistoric stream here is not known but at Bucklersbury House (Site **23**) (Grimes 1968, 93) it was reduced to 4.26m by means of timber revetments and dumped material. A succession of timber buildings and surfaces was then constructed above the banks of the canalised stream. The timing for reclamation and building seems to have been dissimilar however in the upper and lower valley: finds from the lowest deposits at Bucklersbury were dated AD 43-96 (Wilmott forthcoming). This early date for initial occupation of the lower Walbrook has been confirmed by a recent excavation on the west pavement of Bucklersbury street (P Rowsome and J Hill BUC 87, pers comm). With the already simplified stream system of the lower Walbrook, reclamation of the valley floor was easily achieved through dumping and building could begin immediately. Layers of black silt within the building

Appendix: 15-35 Copthall Avenue plant remains (Figs 131-6)

Fig 131 15-35 Copthall Avenue plant remains: Period I, waterlogged preservation; Natural Valley fills; channel/ditch fills

Species	Common name		Habitat	Contexts														
				Natural Valley fills			Natural Valley fills				Channel/Ditch fills							
				709	710	712	719	547	562	564	583	588	591	593	601	604	642	646
			*wgt soil g	1250	850	400	650	500	250	250	1000	250	250	250	250	604	642	646
<i>Cereals:</i>																		
<i>Triticum cf spelta</i>	spelt	spikelet fork	FI						1									
<i>Triticum sp</i>	wheat	spikelet fork	FI									2				4		
<i>Triticum sp</i>	wheat	glume base	FI	2	1	5		1		8		47			600	4	9	
<i>Triticum sp</i>	wheat	rachis	FI									2						
<i>Hordeum/Triticum sp</i>	barley or wheat		FI											78				
<i>Avena sp</i>	oat		AI								1							
<i>cf Avena sp</i>	oat		AI											6				
<i>Cerealia</i>	ind cereal straw		FI															
<i>Other plants:</i>																		
<i>Chara sp</i>			E	45	2	138	27	8										6
<i>Pteridium aquilinum (L) Kuhn</i>	bracken		CDGH															
<i>Caltha palustris L</i>	marsh marigold		CE						1									
<i>Ranunculus acris/repens/bulbosus</i>	buttercups		ABCDEG	23	11	10	5	10	44	70	164	40	4	10	8	69	15	4
<i>Ranunculus sardous Crantz</i>	hairy buttercup		ABE		14				4		11		4		1		11	
<i>Ranunculus cf sardous</i>	hairy buttercup		ABE		9							2	3				8	
<i>Ranunculus cf parviflorus</i>	small-flowered buttercup		CD								2							
<i>Ranunculus cf auricomus</i>	goldilocks		C													12		
<i>Ranunculus flammula L</i>	lesser spearwort		EG						10	5	16					5		
<i>Ranunculus cf flammula</i>	lesser spearwort		EG		11	1						7		1				1
<i>Ranunculus sceleratus L</i>	celery-leaved crowfoot		E	10	22	1	7	2	3	5	8	5	10	4	58		16	4
<i>Ranunculus cf sceleratus</i>	celery-leaved crowfoot		E		2	1											15	
<i>Ranunculus subgen Batrachium (DC)A</i>	crowfoots		E			1				1								
<i>Thalictrum cf flavum</i>	common meadow rue		DE								2	1						
<i>Ranunculus sp</i>	-		ABCDEG						1					4			2	
<i>Papaver somniferum L</i>	opium poppy		BGHI						5									2
<i>Papaver cf somniferum</i>	opium poppy		BGHI		1													
<i>cf Papaver somniferum</i>	opium poppy		BGHI								2							
<i>Papaver sp</i>	poppy		ABGHI					7	1					2	1			
<i>cf Papaver sp</i>	poppy		ABGHI															1
<i>Fumaria officinalis L</i>	fumitory		A								1							1
<i>Fumaria sp</i>	fumitory		A				1		1		1	1						
<i>Brassica sp</i>	wild cabbage/turnip/mustard		ABI															1
<i>Brassica spp</i>	wild cabbage/turnip/mustard		ABI								2							
<i>Raphanus raphanistrum L</i>	wild radish/charlock		A						1									
<i>cf Raphanus raphanistrum</i>	wild radish/charlock		A												1			
<i>cf Lepidium sp</i>	-		ABDE												1			
<i>Thlaspi arvense L</i>	field penny-cress		AB						1									
<i>Capsella bursa-pastoris (L) Medic</i>	shepherd's purse		AB		4			2	14	1		1		3	8			1
<i>Rorippa nasturtium-aquaticum (L)Ha</i>	watercress		IE	5		1	20	1	2			2					2	
<i>Rorippa cf nasturtium-aquaticum</i>	watercress		IE										1					
<i>Rorippa islandica (Oeder) Borbas</i>	marsh yellow-cress		E	1	1	1			1			2	3	1	12		3	2
<i>Rorippa cf islandica</i>	marsh yellow-cress		E			1											4	
<i>cf Camelina sativa</i>	gold of pleasure		AHI				1											
<i>Cruciferae</i>	-		ABCDEGFI						1			5		1				

Fig 131 continued

Species	Common name	Habitat	Contexts														
			Natural Valley fills			Natural Valley fills				Channel/Ditch fills							
			709 1250	710 850	712 400	719 650	547 500	562 250	564 250	583 1000	588 250	591 250	593 250	601 250	604 250	642 750	646 650
<i>Reseda luteola</i> L	weld-dyer's rocket	ABHI	2					6	3				3	2			7
<i>Viola</i> sp	violet	ABCDG						1		1							
<i>Silene cf alba</i>	white campion	ABC						2								1	
<i>Silene</i> sp	campion/catchfly	ABCDF							2								1
<i>Silene</i> spp	campions/catchflies	ABCDF								9							
<i>Lychnis flos-cuculi</i> L	ragged robin	CDE	1			1	3	3		2	3	1			7	1	
<i>cf Lychnis flos-cuculi</i>	ragged robin	CDE															1
<i>Agrostemma githago</i> L	corn cockle	A			1								4				
<i>cf Saponaria officinalis</i>	soapwort	CEH						2									
<i>Cerastium</i> sp	mouse-ear chickweed	ABD	1		3	1		1			1		2	5		1	
<i>Cerastium</i> spp	mouse-ear chickweed	ABD								6							
<i>cf Cerastium</i> sp	mouse-ear chickweed	ABD											1				
<i>Myosoton aquaticum</i> (L.) Moench	water chickweed	E	4			1					8					1	
<i>cf Myosoton aquaticum</i>	water chickweed	E			2		1			138							
<i>Mysoton/Stellaria</i> sp	chickweed/stitchwort	ABCDEG								12							
<i>Stellaria media</i> (L.) Vill	chickweed	AB	8	20	6	13	17	40	37			6		7	59	13	6
<i>Stellaria cf media</i>	chickweed	AB										2					
<i>Stellaria holostea</i> L	greater stitchwort	CG		2													
<i>cf Stellaria holostea</i> L	greater stitchwort	CG															
<i>Stellaria graminea</i> L	lesser stitchwort	CD	3	6	5	1	16		36		41	4			39	6	
<i>cf Stellaria graminea</i>	lesser stitchwort	CD															1
<i>Stellaria graminea/palustris</i>	stitchwort	CDE			2	1		45		94				4			
<i>Stellaria alsine</i> Grimm	bog stitchwort	E						14	2								
<i>Stellaria cf alsine</i>	bog stitchwort	E		1		2		4									
<i>Stellaria</i> sp	chickweed/stitchwort	ABCDEG													2		
<i>Arenaria serpyllifolia</i> L	thyme-leaved sandwort	ABD							1								
<i>cf Arenaria leptoclados</i>	lesser thyme-leaved sandwort	AB										1					
<i>Arenaria serpyllifolia/leptoclados</i>	thyme-leaved sandwort	ABD												4			
<i>cf Areneria</i> sp	sandwort	ABD															1
<i>Arenaria/Cerastium</i> sp	sandwort/chickweed	ABCD			2												
<i>Caryophyllaceae</i> indet	-	-													3		4
<i>Montia fontana</i> ssp <i>chondrosperma</i> L	blinks	AE	5	4	6	3	17	4	12	10	3	1	3	1	4	8	5
<i>cf Montia fontana</i> ssp <i>chondrosperma</i>	blinks	AE		2													
<i>Chenopodium cf polyspermum</i>	all-seed	AB	3	36													2
<i>Chenopodium album</i> L	fat hen	ABFH	1		4			6	4	12				2			2
<i>Chenopodium cf album</i>	fat hen	ABFH		49	2		1		6		7	95			12	5	
<i>Chenopodium album</i> type	fat hen	ABFH					5		6							18	
<i>Chenopodium murale</i> L	nettle-leaved goosefoot	BD						1		2							
<i>Chenopodium rubrum/glaucum</i>	red/glaucous goosefoot	AB		5			7	97	94	110	225	102	38	34		16	6
<i>Chenopodium cf rubrum/glaucum</i>	red/glaucous goosefoot	AB													66	4	
<i>Chenopodium</i> sp	goosefoot etc	ABFH			1						3						
<i>Chenopodium</i> spp	goosefoot etc	ABFH				3											
<i>cf Chenopodium</i> sp	goosefoot etc	ABFH				1											
<i>Chenopodium/Atriplex</i> sp	goosefoots/oraches	ABFGH	1														
<i>Atriplex hastata/patula</i>	orache	ABFGH	4	2	1	2	5		24		17	35				3	6
<i>Atriplex cf hastata/patula</i>	orache	ABFGH	1														
<i>Atriplex</i> sp	orache	ABFGH				1											
<i>Atriplex</i> spp	oraches	ABFGH															
<i>Chenopodiaceae</i> indet	-	-							11	23							
									2								

Fig 131 continued

Species	Common name	Habitat	Contexts															
			Natural Valley fills			Natural Valley fills				Channel Ditch fills								
			709	710	712	719	547	562	564	583	588	591	593	601	604	642	646	
*wgt soil g	1250	850	400	650	500	250	250	1000	250	250	250	250	250	750	650			
Oenanthe sp	dropwort	DE														1		
<i>cf</i> Oenanthe sp	dropwort	DE																
Anethum graveolens L	dill	BFI	1					19	1	8	2	8	2	2				
<i>cf</i> Anethum graveolens	dill	BFI					1		3						5	1		
Foeniculum vulgare Mill	fennel	BDFIG										4						
Coriandrum sativum L	coriander	I						3		2								
<i>cf</i> Coriandrum sativum	coriander	I									1							
Daucus carota L	wild carrot	ACDGI								1					5	2	2	
<i>cf</i> Daucus carota	wild carrot	ACDGI								1							1	
Umbelliferae indet	-	-			1	1					3	3			1		3	3
Bryonia dioica Jacq	bryony	CG	1						1	1								
Bryonia <i>cf</i> dioica	bryony	CG														1		
Polygonum aviculare L	knotgrass	ABG	4	4	6	1	18	32	57	94	30	9	17	5	22	25	10	
Polygonum <i>cf</i> aviculare	knotgrass	ABG											3					
Polygonum bistorta L	bistort	DF														1		
Polygonum persicaria L	persicaria	ABEH	4		1	2	1	22	29	46	15				11			2
Polygonum <i>cf</i> persicaria	persicaria	ABEH													5			
Polygonum lapathifolium L	pale persicaria	ABE					2	4	1		13				9			
Polygonum <i>cf</i> lapathifolium	pale persicaria	ABE							1									
<i>cf</i> Polygonum lapathifolium	pale persicaria	ABE																
Polygonum persicaria/lapathifolium	persicaria	ABEH			1		1					42			10	11	4	
Polygonum <i>cf</i> persicaria/lapathifolium	persicaria	ABEH	5									2						
Polygonum <i>cf</i> hydropiper	water pepper	E					3				5	6	6					
Polygonum convolvulus L	black bindweed	ABF									4							
Polygonum sp	-	ABCDEFGFG													2			
Polygonum spp	-	ABCDEFGFG			2													
Rumex acetosella L	sheep's sorrel	AD	22	2	25	9	38	79	148	153	127	11	18	11			7	13
Rumex obtusifolius L	broad-leaved dock	BC		1														
Rumex obtusifolius type	broad-leaved dock	BC																
Rumex <i>cf</i> obtusifolius	broad-leaved dock	BC			2													
Rumex acetosa/crispus/obtusifolius	dock	ABCD	2	69	4	3	24	57		181	32	11	5	6	26	14	6	
Rumex sanguineus/conglomeratus	dock	BC			4													
Rumex sanguineus L	red-veined dock	BCD														142		
Rumex maritimus L	golden dock	EJ																6
Rumex sp	dock	ABCDEFGFI	1	2	1	3	1					4	3		4	5	8	
Rumex spp	docks	ABCDEFGFI				6			47							9	5	
Polygonaceae indet	-	-				4	2											
Urtica urens L	small nettle	AB		2			1	12	74	15	3	1		1	7	5		
Urtica dioica L	stinging nettle	BCDEFGH	18	16	4	7	29	424	189	386		67		88	99	114	49	
<i>cf</i> Urtica dioica	stinging nettle	BCDEFGH			1													
Ficus carica L	fig	I	1				8	24	50	81	6		1		18	7	6	
<i>cf</i> Ficus carica	fig	I																
Morus nigra	mulberry	FHI							1				1					
Corylus avellana L	hazel	CF																1
Anagallis arvensis L	scarlet pimpernel	AG		7	1		1	1									1	
<i>cf</i> Myosotis	forget-me-not	BCDE	1															
Hyoscyamus niger L	henbane	BDG							1	2						1		
Solanum nigrum L	black nightshade	BF						2	1	2								
<i>cf</i> Solanum nigrum	black nightshade	BF					1											

Species	Common name	Habitat	Contexts															
			Natural Valley fills			Natural Valley fills				Channel/Ditch fills								
			709 1250	710 850	712 400	719 650	547 500	562 250	564 250	583 1000	588 250	591 250	593 250	601 250	604 250	642 750	646 650	
<i>Veronica cf anagallis-aquatica</i> L	water-speedwell	CE				3		9							78			
<i>Veronica officinalis</i> L	common speedwell	CD	1															
<i>cf Veronica</i> spp	speedwell	ACDE						5										
<i>Limosella aquatica</i> L	mudwort	E									2							
<i>cf Limosella aquatica</i>	mudwort	E				1							1		1	1		
<i>cf Rhinanthus minor</i>	yellow rattle	D										1						
<i>Rhinanthus</i> sp	yellow rattle	ABDGH						2			2							
<i>Mentha</i> sp	mint	ABCEFGI		2	1						1		1					
<i>Lycopus europaeus</i> L	gipsy-wort	EH						1			2			1				
<i>cf Lycopus europeus</i>	gipsy-wort	EH							1									
<i>Satureja hortensis</i>	summer savory	FGI						7										
<i>Satureja hortensis</i> type	summer savory	FGI						1										
<i>cf Satureja hortensis</i>	summer savory	FGI															1	
<i>Calamintha</i> sp	calamint	D						1										
<i>Prunella vulgaris</i> L	self-heal	BCDG	3	1				5		38	88	25	1	8	6	49	8	8
<i>cf Prunella vulgaris</i>	self-heal	BCDG						2										
<i>Ballota nigra</i>	black horehound	CG										1					1	
<i>Lamium</i> sp	dead-nettle	ABC														1	2	
<i>cf Lamium</i> sp	dead-nettle	ABC					1	1										
<i>Nepeta cataria</i> L	cat-mint	C							1									
<i>Labiatae</i> indet	-	ABCFFFI				1						3						
<i>Plantago major</i> L	great plantain	ABC	15	70		5	7		17					1		7	17	2
<i>cf Plantago major</i>	great plantain	ABC				2												
<i>Plantago media</i> L	hoary plantain	D										6	35					4
<i>cf Plantago lanceolata</i>	ribwort	D															10	
<i>Sambucus nigra</i> L	elder	BCFGH						1	4	11	6	3				5		1
<i>Sambucus cf nigra</i>	elder	BCFGH												1				
<i>Sambucus nigra/ebulus</i>	elder/danewort	BCFGH			1													3
<i>Bidens cernua</i> L	nodding bur-marigold	E			1			1	7	1		3		3				
<i>Bidens cf cernua</i>	nodding bur-marigold	E											4					
<i>Bidens tripartita</i> L	tripartite bur-marigold	E						1	2			2	5	2	9	1		
<i>Bidens cf tripartita</i>	tripartite bur-marigold	E											4					
<i>Bidens</i> sp	bur-marigold	E			1													1
<i>Senecio</i> sp	ragwort	ABCDEG															2	
<i>cf Senecio</i> sp	ragwort	ABCDEG							8									
<i>Chrysanthemum cf segetum</i>	corn marigold	AH												1				
<i>Chrysanthemum cf leucanthemum</i>	ox-eye daisy	D																1
<i>Chrysanthemum</i> sp	-	ABCD														1		
<i>Anthemis/Chrysanthemum</i> sp	-	ABD																
<i>Arctium lappa</i> L	great burdock	B(D)											1					
<i>cf Arctium lappa</i>	great burdock	B(D)								1								
<i>Cirsium arvense</i> (L.) Scop	creeping thistle	AB	2															
<i>Cirsium</i> sp	thistle	ABCDEFG						2	1			2						
<i>cf Cirsium</i> sp	thistle	ABCDEFG												1	1			
<i>Carduus/Cirsium</i> sp	thistles	ABDEG			1	1	1			2	4						3	1
<i>cf Carduus/Cirsium</i>	thistles	ABDEG															1	
<i>Centaurea cf nigra</i>	lesser knapweed	BDG														7		
<i>Centaurea</i> sp	knapweed/thistle	ABDGH					1					2						
<i>cf Centaurea</i> sp	knapweed/thistle	ABDGH								8		3				1		

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by *Lysbeth Merrifield*

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The archaeology of
Roman London Volume 2

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London west of the Walbrook

Dominic Perring & Steve Roskams
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Gill Craddock, Francis Grew, Jennifer Hillam,
Jennifer Norton and David Smith

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Cover: Reconstruction (by John Pearson) of the Period III buildings at Newgate Street, c AD 50-60

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Summary

This report concerns 1st and 2nd century buildings and occupation on the western of the two hills on which Roman London was built, and is in five parts, the first of which is an introduction.

In Part II six excavations of 1972-1980 are summarised. The earliest evidence of occupation, dated to *c* AD 50, was found at *Newgate Street*, where a fire destruction horizon, possibly associated with the Boudiccan revolt of AD 60/61, was also identified. On the other sites (*Watling Court*, *Milk Street*, *Well Court* and *Ironmonger Lane*) occupation had commenced by the early Flavian period. The Flavian period (AD 69-96) witnessed a flurry of building activity and by the end of the 1st century all of the areas investigated were fully built up. A destruction horizon of the Hadrianic fire (*c* AD 125) was evident on all sites and there was widespread rebuilding into the mid 2nd century. By the end of the 2nd century, most areas had been abandoned although the streets found at *Milk Street*, *Well Court* and *Ironmonger Lane*, all first laid out in the Flavian period, may have continued in use during the 3rd century. Coins and samian stamps also suggest a peak of occupation in the Flavian period, whilst the numbers of glass vessels and proportion of samian to coarse wares imply a humbler form of occupation than on contemporary sites in the eastern part of the settlement. On all sites the latest occupation levels were sealed by dark earth.

The construction and appearance of the buildings are considered in Part III. Locally available building materials influenced the forms of construction. Brickearth, clay and oak were used for most structural purposes; stone was first used in quantity in Period IV foundations at *Watling Court* (*c* AD 80-125). *Tegulae* and *imbrices* were used in walls but not apparently for the roofs. It is suggested that buildings were laid out to prepared plans and that detailed property records were kept.

Most buildings had walls of wattle and daub, involving several types of construction, but unfired bricks and clay were increasingly evident towards the end of the 1st century. In more important buildings clay walls without timber supports often set over tile or stone foundations were preferred. These only became widespread in the late Flavian period. The first stone buildings date to the late 1st or early 2nd century but such structures are poorly represented in the sites considered here. In all types of building internal partitions were usually of timber and clay.

Several types of brickearth and plaster finish were used. The *Newgate Street* buildings featured the poorer plasters and Buildings D and H at *Watling Court* the best. Most decorations consisted of rectangular panels and bands in white, red and black, although other colours and floral motifs were used with some frequency at *Watling Court* and *Milk Street*.

Most floors were in brickearth and some in gravel; timber was rare. Better rooms had mortar floors and the best were of *opus signinum* or mosaic. At *Watling Court* seven mosaic designs in black and white were found. Most were in Building D (*c* AD 80-125) where several of the designs showed Italian influences. A crude design of

tesserae set in mortar in Building F perhaps represented a gateway, and in Building H there had been a mosaic at first floor level. At *Milk Street* the later of two tessellated floors included a stylised cantharus in a design of five colours.

Little remained of superstructures. Building H and perhaps some of the other, later buildings at *Watling Court* were of two storeys. Window glass was a rarity - although one window grill was recovered. Small ground level openings in the walls were probably for ventilation.

Various features were recorded inside the buildings. Many hearths were found at *Newgate Street* and few at *Watling Court*, reflecting the difference between commercial and residential areas. In the more prestigious residential buildings portable braziers were probably used. Open hearths with clay and tile breastworks were used for domestic heating and cooking, and smaller irregular hearths used for industrial activities (as at *Newgate Street*, where ovens were also found). At *Watling Court*, two *lararia* (household shrines) have been tentatively identified.

The houses were served by publicly maintained streets, with privately maintained drains for eavesdrips and surface run-off, but were not supplied with running water. Few rubbish pits were found and there must have been a system for off-site rubbish disposal.

As far as the overall form and function of these various buildings is concerned, circular huts were found in Periods I and III at *Newgate Street*, probably attesting pre-Roman building practices as in the suburbs of other early Romano-British towns. The Period V buildings on the same site may have been part of an integrated row of shops. In the later strip buildings of the early 2nd century reception quarters behind the commercial areas incorporated halls, dining rooms, bedrooms and latrines. Rooms interpreted as lodgings were also found at *Newgate Street* behind the main buildings.

The buildings at *Watling Court* were town houses of some quality. A military diploma was found in the destruction of Building D. Building F may have been divided into two or three apartments. The gradual replacement of timber structures by larger clay walled buildings in the later Flavian to Hadrianic periods was followed by the introduction of stone built houses, coinciding with an evident contraction of the town. This may reflect a change in the character of the population, from the short-lived entrepreneurial settlement of the 1st century to the longer-term, more comfortable buildings of less commercial character in later periods.

In Part IV of the study we consider the physical and functional characteristics of the settlement which was planned around an east-west axial street. Changes at either end of this alignment suggest the original limits of occupation and imply that a large settlement was intended from the start. This is supported by the distribution of early burials.

Within the western part of town, residential areas were systematically planned on either side of the axial street. To the north, on rising ground, was a fort which, though connected to the civilian areas by road, remained separate from them. To the east, the difficult terrain of

the Walbrook valley dictated a different form of expansion in which industrial activity was clearly regulated. Finally, in the suburban area to the west, development focussed upon the continuation of the axial street. Commercial buildings here were interspersed with burials on the frontage, giving way to more marginal areas towards the rear of the properties and approached by narrow lanes.

Gravel and brickearth were quarried throughout the area, the former for general use in streets and courtyards, the latter for adjacent buildings or for use with kilns in industrial areas. Water was supplied by

wells in domestic and commercial areas, either on private properties or clustered together in areas of public access, and by streams on industrial sites. There is no evidence (nor was there need) for an aqueduct.

It is argued that the development of London was at no stage haphazard or uncontrolled. It was laid out before the Boudiccan rebellion and became built up during the Flavian period. Occupation continued even after the densely settled town was destroyed in the Hadrianic fire but all areas show signs of decay by the end of the 2nd century.

Résumé

Ce rapport porte sur les bâtiments datant du 1er et du 2ème siècle et sur la topographie de la colline la plus à l'ouest des deux collines sur lesquelles le Londres romain a été construit. Il est divisé en cinq parties dont la première est une introduction.

Dans la deuxième partie, l'on trouvera le résumé de six fouilles entreprises entre 1972 et 1980. Les traces de la première occupation datant de 50 avant J.C. ont été retrouvées à *Newgate Street*. Une couche de destruction due à un incendie datant probablement de la révolte de Boudicca en 60/61 avant J.C. a été également retrouvée sur ce site. Les premières installations des autres sites (*Watling Court*, *Milk Street*, *Well Court* et *Ironmonger Lane*) datent du début de l'ère flavienne. Pendant l'ère flavienne (69-96 avant J.C.) il y eut une vague de construction et à la fin du 1er siècle, toutes les parties de la ville examinées dans cette étude ont été complètement reconstruites. Une couche de destruction due à l'incendie hadrienique a été retrouvée sur tous les sites et il semble que l'on reconstruisait partout jusqu'au milieu du 2ème siècle. A la fin du 2ème siècle, la plupart des quartiers ont été abandonnés mais les rues retrouvées à *Milk Street*, *Well Court* et *Ironmonger Lane* qui ont toutes été tracées à l'ère flavienne, ont peut-être continué à être utilisées au troisième siècle. La monnaie et les sceaux samiens suggèrent également une occupation à son apogée à l'époque flavienne alors que le nombre des récipients en verre et la proportion d'objets samiens par rapport à la céramique grossière indiquent une occupation moins raffinée à l'emplacement des sites situés à l'Est de la ville. Dans tous les sites la dernière couche d'occupation a été recouverte par une couche de "dark earth" (terre meuble de couleur foncée souvent retrouvée à cette époque dans les sites urbains).

La construction et l'aspect des bâtiments sont décrits dans la 3ème partie du rapport. Les matériaux de construction locaux ont influencé la forme des constructions. La terre à brique, l'argile et le chêne sont utilisés pour la plus grande partie de la construction; la Pierre a été utilisée en premier en grande quantité dans la fabrication des fondations à *Watling Court* (80-125 avant J.C.) pendant la période IV. Il semble que les *tegulae* et les *imbrices* étaient utilisées pour les murs mais non pour les toits. L'on a avancé l'hypothèse que les bâtiments étaient construits d'après des plans faits à l'avance et que un cadastre était tenu à jour.

La plupart des bâtiments avaient des murs de torchis; ceux-ci ont été trouvés dans plusieurs types de construction mais les briques crues et l'argile apparaissent de plus en plus à la fin du 1er siècle. Les bâtiments les plus importants comportent des murs en argile sans soutiens de bois souvent placés sur des carrelages de céramique ou des fondations en pierre. Ces dernières sont seulement devenues courantes à la fin de l'époque flavienne. Les premiers bâtiments datent du 2ème siècle mais peu de ces structures apparaissent sur les sites dont il est question ici. A l'intérieur des bâtiments des murs internes en torchis étaient utilisés.

On s'est servi pour ces bâtiments de plusieurs sortes d'enduits de terre à brique et de plâtre. Les bâtiments de *Newgate Street* avaient des plâtres de moins bonne qualité que ceux des bâtiments D et H de *Watling Court* qui leur étaient supérieurs. La plupart des décorations consistait en des panneaux ou bandes blancs, rouges et noirs mais d'autres couleurs et d'autres motifs à fleurs ont été utilisés assez fréquemment à *Watling Court* et à *Milk Street*. La plupart des sols étaient en terre à brique et certains en gravillon; les sols de bois étaient rares. Les pièces les plus belles avaient des sols de mortier et surtout d'*opus signinum* et de mosaïque. A *Watling Court*, sept dessins de mosaïque en blanc et noir ont été retrouvés. La plupart d'entre eux se trouvait dans le bâtiment D (c 80-125 après J.C.) où plusieurs des dessins ont la marque d'une influence italienne. Prise dans le mortier du bâtiment F, on a retrouvé une surface tessallée d'un dessin grossier; elle représenterait peut-être un portail. D'autre part, au premier étage du bâtiment H il y avait eu un sol en mosaïque. A *Milk Street*, le plus récent des deux sols tessallés comprenait un cantharides stylisé dessiné en cinq couleurs.

On a retrouvé peu de restes des structures elles-mêmes. Le bâtiment H et peut-être certains autres bâtiments plus récents de *Watling Court* avaient deux étages. Les vitres étaient rares mais une grille de fenêtre a été retrouvée. De petites ouvertures dans les murs au niveau du sol étaient probablement là pour la ventilation du bâtiment.

Un certain nombre de détails ont été retrouvés à l'intérieur des bâtiments. Plusieurs foyers ont été découverts à *Newgate Street* et quelques uns à *Watling Court*, ils reflètent les différences qui existaient entre les

quartiers résidentiels et commerciaux. Dans les bâtiments résidentiels les plus luxueux on devait se servir de braseros portables. Des foyers ouverts dont le devant était recouvert d'argile et de tuile servaient pour le chauffage et pour la cuisine tandis que des foyers de forme irrégulière servaient à des activités industrielles (par exemple à Newgate Street où des fours ont été également retrouvés). A Watling Court, on pense avoir identifié deux *lararia* (sanctuaires privés).

Les maisons étaient desservies par des rues entretenues par l'administration qui comportaient des canalisations pour l'écoulement des eaux; celles-ci étaient maintenues par les particuliers. Ces maisons ne recevaient pas d'eau courante. Peu de fosses à ordures ont été retrouvées; il devait donc y avoir un système de dépotoir situé en dehors du site.

En ce qui concerne la forme et la fonction des divers bâtiments, on a retrouvé des huttes circulaires des Périodes I et III à Newgate Street; celles-ci sont sans doute la preuve que des bâtiments du style de ceux de l'époque pré-romaine y étaient construits tout comme dans les faubourgs d'autres villes de l'époque romano-britannique ancienne. Les bâtiments de la période V du même site faisaient peut-être partie d'une rangée de boutiques attenantes les unes aux autres. Dans les bâtiments alignés de la première partie du deuxième siècle, des salles d'habitation placées derrière les pièces destinées au commerce comportaient des entrées, des salles à manger, des chambres à coucher et des latrines. On pense que certaines pièces placées derrière les bâtiments principaux de Newgate Street étaient des logements.

Les bâtiments de Watling Court étaient des maisons d'habitation d'un certain luxe. Un diplôme militaire a été retrouvé dans les couches de destruction du bâtiment D. Le bâtiment E était peut-être divisé en deux ou trois appartements.

Le remplacement progressif des constructions en bois par de plus grands bâtiments d'argile aux époques flavienne et hadrienne fut suivi par l'introduction de maisons construites en pierre; celles-ci semblent contemporaines avec une diminution de la taille de la ville qui reflète peut-être un changement de population. Celle-ci aurait été composée au 1er siècle pendant peu de temps de marchands qui auraient été remplacés aux époques suivantes par des habitants installés d'une façon plus permanente dans des constructions plus confortables et à caractère moins commercial qu'auparavant.

Les aspects physiques et fonctionnels de l'agglomération sont examinés dans la quatrième partie de cette étude. Le plan en était le long d'une rue orientée d'Est en Ouest. Les changements effectués à chaque bout de la rue sont une indication des limites de la ville à l'origine; ils montrent aussi que l'on avait prévu une agglomération importante dès le début. La distribution des tombes anciennes confirme cette idée.

Dans la partie Ouest de la ville, des quartiers résidentiels ont été prévus de chaque côté de l'axe routier. Au nord, sur une élévation de terrain, il y avait un fort qui était séparé des quartiers civils bien que reliés à eux par une route. A l'Est, à cause du terrain difficile de la vallée de la Walbrook, l'expansion de la ville a pris une forme différente et des bâtiments destinés à un usage industriel ont été placés là d'une façon planifiée. Les faubourgs Ouest ont été mis dans le prolongement de l'axe routier. Là, le long de la route, il y avait des tombes entre les bâtiments à usage commercial et des allées étroites menaient de l'arrière des bâtiments à des quartiers en marge.

Partout dans l'agglomération, on exploitait les gravières pour se servir du gravillon dans les rues et les cours. L'on extrayait également la terre à brique pour construire les bâtiments alentour et pour l'utiliser dans les fours des quartiers industriels. L'eau venait des puits tant dans les quartiers résidentiels que dans les quartiers commerciaux: soit ces puits étaient situés sur les terrains des particuliers soit ils étaient groupés ensemble pour usage public. Dans les quartiers industriels, l'eau venait des ruisseaux. Nous n'avons pas de preuves de l'existence d'un aqueduc qui d'ailleurs n'aurait pas été nécessaire. Les eaux sales partaient dans des caniveaux réutilisés qui étaient destinés à l'origine au drainage des terrains ou bien elles étaient jetées dans les égouts le long des rues.

L'on pense que le développement de Londres n'a été à aucun moment livré au hasard et qu'il a été planifié. Les plans en avaient été faits avant le rébellion de Boudicca et la construction en a été exécutée pendant l'époque flavienne. L'occupation de la ville a continué même après sa destruction pendant l'incendie accidentel sous Hadrien mais des signes de déclin commencent à apparaître dans tous les quartiers vers la fin du 2ème siècle.

L'appendice liste tous les archives qui ont été composés pour les sites décrits dans ce volume. Ceci sont entreposés dans le Museum of London et peuvent être examinés sur demande écrite auprès de l'archiviste en chef au Museum of London, 150 London Wall, London EC2Y 5HN.

Zusammenfassung

Dieser Band behandelt Bauten aus dem ersten und zweiten Jahrhundert und die Entwicklung des Geländes auf dem westlichen der beiden Hügel, auf denen das römische London entstand. Der Bericht besteht aus der Einleitung und vier weiteren Kapiteln.

Im Teil II sind Ausgrabungsergebnisse aus den Jahren 1972 bis 1980 zusammengefaßt. Die frühesten Spuren der Bebauung stammen aus *Newgate Street* von ca. 50 nach Christus. Auch die Anzeichen von Zerstörung durch Feuer - wahrscheinlich in Folge der Revolte der Boudicea um 60/61 nach Christus - kommen von diesem Fundplatz. An den anderen Grabungsstellen (*Watling Court*, *Milk Street*, *Well Court* und *Ironmonger Lane*) begann die Besiedelung in der flavianischen Zeit. Diese Periode (ca. 69–96) zeigte starke Bautätigkeit und bei Ende des ersten Jahrhunderts waren alle untersuchten Gegenden voll bebaut. Überall wurden Lagen des hadrianischen Feuers gefunden. Danach setzte bis in die Mitte des zweiten Jahrhunderts erneute intensive Bebauung ein. Am Ende des zweiten Jahrhunderts aber waren die meisten Teile des Hügels verlassen, obwohl neue Straßen erst in der flavianischen Periode in *Milk Street*, *Well Court* und *Ironmonger Lane* angelegt worden waren. Dennoch mögen sie weiter während des dritten Jahrhunderts in Benutzung gewesen sein. Münzen und Stempel auf *terra sigillata* Scherben weisen auf die stärkste Besiedelung in der flavianischen Zeit hin, während die Zahl der Glasgefäße und das Verhältnis der feinen *terra sigillata* zur gewöhnlichen Töpferware eine schwächere Besiedelung des östlichen Teiles des Hügels zur gleichen Zeit belegt. Dunkle Erde lag über den spätesten römischen Lagen aller Ausgrabungsstellen.

Die Bauweise und das Erscheinungsbild der Gebäude werden im Teil III behandelt. Örtlich erhältliches Material beeinflusste die Bauweise. Sandiger Lehm, Ton und Eichenholz wurden für die meisten Bauvorhaben verwendet. Stein wurde erst in größeren Mengen in Periode IV für Fundamente in *Watling Court* eingesetzt (ca. 80–125 n. Chr.). *Tegulae* und *imbrices* wurden in Wänden, jedoch nicht auf Dächern verarbeitet. Man nimmt an, daß die Gebäude vor dem Bau geplant wurden und daß detaillierte Grundstücksakten vorhanden waren.

Die meisten Häuser hatten Wände aus lehmverschmiertem Knüppelgeflecht, welches auf verschiedene Weise zusammengebaut war. Jedoch gegen Ende des ersten Jahrhunderts wurden immer mehr ungebrannte Lehmziegel verwandt. Reichere Häuser wurden bevorzugt mit starken Lehmwänden ohne Holzverstrebungen, oft über Kachel oder Steinfundamenten, gebaut. Diese Bauweise war in der späten flavianischen Zeit weit verbreitet. Die ersten Steingebäude stammen aus dem zweiten Jahrhundert, sie sind aber nur schwach vertreten in diesen Ausgrabungen. Bei allen Häuserarten waren die meisten Innenwände aus Holz und Lehm.

Verschiedene Arten von Lehm- und Mörtelverputz waren üblich. Die Gebäude in *Newgate Street* hatten ärmlichere, Haus D und H in *Watling Court* die besten Mörtel. Die meisten Wanddekorationen bestanden aus regelmäßigen Feldern und

Streifen in Weiß, Rot und Schwarz, nur in *Watling Court* und *Milk Street* wurden öfter auch andere Farben verwendet.

Die meisten Böden bestanden aus Lehm, manchmal mit Kies vermischt. Holzböden waren selten vertreten. Bessere Böden bestanden aus Mörtel und die repräsentativsten waren aus *opus signinum* oder Mosaik. In *Watling Court* wurden sieben schwarz-weiße Mosaikböden gefunden. Die meisten stammten aus Hause D (von ca. 80–125 n. Chr.). Einige der Entwürfe zeigen italienischen Einfluß. Ein grobes Muster aus *tesselae* in Mörtel lag in Haus F, vielleicht in der Einfahrt. In Haus H hatte es einen Mosaikfußboden im ersten Stock gegeben. Der spätere von zwei Böden in *Milk Street* enthielt einen stilisierten *Cantharus* in einem fünffarbigen Entwurf. Weniges hatte sich von den Oberbauten erhalten. Haus H und vielleicht einige der späteren Häuser in *Watling Court* waren zweistöckig. Fensterscheiben gab es selten, aber ein Fenstergitter wurde geborgen. Kleine Öffnungen am Boden in den Wänden scheinen zur Ventilation gedient zu haben. In den Häusern wurden verschiedene Einbauten gefunden: viele Feuerstellen gab es in *Newgate Street*, wenige jedoch in *Watling Court*, dies zeigt den Unterschied des Standorts in Geschäfts- und Wohnräumen. In den reichen Wohngebieten wurden wahrscheinlich tragbare Kohlenbecken benutzt. Offene Herde mit Ton- oder Kachelplatten dienten zum Kochen und Heizen, die kleinen unregelmäßigen Spuren von Feuerstellen stammten von handwerklicher Benutzung (wie zum Beispiel in *Newgate Street*, wo auch Backöfen gefunden wurden). Zwei Hausschreine, (*lararia*), wurden möglicherweise in *Watling Court* gefunden.

Die Häuser hatten Zugang über öffentlich unterhaltene Straßen, die Drainagenreinigung unterstand privater Pflege, sie waren für das Regenwasser bestimmt, nicht jedoch für fließendes Wasser. Da nur wenige Abfallgruben gefunden wurden, muß es wohl einen organisierten Abtransport gegeben haben.

Was die allgemeine Form und den Zweck der verschiedenen Gebäude anbelangt, so gab es Runde Hütten in Periode I und III in *Newgate Street*, wahrscheinlich noch ein Bestandteil der vorrömischen Bauweise, wie es auch in anderen romano-britischen Vorstädten gefunden worden ist. Die Gebäude der Periode V der selben Grabungsstelle gehörten wohl zu einer Reihe von Läden. An die späteren Langhäuser des frühen zweiten Jahrhunderts waren Privaträume hinten an den Geschäftsteil angebaut, mit Eingangshallen, Eßräumen, Schlafzimmern und Latrinen. In *Newgate Street* wurden auch unabhängige Logierräume gefunden, die hinten an das Hauptgebäude angebaut waren.

In *Watling Court* standen Stadthäuser von einiger Qualität. Unter den Trümmern von Haus D wurde ein Militärdiplom gefunden. Haus F war wohl in zwei oder drei Wohnungen aufgeteilt.

Der allmähliche Übergang von Holz- zu größeren Lehmbauten in der späten flavianischen bis zur hadrianischen Periode wurde danach abgelöst von

Steinhäusern, dies geschah wahrscheinlich gleichzeitig mit der Ausweitung des Stadtgebietes. Dies könnte auf einen Wandel in der Art der Besiedelung hindeuten, von kurzlebigen Bauten einer unternehmerischen Gründergesellschaft des ersten Jahrhunderts hin zu bequemeren Gebäuden mit weniger kaufmännischem Charakter in den späteren Perioden.

Im Teil IV der Studie werden die räumlichen und funktionellen Merkmale der Siedlung erörtert. Sie war zu beiden Seiten einer ost-westlich verlaufenden Durchgangsstraße angelegt worden. Veränderungen der Straßenrichtung an beiden Enden geben Hinweise auf die ursprünglichen Ausmaße und zeigen, daß von Anfang an eine große Siedlung geplant war. Diese Annahme wird bestätigt durch die Lage der frühen Gräber.

Im westlichen Teil der Stadt waren die Wohngegenden systematisch geplant angelegt zu beiden Seiten der Durchgangsstraße. Im Norden, etwas erhöht, lag das Fort; obwohl es durch eine Straße mit der Wohnstadt verbunden war, lag es separat. Im Osten, wegen des schwierigen Terrains des Walbrook Tales, sah die Ausweitung der Stadt anders aus, hier lagen Industriebauten in einem geplant angelegten Gelände. In der westlichen Vorstadt, schließlich, breitete sich die Stadt weiter an der Durchgangstraße aus. Geschäftshäuser entstanden hier zwischen den Gräbern nahe der Straße, während nach hinten hinaus die Randgebiete durch schmale Gassen erreicht werden konnten.

Kies und Lehm wurde überall geschürft, es wurde zum Bau der Straßen und Plätze benötigt, auch für die nahegelegenen Häuser oder als Rohmaterial für die Brennöfen in den Industriegegenden. Wasser wurde in den Wohn- und kommerziellen Gegenden entweder aus einzelnen Brunnen auf Privatgrundstücken, oder öffentlich aus Gruppen von Brunnen geschöpft, Bäche versorgten die industriellen Grundstücke. Es gibt keine Anzeichen für ein Aquaduct – und es war auch keinen Bedarf dafür. Für Abwasser wurden entweder frühere Landdrainagen wiederverwendet oder man goß es in die Straßengräben.

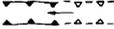
Teil V, das allgemeine Bild zeigt, daß die Entwicklung der Stadt London nie zufällig oder unkontrolliert war. Sie wurde gegründet vor der Revolte der Boudicea und die Viertel füllten sich während der flavianischen Zeit. Sogar nachdem die dicht besiedelte Stadt vom zufällig entfachten hadrianischen Feuer zerstört wurde, geht das Leben hier weiter. Jedoch gibt es Anzeichen des Verfalls um das Ende des zweiten Jahrhunderts.

In der Anlage sind alle Ausgrabungsberichte aufgelistet, die die Grundlage dieses Bandes bilden. Sie befinden sich im Museum of London und können auf schriftliche Anfrage an den Archivverwalter des Museums eingesehen werden. Museum of London, 150 London Wall, London EC2Y 5HN.

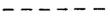
Location maps - figs 2,24 & 92

	study area site (hatched) excavated area (black)		exact site location not known
	site outline		position of observation

Phase plans

	site outline		building room number
	limit of excavation		drainage feature: found and conjectured; arrow indicates direction of flow
	section		pits found and conjectured
	cut edge of layer		postholes and stakeholes
	wall: found and conjectured		hearths found and conjectured
	retained wall		external metalling
	threshold		photographic viewpoint and figure reference number
	mortar floor surface		

Study area interpretive map - fig 93

	fort wall		early 2nd century buildings (location only)
	city wall		buildings of later or uncertain date (location only)
	contours: 0.91m (3ft) intervals		quarry pits
	road: found and conjectured		kilns
	1st century settlement boundary		wells
	early 2nd century buildings		cremation burials

Key Conventions used in the figures.

1 Introduction

This report is concerned with 1st and 2nd century domestic buildings and the topography of the western part of the Roman city of London. Its scope was largely determined by the close proximity of a series of major excavations in the later 1970s: the GPO (now British Telecom) headquarters in Newgate Street (1975-79); Milk Street (1972 and 1976-8); Watling Court (1978-79); Well Court (1979-80); and Ironmonger Lane (1980). Each contributed to a coherent picture of the early growth of a district whose identity was also defined by natural topography (Fig 1).

The Roman city was divided into two halves by the Walbrook stream, to either side of which the pattern of development differed. Other physical constraints were formed by the Thames to the south and the River Fleet to the west, both of which effectively limited the settlement. Only one Roman building is known in the

area between the Fleet and Westminster (Grimes 1968, 183) while the suburb to the south of the Thames in Southwark arose from the bridgehead and had no topographical link with the western part of the city. The area of occupation did not extend far to the north and for the most part was defined by the line of the later Roman city wall.

Within the area defined above, a brickearth (sandy clay) capped hill dropped gradually to the west, south and east from a maximum height of about 13m above Ordnance Datum (henceforth m OD) in the area immediately to the north-east of the site of St Paul's cathedral. This hillside became more steeply inclined within 100-200m of the two rivers, where it sloped down from c 10m OD to datum. Down this slope the brickearth gave way first to underlying sandy river gravels and finally to stiff fissured London clay, a

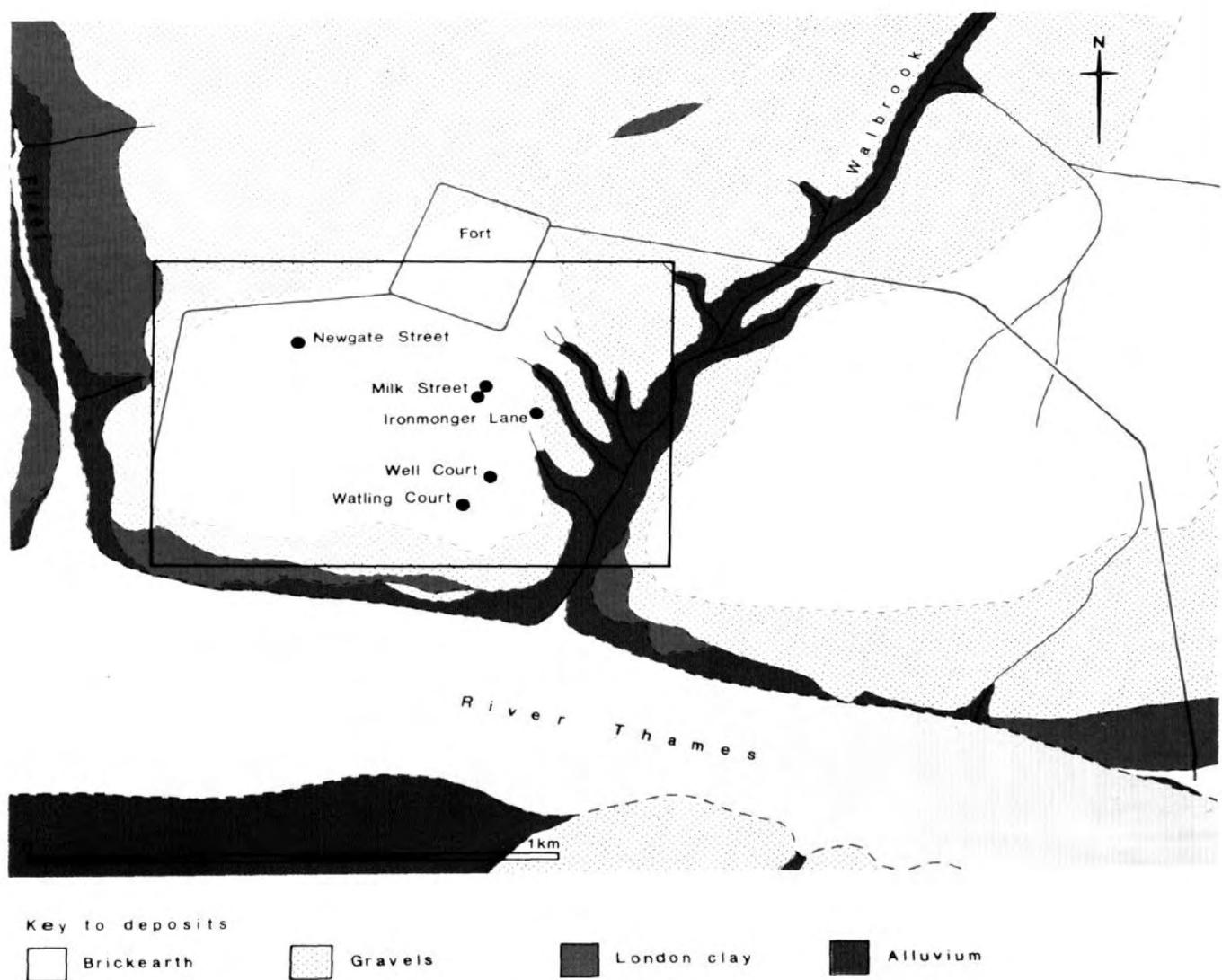


Fig 1 Geology of the City of London. Also shown are the locations of the main sites referred to in the text and the Roman city wall. Scale: 1:25,000.

spring-line occurring at their junction. The area formed about half the total of the later walled city; the other half was formed by a similar hill which lay to the east of the Walbrook.

The slopes and streams in the vicinity of the Walbrook and Thames are, due to their characteristic development, the subject of separate reports (C Maloney 1990; T Williams forthcoming a; and Wilmott forthcoming) and will only be referred to briefly here. The northern part of the town, around the fort and amphitheatre, also falls outside the area of detailed study. This report concentrates instead on the development of the land to either side of the principal road which crossed the hill from east to west (see Figs 91-3).

The period of this study is clearly defined by the nature of the evidence. On the one hand, there is little evidence for any permanent pre-Roman occupation in the area of the City of London. Of the present sites only Newgate Street produced any pre-Roman material, consisting of a number of sherds from a single Bronze Age vessel (Hobley & Schofield 1977, 51-2, pl xii). On the other hand, the early Roman sequence on most of the sites was clearly separated from later occupation by a thick, predominantly silt, horizon. This 'dark earth' has been the subject of much discussion (Macphail 1981; 1983) and clearly indicates a major change in the nature of the land use. But even apart from this horizon, changes in the nature of occupation determine the date at which the report ends. The evidence from a variety of sites, dated by a variety of techniques, demonstrates that the Roman structural sequence in the area of study continued only infrequently beyond the end of the 2nd century AD, and that when it did, as perhaps at Ironmonger Lane, the occupation changed in character (P 00).

The site summaries presented here provide both the necessary background for the discussion which follows in Parts III-V and also a guide to the contents and structure of the detailed reports. The reports on excavations at Newgate Street (Roskams 1982), Watling Court (Perring 1983), Well Court (Milner & Allen 1986), and Ironmonger Lane (Norton 1985) present a full account of the stratigraphic and structural

sequences and consider the evidence for each period of activity in a number of text-sections. In each text-section a group of observations is brought together for discussion.

In the present report, reference to the archival reports is made by period and text-section code rather than page number. III.5 is therefore the fifth text-section presented in the account of Period III. The report on 1-6 Milk Street (Roskams *et al* 1986) is not divided into text-sections and reference here is made to the period and area of the relevant discoveries.

Conventions used in the figures

The line drawings follow the conventions which have been developed and standardised by the Department of Urban Archaeology, and which are followed in the other volumes in this series. Location maps are reproduced to a uniform scale of 1:25,000 and 1:2,500, phase plans to a scale of 1:200. Sections have been drawn at varying scales, in accordance with the original records from which they are derived. The position of drawn sections is marked on plans by a dashed line with the relevant figure number beside it. Thick lines on a section mark the period divisions which are labelled at the side of that drawing. The viewpoints of the photographs are marked on plans by a special symbol and by the photographic figure number.

On 1:200 phase plans the extent to which features have been extrapolated beyond the recorded evidence has been carefully standardised. Buildings and other structures have generally been extended by a notional 0.5m. They have been extended further only if the evidence permits: if, for instance, an internal surface has been recorded at the limit of excavation beyond the furthest recorded wall. Where walls are thought to have remained standing in a later phase of building, their position has been shown by the 'retained' symbol (see Key). Finally, where relevant, evidence recorded in section has been extrapolated and drawn in plan as a notional 0.2m wide strip, using the same conventions as if it had been recorded in plan originally.

II The Sites: Archaeological Sequence and Summaries

Newgate Street (GPO 75)

This site, (TQ 3204 8135) (also known as the GPO site), is situated on the north side of Newgate Street, and is bounded by King Edward Street, Angel Street and St Martin-le-Grand to the west, north and east respectively (Fig 2). Excavations in advance of redevelopment, funded by the Department of the Environment and British Telecom, began in 1975 and were completed in 1979. They were concentrated in an area *c* 20m x 16m in the south-west corner of the rectangle defined by the modern streets, in view of the greater survival of stratigraphy there and its direct association with a major Roman street frontage immediately to the south.

The natural stratigraphy on the site consisted of brickearth (with a surface on 12.5-12.6m OD), up to *c* 2m thick, overlying the gravels of the upper flood plain

of the Thames. Ten successive periods of Roman activity (I-X) were identified above this (Fig 3).

Period I: early Neronian; c AD 50/55-60 (Figs 4 and 5)

The first sign of building activity (Figs 4 and 5) was a circular hut cutting directly into the natural brickearth, part of which was exposed in the south-west corner of the site (Building A; I.1). No associated floors survived but a probable boundary ditch to the north was contemporary. The latter's alignment was not that of the subsequent structures on the site, which ran perpendicular to the Roman forerunner of Newgate Street (henceforth 'Roman Newgate Street'). Both ditch and hut may therefore be earlier than the road. Small pits found over the rest of the area may have been dug in association with the quarrying of brickearth or tree removal (I.2).

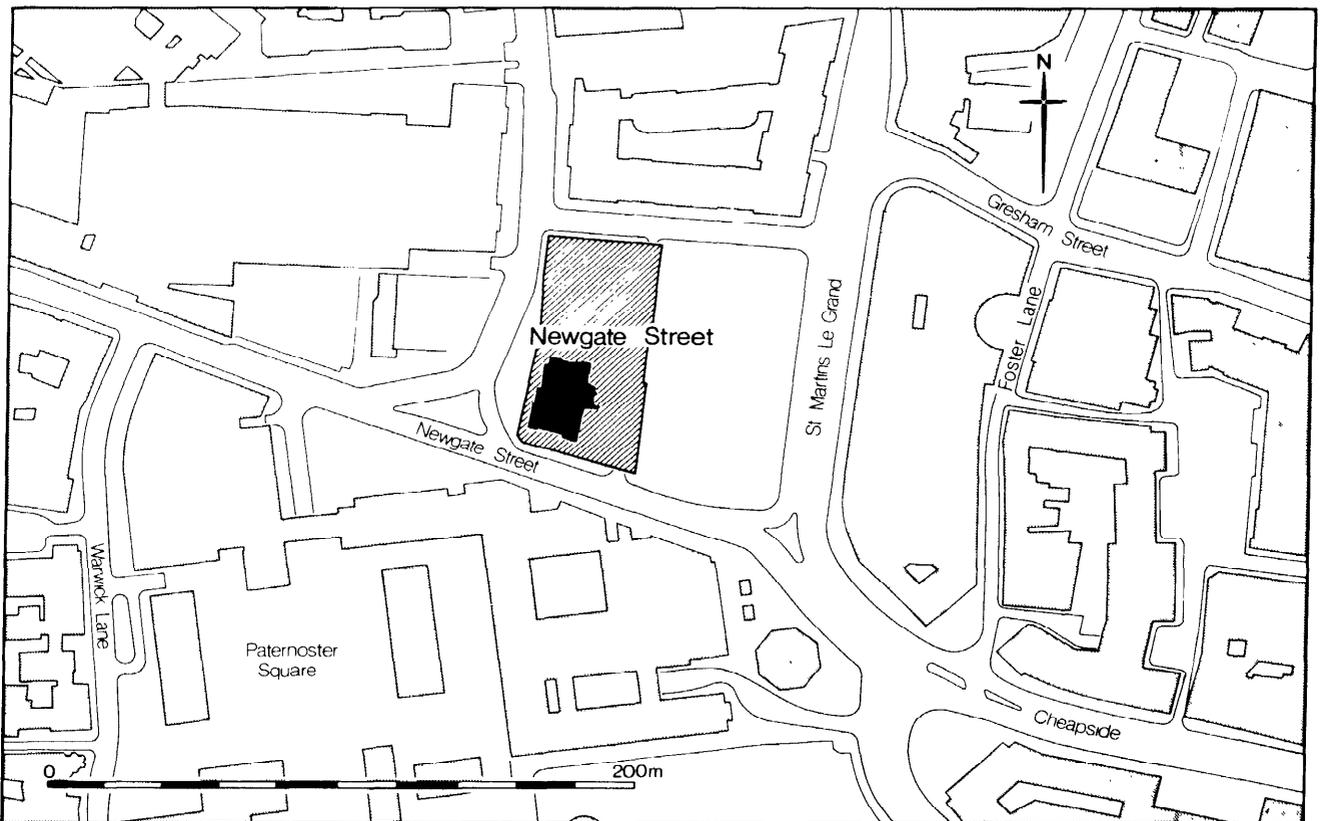


Fig 2 Location map of the Newgate Street site in relation to modern streets (reproduced from the 1980 Ordnance Survey 1:1250 map, with the permission of the Controller of Her Majesty's Stationery Office: Crown Copyright). Scale: 1 :25,000.

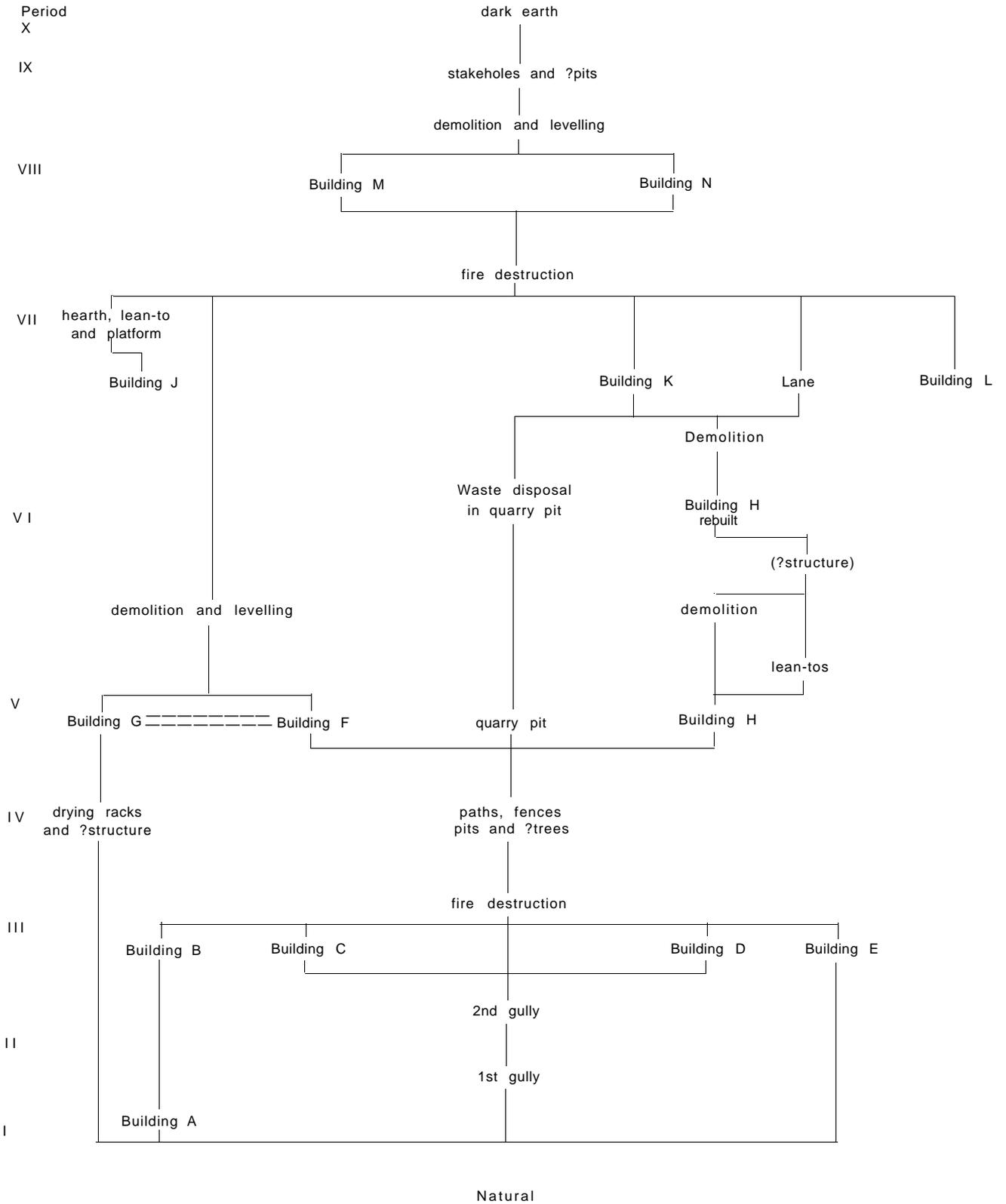


Fig 3 Simplified matrix showing the main stages in the structural sequence at Newgate Street.

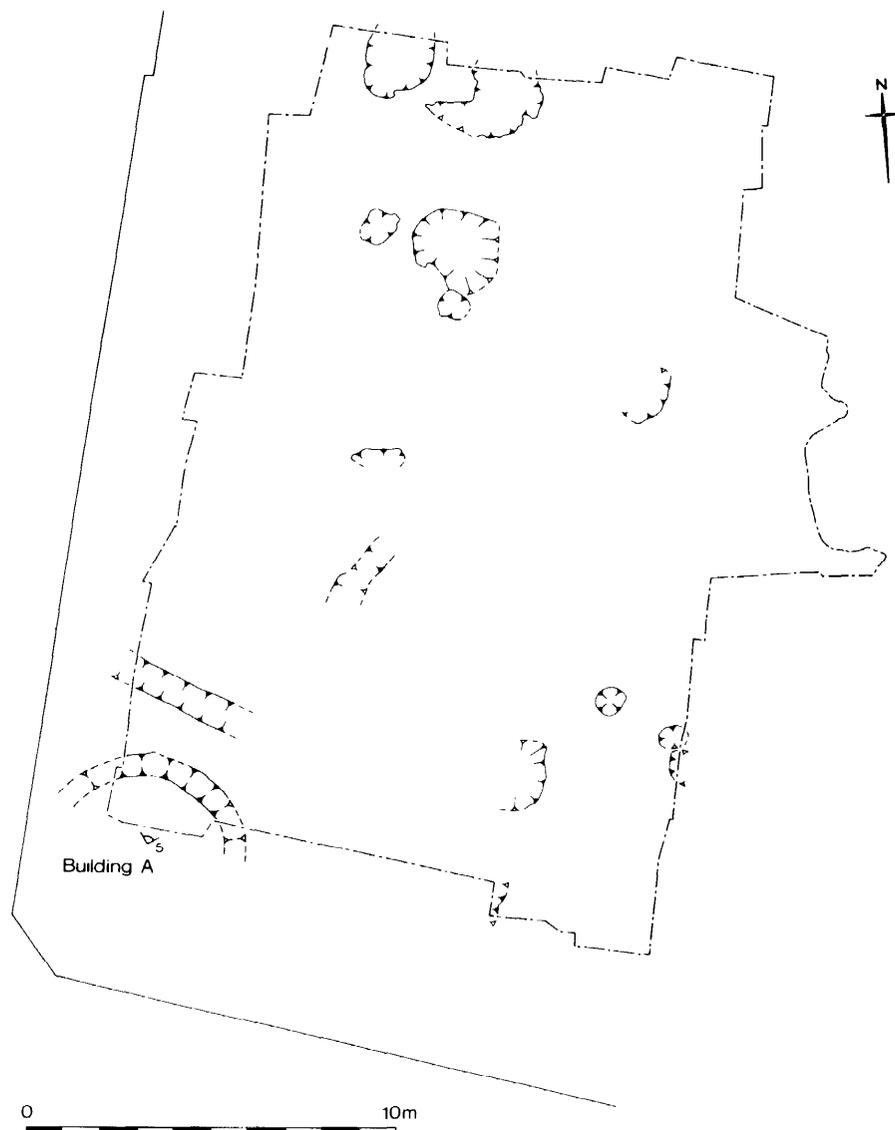


Fig 4 Newgate Street: plan of period I. Scale: 1:200.

Period II: early Neronian; c 50/55-60
(Fig 6)

In Period II a gulley (II.1), perhaps a drain or boundary ditch, was cut into Period I pits. It was aligned perpendicular to Roman Newgate Street and marked the first influence of that thoroughfare on activities on the site. Stakeholes cut into natural brickearth (II.2) may represent a hut position with an entrance opposite the north end of the gulley. A second gulley (II.3) replaced the first. Decayed organic material within its fills may have derived from a timber lining, and fences possibly flanked it on both sides. A pit (II.4) had also cut the early gulley.

*Period III: early Neronian;
c AD 50/55-60* (Figs 7 and 8)

At the start of Period III (Fig 7), the site of Building A was levelled and a rectangular building (Building B) erected (III.1). Its east wall was built of timber and clay and was flanked by a hearth (III.2) to the west and surfaces (III.3) to the east. The wall did not extend to the north but surfaces here abutted a continuation of the wall line. Further to the north postholes and postpads (III.4) were set on that wall line and indicate that, with a timber extension, Building B was at least 24m long. Internal partitions were represented by posthole alignments.



Fig 5 Newgate Street: looking north at features of Period I cutting into 'natural' (see Fig 4). In the foreground is the curved gully of the eavesdrip or wall trench of Building A, while beyond the scale (in 0.1m units) is a further gully on an alignment at variance from that of the street and of later properties (I.1). Some of the smaller features (eg stakeholes) were associated with the construction of the wall of Building B of Period III (III.1).

In the south-east of the site the corner of another building (Building C) was represented by brickearth filled trenches (III.5). Gravels (III.6) flanked its west wall and, where they crossed the wall line, suggested the site of a threshold. Brickearth floors cut by stakeholes (III.7) were laid within the building, over the pit and gulleys of Period II. Gravels were laid to the west of the building and less substantial surfaces to the north (III.8-9).

The foundation trench of an approximately square structure, 2.3m across, was found between Buildings B and C (III.10); it may have been the base for a tank or tower. Traces of a hearth, various stakeholes and patchy occupation layers (III.11) were also found in this area (not illustrated on Fig 7).

Two near-circular buildings with walls of wattle and daub (III.12-13 and III.21-22) (Buildings D and E) were set to the north (Fig 8). Stakeholes and a gully (III.14) to the east of these two buildings might have

marked the site of another circular structure. Two rubbish pits and several stakeholes (III.15, III.23, III.25) were found between, and to the west of, the huts.

During Period III new brickearth floors were laid in Building B and the hearth replaced by another to the north (III.16-17) (not shown on Fig 7). Building C and some external areas (III.18-20, III.24) were also resurfaced.

Layers of burnt clay destruction debris covered the sites of Buildings B to E and the small rectangular structure between Buildings B and C (III.26-30). The spacing of these buildings was such that the fire marking their demise seems unlikely to have been accidental. This and its date (pottery from these levels is entirely pre-Flavian, see Fig 23), suggest a correlation with the Boudiccan destruction of London in AD 60-61.

Period IV: late Neronian-early Flavian; c AD 60-65/75 (Fig 9)

In Period IV there seems to have been a delay before new buildings were put up. Destruction debris (IV.1) was dumped to level off the lower area east of Building B. In the northernmost part of the site an early Period IV pit was sealed by brickearth between stake-built fences to east and west. Stakeholes cut into the debris east of Building B may have extended one of these fence lines to the southern limit of excavation (IV.5-6). The fences flanked a pathway dividing the site into two properties. Some trample layers above the stakeholes apparently crossed these property divisions but a series of make-ups and rubbish pits, some set along the line of the path, showed that the boundaries were generally respected (IV.2-3, IV.7-9). Various stake- and postholes were found within the two properties. Some in the north-west corner of the site (IV.10) were perhaps arranged in diagonal lines, possibly for drying racks. To the south of these, stakehole alignments and a gully or eavesdrip (IV.4) over features of Period I may have been part of a small rectangular structure.

On the eastern property stakeholes, postpads and two irregular pits with associated gulleys (IV.11-13) were found. The pits may have had an industrial function or, equally likely, were the result of uprooting trees.

Later brickearth was laid over most of the southern part of the site (IV.14, covering features in IV.6-8 which are consequently not illustrated on Fig 9). It was cut by many stakeholes and overlain by silt and brickearth patches but no structures were identified. A small hearth was set into a depression in this area. In the northern part of the area pits, patchy surfaces and stakeholes had been set along the line of the paths between the two properties (IV.17-21), and a large pit with an associated gully was cut in the central part of the western property (IV.16). Brickearth covered the irregular pits in the eastern part of the site (IV.15, not illustrated on Fig 9) and may have been part of the same horizon noted to the south. It was cut by several stakeholes and sealed by silt and brickearth patches.

The property boundaries established in this period were maintained in later developments on the site, and show that formalised planning along the street

Fig 23 continued

Period	Structural context (context no)	Coins	Stamped samian	Stamped mortaria	Other pottery	Suggested date for phase
VI.15	Fills of small pits cut into earliest occupation layers in N part of Building H (9611, 9559)	Domitian (temp Vespasiani), As, AD 73-81	GERMANUS I, LG, Dr 29, AD 70-85 ?, LG?, Dr 27, AD 40-70	—	HWB/C, LOMI Date: AD 70-100	late 1st c
VI.18	Brickearth wall erected in final phase of re-building of Building H (9326)	Vespasian, Dup, Lyon, RIC 479/BMC 808, AD 71 Vespasian, Dup, Lyon, RIC 473 or 739/BMC p 199 No 815, AD 71-73	Illiterate?, LG, Dr 27, AD 55-80	—	AHSU, CGWH, FMIC, HWB, HWC, RDBK, VRG, VRW Date: AD 70-100	late 1st c
VI.39-40	Occupation layers associated with use and repairs to rectangular base to W of empty plot previously occupied by Building F (9322, 9346, 8995)	—	PRIMULUS I, LG, Dr 15/17, AD 65-90 SEVERUS I, LG, Dr 18, AD 75-95 (two)	—	—	late 1st c
VI.20	Fills of pit to N of Building H (10220, 10262) This pit was poorly stratified and could have remained open until Period VIII.	—	PATRICIUS I, LG, Dr 33a, AD 70-90 TRA-MASCIUS, LG, Dr 15/17 or 18, AD 80-110 PATERCULUS II, Les Martres Dr 18/31, AD 110-125 (intrusive?)	—	AHSU, DR20, FMIC, HOO, HWB, HWC, LOEG, LOMA, LOMI, LOND, PE47, RDBK, SHEL, SLOW, VCWS, VRR, VRW Date: AD 80-120	late 1st c
VI.21*	Latest fills of Period V brickearth quarry (8998, 9092, 9097, 10642) Subsidence in the area may have introduced later material.	Domitian, As, Lyon or Rome, RIC 724 or 791A/ BMC Vesp 873-4 AD 77-8 Hadrian, As, AD 117-138 M Aurelius, As, AD 161-192 radiate, late 3rd c	Illiterate, LG?, Dr 27g, AD 55-80 Illiterate?, LG?, Dr 27, AD 55-80 FELICIO I, LG?, Dr 15/17 or 18, AD 55-80 ?, LG, Dr 27g, AD 55-80 Illiterate?, LG?, Dr 27g, AD 70-100 (two) ?, LG?, Dr 15/17 or 18, AD 70-100	—	AHSU, CC, COLC, DR20, ECCW, FMIC, GROG, H70, HOO, HWB, HWC, KOAN, MLEZ, NKSH, PE47, RDBK, RWS, SHEL, VCWS, VRG, VRW Date: AD 70-100	late 1st c
VI.26*	Brickearth make-up over quarry fills (8315)	—	CRESTIO, LG, Dr 18, AD 50-70 IUSTUS I, LG, Dr 15/17 or 18, AD 70-95	—	AHSU, BB1 (intrusive?), DR20, FMIC, GROG, HWB, HWC, KOAN, LOND, MLEZ, PE47, RWS, VCWS, VRG, VRMI, VRW Date: AD 70-100	late 1st c
VI.27	Brickearth make-ups to W of sealed quarry (9352)	Titus, As, Lyon, RIC Vespasian 785/BMC 867, AD 77-78	IOVIS, LG?, Dr 27, AD 55-80	—	—	late 1st c
VI.37	Brickearth patches over site of Building F and directly beneath construction levels of Period VII Building K (9082)	Domitian, As, Rome, AD 87	—	—	—	late 1st c
VII.6	Gravel surfaces against W side of Building J, laid early within or at start of period (8802)	Domitian, Sest, Rome, AD 86-89	—	—	AHSU, HWC, VRW Date: AD 70+	late 1st c or later
VII.20	Resurfacing of floors, rooms iii, v and vi, Building K (7922, 8120 7745, 5887)	Domitian, As, Rome, RIC 351/BMC 404, AD 87 Domitian, As, AD 84-96 (two)	?, LG, Dr 15/17 or 18, AD 55-80	SOLLUS, VRW, AD 70-100 BRUCCIUS, VRW, AD 80-110 MATUGENUS, VRW, AD 90-125	BB1, DR20, FMIC, HWB, HWC, NKSH, VCWS, VRW Date: AD 100-120	early 2nd c
VII.29	Later occupation debris, room v, Building K (7675)	Trajan, As, Rome, AD 98-117	—	—	—	early 2nd c

Fig 23 continued

Period	Structural context (context no)	Coins	Stamped samian	Stamped mortaria	Other pottery	Suggested date for phase
VII 33	Keyhole-shaped oven to W of Building J (8167)	Domitian, As. AD 84-96	—	—	AHSU, CGWH, DR20, FMIC, GROG, HWC, NGGW, NKSH, VRW Date AD 100-120	early 2nd c
VII 49	Debris from destruction by fire Building J (4890, 5434, 7012)	Domitian, Dup. AD 81-96 Domitian, Quad. RIC 434/ BMC 496-7 AD 81-96 ? As. 1st-2nd c	ROPPUS II RUTUS, Les Martres, Dr 18/31R AD 100-120 VITALIS III, Les Martres, Dr 18/31 AD 110-130	—	AHSU, BB1, BB2, BBS, BLEG, G186, CGOF, DR20, ECCW, FMIC, GROG, HOO, HWB, HWC, LOEG, LOMA, LOMI, LOND, MICA, NKSH I, RDBK, RWS, VCWS, VRW Date AD 120-140	early 2nd c (‘Hadrianic Fire’)
VIII 1-2	Dumps etc associated with post-fire levelling (7867, 8118, 8037)	—	BALBINUS, Les Martres, Dr 18/31 AD 100-120	—	OXID 1298, VRW Date AD 70+	early 2nd c or later
VIII 3	Fill of pit dug into Period VIII threshold (4867)	Carausius, Anton AD 286-293	—	—	—	—
VIII.11	Fill of small pit associated with reconstruction of N part of Building N (7335)	Hadrian, As. Rome, RIC 577B/BMC 1174-5, AD 119	—	—	BB2, DR20, HWC, VRW Date AD 120-180	—
VIII 9	Silt and charcoal associated with use of hearth in Building M (4883)	Carausius, Anton AD 286-293	—	—	BB2, HOO, HWC, NVCC Date AD 150+	—
VIII 13	Dismantling and levelling-off Building M (7176, 7522, 4469, 7084). This horizon was much disturbed by later features which could have introduced later material.	Vespasian? As? AD 69-79? Plautilla, Den. Rome, RIC Caracalla 367 AD 202-205 radiate, late 3rd c	SECUNDINUS II, Les Martres Dr 27q, AD 100-125	—	BB1, BB2, BBS, COLC, DR20 GROG, HWC, MIÇA, NKSH, NVCC, VCWS, VRW Date ? AD 150+ (with intrusive AHFA, C306 in small quantities)	mid 2nd c
VIII.14	Levelling and rubbish-tipping over Building N (6925, 4563)	Claudius II, Anton RIC 30, AD 268-270	none relevant	DRICCIUS, VRW AD 110-50	AHFA, BB1, BB2, BBS, COLC, COMO, DR20, FMIC, HOO, HWB, HWC, KOLN, LOEG, LOMI, LOND, MICA, NKSH, PE47, FC, RDBK, RHMO, RWS, SAM (Dr 18, 18/31, 27, 33, 35/6, 37, 38, 42, 46), SHEL, SLOW, VCWS, VRR, VRW Date AD 140-180 (some sherds possibly intrusive)	mid 2nd c
X 1	Pits cutting Period VIII deposits and ?below dark earth (6890, 6926, 6948)	M Aurelius, Sest. BMC pl 74, 13, AD 161-162 ? Den ?AD 198-235 Philip I, Anton, Rome, RIC 26, AD 245 Claudius II, Anton AD 268-270 Victorinus/Tetricus I Anton, AD 268-273 Carausius? Anton AD 287-293? Anton, late 3rd c, uncertain ?late 3rd-4th c (two)	—	—	AHFA, AHSU, BB1, BB2, BBS, CALC, CGB ¹ , DR20, ERMS, FMIC, HOO, HWB, HWC, KOLN, LOMI, MHAD, MICA, MOSL, NKGW, NKSH, NVCC, OXMO, OXPA, OXRC, PE47, PORD, RDBK, RHMO, RWS, SHEL, VCWS, VRW (+ several sherds medieval, ? intrusive) Date AD 350+	late 2nd - 4th c
X 2	Dark earth (4106, 4119, 4120, 4127, 4246, 4559)	As, 1st c Claudius II (copy), Anton, AD 270 or later Anton, late 3rd c (two) ?House of Constantine, early-mid 4th c Valens, Arles, RIC p 64, 9 AD 364-367 uncertain ?4th c	—	—	AHFA, AHSU, BB1, BB2, BBS, CALC, DR20, EIFL, FMIC, HOO, HWB, HWC, KOLN, LOMI, MHAD, MOSL, NKGW, NKSH, NVCC, OXMO, OXRC, PE47, PORD, SHEL, VCWS, VRW (+ several sherds early medieval, ? intrusive) Date AD 350+	late 2nd - 4th c

Fig 23 continued

Period	Structural context (context no)	Coins	Stamped samian	Stamped mortaria	Other pottery	Suggested date for phase
X.3	Fills of pits between primary and secondary dark earth horizons (4143, 4157)	Claudius II, Anton, RIC 259 or 262, AD 270 Anton, late 3rd c (three)	—	—	AHFA, BB1, BB2, DR20, GROG, HWB, HWC, MHAD, NVCC, OXMO, PE47, PORD, SHEL, VRW (+ several sherds early medieval, ?intrusive) Date: AD 350+	late 2nd - 4th c
X.4	Secondary dark earth (4083)	—	—	—	AHFA, BB1, BBS, DR20, HWC, OXMO, OXRC Date: AD 270-400	late 2nd - 4th c

Period IX: Antonine +; c AD 160+ (Fig 22)

In Period IX a palimpsest of stakeholes (IX.1, Fig 22) was cut into the Period VIII levelling horizon. They were concentrated in areas where the earlier stratigraphy was partially truncated and may therefore have been set within shallow pits. It was not otherwise possible to identify any pattern in their distribution. In the south-east corner of the site some of the stakeholes were sealed by a gravel layer which was cut by further stakeholes.

Period X: late 2nd century and later

In Period X pits (X. 1) were also cut into the Period VIII levelling. Some of these, and some of the Period IX stakeholes, were sealed by the dark earth (X.2) although others may have been cut from a higher level (pit-fills were not always easily distinguishable from the dark earth). One pit cutting the dark earth (X.3) had been sealed by further dark earth material (X.4), and others (X.5-7) were of uncertain relationship to it. None of these Periods IX-X features provided any definite evidence for the construction, occupation or destruction of buildings succeeding those of Period VIII. The levelling off of the Period VIII buildings can therefore be seen to mark a clear break in the structural sequence. If the site had been built on in Period IX, any structures would have taken the form of shallow pits lined with stakes. The church and graveyard of St Nicholas Shambles ultimately occupied the site (Thompson 1979; White 1988).

Watling Court, 39-53 Cannon Street, 11-14 Bow Lane (WAT 78)

This site (TQ 3235 8105) (Fig 24) is situated on the north side of Cannon Street, and is bounded on the east by Bow Lane, on the west by Watling Court, and on the north by Watling Street. Excavations in advance of redevelopment began in selected areas. In June 1978, were extended across the full site in August, and were completed in February 1979; further observations, made during building work, continued until March

1980. The excavations were funded by the Department of the Environment and would not have been possible without the co-operation and material assistance extended by the owners of the site, Electricity Supply Nominees, and various companies contracted to undertake the development programme, notably Higgs and Hill Ltd.

Observations were made over an area 40m square, with detailed excavations concentrated in an area of some 32m x 30m in the south-east corner of the site. Even in this area it was not possible to excavate all the surviving material in the time available. Although the earliest levels were selectively investigated most effort was concentrated on the examination of buildings destroyed by an early 2nd century fire (see Period IV below). The investigation of the Roman sequence was also limited by the decision to give equal priority to the study of a sequence of early medieval cellars.

The natural stratigraphy on the site consisted of brickearth, up to 1m thick (with a surface at 9.6-10.5m OD), overlying the gravels of the upper flood plain of the Thames. Seven successive periods of Roman activity (I-VII) were identified above this (Fig 25).

Period I: Neronian or early Flavian; *pre- c 70/80* (not illustrated)

The earliest features of Period I were three shallow pits scooped into the natural brickearth (phase a, I. 1). These features were noted in the south-east corner of the site, beneath Buildings A and B, where the earliest horizons were most extensively revealed; similar features elsewhere on site would most probably have eluded identification. The absence of a soil horizon suggests deturfing of the site, perhaps in connection with brickearth quarrying or tree removal implied by the shallow pits. Mixed brickearth and silt dumps (phase b, 1.2-8) overlay the undisturbed brickearth and formed the ground surface on which the Period II buildings were constructed.

Period II: ?Nerbnian or early Flavian; *pre- c AD 85* (Figs 26 and 27)

Two buildings of Period II were situated in the south-east corner of the site (Fig 26) and apparently fronted off the site to the south. The eastern building

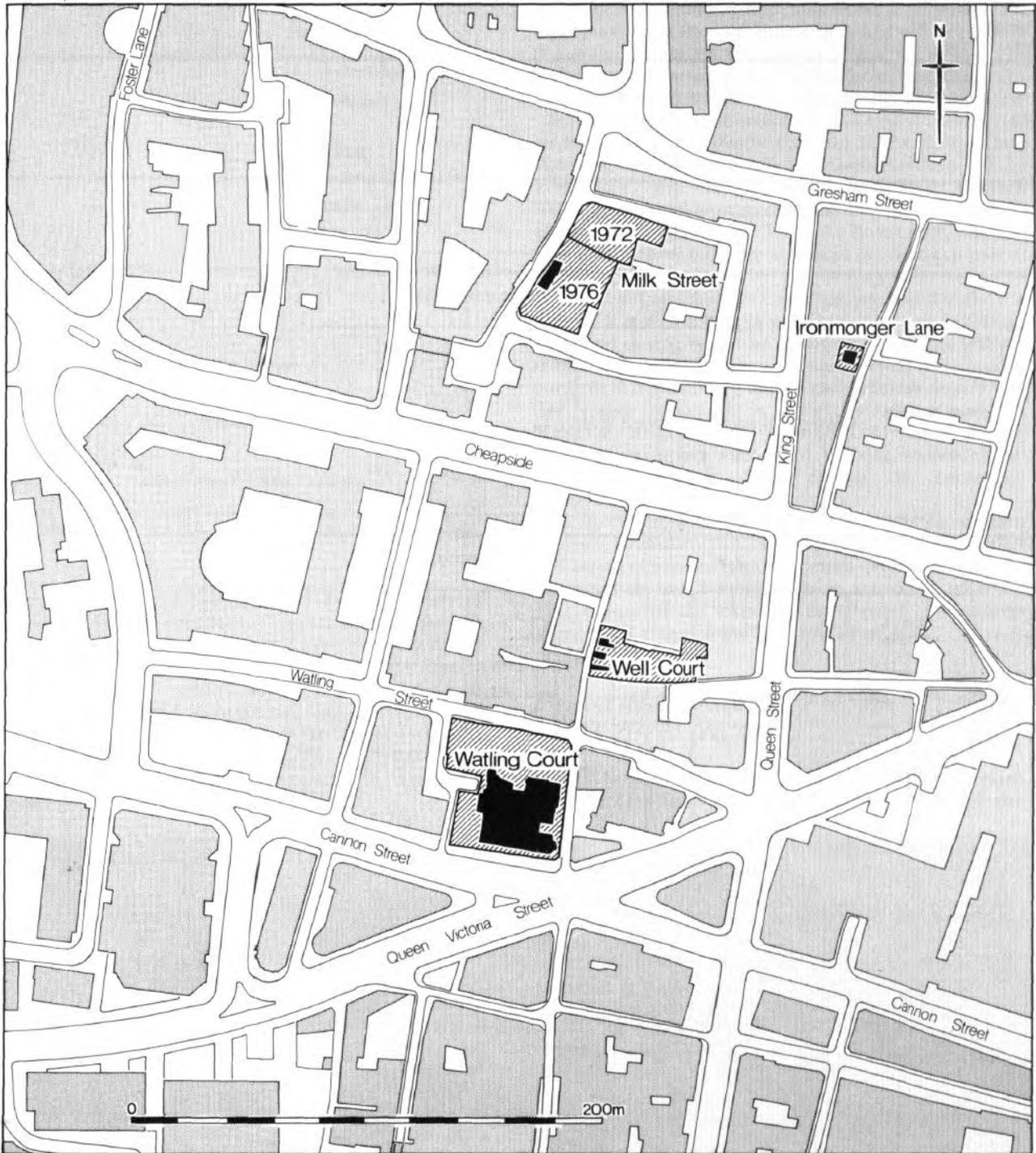
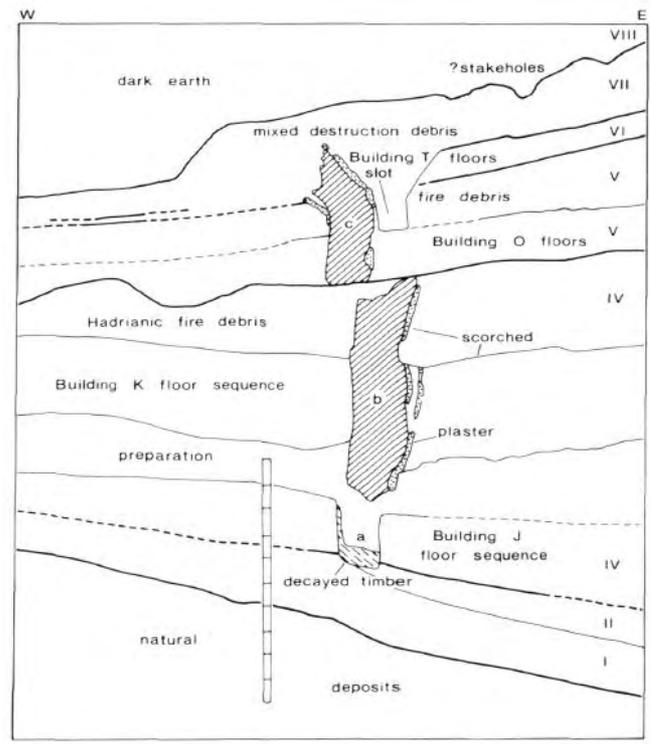
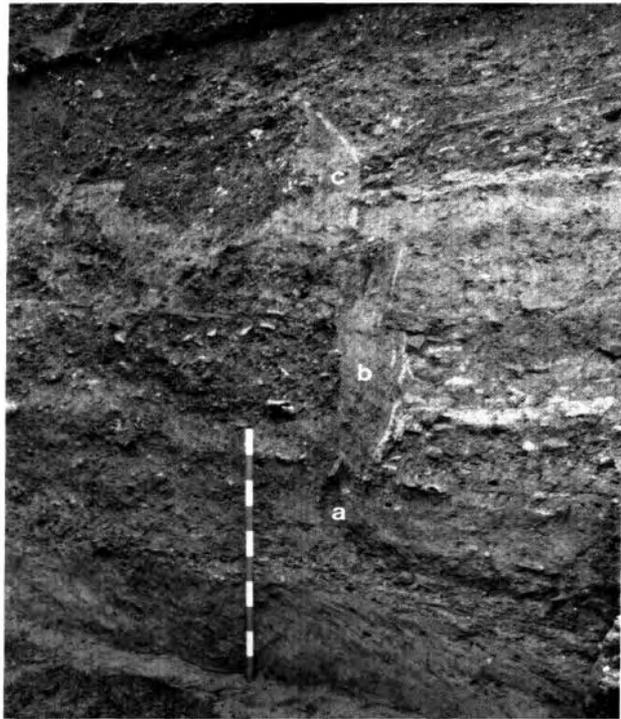


Fig 24 Location map of Watling Court, Milk Street, Well Court and Ironmonger Lane sites in relation to modern streets (reproduced from the Ordnance Survey 1:1250 map, with the permission of the Controller of Her Majesty's Stationery Office: Crown Copyright). Scale: 1:25,000.



Figs 37-8 Watling Court: photograph (Fig 37) and drawing (Fig 38) of south-facing section through Buildings J, K, O and T. This section shows the continuity of wall lines from Period IV through to Period VII. A slot, 'a', contained the remains of a timber partition within Building J (IV.34; see Fig 29). The plaster-faced brickearth internal wall, 'b', of Building K (IV.35; see Fig 30) was then built above slot 'a'. Wall 'b' showed signs of repair, and the floor levels had been raised on either side before the upper part of the wall and higher floor level were scorched by the Hadrianic fire. Wall 'c', a partly collapsed partition in Building O (V.16; Fig 36), was built over the fire debris. After an accumulation of floors, this wall was destroyed by a local fire at the end of Period V (V.31). Period VI floor surfaces sealed this fire debris on both sides of wall 'c' (VI.1). Cutting these Period VI floors was one slot, which suggests that a fourth building, Building T, may have stood briefly in this area (not illustrated in plan). Building T was sealed by mixed destruction debris through which possible stakeholes were cut. These were in turn sealed by dark earth (VIII.1). Naturally-deposited brickearth can be seen at the base of the section. Scale on Fig 37 in 0.1m units; Fig 38 not to scale, traced from the photograph.

collapsed wall. A large amount of tile was found in this room, and elsewhere in the building, but the range of types present (predominantly *tegulae* but with some bonding brick and *imbrices*) and its context (mixed with wall collapse) suggests that it had derived from the destruction of the walls and not the roof (Fig 35).

Fragments of human bone (not charred) were found in the upper part of the destruction debris in room iv of Building H. Since the layer was dug hurriedly and was adjacent to the limit of excavation, there is a risk that the material was intrusive. It is also possible however, that the remains of a victim of the fire had been disturbed in the post-fire levelling of destruction debris. The evidence of the pottery supports the interpretation that this was the Hadrianic fire of c AD 120 or soon after (Fig 39). Two coins found in the debris do not help in the dating but fragments of a military diploma from the same horizon (p 105) can be dated AD 98-108 (Roxan 1983).

Period V: Hadrianic-early Antonine; c AD 120-160 (Fig 36)

Period V silts over the remains of Building F were possibly formed by sedimentary deposition in rainwater puddles (V.4). This part of the site had probably been left open in the period immediately after the fire. Dumps of brickearth and building debris covered the silt and were seen over the destruction horizon in most parts of the site (V.1-8). In one area the dumps may have been laid as part of the foundation of a building (Building N) (V.7), but elsewhere were probably intended as a general levelling horizon. Intrusive and structural features were cut into or built over this levelling horizon and the earlier fire debris. These features indicate that buildings were present (Buildings N to R, Fig 36), but they survived so poorly that little of their plan or character could be established. Little horizontal stratigraphy

Fig 39 Watling Court: table of selected dating evidence.

Period	Structural context (context no)	Coins	Stamped samian	Other pottery	Other finds	Suggested date for phase
I 3	Dumps beneath Building B (478)			AHSU DR20 ECCW PE47 SAM (Dr 18) Date AD 50-70		mid 1st c
II 6	Destruction Building B (1275)	Corroded probably Claudius				mid 1st c (*Boudican Fire)
IIIa 7	Fill of pit cut into ruins of Building A (1867)			DR20 HWD HWB PE47 VRW Date AD 40-100		mid 1st c or later
IIIc 11	Fill of quarry beneath Building F (2311, 2313)		Illiterate La Grauf Dr 24 ¹ AD 40-50 MODESTUS I La Grauf Dr 18 AD 45-65 CARBO La Grauf Dr 24 ¹ AD 65-85	C186 DR20 G238 GROC HWB HWC HOD KGAN LYON PE47 RWS SAM(Dr 15 17 18 27 29 33 R 121 SHE1 VRW Date AD 70-120		late 1st c
IIIc 13	Dump beneath Building H (3054)			HWB Date AD 55-80		late 1st c
<i>(early phases)</i>						
IV 2	Construction slab beneath floors of room viii Building B (1343)		PATRICIUS I La Grauf Dr 27 AD 65-90	AHSU HWB PE17 SAM (Dr 37) Date AD 65-120		late 1st c
IV.31	Tile and clay foundation of wall between rooms xi and xii Building H (3315)			NKSH (KOLN) LOMI Date AD 55-100		late 1st c
<i>(later phases)</i>						
IV 18	Piling beneath Building F (2401 etc)				DR20 HWD HWB AD 100-120	late 1st c
	Construction slab of Building F (2304, 2308)		Illiterate La Grauf Dr 27 ¹ AD 55-80 PONTIUS La Grauf Dr 27 ¹ AD 65-90	C186 DR20 FMIC HOD HWB HWC KGAN LOMI MUC1 PE47 RWB RWS VRW Date AD 70-100		late 1st c
IV 19	Mortar floor Building F room i (2246)			DR20 HWC LOMI Date AD 70-120		late 1st c
IV 6	Packing around ground-beam of late wall rebuild between rooms i and iii Building D (282)			BB1 VRW Date AD 100-120		early mid 2nd c
<i>(destruction)</i>						
IV 45	Debris over Building D (225, 226, 1301)			AHSU BB1 BB2 HOD DR20 FMIC HWB RWB RUCW VRW Date AD 100-120	Mortar floor i Room 1296 AD 100-120	early mid 2nd c (*Hadrianic Fire)
V 46.48	Debris over Building F (2228, 2230, 1296)			AHSU BB1 BB2 BBS DR20 FMIC GROC HWB HWC KGAN LOMI KGAN NKSH PE47 SHE1 VRW Date AD 100-120		early mid 2nd c (*Hadrianic Fire)
V 52	Debris over Building H (2571, 2758, 2774)			NKSH Date AD 150-200		early mid 2nd c (*Hadrianic Fire debris possibly contaminated)
Va 6	Dumps over debris over Building H (2273, 2684, 2679, 2725, 2688)			BB2 DR20 FMIC GROC HWB HWC KOLN LOMI NKSH RWS VRW Date AD 120-200		early mid 2nd c
Va 3	Silting over debris of Building D (230)			<i>(in situ)</i>		early mid 2nd c

Fig 39 continued

Period	Structural context (context no)	Coins	Stamped samian	Other pottery	Other finds	Suggested date for phase
Vb 13	Gravel yard surface in area over Building H (2686)			DR20 HWC (imitation BB1) VRW Date AD 120-200		early/mid 2nd c
Vc 28	Occupation layer Building S (4308)			BB2 Date AD 120 200		early/mid 2nd c
Vc 30	Destruction Building S (4306)		CHRRESIMUS Montans Dr 15-17 or 18 AD 110-145 CRICIRO V Lezoux Dr 31 AD 140-160	(missing)	--	mid 2nd c
VI 1	Silt surface Building T (4305)		Q V.C. Montans? Dr 33 AD 120-145 MARCFLUS III Lezoux Dr 33 AD 135-165	BB2 CC HWB HWC NKSH PE47 RWS VCWS VRW Date AD 120 200		mid 2nd c or later
	Surface associated with Building T (4279)	? FEL TEMP REPARATIO ? AD 346-50 (intrusive?)		AHSU BB1 BB2 CC FMIC HWC NVCC VCWS VRW Date AD 160-230	--	mid/late 2nd c (contaminated?)
VIII	Dark earth over Building T (3963)	House of Constantine AD 335-341		1 sherd post-medieval	--	mid 4th c or later

survived over the early Period V dumps in the southern part of the site. Postholes and a beam slot (V.9-12) suggest that there had been a structure here, but the absence of foundation trenches shows it to have been less substantial than its predecessor (Building D). The features were sealed by dumps (V.25-26). Gravels, also sealed by later irregular dumps (V.13, V.27), were laid over the site of Building H and the area seems to have been converted into a yard. A building (Building N) was preserved over the western part of Building F (V.14). A line of tile fragments set in clay may have been a wall-base and an adjacent area of scorched clay was probably a hearth. Two small charcoal-filled pits were also inside the building. Some gravels to the north of this building were set over early Period V dumps (V.15) and may have been laid to reconstitute Alley 3.

Building N was replaced by Building S (not illustrated) during Period V. This building was represented by a brickearth floor over the earlier features and by a wall, built of clay over a thin concrete base, which had encroached onto the line of Alley 3. Within the building part of a tile walled hearth was also noted (V.28).

To the north of Alley 3 a brickearth construction slab and wall were noted in section (Figs 37 and 38, V.16). The wall perpetuated the line of a partition in Building K and suggested that the rebuilding in this area (Building O) was based on the earlier arrangement. A thin mortar surface, later replaced by gravel, was laid in the room to the north of the wall.

Several stone-founded walls were noted cutting into Period IV destruction debris in the northern part of the site (Fig 36). These were completely different in character (up to 1.6m in height/depth) from anything within the excavated area and it was unfortunate that they could not be studied in greater detail. Foundations were noted in three areas (Buildings P, Q and R) (V.18, V.21, V.23) and brickearth floor surfaces were recorded in several sections (V.20, V.22-24). Poor quality gravel surfaces (V.17, V.19) were also observed, some over the line of Alley 4.

Building O had been destroyed by fire (V.31) (Figs 37 and 38) and fire destruction debris was also found over and to the east of Building S (V.29-30). The brickearth floors recorded in the watching brief were sealed by similar debris (V.32) and it is probable that Buildings P, Q and R had been destroyed, although some of the stone foundations could have been reused in later phases (only the walls of Building P were observed to have been sealed by the debris, the other walls all being directly beneath modern intrusive features). The samian stamps from the destruction of Building S suggest that this fire should be dated to the Antonine period (Fig 39).

Period VI: ?Antonine; c AD 160

Deposits of Period VI only survived later truncation in the area over Buildings O and S. Thin layers of silt, charcoal and ash, with some thicker sandy dumps, had covered the Period V destruction debris (VI.1). Some of those, especially those to the east of the wall of Building O which remained projecting above the fire debris (Figs 37 and 38), looked like floors. A slot was also tentatively identified. It is therefore possible that a building (Building T) had briefly stood in the area. Some of the Period IV destruction debris noted in sections during the watching brief had been sealed by brickearth mixed with plaster fragments which may have been part of a levelling horizon (VI.2). The pottery from the surfaces of Building T (Fig 39) indicates a mid 2nd century date for this phase.

Building T was sealed by a dark grey silty layer considered to have been part of the dark earth horizon (Figs 37 and 38). Stakeholes or perhaps root cavities were 'cut' through this layer and had been sealed by further dark earth (VII.1 beneath VIII.1). Dark earth type layers were also recorded over the Period VI 'levelling horizon' in the watching brief. Whenever appropriate levels survived later truncation, admittedly only on a small proportion of the site, dark earth type

layers sealed the Period V and VI remains. It is consequently unlikely that there were buildings on the site by the end of the 2nd century. Any later Roman occupation must have been built over very shallow foundations, or reused the foundations of Buildings Q and R, with floors above the level of the dark earth. This is considered unlikely.

Post Roman

The later, Saxon and medieval sequence of occupation has been summarised elsewhere (Perring 1982, 208-13); the Saxon structures and medieval buildings are also discussed in other reports (Horsman *et al* 1988; Schofield *et al* in preparation respectively).

1-6 Milk Street (MLK 76), 7-10 Milk Street (MIL 72)

The site at 1-6 Milk Street (TQ 3238 8126) (Fig 24) is situated on the east side of modern Milk Street and is bounded by Russia Row to the south. Excavations in advance of redevelopment, funded by the Department of the Environment and Wates Developments Ltd, took place between the end of 1976 and September 1977, with further recording during contractors' operations until the end of the year and again in the summer of 1978. The site measured 40m x 50m overall and was divided into four areas (A-D). Only in Area A in the west of the site was a complete Roman sequence excavated, although a small sample of the street surfaces was excavated in Area D in the east. Sections of all strata down to the natural brickearth were drawn in Areas B, C and D and during the watching brief. These allow correlations with the sequence excavated in detail in Area A to be made across the whole of the rest of the site.

In this summary, the results of 1-6 Milk Street (MLK 76) are outlined, together with those of earlier excavations at 7-10 Milk Street (MIL 72) immediately to the north (TQ 3239 8128) excavated in advance of redevelopment by Nick Fuentes (Farrant) for the City of London Archaeological Society in the summer of 1972. Because of the time limitations on the latter site, only the latest Roman stratigraphy could be exposed in plan (Areas A, D and E) with the underlying elements recorded in a series of sections (Areas D, F and G). Consequently there is plan evidence for the latest Roman activity only (Period V; on Fig 45).

Natural stratigraphy on both sites (Fig 1) consisted of brickearth, up to 0.6m thick with a surface at 10.65-10.9m OD, overlying the upper flood plain gravels of the Thames. Above the natural surface seven successive periods of Roman activity (I-VII) were identified at the 1976 site, corresponding with a sequence of sixteen street surfaces (Streets 1-16) and six ditches (Ditches 1-6) at its eastern limit. Five successive periods of Roman activity (I-V) were identified at the 1972 site to the north. The phases of the two sites are discussed separately here, though the two sequences are correlated in a table (Fig 43).

The 1976 excavations (MLK 76) (Figs 40-2)

The earliest features in Area A on the 1976 site, cutting the natural brickearth, comprised a series of slots and post settings in the main excavation area in the west (Fig 40). These represent at least two distinct structures (*Periods I and II*), both of considerable size. One did not align with the pre-Flavian street in the east (described below). Neither structure is accurately dated, although they cannot have been significantly earlier than the overlying buildings of Period III.

In *Period III* (Flavian; *c* AD 70-100), the initial structures were dismantled and covered with a thick sealing layer which acted as a foundation slab for a good quality timber-framed building. The building was of several phases (IIIa-IIIg), although these can only be distinguished in the main excavation Area A (Fig 40). Despite the various changes, the overall layout remained broadly the same throughout, comprising a range of rooms flanked by a gravelled external area to the west. The building contained good quality concrete floors bounded by beam slots and, in one instance (phase f), the border of a partially robbed white tessellated floor. Traces of a plank-lined drain for an eavesdrip gully were found along the building's western side.

The same building was seen more extensively, although in less detail, over the central and the eastern parts of the site (Fig 41). Here it contained further concrete floors and a number of brickearth internal partitions, some of which were decorated with painted plaster. The building fronted onto a street to the east (p 49) and was bounded by external areas to the south-west. Stone footings and concrete floors to the north-west may represent yet another part of the building.

A broadly contemporary building fronting onto the street in the north-east (Fig 41) seems to represent a quite different development. This had massive stone foundations, although its floors were much less sophisticated than those seen elsewhere. Also, it remained in use throughout Period IV after the other Period III building had been dismantled. A plank-lined well, probably in use at this time, lay between the two buildings.

All the features of Period III, except for the retained building in the north-east, were sealed by an extensive brickearth slab which formed a base for the *Period IV* development (Trajanic; *c* AD 100-120). In the excavated Area A in the west, an insubstantial timber structure with clay floors was built bounded by a gravelled external area to the east (Fig 40). Its character suggests that it formed a lean-to against a building to its west, in sharp contrast to its Period III predecessor which fronted onto the street to the east. Apart from the retained building in the north-east, that street frontage was not built up at all in Period IV, although the street itself remained in use.

Another brickearth foundation slab was laid over the features of Period IV, including the retained Period III building, to prepare the area for the *Period V* development (Trajanic; *c* AD 100-120). Once again, an insubstantial structure existed in the excavated area (Fig 40) and the area running up to the street in the east remained external. This structure was destroyed in the Hadrianic fire *c* AD 120 (Fig 44).

Fig 44 continued

Period	Structural context (context no)	Coins	Stamped samian	Other pottery	Suggested date for phase
	Layers sealing collapse/ destruction of building in Area A, at base of dark earth (314, 347)	—	—	AHFA, BB1, BB2, BBS, CC, HWC, KOLN, NKSH, NVCC, PE47, VCWS, VRW (+ 1 sherd intrusive? Saxon) Date: AD 200-300	3rd c
	Latest siltling over occupation surfaces N of building in Area A (370)			BBS, HWC, KOLN, VCWS, VRW Date: AD 120-160	mid 2nd c or later

During *Periods III-V* a series of external gravelled surfaces were laid down beyond the southern limit of the brickearth slabs which covered most of the site. The latest was sealed by burnt debris from the Hadrianic fire. They probably represent an area of development separate from the buildings.

In *Period VI* in the excavated Area A, the slots of a large building (Figs 40 and 42) were cut through the Hadrianic fire debris (p 71). After they had been robbed, these slots were backfilled with redeposited fire debris. This suggests that the building represents the immediate, but short-term, occupation of the area in the aftermath of the fire before more permanent rebuilding could take place.

The redeposited destruction debris above the *Period VI* building was roughly levelled across the site to form the make-up for the *Period VII* development (Hadrianic-early Antonine; c AD 120-160). In Area A this consisted of the easternmost room of a timber building incorporating a mosaic floor (p 94) (Pl 8; Fig 82), bounded to the north and east by a metalled external area and associated with the use of a timber-lined well immediately to its north (Fig 40). Again, the area to the east, adjacent to the street, remained undeveloped and a series of rubbish pits were dug there. The building in the west was dismantled and large dumps of rubbish were deposited around the southern, eastern and northern extremes of the site before it was finally covered with dark earth.

The gravelled metallings of a street c 4-5m wide and aligned south-southwest to north-northeast were recorded in several places along the eastern limit of the site. Where it was recorded in detail a sequence of sixteen surfaces was identified (Streets 1-16). Most were of rammed gravel, except for Streets 9 and 10, which incorporated large ragstone cobbles. At its western edge, running parallel to it, were a series of six street-side ditches (Ditches 1-6). The first five of these were in use with the first five street surfaces (although not necessarily in a one-to-one correlation), and with *Period I-III* activity to the west. Finds from the second roadside ditch suggest that the road had been laid out prior to the *Period I* building in Area A and was possibly pre-Flavian. The final feature, Ditch 6, was plank lined and much larger than its predecessors. It was in use with Streets 5 and 6 to the east and with activity of *Period IV* to the west. However, it was cleaned out on at least three occasions and probably continued in use into *Period V*, although by this stage it would have largely silted up. Ditch 6 was apparently not replaced.

It is notable that the ditches were generally in operation during *Periods III* and *IV*, when there were buildings fronting onto the street and when Streets 1-6 were also definitely in use. Later street surfaces (Streets 7-16) must all have been laid after *Period IV*. The level of the street eventually rose to c 0.6-0.8m above that of the latest Roman building on the site (*Period VII*), probably continuing in use after the rest of the site had been covered by dark earth. The latest metallings, Streets 11-16, were less well laid than Streets 7-10, especially the cobbled surfaces of Streets 9 and 10. It is likely that the change in the character of the street broadly coincided with the end of the Roman building sequence on the site.

The 1972 excavations (MIL 72) (Fig 45)

In the excavations of 1972 immediately to the north, the earliest activity (*Period I*: Flavian; c AD 70-100) was represented by a plank-lined drain which probably discharged into a Walbrook tributary just to the north of the site. The absence of other activity at this stage contrasts with the contemporary building development (*Period III*) over the 1976 site to the south.

In *Period II* (Flavian-Trajanic; c AD 70-120) the drain was backfilled and two timber buildings were erected. These were aligned east-west and probably fronted onto a northern extension of the street recorded in 1976 (the line of the street lay outside the 1972 excavation areas). The buildings were broadly contemporary with those of *Periods III* and *IV* on the site to the south (Fig 43).

In *Period III* (Flavian-Trajanic; c AD 70-120) the *Period II* buildings were dismantled but, although the northern building may have been replaced, the south part of the site was not redeveloped at all but merely used as a rubbish dump. This seems to represent a marginal area at the northern limit of the development on the 1976 site.

In *Period IV* (Hadrianic-early Antonine; AD 120-160) a gravelled street c 4m wide was laid directly above the *Period III* ground surface. The street ran due north, diverging slightly westwards from the original north-south street recorded at MIL 76. Like its *Period V* successor, it may have provided access to the Cripplegate fort. A sequence of ditches and rough surfaces was recorded at the street's eastern edge but

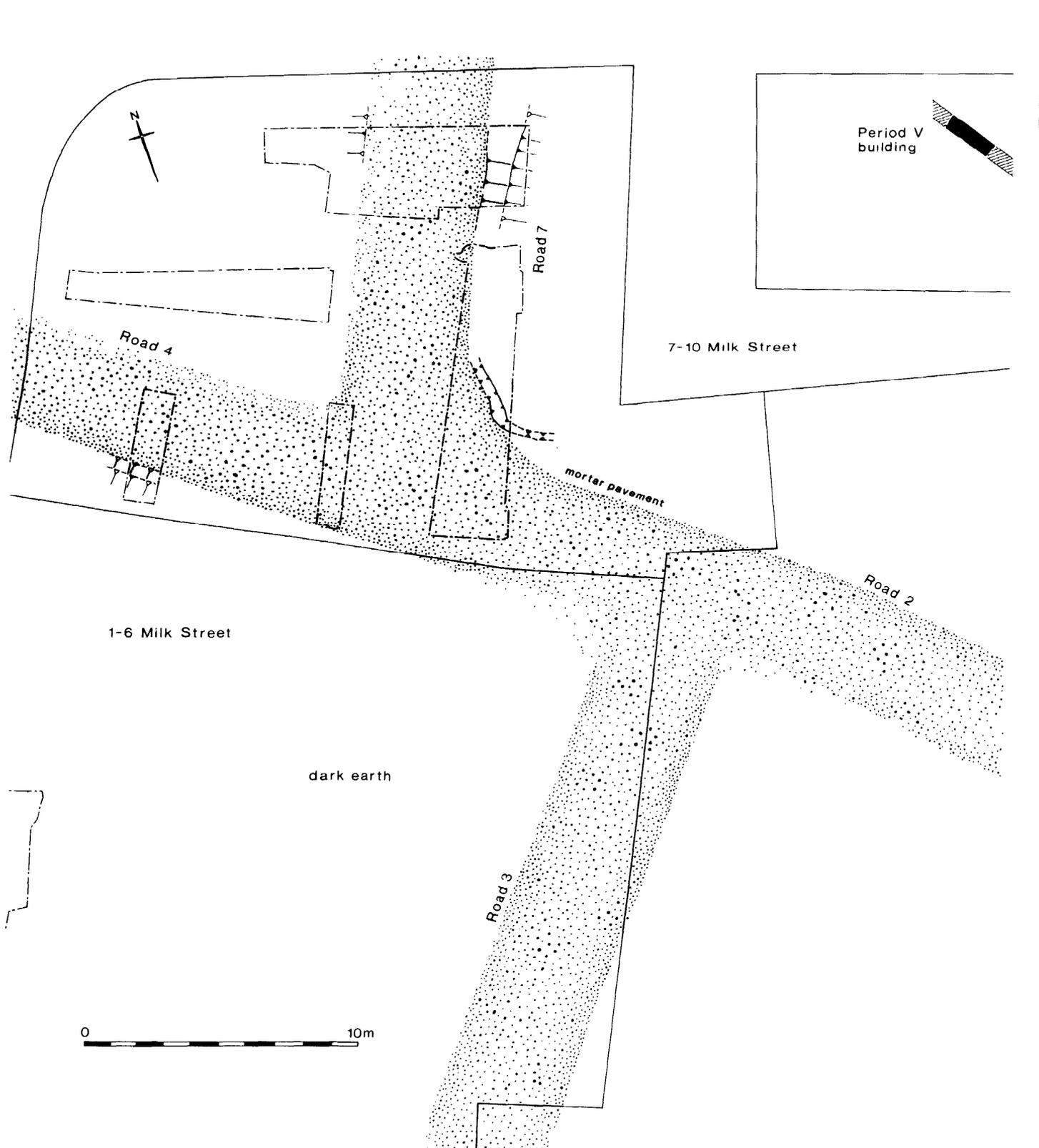


Fig 45 7-10 Milk Street: plan of Period V, also showing the relationship of this site to Period VIII at 1-6 Milk Street. The grey tone represents the extent of the earlier Periods IV and VI-VII alignments on the two sites.

there was no evidence of related buildings. Material dumped in the eastern extremity of the site probably represents redeposited Hadrianic fire debris.

In *Period V* (mid/late Antonine-late 4th century; c AD 160-200 - 350-400) the street junction was replanned to form a staggered cross-roads, with new streets branching off to the west and north (Fig 45). These streets aligned with the fort to the north-west, and would presumably have provided access to its south and east gates. Street-side ditches were dug but structural evidence was limited to a robbed stone wall at the eastern extremity of the site, which was not only set well back from the street but followed a completely different alignment from that of the ditches. The level of the streets corresponded with that of contemporary surfaces (*Period VII*) recorded in 1976 to the south.

The cross-roads remained in use until c 350-400, by which stage its surface had deteriorated and become covered with loose stones. The street-side ditches had silted up by c 250-300, when a crude mortar pavement was laid above the eastern ditch. Both ditches and the cross-roads itself were sealed by dark earth. The continued existence of the crossroads on the 1972 site into the 4th century reinforces the probability that the street found in 1976 to the south remained in use as a through-route even after the latest building there had been abandoned.

Late Saxon buildings on the Milk Street sites are discussed elsewhere (Horsman *et al* 1988), as are the strata and stone buildings of the period after c 1100 (Schofield *et al* in preparation).

Well Court, 44-48 Bow Lane (WEL 79)

This site (TQ 3240 8110) (Fig 24) is situated on the east side of modern Bow Lane and extends back along both north and south sides of Well Court almost as far east as Queen Street, measuring 22m x 45m overall. Excavations within the cellars of standing buildings took place between October 1979 and January 1980 in advance of redevelopment and were funded by the Department of the Environment and Watling Street Properties Ltd, with further recording of the site during contractors' work. The main objective was to investigate the line of a suspected Roman street, and, when this had been located by trenching, related structures on its western edge were excavated in a series of small control areas (Areas A, B and C). These excavation areas and the watching brief sections at the street's eastern edge can all be closely related. However, watching brief evidence further east can only be related to the excavated areas by major horizons such as the fire at the end of *Period V*.

The natural stratigraphy (Fig 1) consisted of sandy gravels of the upper flood plain of the Thames. The site lies just to the east of the brickearth plateau of the settlement's western hill, and although the ground surface was quite level in the west of the site, further east it sloped down at c 1 in 30 into the Walbrook valley. Seven successive periods of Roman activity (I-VII) (Figs 46 and 49) were identified above the natural gravel. Unless otherwise indicated the buildings were represented by earth floors and the remains of timber and clay walls.

Period I: ?Flavian; c AD 70-100

(Figs 47 and 48)

In Area A a shallow (1.2m wide and 0.5m deep) V-shaped ditch (Figs 47 and 48) cut from the natural surface marked out the line followed in later periods by the street's western edge (I.1). The natural gravels were extensively quarried to both west and east (I.2).

Period II: Flavian; c AD 70-100 (Fig 47)

An extensive levelling slab of brickearth, some 0.30m thick, was laid across the entire western half of the site at the beginning of *Period II* (II.1). It served as a foundation for both the road and the buildings on its west side. The gravelled street, 5m wide and aligned north-south (II.2), was constructed along the edge of the Walbrook valley, bounding the area of level ground to the west. Significantly, the slab prepared only the area to the west of the street for related development and did not extend down the slope of the valley to the east. In Area A the slab backfilled the *Period I* marking-out ditch after only a very thin skim of silt had accumulated within it, so that the construction of the street must have followed soon after the cutting of the ditch, most likely as successive stages within a single planned operation. This initial laying out of the site is not closely dated, but probably occurred only a short time before the *Period III* development, securely dated to the Flavian period. In Area A successive gravelled surfaces (II.3-4), the earliest of which was contemporary with a light timber structure, extended to the edge of the street. It is uncertain whether the structure represented a fence or the wall of an open-fronted building.

Period III: Flavian; c AD 70-100

(Figs 47 and 48)

In *Period III* a timber building (Building A) (III.1) followed the line of the *Period II* structure and, like it, fronted onto the street. A timber-lined drain built into the front of the wall of Building A was higher than the contemporary street surface and can only have served the building.

Period IV: late Flavian; c AD 85/90-100

(Figs 47 and 48)

The *Period III* building was dismantled in *Period IV* and replaced by a less substantial building (Building B) in the same position as its predecessor, but set further back from the street (IV.1) (Fig 47). The frontage area was no longer maintained and the *Period III* drain overflowed, flooding the edge of the street, which was then resurfaced (Street 2) and widened to seal over the flooded area (IV.2-3). Building B was destroyed by fire.

To the east of the street (not illustrated), opposite Areas A and C, a gravelled external area at the edge of

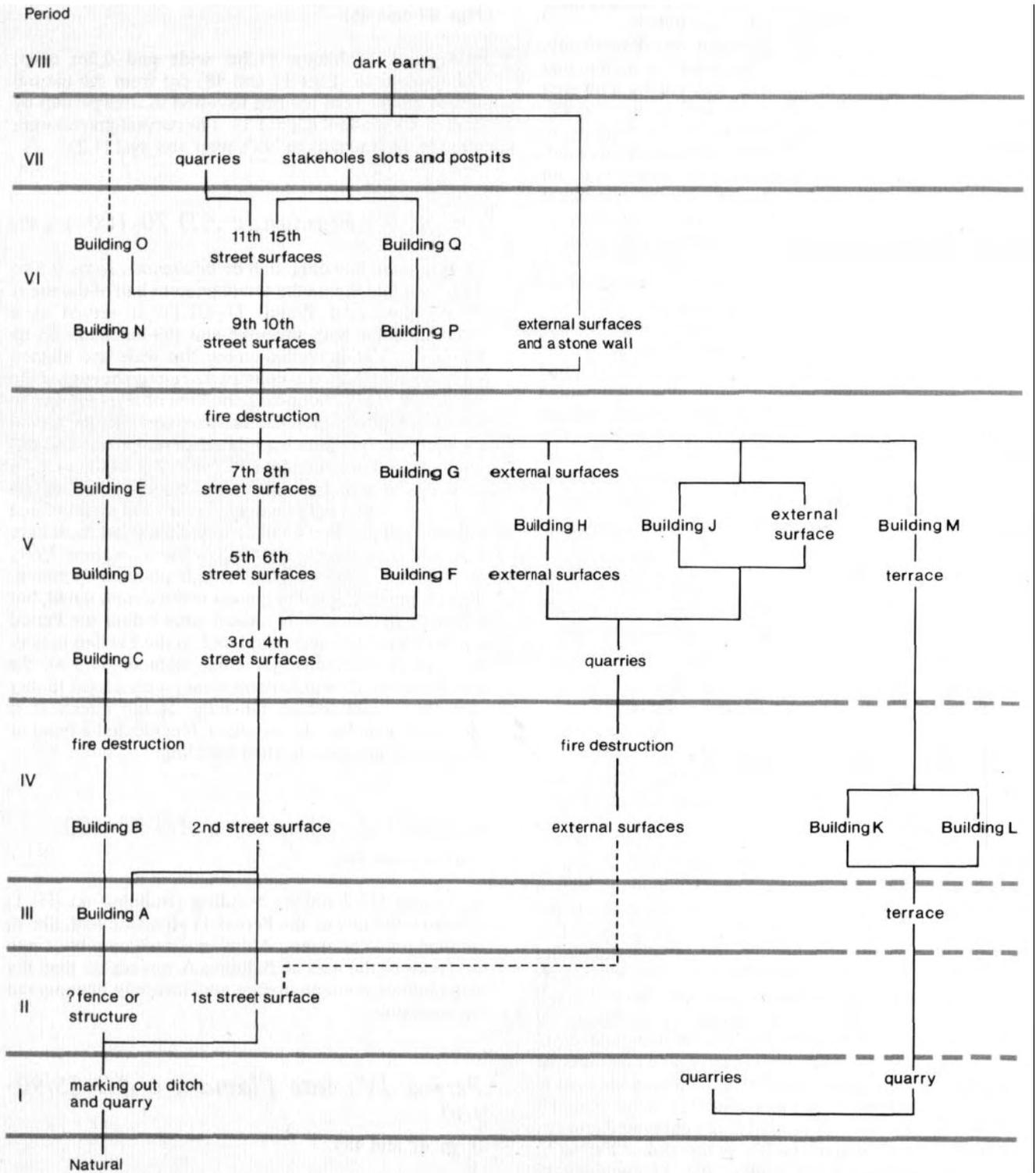


Fig 46 Simplified matrix showing the main stages in the structural sequence at Well Court.



Fig 50 Well Court: the opus signinum bedding for a tile (opus spicatum) floor inside Building G (Area B, Period V.8-9) looking west. To the left, beneath the scale (which is in 0.1m units) is a brickearth wall (see Fig 49).

verandah may have been built out onto the street (although these may have been inserted during Period VII). The floor was sealed by a layer of mixed brickearth and wall plaster derived from the levelling-off and destruction of the building.

Opposite Area C, to the east of the street (not illustrated), successive external surfaces were laid above the fire debris and development was similar to that before the fire (VI.12-13). By contrast, opposite Area A the fire debris was directly sealed by dark earth and there was no post-fire development there at all. The same was true of the area further east, in the Walbrook valley, where there was a complete absence of structural evidence, apart from a single, massively built stone wall in the extreme north-east of the site (VI.14).

Period VII: 3rd century and later; c AD 250+ (not illustrated)

Period VII consisted of a loose grouping of features which suggest the disuse of the street and related buildings some time before the deposition of dark earth. Structural activity in Areas B and C consisted of a series

of slots, post positions and stakeholes, occasionally related to spreads of trample (VII.1-4). Some of the stakeholes were sealed by a dark earth type layer which was in turn cut by more slots and stakeholes. It was not possible to identify any individual structures, and the general alignment and distribution of the features did not indicate any particular regard for the alignment and position of the street. It is also possible that some of these features were root holes and bedding trenches rather than structural features. Several phases of activity are probably represented and the latest features cut a deposit containing a late 3rd century coin (Fig 51).

Stakeholes were also cut through the latest street surface, and a pit sealed by dark earth intruded almost to the centre of the street. Another pit, undated but filled exclusively with Roman building material, was cut precisely down to the base of the street gravels and had obviously been dug to quarry them (VII.5).

Late Saxon buildings excavated on this site have been published elsewhere (Horsman *et al* 1988); the strata of the 13th century, including three stone buildings, are the subject of another report (Schofield *et al* in preparation).

24-25 Ironmonger Lane (IRO 80)

This site (TQ 3249 8123) (Fig 24) is situated on the west side of Ironmonger Lane. Excavation in advance of redevelopment, funded by Guardian Royal Exchange Insurance Ltd, took place between July and December 1980 in an area measuring 8m square. The site was known to lie across the line of an east-west Roman street previously recorded on other sites in the area.

The natural stratigraphy (Fig 1) consisted of upper flood plain gravels of the Thames. There was no evidence of any natural brickearth above the gravels and the site must have lain to the east of the brickearth plateau which capped the settlement's western hill. Three successive periods of Roman activity (I-III) were identified.

Period I: Neronian; c AD 50/55-70

Period I consisted of several large quarry pits dug through the natural gravels (I.1-3).

Period II: Flavian- Trajanic; C AD 70-120 (Figs 52 and 53)

A street and building were laid out at the beginning of Period II; both were replaced on several occasions although the same basic layout was retained throughout. Due to the very limited size of the excavation area, it is difficult to assess how extensive these changes really were and they are described as successive phases (1-7) within Period II (Fig 52).

In *phase 1* a shallow ditch (II.1) was cut as part of the settings out of an east-west street. The patchy gravels of the street were laid on its south side and a timber building constructed to the north, flanked by an external

Fig 51 Well Court: table of selected dating evidence.

Period	Structural context (context no)	Coins	Stamped mortaria	Other pottery	Suggested date for phase
II.1	Brickearth levelling slab over marking-out ditch and beneath first street (713)	—	—	SAM (Dr 29) Date AD 40-100	? late 1st c
II.4	Make-up for gravel surfaces, Area A (706, 709)	—	—	DR20, GROG, SAM (Dr 37) Date AD 70-150	late 1st c
III.1	Make-up, Building A (642) (Context not fully sealed until Period V 1)	—	—	AHSU, DR20, FMIC Date AD 100-200	? late 1st c
IV.2	Disuse of drain, Building A (657)	—	—	FMIC, GROG, RDBK, SAM (Dr 37), VRW Date AD 70-100	late 1st/early 2nd c
IV.1	Backfill of posthole, Building B reconstruction (509)	—	—	AHSU, FMIC, MICA Date AD 100-200	early 2nd c
IV.3	Street 2 (2437)	—	—	HWC AD 100 +	early 2nd c
V.1	Make-up, Building C (501)	—	—	HWC, KOAN, VRW Date AD 70-130	early 2nd c
V.2	Occupation surfaces, Building D (473, 475)	—	—	C186, CC, DR20, FMIC, HWC, KOAN, SAM (Dr 18/31 29), SHEL, VRW Date AD 100-150	early 2nd c
V.3	Make-up, Building E (466 471)	—	—	AHSU, C189, DR20, HWC, SAM (Dr 27), VRW Date AD 100-150	early 2nd c
V.9	Foundation slab, Building G (1820)	—	ALBINUS, VRW AD 65-95	—	early 2nd c
(Disuse/ destruction)	Fill of posthole, Building G (1801)	—	—	BB1, BB2, HWC Date AD 120-200	early/mid 2nd c ('Hadrianic Fire')
VI.8	Accumulation between Building Q and street, immediately below dark earth and Saxon pits (2018)	—	—	BB2, DR20, FMIC, NVCC, MOSL, PORD (intrusive) Date AD 150 +	mid 2nd c
VI.10	Occupation, Building P (1753)	—	—	BB2, CGOF, DR20, HWC (BB1 imitation), NKSH, OXRC (intrusive), RDBK, VRW Date AD 120-140	mid 2nd c
VI.9	Occupation, Building Q (1728)	—	—	BB1, BB2, HWC, NKSH, R527, VCWS, VRW Date AD 120-200	mid/late 2nd c
VII.1	Silting/dumping over Building Q, beneath 'early dark earth' (1327)	—	—	BB1, DR20, MHAD Date AD 250-400	late 3rd c or later
VII.2	'early dark earth' over Building Q, cut by 'slots' and stakeholes, and beneath main dark earth (1325)	radiate copy, late 3rd c	—	none datable	late 3rd c or later
VIII	Dark earth (1311, 1536)	uncertain, probably late 3rd-4th c	—	AHFA, BB1, BB2, CALC, CC, COLC, FMIC, NVCC, OXCC, OXMO, OXRC, PORD, SHEL, VRW Date AD 350-400	late 4th c

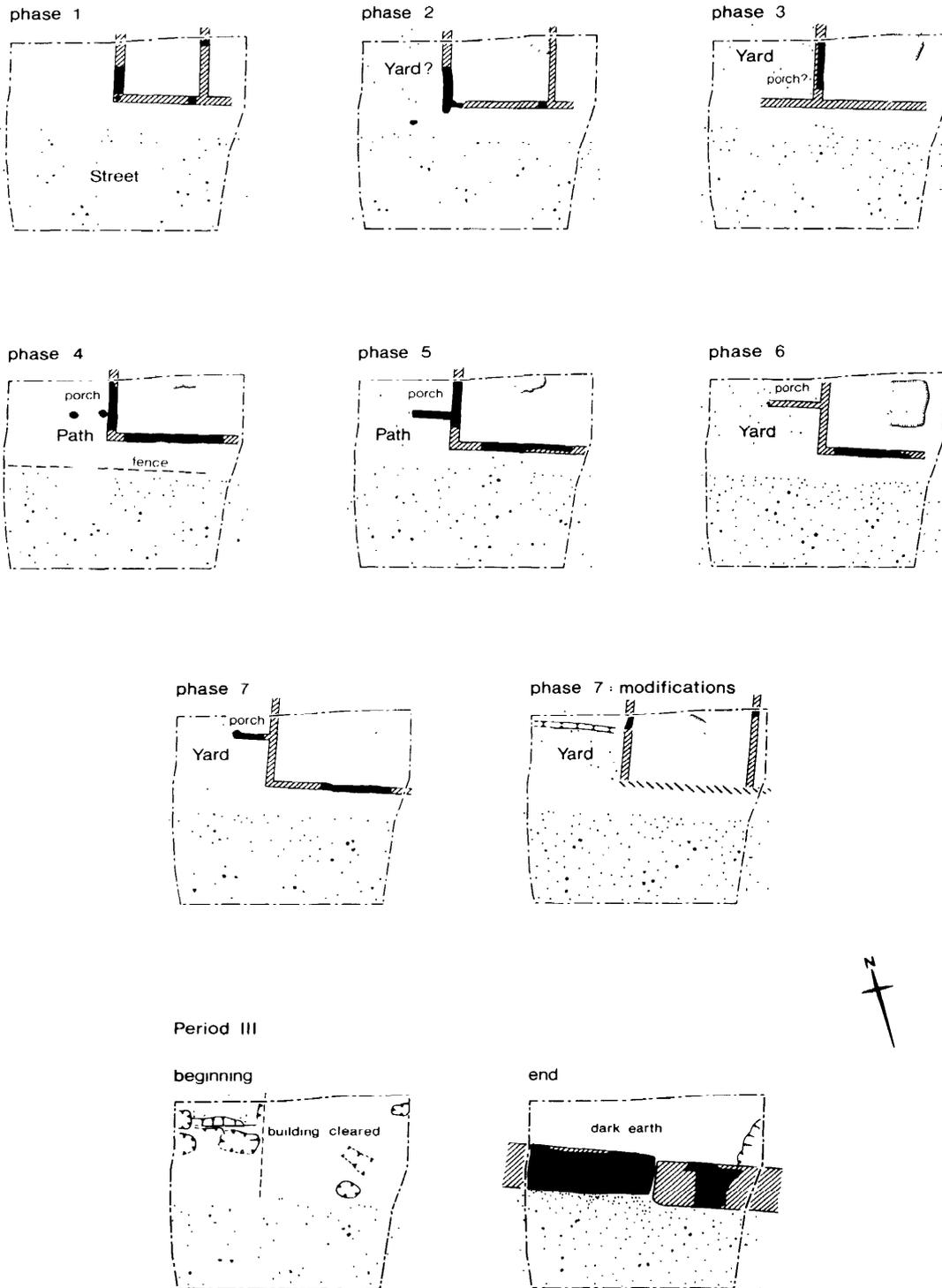


Fig 52 Ironmonger Lane: plan of Periods II-III.

Fig 53 Ironmonger Lane: table of selected dating evidence.

Period	Structural context (archive report grouping)	Coins	Stamped samian	Other pottery	Suggested date for phase
I	Quarry pits (I 3)	—	—	C186, DR20, ECCW, FMIC, G238 HWB, HWC, SAM(Dr 18-29) Date AD 55-100	mid 1st c
II	phase 1 1st building, occupation (II 3)	—	—	SAM(Dr 24/25) Date AD 55-70	mid 1st c
	1st building and street, disuse (II 5)	—	—	DR20, GROG, SAM(Dr 24/25) Date AD 55-70	mid 1st c
	phase 2 2nd building, construction (II 6)	Vespasian, Dup. AD 69-79	—	SAM (Dr 30) VRW Date AD 55-70	late 1st c
	2nd building, disuse (II 9)	—	—	AHSU? FMIC HWB, HWC, TNIM VRW Date AD 70-120	late 1st c
	phase 3 3rd building, primary occupation (II 11)	—	—	DR20, ERSA, LCWS, OXID 1298 VRW Date AD 100-120	late 1st/early 2nd c
	phase 4 4th building, construction (II 17)	—	—	FMIC, HWC, VRW Date AD 70-120	late 1st/early 2nd c
	Street (II 19) (<i>deposit possibly contaminated by disturbance at NE of trench</i>)	—	SECUNDINUS I, La Grauf Dr 15/17R, AD 80-110	AHSU, DR20, ERMS, FMIC, HWB, HWC, NKSH, OXID 1298, RDBK, RWS, VRW (+ intrusive BB1, BBS) Date AD 70-100	late 1st/early 2nd c
	phase 5 Street, repair (II 25)	Vespasian, Dup. AD 69-79	Illiterate, S. Gaul, Dr 27g, AD 70-120	AHSU, DR20, FMIC, HWB, HWC, LOND, OXID 1298, VRG, VRM, VRW Date AD 70-120 or later	late 1st/early 2nd c
	phase 6 6th building, primary occupation (II 29)	—	—	AHSU, DR20, HWB, HWC, LOMI, MICA, OXID 1298, PE47, R527, RHMO, VCWS, VRMA, VRW Date AD 100-120	early 2nd c
	Street (II 31)	—	—	AHSU, BB2, COLC, LCWS, NKSH, OXID 1298, PE47, VCWS, VRW Date AD 120-180	early/mid 2nd c
phase 7 7th building, construction (II 39)	—	—	AHSU, BB1, DR20, HWB, HWC, VRW Date AD 120-140	early/mid 2nd c	
Street (II 42)	—	MALLURO I Lezoux Dr 18/31, AD 135-65	DR20, HWC, PE47, PRW, VCWS, VRW (+1 possible sherd NVCC, now missing, intrusive?) Date AD 100-160	early/mid 2nd c	
Primary fire debris (II 51)	—	—	BB1, DR20 Date AD 120-250	early/mid 2nd c (‘Hadrianic Fire’)	
Redeposited fire debris (II 52)	—	—	BB2, HWC Date AD 120-160	early/mid 2nd c (‘Hadrianic Fire’)	
III	Yard surfaces (III 3)	—	—	AHSU, BB5, DR20, HWB, HWC, LCWS, OXID 1298, PE47, RWS, SAM (Dr 15/17, 18, 27, 33, 37, Cu 15), SESH, VCWS, VRW Date AD 120-160	mid 2nd c
	Pits and gullies (III 4)	—	—	AHSU, BB2, BB5, DR20, GROG, HWB, HWC, LOMI, NKGW, RDBK, SESH, VRW Date AD 120-160	mid 2nd c

Fig 53 continued

Period	Structural context (archive report grouping)	Coins	Stamped samian	Other pottery	Suggested date for phase
	Latest street (III 7)	--	—	AHFA, AHSU, BB1, DR20, HWC, NVCC, OXRC Date AD 270-400	late 3rd c or later
	Robber trench (?) over former building, beneath dark earth (III 8)	—	—	AHFA, AHSU, BB2, BBS, DR20, GROG, HWC, OXRC, R527, RWS, VCWS, VRW Date AD 270-400	late 3rd c or later

yard area to the west (II.2-4). At the end of the phase, the building was dismantled and the area levelled up, employing in part redeposited burnt debris (II.5). A coin of Vespasian (69-79) at the top of the levelling suggests that this debris was not derived from the Boudiccan fire (Fig 53).

In *phase 2* a new timber building (II.6) was erected in exactly the same position as its predecessor, as a direct replacement, and contained a brickearth hearth (II.7). A gravel metalling was laid in the yard area to the west, whilst further gravels laid between the building and the street to its south (II.8) may represent consolidation of the ground surface in the area of an eaves-drip. There was a posthole at the south-west corner of the building, perhaps marking out its property boundary in relation to the street. The latter was given its first substantial gravel surfacing at the point when the structure was dismantled at the end of phase 2 (II.9-10), although the two events were not necessarily related.

In *phase 3* a new timber building (II.11) was constructed along the lines of its predecessor, and contained four successive hearths. Their function is unknown but they were possibly associated with contemporary features (?containers) evidenced by a series of regular cuts through the floor (II.12-14). Externally, the street was resurfaced and the presumed marker post replaced (II.15). The yard area was patchily resurfaced on four successive occasions, with features suggesting a porch added on the west side of the building. Towards the end of this phase the street was again remetalled (II.16), this time in association with a possible verandah or walkway on the south side of the building before it was finally dismantled.

The building of *phase 4* exactly resembled its immediate predecessor, including the threshold position on its western wall and the internal hearth, which was again associated with a shallow pit (II.17-18). To the west a tiled pathway was laid in the yard area (II.19-20), now giving access to the street through a gate since the area had been enclosed by a street-side fence. The dismantling of both the building and fence marked the end of this phase (II.21).

At the beginning of *phase 5* a new timber building was represented by a slot along the front wall accompanied by the direct replacement of all the other features — porch and threshold, hearth and associated pit (II.22-23). In the yard another pathway gave access to the street, which was itself extensively resurfaced after some initial crude patching (II.24-26). The building was subsequently dismantled (II.27).

Only part of the construction trench for the *phase 6* building (II.28) survived, but its insertion can be correlated with a new internal hearth and a re-cutting of the associated pit (II.29). Two further hearths (II.32, II.35) were then laid above the initial one. Watching brief observations in the north of the site (II.38, II.53-57) showed the pit in its various phases to have been an extensive feature, at least 2.5m across, though even here the specific function could not be identified. The continual association of pit and hearths, however, suggests a single activity within the room, consistently recurring from at least phase 3.

Externally, the yard was resurfaced three times (II.30, II.33, II.36), each surfacing suggesting a pathway or access point alongside the building and less well constituted gravelling further west. The use of a porch beside the building was retained in this new arrangement. The street was resurfaced three times during the phase (II.31, II.34, II.37), each time with underlying subsidence causing subsequent repairs. Assuming that its highest point lay at the centre, the distinct camber of the street at this stage indicates a total width of c 5-6m. The pottery from this phase, though largely residual, suggests use until the end of the Trajanic period.

A further marker post (II.39) may have been associated with the construction of the *phase 7* building, since it was sealed by a street surface (II.42, II.50) laid during its lifetime. The main south wall of the building was represented by a slot, again with a porch on its west side. Another hearth was laid inside but quickly went out of use when sealed over by a brickearth slab and associated stakeholes (II.41). Outside, there were corresponding changes, with silts accumulating in the yard (II.40, II.43).

After this, substantial modifications to the building took place, with new internal partitions and hearths (II.44, II.46-47) suggesting renewed activity along the previous lines. Externally, the porch was not replaced and a drainage channel was cut across the yard (II.48). The channel was encrusted with compacted crumbly brown material containing fragments of charcoal and iron slag. While this was in use, the yard was resurfaced (II.45), then a replacement channel inserted (II.49). It seems likely that these features provided an alternative method of disposing of waste products from the hearth, replacing the pits of earlier phases. The activity was halted by a fire centred outside the excavation to the north-west (II.51). Burnt debris collapsed from that direction across the yard, evidence of the destruction of a timber-framed building, possibly with daub infill (II.52).

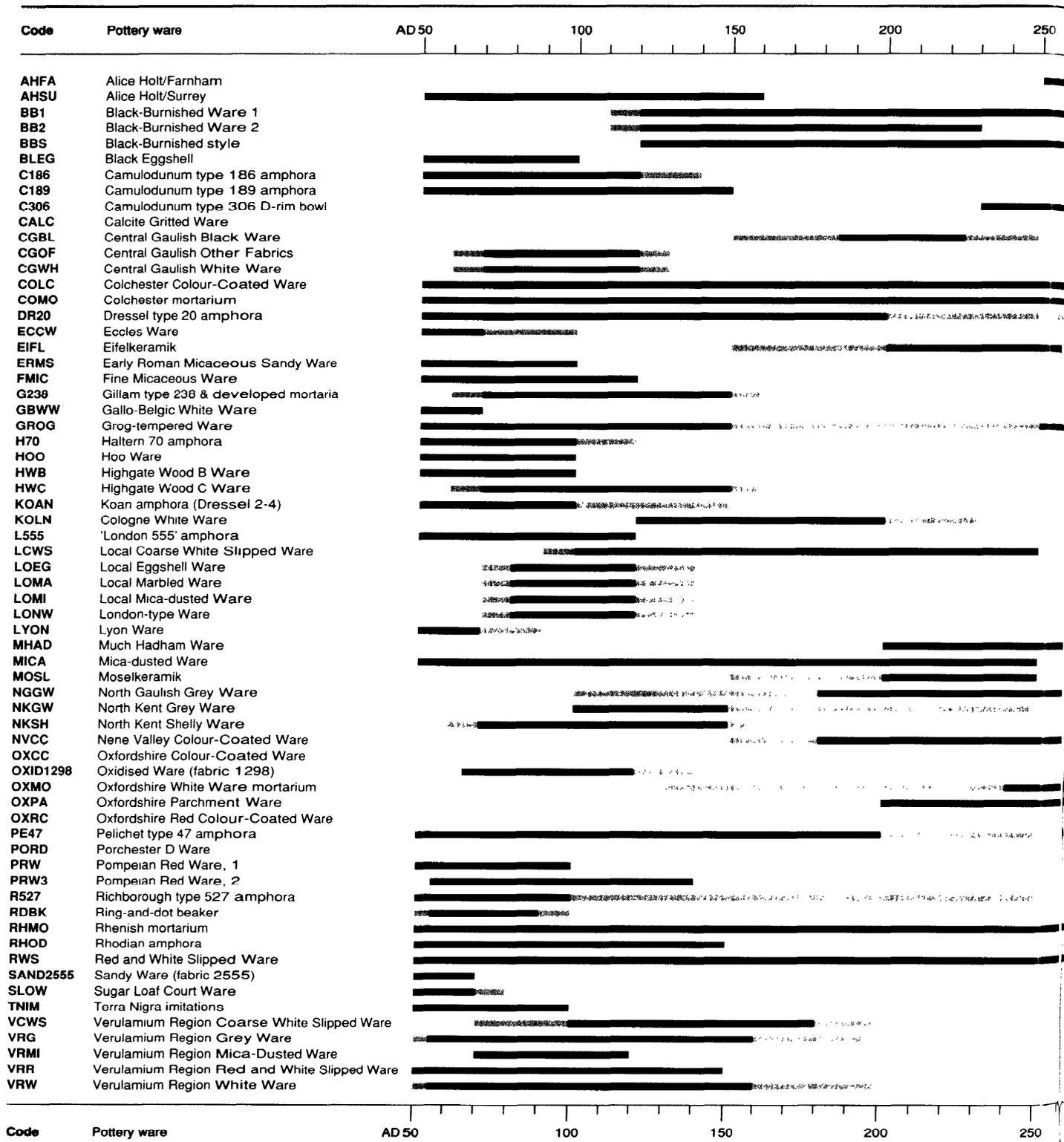
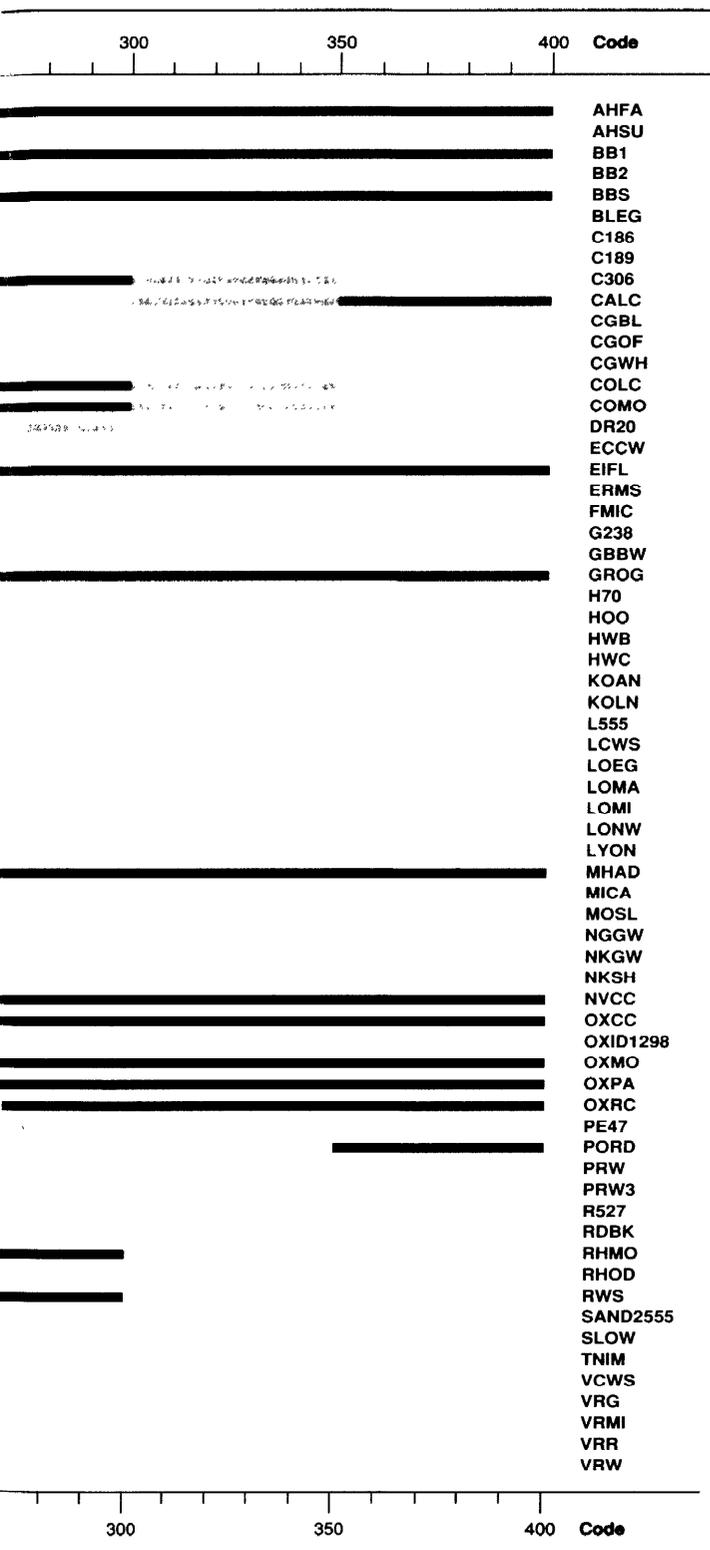


Fig 54 Summary of the main pottery wares found on the sites west of the Walbrook, the codes used in the tables of dating evidence (Figs 23, 39, 45, 51, 53), and the approximate date ranges (for all details, see Davies & Richardson forthcoming).



The precise date of the fire cannot be accurately determined, although Trajanic pottery in the construction slot of the phase 7 building is consistent with its destruction in the extensive Hadrianic fire.

Period III: later than c AD 120

(Figs 52 and 53)

In Period III some gulleys and small pits (III.3-5, III.8) were cut into the debris over the destroyed Period II building and yard, and were sealed by a dark earth horizon (III.9). There is no further evidence of Roman buildings on the site. The street (III.1, III.6-7) apparently continued in use for some time (the date of its disuse cannot be determined), and was separated from the area of dark earth to its north by a chalk and ragstone boundary wall (III.2) built at this time. The wall followed the line of the previous building frontage and may have remained standing beyond the end of the Roman period, perhaps until it was finally robbed in the 10th century. A summary of the later occupation on this site has been published elsewhere (Norton 1982; see also Schofield *et al* in preparation).

Dating evidence and finds

The sites produced very large numbers of loose finds, all of which were studied during the preparation of this report. Catalogues of Individually Registered Finds, 'Bulk Finds', pottery and glass may be consulted in the Museum of London, on written application to the Archives Officer. The main themes of the present volume, however, are structural and topographical. For this reason it was decided that only those finds which are important as dating evidence (see below), or which provide direct information about the appearance and function of buildings, should be published here in any detail. Thus there are full reports on the painted wall plaster, 'mudbricks' and daub, and on the diploma from Watling Court — the one item to give a clue to the identity of some of the occupants of the buildings. The remaining categories of finds — pottery, glass, metalwork, for example — are being combined with those from other recent excavations to produce separate volumes which treat the City as a whole. It will only be from comprehensive studies such as these that chronological trends and regional variations in the use of artefacts — as between the areas east and west of the Walbrook, for instance — may become apparent.

The dating evidence itself is presented in five tables (Figs 23, 39, 44, 51 and 53) and an overall table of correspondence (Fig 56). Descriptions of the key stratigraphic units on each site are combined with summaries of coins (identified by J Hall), stamped samian (identified by B Dickinson), unstamped samian and coarse pottery, and, in the case of Watling Court, dendrochronology. The unstamped samian has been included only where it is the sole or apparently most significant means of dating, with few residual pieces. In these cases, all the forms from each group are listed. Fuller descriptions of the decorated sherds (examined by G Marsh) have been omitted, however: they were found in small quantities, and none could be dated sufficiently accurately to alter or refine the chronological framework inferred from other evidence.

The non-samian pottery — which, by its abundance, is in many cases the most important dating tool and, at the same time, the most difficult to

summarise adequately in tabular form — has been the subject of a major study which will be published as a separate volume in this series (Davies & Richardson forthcoming; see also Chadburn & Tyers 1984; Davies 1983; 1984; Davies *et al* 1984; Davies & Tyers 1983a; 1983b; Tyers 1983). This study, which deals principally with the century *c* AD 50-150, took as its starting-point the enormous groups of pottery (nearly one tonne in total) from Periods I to VIII on the Newgate Street site. The contents of each period and sub-phase were carefully recorded and it was possible to construct from this a detailed series of forms and wares. Upon this *relative* sequence an *absolute* chronology was then imposed by reference, first, to wares such as samian, Highgate Wood and Black-Burnished that have been dated independently outside the city and, second, to two major fire-destruction levels that articulated the stratification on the site. The earlier of these levels seems to have resulted from the sacking of the city by Boudicca in the early 60s, while the later, although not historically attested, has been observed on many other sites (see Dunning 1945) and may be the product of a single fire that destroyed much of the city between *c* 120 and 125.

This dating of the Newgate Street pottery series was then checked and refined by examining many other well-stratified deposits on the remaining sites described here, together with deposits on sites east of the Walbrook (Williams forthcoming b), in the Walbrook valley (Maloney 1990), and near the waterfront (Milne 1985). The main wares are summarised in Figure 54, along with their suggested date ranges and the abbreviated codes used in the dating tables. All the wares from the key stratigraphic groups are listed in the tables, except for unclassified amphorae, mortaria and coarsewares which seem to have no value as tools for close dating. Form descriptions have been omitted owing to lack of space (but see Davies & Richardson forthcoming), but it is hoped that even from this limited presentation the dating framework for each site will be clarified and that some future reassessment will be possible, as pottery research proceeds.

The study of London's late Roman pottery is less far advanced. The late Roman deposits at Newgate Street, Milk Street and Watling Court are unsuitable for developing a corpus of wares and forms, and the most important sites are those near the waterfront, where a rapidly changing sequence extends to the end of the 4th century (Bateman & Milne 1983; Milne 1985). A study of these sequences is in progress, and is scheduled for publication in 1991-1992; in the meantime, for dating the dark earth and similar features on the present sites, excessive reliance must be placed on coins and small quantities of well-known wares, such as Alice Holt/Farnham, Nene Valley and Oxfordshire (Fig 54), that have been researched outside the London region.

Tree-ring analysis of Roman timbers from Watling Court (Fig 55)

Five oak piles from pit 2314 (IV.18, Figs 30 and 57) were analysed at the Sheffield Dendrochronology Laboratory in 1980 following the method given in Hillam & Morgan

timber	date span	falling date	London Bridgehead	London Southwark	Droitwich Bowling Green
2413	25BC-AD45	AD55+	7.8	6.2	2.7
2415	86BC-AD57(AD51)	AD60-105	9.1	7.6	5.5
2417	110BC-AD6	AD16+	9.1	7.3	6.3
2431	72BC-AD49	AD59+	7.1	6.5	3.7

Fig 55 Details of tree-ring dates and estimated felling dates. The latter are based on the sapwood estimate of 10-55 rings. The date of the heartwood-sapwood transition, if present, is given in brackets. The dates from Droitwich and Southwark were made available by A Crone and I Tyers respectively.

(1986). The timbers contained 70-180 annual rings, and four of the sequences crossmatched to produce a site chronology of 167 years. The master matched well with other chronologies from sites in the City of London, such as Thames Street Tunnel ($t = 10.6$; for an explanation of t values, see Baillie 1982), but no absolute dating was obtained.

In 1981, the Watling Court master, along with other London sequences, was dated by comparison with chronologies from Germany and Ireland (Hillam & Morgan 1981). The master spans the period 110BC-AD 57, and matches Roman chronologies outside London, *eg* Droitwich, Old Bowling Green (Crone pers comm), as well as the London chronologies themselves, *eg* Southwark (Tyers pers comm) or Bridgehead, made up from sequences from Miles Lane, Peninsular House and Pudding Lane (Hillam 1986). The dates of the individual timbers are set out in Figure 55. Estimation of a felling date range is possible because 2415 contained sapwood rings. Its heartwood-sapwood transition dates to AD 51 and, using the sapwood estimate of 10-55 rings (see Hillam *et al* 1987), this gives a probable felling date range of AD 60-105.

The tree-ring data are stored in the Sheffield Dendrochronology Laboratory, where a full archive report of the tree-ring analysis is also available.

The dark earth

The term 'dark earth' was coined in London in 1977 to describe a particular stratum overlying Roman buildings on many sites in the City; since 1977 the term has been used for similar deposits within Roman settlements elsewhere in Britain and in Europe.

On all five excavations discussed, a stratum of dark earth was recorded over the latest identifiable Roman buildings. This horizon survived to differing extents on the various sites, being found over much of the Newgate Street site but virtually absent, due to truncation of deposits, at Watling Court. It was therefore accorded differing degrees of attention during excavation. At Watling Court, Well Court, Ironmonger Lane and to some extent at Newgate Street, the deposit was removed summarily with pick and shovel or recorded only in section. At the southern end of Newgate Street and at Milk Street, however, it was trowelled away carefully

and extensively sampled for micromorphological analysis (MacPhail 1981; 1983). At Milk Street, in particular, great care was taken by removing the material in 25mm spits, grouping the finds by 1m squares and drawing the surface of the deposit at 50mm intervals. The objective was to record any patterning of artefacts in plan or elevation in what was otherwise seen to be a homogeneous deposit. For example, physical inclusions such as pebble spreads or the distribution of datable finds such as pottery might have indicated a sequence of features or activities within the deposit. In the event, no such patterns emerged, and consequently the whole horizon can be treated as representing a single episode in the development of the sites in question. Some assessment of the character, origin and date of its deposition can be made.

In excavation the dark earth was consistently described as a dark grey silt containing various inclusions, mostly building materials, which were evenly distributed throughout its matrix, both vertically and horizontally. In some places it took on a brownish hue, whilst elsewhere a small proportion of clay or fine sand was mixed with the silt, or the frequency of inclusions varied. These variations, however, displayed no patterns either within or between sites. This suggests that the source of the building material must be other than the underlying structures, since the character of the latter *did* vary. Detailed laboratory analysis showed that the particle size was strictly closer to 'loamy sand' than 'silt' (MacPhail 1981; Table 3) but did confirm that the inclusions were mainly building materials (*loc cit*, Table 4). This suggested that the dark earth was deliberately introduced, possibly for cultivation (MacPhail *ibid*).

The dark earth exhibited differences between sites which could be a result either of the way in which it was introduced or of its subsequent use on the sites. At Newgate Street there was evidence of successive layers of marginally different character or hue, implying that the dark earth was deliberately dumped after introduction from elsewhere. Such dumps were not apparent at Milk Street. This is likely to be a genuine distinction between deposits, rather than a result of differences in excavation and recording techniques. If there was any reworking of the deposit at Milk Street, it failed to disturb a mosaic pavement only 0.2m below the base of the dark earth. At Milk Street, at least, any agricultural activity must have been on a limited scale (*eg* horticulture) since no plough-marks were recorded in the Roman strata, including the pavement immediately beneath.

It has sometimes been suggested that the dark earth is a post-Roman phenomenon, and that cultivation destroyed the majority of late Roman strata, leaving only the early Roman levels intact. At Milk Street, however, dark earth sealed a consistent chronological horizon across the site; and this horizon was not level. It is difficult to imagine in this case that post-Roman truncation could have removed all late Roman levels down to a chronological point in the sequence by following its physical undulations, especially as the datable cultural material within the dark earth was predominantly of early Roman date, not abraded artefacts from ploughed-out late Roman levels. There

was also a similar lack of late Roman finds in the stratum on the other sites. The implication must be that dark earth was dumped shortly after the demise of the Antonine buildings, and represents a marked change of land use, dating perhaps as early as the late 2nd century.

Three other strands of evidence should be considered; they also point to a late 2nd century change. Firstly the final Roman structures on each site were different from their predecessors. At Newgate Street, stakeholes cutting the Antonine buildings bore no resemblance to any previous structural features, though whether these stakeholes were Roman or later in date is uncertain (p 26). At Watling Court buildings burnt down in an Antonine fire were less substantial than their predecessors and were replaced by further ephemeral floors and levelling of redeposited destruction debris before being covered by dark earth (p 43). At Milk Street the main site contained no buildings after the Antonine period, whilst the only structural activity to the north comprised a crude mortar floor and a substantial foundation, subsequently robbed, which lay on a different alignment from any earlier buildings or roads there (p 51). At Well Court there was a similarly massive stone wall accompanied by an occupation surface and stakeholes, the latter interpreted as evidence of planting rather than buildings (p 57). Finally, at Ironmonger Lane, gullies and pits cutting the debris of the Hadrianic fire were divided from the road on that site by another substantial masonry wall (p 63). This wall, like those at Milk Street and Well Court, seems to have formed a major boundary. All these sites suggest that the character of the buildings was beginning to change before the deposition of dark earth.

Secondly the fate of the latest certain Roman buildings on the sites may have been different from that of their predecessors. At Newgate Street, Watling Court and Milk Street, the Antonine buildings were overlain by material apparently derived from the break-up of their clay walls. Previously such material had been salvaged for re-use, something that was now presumably no longer necessary. Several late Roman coins incorporated within the levelling at Newgate Street might suggest that the decay took place over an extended period of time, although such finds could equally well be intrusive, given the later use of the site as a medieval graveyard (White 1988) and the 2nd century date for the deposition of dark earth suggested above.

Finally, these changes in structural development were paralleled by modifications to the road system at Milk Street. The replanning of the junction on the north of the site was accompanied by less substantial remodelling of the main road to the south and by the abandonment of its side ditches. Therefore the changed nature of the latest buildings, the different character of their decay and disuse, and the alterations to the road system can be put beside the dark earth itself to suggest that, in the 3rd century, all the sites discussed here underwent a similar radical transformation from their previous use, in a way already anticipated in the later 2nd century but which remains otherwise unexplained. This both sets the chronological limit to the present study, and poses questions for future research about the character of late Roman London.

Late 3rd - late 4th century (c 250 - 400)			?				?
Early 3rd century (c 200 - 250)			latest street surfaces			VII	latest street surfaces and boundary wall
Mid - late Antonine (c 160 - 200)		VIII dark earth	?		V		?
Hadrianic - early Antonine (c 120 - 160)	dark earth IX	VII VI	dark earth VII				dark earth
	VIII	V	VI	IV	VI		III
Trajanic (c 100 - 120)	VII		V VI				II phases 4 - 7
Late Flavian (c 85/90 - 100)	VI				V IV		
Early Flavian (c 70/80 - 85/90)		IV III		III	III	II ?II	II phases 2 - 3
	V	II	III	I	?I		
Late Neronian - early Flavian (c 60 - 70/80)	IV	I	?I/II				II phase 1
Early Neronian (c 50/55 - 60)	III II I						

Fig 56 Table showing dating and correspondence of sequences at Newgate Street, Watling Court, Milk Street, Well Court and Ironmonger Lane.

III The Buildings

Building Materials

Most of the materials employed in the buildings of early Roman London were those most readily available, and the nature of these materials influenced the forms of construction adopted. The most accessible were those on which London had been built. Of these the brickearth was the most useful; its high sand content makes it a valuable building clay as it will not warp, crack, or shrink excessively, and yet is plastic enough for most uses. By contrast the London clay has a fine body and is generally too plastic to be used by itself.

The brickearth was widely quarried. The overall distribution of the quarries has topographical implications, and will be further discussed (p 117). Other aspects of quarrying, relevant to building material supply, will be considered here. Most quarries were dug adjacent to the buildings which they presumably supplied, and it is probable that where space allowed they would have lain within the same property as the building under construction. Extensive quarrying in peripheral areas was in most cases likely to have been associated with specialised industries (notably pottery and tile production), although it is possible that a commercial exploitation of brickearth as a building material (in an unfired state) would have become necessary as the owners of sites exhausted, or lost access to, their own supplies. The earliest pits at Newgate Street (I.2) (Fig 4) and Watling Court (I.1) consisted of shallow and irregular scoops, 0.50m-3.00m in diameter and no deeper than 0.55m (p 26). These may have been quarries but could also have been dug to remove the roots of felled trees. By contrast the later quarries were regularly and deeply cut, indicating the need to extract the greatest quantity of material from the smallest area. One such quarry at Newgate Street (V.18 and p 9) is illustrative of this (Figs 10 and 11). It was set immediately behind Building H, which it had no doubt been dug to supply, and had been cut in spits down to natural gravels. A pit separately cut in the north-west corner of the quarry might have been a test pit dug to determine the depth of the brickearth prior to quarrying (p 9). The full dimensions of the quarry were not retrieved but it is unlikely to have been much larger than the excavated area of 7m x 7m. The depth of up to 2.20m indicates that some 100 cu m of brickearth would have been supplied by the quarry. It is not possible to determine the quantity of brickearth that would have been required in the construction of Building H as the walls of this construction were not fully traced. However, the destruction debris of other buildings (p 78 and 94) suggests that at least 0.30-0.50 cu m of brickearth was used in the superstructure for each square metre of floor space. On this basis Building H would have required over 45 cu m of brickearth for the walls alone. Since further brickearth would have been used in the floors, hearths, etc, the quarry seems about the right size to have supplied the total needs of the building. The brickearth was probably processed adjacent to the quarry. Although no mixing area was identified, two complete dried bricks had been

discarded in the fills of the feature and indicate the proximity of their manufacture.

The large quarries on the Watling Court site (III.4-6) (Figs 28; 57) were similar to the quarry described above and were apparently located towards the rear of the properties (p 30). The only example which was fully excavated had been cut down to the top of the underlying gravel.

In later periods much of the brickearth used was salvaged from walls of earlier buildings. This was illustrated in several ways, notably by the absence of clay destruction debris. The only buildings where the destruction debris had not been cleared away for reuse were those which had been burnt down and those which were levelled off at the end of the sequence of occupation (as at Newgate Street VIII.13, Watling Court VI.2, and Well Court VI.9). Trenches cut to remove the brickearth for reuse were tentatively identified at Ironmonger Lane (along the south walls of the phase 4 and 5 buildings of Period II, II.17 and II.22). Many of the later brickearth-based walls incorporated a considerable number of inclusions, including fragments of wall plaster, which also indicate that the brickearth had been reused.

London Clay by contrast was not often used although strips of this clay had been laid for wall foundations on the Watling Court site (p 37 and 73). The cohesion of the clay when wet offers better load spreading qualities than brickearth and might have made it more suitable for such foundations. Gravels were used extensively as a metalling material, especially for external surfaces (p 100 and 117), and its exploitation is illustrated by an irregular gravel quarry pit recorded at Ironmonger Lane (I.1 and p 57).

The other extensively used building materials in the early city were organic. Grass-like materials were used to temper clays (p 76) and in thatch roofs (p 95). The combination of poor survival, an inadequate archaeological sampling and the general similarity of types of grasses prevents precise identifications of the materials used, although straw was poorly represented. The grasses would have been easily available from the strip of semi-marshland which extended along the banks of the river (Sheldon 1978, 19-20; Hill *et al* 1980).

Timber was widely used in the buildings (p 71). Selective identifications indicate that most load bearing timbers were oak, the availability of which is illustrated by its profligate use in the construction of the early waterfront (Milne 1985, 55-67). A number of other timber species was represented in contexts which would imply their use in the buildings, but in most of these cases it was not possible to determine whether they were actually used as building materials. All the species present would have been locally available. In no case had the timber survived well enough to permit a study of the carpentry employed.

Stone was only selectively employed in the earlier buildings, mostly in wall foundations (p 80). Examples from Watling Court demonstrate the range of stones most commonly used. Cretaceous Lower Greensand predominated, mainly consisting of limestone ('Kentish

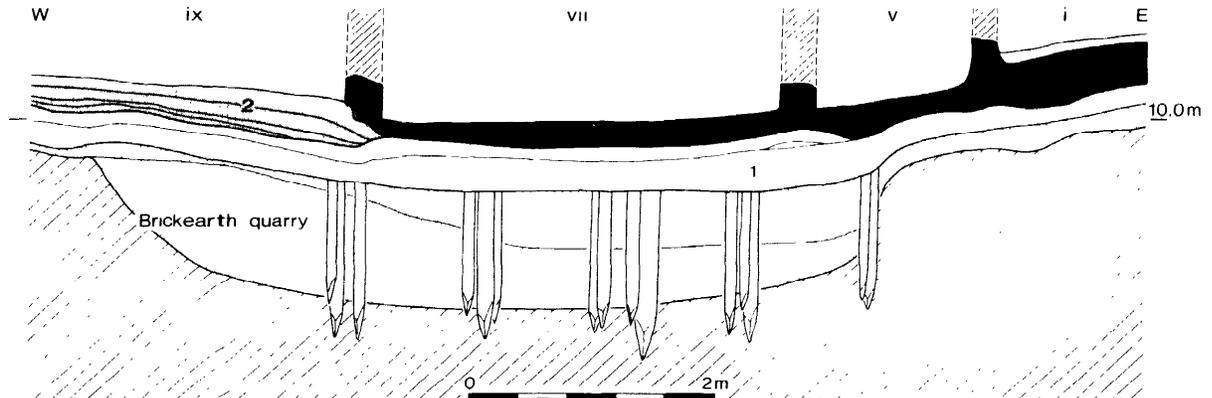


Fig 57 East-west section illustrating the construction sequence of Building F at Watling Court (Period IV.17; cf Figs 30 and 58). Timber piles were driven through the backfills of a Period III quarry to support a construction slab laid in 4 consecutive stages (numbered 1 to 4). The plaster faced brickearth walls were then erected and a mortar floor laid above slab 4.

Rag') in association with sandstone ('Hassock'). The most likely provenance for these would have been the Hythe Beds in the Maidstone and Borough Green areas. Outcrops close to the River Medway would have been conveniently placed for waterborne transportation to London, as evidenced by a wrecked sea going ship found near Blackfriars Bridge (Marsden 1967 see note) with its ragstone cargo still aboard.

Flint and chalk were also present in the Watling Court wall foundations. The presence of both might suggest a common source, perhaps from outcrops of the upper chalk horizons along the banks of the Thames, which would have been easy to exploit and transport. Two localities might recommend themselves, one on the north bank between Purfleet and Grays and the other stretching from Stone to Cliffe along the south bank.

Other types of stone, identified but not directly associated with the buildings, illustrate a fairly thorough exploitation of the other stone outcrops of the south-east. Wealden freshwater limestone was present in two contexts on the Newgate Street site. Such limestones occur in thin horizons (c 45mm thick), limiting their use as a building material, but are known to have been used in the production of *tesserae* (as illustrated by examples from Milk Street and Building H at Watling Court; p 00). These limestones can be found in the Staplehurst area of Kent. Ironstained sandstones, probably from the Folkestone Beds but possibly also from the ironstone horizons of the Wealden Clay, were also found at Newgate Street.

Two examples of calcareous tufa from the Watling Court site may also have come from a Hythe Beds horizon. It occurs coating the walls of vertical fissures in Rag and Hassock strata in the Ightham and Borough Green areas of Kent (Geological Survey 1969, 74) and was probably quarried with these stones.

This summary (derived from a more detailed report by Marie Barker) excludes a consideration of the varieties of stone *tesserae* which will be treated with other aspects of the tessellated pavements (p 88).

Considerable quantities of tile were also used in building construction, mostly for wall foundations and bonding courses, and for hearths (pp 79, 95 and 98). In

most of these the tile had been broken prior to use. *Tegulae* and *imbrices* predominated but brick was also widely used. Flue tile was poorly represented. The majority of the *tegulae* and *imbrices* examined were in an orange red to reddish brown fabric, and were manufactured at various sites locally to London from the 1st to the 3rd centuries. A smaller percentage was in a buff-coloured fabric, thought to have been manufactured in the Eccles area of Kent during the mid/late 1st century. As stated above, it seems unlikely that much of the tile was used for roofing.

The only other building materials used on an appreciable scale were those associated with the manufacture of mortar, plaster, *opus signinum*, and other concretions (pp 85 and 88).

Preparation for Building Construction (Figs 57 and 58)

In most of the buildings considered here ground preparation appears to have been kept to a minimum, although on all the sites the pre-Roman ground surface had apparently been cleared or deturfed prior to the earliest building activity. No primary soil horizons were identified and in most cases there was little evidence for root action in the natural ground surface, although some was noted at Milk Street. If any turves had been produced in this early clearance they were perhaps utilised as a building material; turf consolidation rafts were used in road construction at Cophthall Avenue (Maloney C 1982, 35; 1990).

There was no evidence for large scale truncation of the ground surface at any other period, and most later redevelopments took place over the levelled off remains of earlier buildings. The evidence suggests that in most, if not all, cases building surfaces were established by levelling up after the removal of upstanding structures. It is difficult to separate the process of demolition from that of construction in the later periods, since the removal of building materials might have been the only form of preparation necessary. Clearance work was

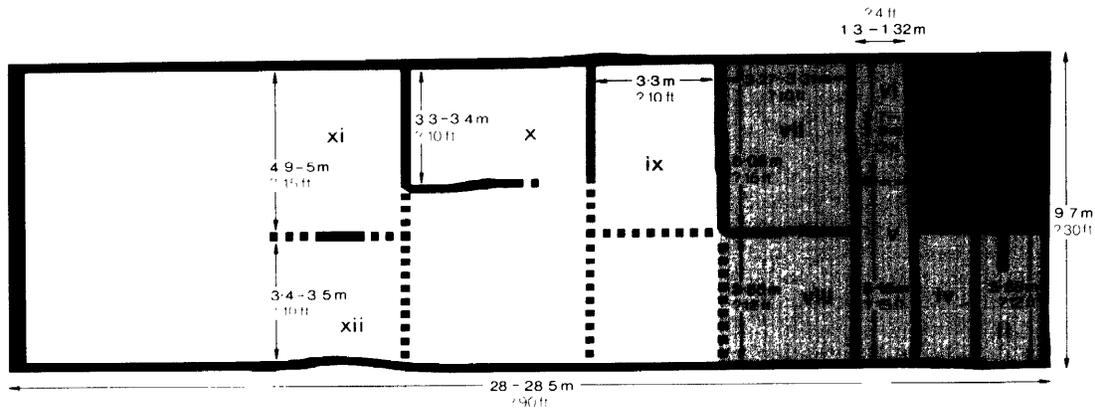


Fig 58 Plan of Building F at Watling Court to illustrate the arrangement of brickearth slabs (cf Fig 57). The metric measurements are in bold type, the pes Drusianus in light type.

evident after the Hadrianic fire at Newgate Street where the east wall of Building K had been cut down to the surface of the destruction debris (VIII.2).

On occasion piles were employed to consolidate the ground in conjunction with the levelling. Among the buildings examined here this practice was confined to one, or perhaps two, buildings (Watling Court, Buildings F and perhaps D, IV.18, IV.6, p 30) which had been erected over backfilled quarries or pits, and was clearly intended to counteract subsidence (Fig 57). Although the post positions occasionally coincided with the subsequent wall lines this was not always the case, and the consolidation was general to the whole building plot rather than specific to the walls.

Despite these examples, piling was rarely used as a means of ground preparation, even when subsidence might have seemed likely. At Newgate Street no comparable use of piling was noted despite extensive quarrying. This is illustrated by the rear part of Building K which was built over a Period V quarry that had only recently been backfilled, and was later subject to considerable subsidence.

The most common form of building preparation consisted of the deposition of a clay or brickearth slab to provide a building platform. Generally 0.15-0.30m thick, such slabs were identified beneath buildings on all but the Newgate Street site. The slabs were usually laid up to, but not beyond, the limit of the proposed building. Although no complete buildings have been excavated it seems probable that the slabs were extended across the entire area of the proposed buildings.

The slabs were often laid in several layers. The most informative example was that of Building F at Watling Court (IV. 17) where an extensive area of the construction slab was recorded. This had been deposited from west to east in a number of layers *c* 0.25-0.50m thick (Figs 57 and 58), which combined to give a total thickness of *c* 0.80m. The layer which formed the base of the slab extended over the entire building area investigated. The other layers were laid as adjoining rectangular blocks, the limits of which were subsequently followed by partitions within the building. Building F was not alone in this arrangement of the construction slab: wall lines were similarly anticipated

by the layers of building slabs at Ironmonger Lane (II.2) and Well Court (V.1). The further implications of this procedure for the planning and marking out of the buildings will be discussed below (p 70).

At Newgate Street no regular construction slabs were identified. In many cases no levelling up was attempted; in others localised dumps were employed. An example of such a dump came from beneath the south-west corner of the excavated part of Building F (V.1-2). Nevertheless, even here the irregular spreads of silt construction surfaces and dirty brickearth dumps were seen to conform to lines later adopted by the walls of the building.

In one building the brickearth had been laid in preparation for the floor surfaces *after* the construction of the walls. This was Building D at Watling Court in which the walls were stone founded. In the rooms on the eastern side of the building the slab had been laid in horizontal layers with intervening gravelly silt trample layers up to the approximate level of the masonry (IV.2, p 30). The method was presumably adopted to reduce the depth to which foundation trenches needed to be dug and to provide better support for the mosaic floors of the building. In other examples where brickearth had been laid after the walls were built it was usually as a floor surface rather than as part of the ground preparation (p 88).

Foundation burial

A dog burial was found beneath the east wall of Building N of Period VIII at Newgate Street (p 19) and was evidently part of the building preparation (VIII.6). The skeleton was complete and had been placed with the head to the north-west in a roughly circular hollow *c* 0.3m in diameter. The context of the feature, directly cut into a dump laid as levelling for Building N, and its location, imply that the burial was sacrificial. Such ritual burials are known elsewhere, as at the site of Kingdon's workshop in Winchester (Cunliffe 1964, 43), where the context of a dog burial might suggest that it was also a foundation deposit.

Whilst foundation burial forms part of a tradition which was not exclusively Roman (M J Green 1976, 49-50), dog sacrifice was also acceptable within Roman state religion (see Ovid, *Fasti* IV, 905-42). There is a clear association between dogs and house protection but the choice of a dog may not have been significant. Dogs are easily found in towns and the burial was perhaps a reflection of the urban context and the limited resources of the builder. A sacrifice on this particular occasion was perhaps a superstitious response to the disaster of the Hadrianic fire, which had destroyed the preceding buildings.

Units of measurement and evidence of planning

The evidence for the use of units of measurement in Roman buildings and the types of units employed has been the subject of much debate, especially with respect to the relative significance of the two forms of foot measure known to have been used in the north-west provinces: the *pes Drusianus* or 'northern foot' (332 or 333mm) and the standard *pes Monetalis* (c 291-297mm). It has been argued that the *pes Drusianus* was occasionally used in Britain by army surveyors prior to the more widespread acceptance of the *pes Monetalis*, but the case is not proven (Frere 1977, 87-103; Walthew 1978, 335-50; Duncan-Jones 1980, 127-33; Walthew 1981, 15-35; Millett 1982, 315-20; Walthew 1987).

On the Newgate Street and Watling Court sites 95 room/building lengths and widths were recorded, but it was not possible to demonstrate the consistent use of round number measures in either foot. Despite general rectilinearity true right-angles were almost unknown and measurements were therefore not precise. Room widths and lengths varied from 0.6-6.7m. Measurements within or including the 3.8-3.85m range were the most frequent (12 examples), with other concentrations on 3.25-3.3m (6 examples) and 1.25-1.3m (5 examples). Unfortunately the various lengths cited above are not divisible by a single number. A unit of measurement of 327mm \pm 6mm would however give these lengths values, in order of frequency, of 12, 10, and 4 units. Many of these (nearly a third) were recorded in Building F on Watling Court where several rooms (i, vii, ix, and xi; Figs 30; 58) may have shared the same approximate dimensions (3.25-3.5m x 4.9-5.1m, a constant 2:3 width to length ratio, perhaps intended as 10 x 15 units). The recurrence of these dimensions and their use in a building for which there is independent evidence of a predetermined plan and where standard ratios were employed, suggests that they were multiples or fractions of a determined length. There is therefore a possibility that a foot of c 327 mm, a short *pes Drusianus*, was used. The overall dimensions of Building F (9.7 x 28-28.5m) might have been intended as measures of 30 x 90ft.

In contrast, a study of the layout of the entire Watling Court site suggests that the *pes Monetalis* might have been employed in the division of the site into alleyways and building plots. When first laid out, three alleys of Period IV (Alleys 1-3) were 4.4-4.5m wide. The consistency of this figure suggests that this width was a

set measure, perhaps 15 *pedes Monetales*. On the other hand, the irregularity of most aspects of wall construction suggests that there was no regular use of units of measure in their construction. The exception to this was in the use of dried bricks where a standard size was essential (p 00); the mean standard brick size was 440 x 145 x 80mm; undoubtedly a 1½ x ½ x ¼ *pes Monetalis* standard.

There are two further indications of planning in the development of properties in early Roman London. The first was the apparent presence of marking posts on the Ironmonger Lane site. A sequence of three successive lines of posts was set some 0.60-0.80m into the road surface at the south-west corner of the building and in line with its west wall. These posts were associated with the construction levels of buildings of Period II (II.6, II.11, II.39). In all cases the post positions were sealed by surfaces and road resurfacing associated with the occupation of the buildings. It seems probable from their positions and context that they were intended to indicate the corner positions of the buildings prior to erection. If so, they were presumably fixed by reference to some more significant and independent feature, perhaps a street junction at the corner of the *insula*. The constancy with which this position was re-established suggests that some form of record of the measurement was available. This in turn introduces the question of the use of plans and the continuity of property boundaries and of building lines. The continuity of wall lines was noted on all the sites presented here (Figs 37 and 38). This was no doubt partly due to a continuity of occupation and to the survival of standing portions of the walls from which the rest could be reconstructed. But this could not have applied in every situation. The best example of this was the Period VIII reconstruction on the Newgate Street site where the destruction debris of the Period VII fire had completely buried Building J, so that there was no obvious way in which its successor could have re-established the wall lines from the visible remains. Nevertheless, Building M was built so that its main walls precisely followed those of its predecessor (VIII.4, p 18).

This could only have happened if Building M was plotted from a point which bore a fixed and known relationship to its predecessor, which also implies the existence of a plan, as does the regularity of certain elements of the surviving buildings, specifically length to width ratios and repeated unit sizes. The evidence of the marking out posts, and the ability of the occupants to re-establish building positions and other elements of the previous building plan indicate that a record was maintained. Both these aspects of planning are attested elsewhere. Vitruvius describes the preparation of ground plans (I, ii.2), and some plans indicating dimensions have survived on stone (Carettoni *et al* 1960, 207-10) and mosaic (Pietrangeli *et al* 1958). Perhaps the most important of these is the cadastral inscription of Arausio (Piganiol 1962, 331-3), which not only illustrates in plan the information from which property plots could be recreated, but also indicates the considerable irregularity of some of the shorter dimensions used. For London to have functioned effectively, detailed civic records (such as *cadastres*) would have been essential for establishing taxation



Fig 59 Newgate Street: looking south along the southernmost part of a rebuild of the east wall of Building H (Period V.46; not illustrated on Fig 10). The dark strip to the right of the scale (which is in 0.1m units) probably marks the line of a decayed timber ground beam which terminates in the foreground at a point where an upright may have been socketed. A series of postholes to the right of the beam may have contained scaffolding intended to support the roof during the rebuilding of the wall (see p87)

liabilities and for settling the many legal disputes that urban property ownership would entail. A similar conclusion has been reached from the study of contemporary buildings at *Verulamium* (Frere 1983, 29).

Walls

The construction of the many walls found on the sites considered here can only be summarised. Most were of brickearth construction, both with and without timber supports, but there was a considerable variety in the way in which the timber and brickearth had been used. The forms of timber walling are considered first.

Timber construction

The most common form of timber construction was probably that in which the roof rested on posts set into the ground. None of the buildings probably built in this

way survived sufficiently well to permit a study of post spacing. It remains possible, however, that the identified posts merely served to stiffen brickearth wattle and daubed walls in which the mass of the wall, rather than the individual posts, supported the weight of the roof.

Timber uprights were represented by a variety of evidence. Although timbers had occasionally been preserved by soil conditions or been carbonised prior to burial, most timber positions were only indicated by the holes into which they had been set. Three types of such holes can be identified: those formed when the uprights were driven into the ground (stakeholes); those cut into the ground to take the base of an upright (postholes); and holes formed by the deposition of material around an upright (postpipes). In addition to these holes indicating individual post positions, trenches were cut along wall lines to take rows of posts. Some of these trenches were lined by planks (or perhaps hollowed timbers) which in some cases could have served as ground beams (see below). More rarely, posts were indicated by pads of stone, clay or some other firm material, which had been set to provide platforms for the timbers.

On the Newgate Street site postbuilt structures were probably in use prior to the Boudiccan fire. This was best illustrated by Building B (p 5; Fig 7), the east wall of which (III.1) was represented by a slot with post positions indicated by depressions at its base. Smaller stake or postholes between these were perhaps associated with a wattled (probably wattle and daub) infill. The line of the slot was extended northwards by a row of irregularly spaced postholes (III.4). The walls of the contemporary building to the east, Building C, were represented by slots (III.5) and might have been constructed in a similar fashion to that of Building B.

Evidence for structures of a generally similar nature was found in most later phases on this site up to Period VIII (c AD 160). The best example was that of Building J of Period VII (p 14) where the walls of the main part of the building, with the exception of some of the early internal partitions, were set into shallow and irregular construction trenches. Although post positions were not evident in these trenches (VII.2-3), the destruction debris from the building included daub fragments with clear impressions of squared timbers of a size which indicates that they are most likely to have been structural uprights (Fig 64). These illustrate the probable use of squared structural timbers in a context where no trace of the timbers themselves survived in the ground.

The Ironmonger Lane and Well Court sites produced broadly similar evidence for the use of posts set into trenches. Slots with post positions were also a common feature at Milk Street (MLK 76) where all the early buildings (to Period III, phase d) were represented by this form of evidence. This site also produced evidence of an unusual form of timber construction from a later phase (Period VI). A group of east-west aligned parallel sub-rectangular slots was traced north-south for c 8m (p 49 and Figs 42; 93). The flat based slots were 0.30-0.80m wide and c 1m to at least 1.40m long. Although they were possibly associated with the robbing of earlier material, or with the scaffolding or buttressing of a wall which lay off the site to the east, it is most likely that they formed the western part of a

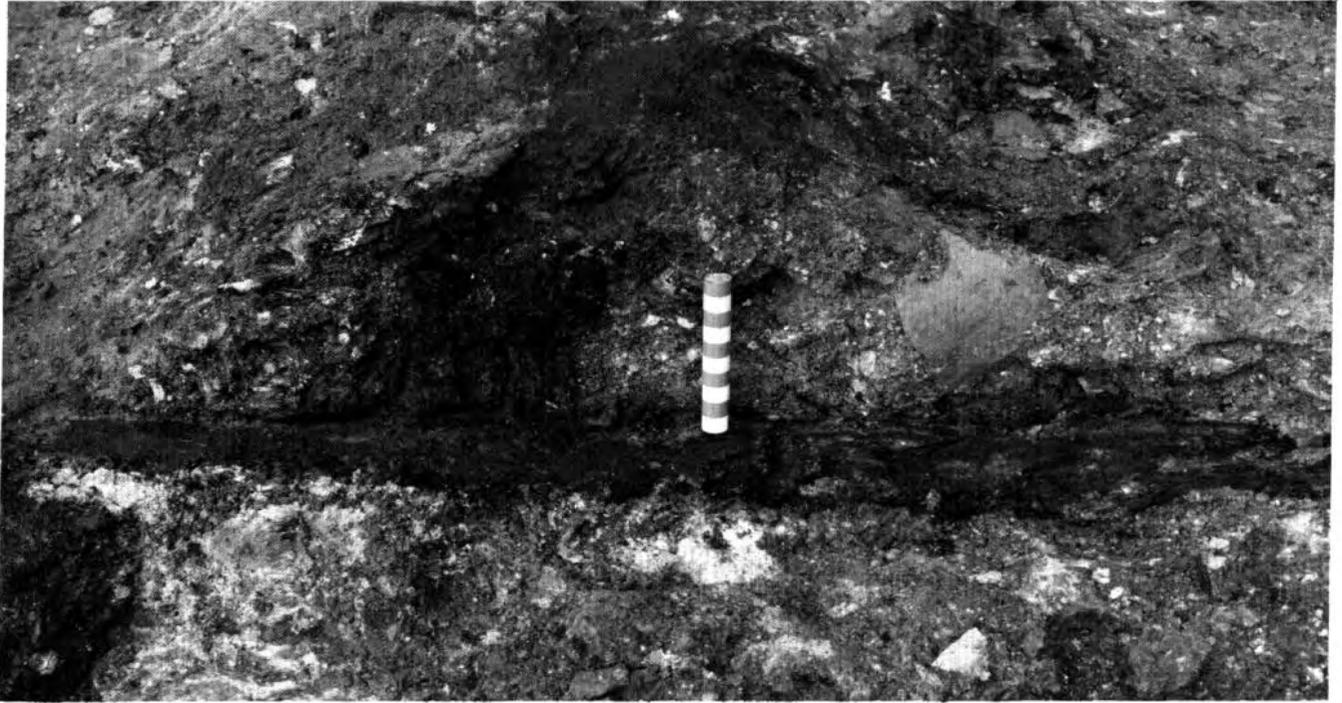


Fig 60 Watling Court: charred timber ground beam and stud from the partition between rooms i and vii of Building H (Period IV.31), seen from the south. The wall was probably built of wattle and daub and is the source of the daub fragment illustrated as Fig 65. In front of the partition traces of the opus signinum floor of the hallway (room i) are evident whilst the poorly surfaced area beyond (room vii) may have been under a stair (see Figs 29 and 33). Scale in 10mm units.

building. They could have contained floor joists, or been post pits of an unusual shape and size.

The Milk Street building was similar to an earlier structure from Watling Court, Building B of Period II (11.2) (p 29, Figs 26 and 27). A series of charred surfaces (the building had been destroyed by fire) respected the north wall of this building which was represented by three principal rectangular slots aligned north-south (0.10-0.20m deep, 0.50-0.60m wide and over 1.20m long), set 1.20-1.50m apart. Charred square planks were found within these slots (further charred timbers and slots found in this building are discussed below, p 102) and had been buried beneath the daub destruction debris.

Postbuilt structures were otherwise comparatively poorly represented on the Watling Court site. Buildings E, F, J, and N were possibly timber built as, probably, was the 'corridor' added to the north side of Building D (Rooms xii and xiii, p 30). On all the sites postbuilt internal partitions were used in buildings in which the main walls were constructed of other materials (as in Building D at Watling Court or Building K at Newgate Street).

An alternative method of timber construction involved the provision of a timber ground beam into which the timber uprights were jointed. This form of construction poses a particular problem since traces of wood were rare and there were no postholes to indicate the position of uprights. Even where traces of organic decay survived to suggest the presence of timbers beneath the infill elements of walls, these might

illustrate only the occasional use of planking to line the construction trenches and provide a level base for the infill (p 71), rather than the use of timber ground beams. A further element of uncertainty arises as clay or stone-built wall bases might have been employed to underpin timber ground beams, yet would leave remains indistinguishable from those of walls fully built in stone or clay.

Despite these problems of identification it is probable that timber ground beams were indeed a rarity on the Newgate Street site (contrary to interim statements, *eg* Roskams 1980, 403-5). The earliest example of a wall on that site which may have been built with a ground beam was a rebuild of the southern part of the east wall of Building H (V.46, *c* AD 65-85, p 10). Here, a thin brickearth strip *c* 0.20m wide, which was traced for 3.20m, served as the base for a strip of dark brown 'silt' which may represent a decayed timber (Fig 59). Nails found at both surviving ends of this strip may have marked the position of uprights, the presence of the northern of which was further implied by the recessed shape of the grey 'silt' terminal. Even if this had been a ground beam with uprights it was no more than a localised insertion and could indeed have marked a large timber lined opening into the building rather than a solid wall.

In the rear part of Building K on the Newgate Street site (destroyed at the end of Period VII, *c* AD 125) partitions were built (VII.1, p 13) with square timber uprights (40-60mm thick and 100-180mm wide) set over timber planks or beams at intervals of 0.42-0.60m, a



Fig 61 Timber ground beam with mortice holes from a mid 2nd-century building at 5-12 Copthall Avenue (Maloney 1990, p 49).

spacing dictated by the lengths of the bricks used between the posts (Figs 15; 66; 70).

At Watling Court approximately contemporary internal partitions within Building D (the rebuilt partitions as illustrated in Figs 30 and 78) were probably of similar construction (IV.6, p 30). Another internal partition on the Watling Court site (separating Rooms i and vii in Building H, see p 37 and Figs 29 and 60) was also built with timber uprights set over a ground beam, and in this case was infilled with wattle and daub (IV.31). Only one stud, 0.15m long and 0.06m wide, survived over the ground beam which was 0.10m wide and was traced for a length of *c* 2m.

In all the above examples the timber ground beams were set directly upon the ground surface. Three further walls from Watling Court (all of Period IV and all possibly part of lean-to structures) were set over foundations of clay. The south wall of Building H had a clay base *c* 1m wide which presented a flat top and was raised marginally above ground level (IV.31, p 37). Although no timber survived, the smooth surface suggested the presence of a ground beam. The south wall of Building K was virtually identical (IV.35) and in the other example, the west wall of Building G, a timber 0.20m wide was found over a clay filled trench *c* 0.05m deep (IV.28).

The evidence from the sites considered in this report is supplemented by observations elsewhere in London where because of ground conditions wood was better preserved. These observations help to illustrate more fully the type of walling represented by the ground beams.

At Copthall Avenue, in the upper Walbrook valley, three well preserved timber ground beams of a mid 2nd century building were recorded (Maloney 1982, 34; 1986; 1990). The timbers were traced along their length for up to 3m and were 0.07-0.18m wide and thick; into them a series of mortices had been cut to take tenoned timber uprights (Fig 61). On one of the timbers these mortices were squared, 60-120mm long by 40-50mm wide, and were set 0.22-0.30m apart. In another of the ground beams, traces of the uprights 0.20-0.40m apart had survived, but so poorly that their dimensions could not be retrieved; some of these uprights may not have been principal studs but lesser timbers forming part of the infilling of the wall. Notches cut into the sides of the ground beams served no apparent purpose and imply that the timbers were reused in this context; in one case the slot for a mortice and tenon joint had been set slightly out of line to avoid a large notch. Grooves, decayed wood and clay suggested that there had been a wattle and daub infill between the studs.

A timber found in a secondary context in the waterfront at Pudding Lane (Milne 1983) might have been a principal stud. The timber had survived undamaged except for the decay or abrasion of one of the end joints; this permitted the retrieval of an almost complete set of dimensions, whilst the jointing suggested the way in which the timber functioned (Fig 62). Excluding the tenons at either end, the timber was 2.30m long, 0.06-0.10m wide and 0.12-0.15m thick (much of the variation may have been due to differential contraction). A series of slots on both wide faces of the timber was clearly cut to take some form of timber or wattle and daub infill (p 76; Fig 70): these indicate that the studs were set with their wider face across the thickness of the wall. The preserved tenon was 0.18-0.20m long, which strongly suggests that it would have passed right through any ground beam or wall plate into which it was set. In fact, it is much more likely that it formed the top of the stud and had been designed to joint into both wall plate and a superimposed tie beam. If this were the case, it would provide the strongest evidence yet for the use of full box framing construction techniques in the domestic Romano-British architecture of London. The joint at what is now proposed as the base of the stud was differently positioned from that described above, but the length and nature of this tenon was harder to establish as the end of the stud, above the joint, had decayed or been worn (a condition perhaps more compatible with a position at the base of the timber).

It is conceivable that the form of construction implied by these timbers involved some degree of pre-fabrication, requiring the co-ordination of timbers in three planes onto single joints (where uprights met T junctions between wall plates and tie beams). The panel of wattle infill, as described below (p 76), is also likely to have been assembled before use. In general, however, the evidence for such pre-fabrication is poor. Buildings excavated at Valkenburg in Holland (Glasbergen 1967) suggest that almost identical methods of construction were used to those outlined in the two paragraphs above. The plans of these Valkenburg buildings were recovered completely enough for it to be established from the timber lengths and post spacings that there was no standardised pre-assembly. It seems most likely that

- 2 The more widespread form, as used in the contemporary rectangular buildings on the same site, involved the use of wattling horizontally woven around and between principal posts (Fig 70a). In both this and the first type the daub was a poorly tempered brickearth. These forms of construction are closely paralleled in the Period II buildings at Castle Street, Carlisle (McCarthy & Dacre 1983, 124-30).
- 3 By the end of the 1st century a more complex form of wattle and daub had been introduced. This consisted of vertically woven, perhaps pre-formed, panels (Fig 70b). At Newgate Street these were used between principal posts set into trenches (as in Building K) and at Watling Court as an infill within a wall of studs set over a ground beam (in the partition inside Building H). In these cases the daub had been tempered. This developed form of wattle and daub can be identified in earlier contexts outside London, notably at Valkenburg (Glasbergen 1967) and Colchester (Crummy 1977, fig 9). There were also isolated occurrences of daubed panels of interlaced laths and closely spaced parallel laths. These were also introduced late in the 1st century but only found in internal partitions.

Wattle and daubed walls were built throughout the period with which this report is concerned, but increasingly other forms of construction were employed. From the Flavian period their continued use was generally in the poorer quality buildings (such as those at Ironmonger Lane) or confined to the minor partitions (as in Building H at Watling Court).

Wattle and daub was clearly considered somewhat inferior. Vitruvius (II, vii.2), for example, complained of the instability and inflammability of the material. This inferiority is illustrated by the modern clay-walled buildings of West Africa where wattle and daub walls, held in comparative contempt, have a life span of about seven years (McIntosh 1974, 163). By comparison seven phases of wattle and daub walled buildings were evident in the Period II levels at Ironmonger Lane, a period of no more than 60 years duration. Vitruvius also made a note of some of the advantages that led to the use of the material; it saved time, money and space. The last point was clearly apparent from the archaeological evidence, since most of the wattle and daub walls stood little more than 0.10m wide. In the early and expanding city it was no doubt more important to build quickly and cheaply than well, especially for commercial buildings where any delay meant a loss of income.

The use of brickearth (often in the form of unbaked bricks) instead of wattle and daub as the infill between structural timbers represented an improvement in building practice increasingly evident from the Flavian period (Figs 70c and d). Another such improvement was probably the introduction of timber ground beams (perhaps associated with box-framed construction) (Fig 70b). The earliest examples were from the Flavian period (as at Watling Court), but the technique was comparatively rarely used.

On the sites considered here earth walling was apparently the more usual alternative to walls of earth fast posts with wattle and daub infill. However, the types of timber wall described above were widely used as space

saving partitions inside earth walled buildings (best illustrated by Buildings D and H at Watling Court and Building K at Newgate Street). The comparative rarity of walls set over timber ground beams perhaps reflects this preference for earth walling. This contrasts with the evidence from *Verulamium* where earth walling was generally a later introduction, and the use of timber ground beams (half timbering) more common (Frere 1972, 5-6; 1983, 9-10).

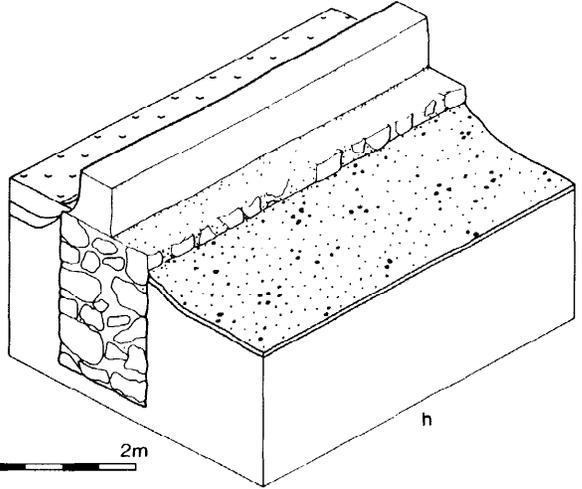
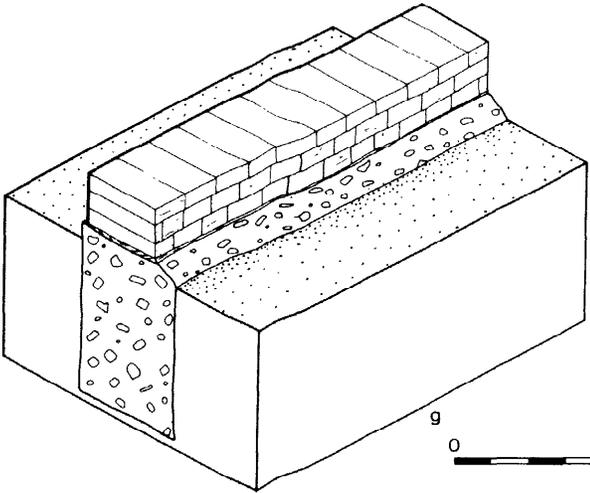
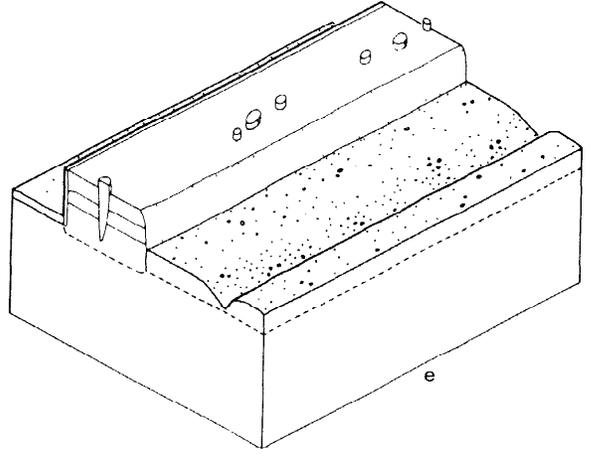
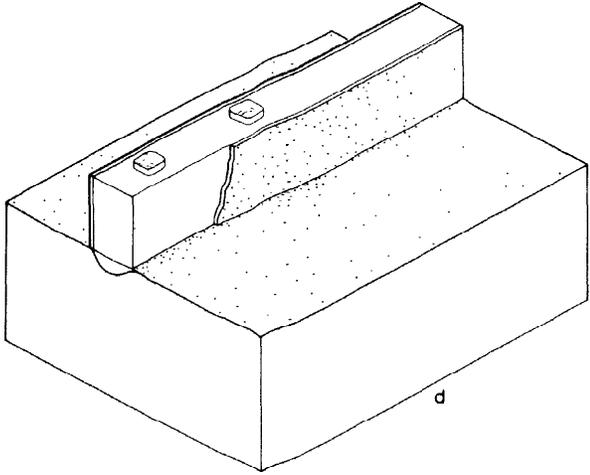
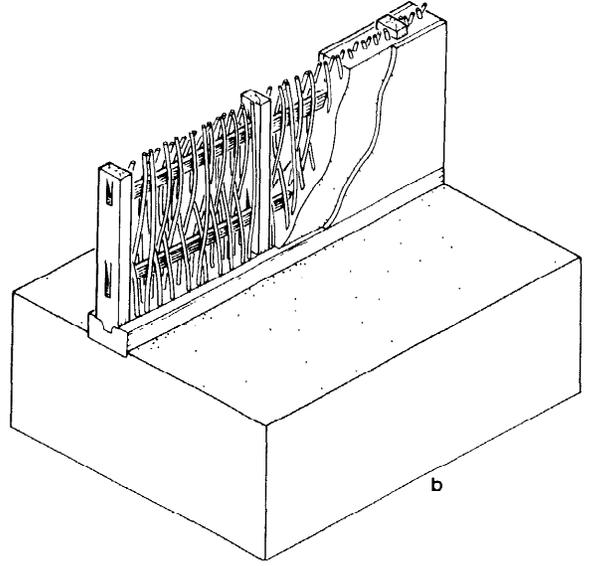
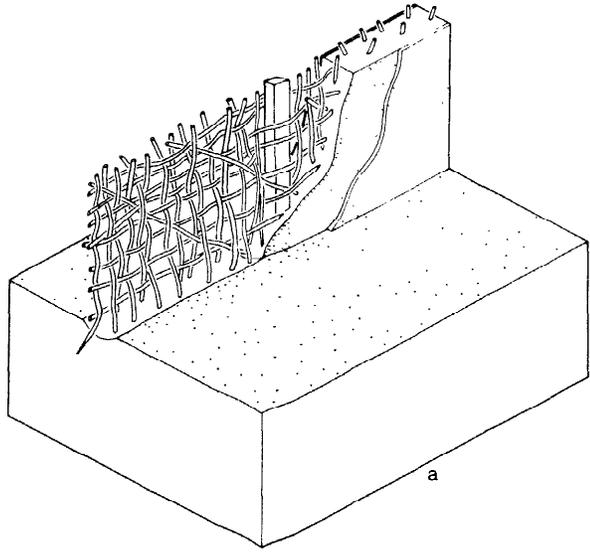
The earliest recorded earth walled building, destroyed in AD 60, was found beneath the south-east corner of the Forum (Fig 70a). This, with its clay block (*adobe*) construction, closely parallels buildings from Colchester (Crummy 1977, 71-4) and Lyons (Desbats 1981, 55-81). The early date for this construction no doubt reflects the central location of the building.

The present sites all lay on the edge of the early settlement and earth walled buildings were not erected on them before the Flavian period. In some walls the brickearth had been preformed into bricks, in others the walls had been moulded out of still plastic brickearth (Fig 70c). Evidence for the use of shuttering was inconclusive. Batten impressions probably left by the shuttered construction of *terra pise* walls have, however, been noted at *Verulamium* (Frere 1983, 161) and this form of construction might have been used in London too. In some of the better buildings the clay walls had been set over stone or tile foundations (Figs 70f, h, and i).

This growing preference for clay building was accompanied by a number of other improvements, notably the provision of mosaic floors and painted walls (note the contrast at Watling Court between the wattle and daubed buildings of Period II and the earth-walled houses of Period IV). The most evident advantage of this type of construction was its greater durability. In the same study of West African clay walled buildings, the earth walled buildings were found to last, on occasion, for more than seventy years (*ie* 10 times longer than those of wattle and daub) (McIntosh 1974, 163). Earth walled buildings at Watling Court (Buildings D and H) apparently stood for some 40 to 60 years, throughout Period IV, before their destruction by fire.

In the 2nd century, amongst many other changes, clay and timber construction techniques were largely abandoned in preference for building in stone. A similar development occurred at *Verulamium* (Frere 1983, 10) and perhaps at Colchester (illustrated by buildings in *Insula* 17; Hull 1958, 148), although it should be noted that this process was not universal; some clay walled buildings were in use in 4th century Colchester (Crummy 1984, 23) and in London clay walled buildings were constructed over the site of the Huggin Hill baths in the 3rd century (P Rowsome pers comm). In south-east Britain stone built villas were rare until the 2nd century, and in many cases a change from timber to stone can also be demonstrated at or about this period (Williams 1971, 169).

The initial adoption of timber and clay was presumably in response to the rapid urban expansion consequent on the Roman conquest. The materials lend themselves well to fast and economical construction. This would have been important during most of the 1st century when long term uncertainty would have kept investment levels to a minimum. The late 18th century, another period of rapid expansion, also saw a boom in



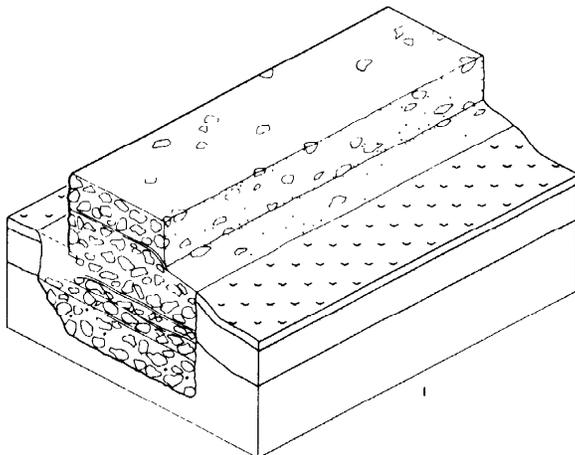
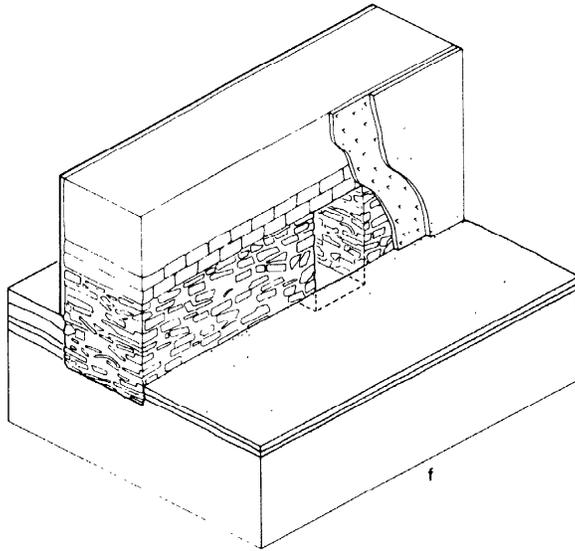
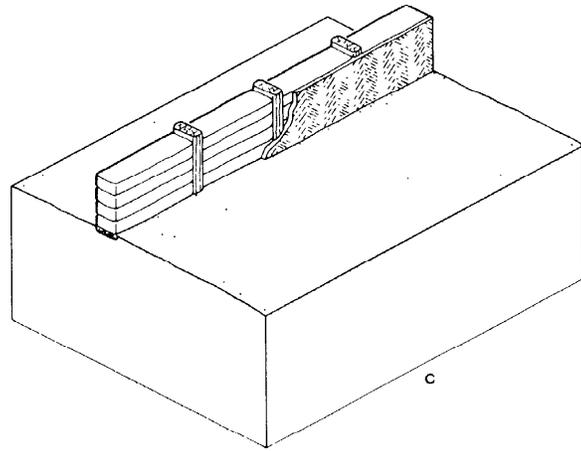


Fig 70 Axonometric reconstructions of some of the main wall types: (a) Wall of posts set into the ground, with an infill of wattle and daub using horizontally woven wattles. Based on the evidence of the daub from Newgate Street Building B (Period III.38, c AD 50/55-60). (b) Wall of timber studs set over a ground beam, with an infill of wattle and daub using vertically woven wattles around horizontal laths. Based in part on the evidence of the daub from Newgate Street Building J (Period VII.49, c AD 100-120; see Fig 64), and supplemented by evidence from several other sites (see Figs 60 to 62). (c) Wall of timber studs with an infill of dried bricks set over a timber plank or ground beam. Reconstructed from the evidence of the partition between rooms v and vi in Building K at Newgate Street (Period VII.1, c AD 100-120). See Fig 71 for another view of this wall. (d) Wall of brickearth with irregularly spaced timber stiffeners, as exemplified by the partition between rooms vii and ix in Building F at Watling Court (Period IV.18, c AD 75/90-120). (e) Earth wall with stakeholes and, in section, a series of lifts associated with a rebuilding of the wall. This example is the east wall of Newgate Street Building K; see also Figs 14 and 89. (f) Earth wall set over a base of tiles set in brickearth and two courses of dried bricks. The example used is the wall between rooms ix and vi in Building H at Watling Court (Period IV.31, c AD 70/80-120). This also illustrates an air-vent set through the wall (see Figs 33 and 85). (g) Wall of large dried bricks ('adobe') set over masonry foundations. Reconstructed from evidence at 160-62 Fenchurch Street (FSE 76) (pre-AD 60; see also Fig 69). (h) Earth wall over masonry foundations. This example is the east wall of Building D at Watling Court (Period IV.2, c AD 70/80-120), with an opus signinum floor inside the building and a gravel alley in the foreground, (cf Fig 31). (i) Masonry foundations supporting a masonry dwarf wall. The wall divided rooms ii and iii, both of which had floors of opus signinum, inside Building L at Watling Court (Period IV.38, c AD 70/80-120).

the construction of earth walled buildings. A comparatively sudden and high level of demand could be satisfied in this manner prior to the mass production of bricks. The introduction of stone indicates an increased level of investment in domestic building.

One of the main disadvantages of the earlier buildings must have been the fire hazard posed by timber and thatch. This hazard left a clear archaeological record in the numerous fire horizons (Fig 56). At a much later period, the London building assize of 1189 (Riley 1859, 328-9) encouraged the construction of stone walls in an attempt to reduce the fire risk and it would seem probable that then, as well as in the 2nd century, this risk was one of the main reasons for the preference for stone. There were, however, other advantages, among them the durability of stone and the greater ease with which heating systems could be safely used. In Roman London the durability of stone building is best illustrated by the 2nd century stone structures recently excavated along the waterfront (Milne 1985, 127-41) which apparently continued in use well into the 4th century.

The introduction of stone was one aspect of a major change in domestic architecture between the 2nd and 3rd centuries (p 107) and as such reflects changes in the character of the settlement after its contraction in the mid 2nd century (p 120). It is also possible that the previous exploitation of brickearth and timber had diminished easily available supplies, resulting in an increase in their cost and a decline in their competitiveness with stone. Furthermore, the earlier public building works in stone had perhaps established

the mechanisms (such as quarries, transportation systems, and skilled masons) and the taste for stone building which could now be applied to private houses.

Wall finishing

After their erection most, if not all, the walls were finished off by the application of protective and decorative skims. Most of those identified were of clay (brickearth) or plaster; although in a couple of examples (the external face of the southern wall of Building F at Watling Court (IV.17) and perhaps the eastern wall of Building K at Newgate Street (VII.21)) weatherboarding had been attached over a plaster face (Fig 14). This would have served to protect the lower part of the brickearth based wall from eavesdrip splash. Where evidence was available (as at Building D at Watling Court) walls were plastered before floor surfaces were laid.

Clay

A thin scrim of brickearth, 10-30mm thick, was applied to the faces of many of the clay based walls. The brickearth was sometimes tempered with organic material and in certain instances sand may have been added. Scrim was clearly identified on the surviving dried brick partitions and in the daub retrieved in excavation, with the exception of the Newgate Street



Fig 71 Newgate Street: detail of the chevron pattern impressed into the south face of the wall between rooms iv and v in Building K (Period VII.9; Fig 13). Scale in 10mm units.

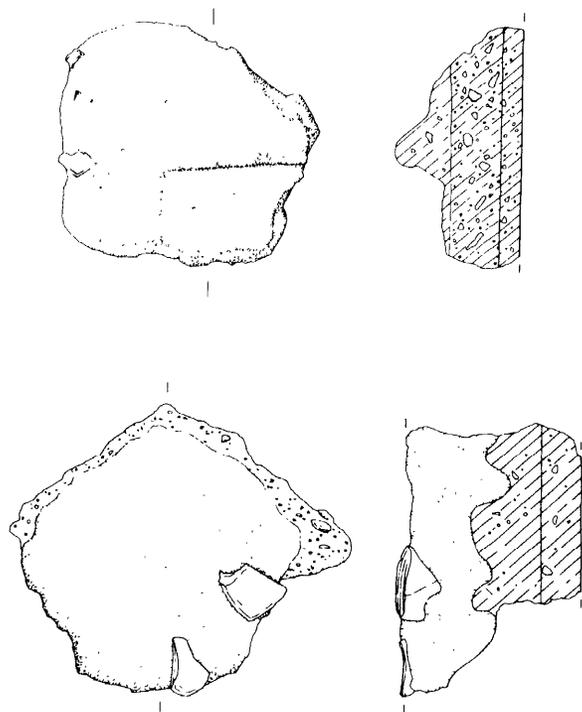


Fig 72 Plaster-fragments from the destruction of Building H (IV.52) at Watling Court (plaster cross-hatched), illustrating parallel groove-keying for the wall plaster. Scale: 1:2.

Period III wattle and daub buildings, where the daub was roughly smoothed off. Only in Building B was an outer scrim applied. The use of applied clay scrims on other types of earth walls was more variable. The main walls of Building K at Newgate Street were left unclad but the tile based walls of Building H at Watling Court were clay coated. The claddings seem to have been used to close up the cracks and gaps left in brick, daub and tile construction. They also completely coated any timber studs, presumably as protection from extremes of temperature and humidity.

The finish varied. The dried brick partition in Building H at Watling Court (IV.31) was smoothly finished in its entirety, but more usually the clay was prepared with an impressed pattern to serve as a keying for plaster work, or as a decoration in its own right. In Building J at Newgate Street most, if not all, of the impressed pattern had been left unplastered. In some other cases such scrims were used to substitute for the plaster backing behind the thin lime plaster face of a painted wall. Two types of configurations of the ridges and furrows of the keying were identified in material from Building J (VII.49). These were a diamond lozenge pattern and a chevron pattern (Fig 64). The chevrons could have represented the edges of diamond patterns or have been an entirely separate design, perhaps herringbone. The daubs were too fragmented to determine the sizes of the panels used, although the impressions indicated that they exceeded the width of one lozenge.

A similar diamond lozenge design survived at Watling Court in the south wall of room i of Building H. The vertical joint between two panels was visible and it was clear that each was at least one full diamond width across. Although complete units had not survived their width could be estimated at between 0.17-0.24m. The design and dimensions are paralleled by better preserved material from Colchester (Crummy 1977, fig 10), and in both cases could have resulted from the use of a roller stamp or press stamp.

A more delicate diamond lozenge pattern was represented in the destruction debris of Building F at Watling Court (IV.48), where applied plaster indicates that it had served as a keying, although the plaster could have been added at a later date. An incised chevron pattern, with panels c 105mm wide, was used decoratively within room v of Building K at Newgate Street (VII.1) (Figs 70c and 71) and a deeply incised parallel ridge and furrow (Fig 72) was used as a keying for plaster in room i of Building H at Watling Court (IV.52).

In most cases it would seem that the patterns were decorative rather than keying for plaster, but their contexts suggest that they were probably considered somewhat inferior to plaster.

Plaster (Pl 5; Figs 73 and 74)

The wall plasters from three of the sites (Watling Court, Newgate Street, and Milk Street (MLK 76)) were examined in detail by Gill Craddock (1984) from whose report this summary is derived.

Nine types of backing for a painted finish were identified, in addition to one which was the outer scrim. Of these, two were modified brickearths, and are discussed with the clay wall claddings above. The others were lime plasters which could be subdivided on the basis of the colour and nature of the inclusions identifiable under x20 magnification.

Chalk inclusions noted in all the plaster types varied in size but were consistently present and may have been the result of inadequate slaking. All types were either pinkish or whitish, the difference due to the colour of the quartz used in the sand added to the lime to make the plaster.

Ceramic fragments found in some plasters, almost exclusively in Buildings D and H at Watling Court, probably represent the use of crushed tile as an additive. This process was recommended by Vitruvius (VII, iv. 1-3) and the Romans were aware that a non hydraulic lime could be converted into a hydraulic type by the addition of pozzolanic material or a pozzolanic substitute such as crushed tile (Davey 1961, 102). The presence of the ceramic can therefore be seen as an improvement to the plaster, especially valuable as the types of wall in use would have had a high moisture content and been vulnerable to moisture flow and rapid evaporation.

Calcite was also found in some of the plasters of Building D at Watling Court. Marble is mentioned as an additive by Vitruvius (VII, iii. 6), a term which could also be taken to include calcite (Ling 1976, 212). The advantage of this is not clear.

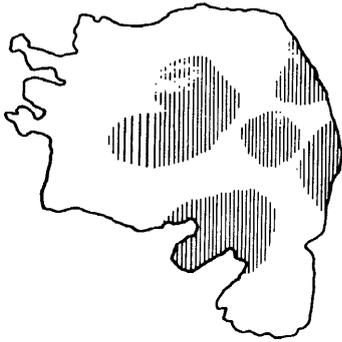


Fig 73 Watling Court. Red-painted floral motif used in the decoration of room i in Building H. Scale: 1:2.

The plaster was finished with an outer scrim which in most of the sampled cases was c 1mm thick. Watling Court produced most instances of scrims in excess of this, while the Newgate Street site had a preponderance of scrims c 0.5mm thick. It seems reasonable to assume that thicker scrims would have permitted a higher quality of finish but might have required more care in application.

Seven colours were used in the painted decoration. Of these white was by far the most extensively used, followed by red, black and, more rarely, green, yellow, blue and brown. Egyptian Blue, which incorporates calcite, was used with some frequency at Watling Court.

The Newgate Street plasters were the least sophisticated (in terms of additives) and utilised the most limited palettes. Technologically the plasters in Building F at Watling Court were no better than those from Newgate Street, whilst those of Building D at Watling Court were the most developed. This scale of sophistication reflected the evidence of the walls and floors of these buildings.

The painted decoration consisted almost entirely of simple bands and panels of colour. The largest group of material was from Building H at Watling Court where large panels of plaster collapsed in concertina fashion onto the floor of the building prior to the collapse of the walls (Pl 5). Although precise schemes of decoration could not be established it was possible to gain a general impression of the decoration of the rooms.

In room i the decoration consisted primarily of red, yellow and also some green blobs on a white background. The blobs clearly formed floral motifs of which one with four heart-shaped red painted petals predominated (Fig 73). Smaller quantities of red painted wall plaster, which had perhaps formed a border or small panel, were also found, as were elements of red and yellow stripes.

White painted wall plaster survived to a height of c 1m on the wall between rooms iii/ix and vi in the same building (IV.31) (Fig 88). The collapsed destruction debris (IV.52) (Fig 35) indicated that, above this, red panels were separated from the white by a black border. Vertical and horizontal green stripes on white had perhaps 'framed' these panels and formed pilasters between them. Further fragments with a white background bore green painted lines, probably stalks

and tendrils, attached to which were green and black blobs perhaps supposed to be fruits and berries. This was only represented by a small group of fragments and might have formed a frieze above the red panels, or been inserted to form motifs between the panels. All the other rooms in the excavated part of this building were provided with white-painted walls, which in rooms ii and vi featured some red-painted horizontal or vertical lines.

In Building D the destruction debris (IV.43-45) had survived poorly, rendering the identification of general schemes of decoration almost impossible. In room ii the plaster was predominantly white with some blue, whilst most of the plaster from room viii was red. Some plaster incorporated into the floor of room iii may have originated from a painted wall in this room and had been painted blue with small areas of red separated from the blue by a white band. It is likely that most of the other rooms of this building had been painted, with the probable exception of the corridor (rooms xii/xiii).

All the rooms within Building F were plastered, but only in rooms i, vi and ix was this plaster decorated. In room i red painted fragments predominated. Rooms vi and ix were both painted in red and blue with the use of a white stripe. In room ix the coloured element was clearly the smaller part of a white painted wall.

At Newgate Street small quantities of predominantly white painted wall plaster were found in Building H of Period VI, but only Period VII produced enough evidence for schemes of decoration to be identified. In Building J room v of both 'builds' was provided with painted wall plaster, as was room viii. Destruction debris from the northern part of the main building (rooms iii/iv) suggests that a plastered room may also have been located in the area. In all cases the plaster was mostly white painted with some areas of red, and with black bands. In Building K painted walls were attested in rooms iii, iv and ii (including its northern wing), whilst in the later phases of the building room ib also had painted walls. These were all similar to those in Building J, although room iii may have been predominantly red. The concentration of painted wall plaster in the rooms to the rear of these buildings is of particular interest and will be further referred to below.

A group of plaster from Milk Street is also of some interest. The Period III phase F collapse consisted of areas of white with red, black and yellow splashes, perhaps an attempt to create a marble effect; a smaller red painted area with a marbling of blue, white and yellow spots; and brown painted tendrils on a yellow ground. These marbled areas and 'floral' design were separated from each other by broad horizontal bands of red, blue/green and black, with narrower white stripes. A more complex motif found on a fragment of plaster from debris in the Period VII well (Fig 74) is the subject of the following note prepared by F Grew:

The plaster is fragmentary and worn, so much so that the painting can be understood only partially. Outlined in black on a natural white plaster background is a cantharus with double-knopped pedestal base. It stands on an unrecognisable element, which is almost completely lost, and appears to contain a blue globular 'pot' from which spring five black stalks, symmetrically arranged; one of them terminates in an oval,

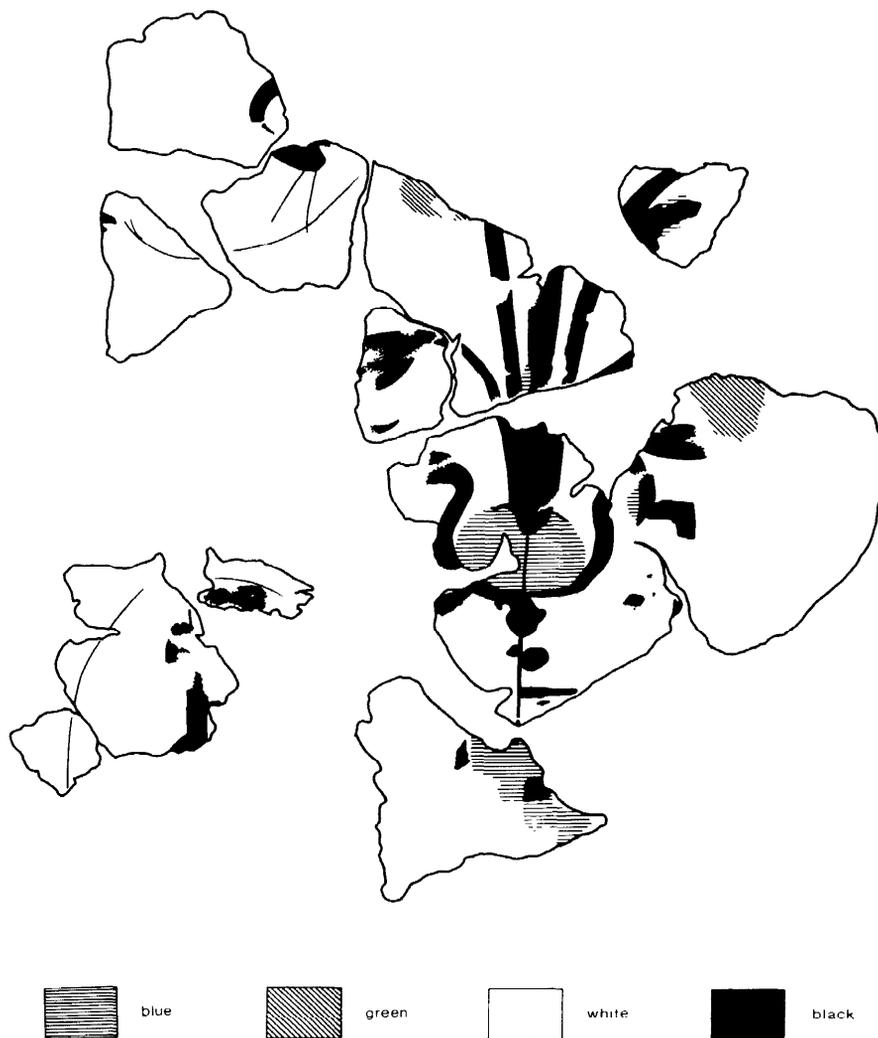


Fig 74 Fragment of painted plaster with cantharus motif from the Period VII well at Milk Street. Scale: 1:2.

laurel-type leaf. A straight groove, which probably was made with the point of a trowel and which runs along the central stalk and through the cantharus, seems to have been used to mark out the design.

The motif appears to have been a common one in the repertoire of late 1st and 2nd century British wall-painters, usually appearing in combination with other such motifs to form an elaborate floral and architectural fantasy which covers almost the whole wall. Examples from Leicester (Davey & Ling 1981, 22) and Winchester (*ibid*, 47) show how tendrils, leaves and volutes could be piled one on top of another to become delicate composite candelabra joined laterally by bars and pendant festoons. In comparison with these, however, the London fragment is drably painted on a white ground, rather than the red or black typical of the Flavian and Trajanic periods.

Fencing and scaffolding

A number of post alignments did not form the walls of buildings. Some were probably fences, as in Period IV at Newgate Street (Fig 9), in which it is most probable that a wattle infill, not necessarily daubed, had been used between the posts; an example of such fencing where both posts and wattles survived has been recorded at Bucklesbury (Grimes 1968, 132; fig 29).

In other examples the lines of posts had been built next to walls (Figs 14; 50; 59). There were several examples; the best such was a post line set immediately inside the east wall of Building H at Newgate Street (V.46). Ten stakes had been driven up to 0.48m into the floor surface of the room, on a line parallel to the wall, at intervals of 0.22-0.41m apart (centre to centre), with a mean of 0.34m. This post line was inserted during the use of the building, but apparently predated a rebuild of the wall as described above (p 72). Further examples were found in Buildings C (III.7) and K (VII.29) on the

same site, also adjacent to walls which had been rebuilt in isolation from the rest of the structure. The stakes were most probably inserted to support a ceiling or roof whilst rebuilding was in progress. On the assumption that tie beams (the laterally bracing members set over the tops of the walls) would not have been used at 0.34m intervals, these supports are likely to have been inserted for rafters, in which case each upright would have supported a single rafter, or were collectively supporting a wallplate (the longitudinal member capping the wall). The near regularity of the spacing and distance from the wall under repair gives some support for the hypothesis that the uprights supported individual rafters (p 94).

In addition to the construction scaffolding which these cases suggest, there were also instances where post positions associated with destruction levels were likely to have been part of the dismantling process; an example is the early Period III activity on Watling Court (p 29).

Floors and mosaics (Pls 6-8, Figs 75-82)

There was little evidence for the use of timber floors. Slots in Building A at Watling Court (II.2) and the Period VI building at Milk Street may have supported timber floors but otherwise joist and plank floors were probably rare on the sites considered here.

Most of the house floors were surfaced with brickearth although gravels were also occasionally used. These poor quality surfaces were frequently repaired during use. Other types of floor were rare except at Watling Court. At Newgate Street all but two surfaces were of brickearth or gravel. The exceptions, in room ib of Building K (VII.29) and room v of Building J (VII.4) (Fig 16), were both of concrete or mortar. The presence of plastered walls in these rooms suggests that the use of mortar reflected the higher status of the rooms rather than an intended heavy use.

On all sites the mortar floors sampled were well cemented mixes of aggregate and cementing agent (analysis by Marie Barker). The cementing agent consisted of slaked lime or chalk. The most common aggregate was flint pebbles. These were usually angular rather than rounded, perhaps implying selection as natural gravels tend to be rounded. In one instance (Building Q at Watling Court, (V.21)) a sandstone (Hassock) might have been employed as an aggregate with the flint; baked daub was also used in this context. Tile fragments were also used as an aggregate, forming 42-86% of the sampled mortars; floors incorporating tile or ceramic are generally referred to as *opus signinum*. This was a common flooring material on the Watling Court site.

The floors varied in depth, with *opus signinum* generally thicker (*c* 0.10m) and apparently laid without special foundation unless used with mosaic floors. *Opus signinum* was also used to make red quarter-round skirtings between wall and floor in some rooms, as around the Milk Street (MLK 76) mosaic; similar mouldings were also made of red painted plaster.

At Well Court a pavement of tiles laid in a herringbone pattern (*opus spicatum*) had been laid over an *opus signinum* bedding in Building G (V.8-9, p 54) (Fig 50). The pavement had been very badly damaged in

the fire (or perhaps before the fire) but a number of loose red tiles were found (most measured 94-100 x 58-66 x 23-26mm although one tile was 122 x 65 x 25mm).

The mosaic floors were constructed with care. The Period VII Milk Street (MLK 76) mosaic was laid over an *opus signinum* base resting on a brickearth construction slab. At Watling Court a preparatory gravel bed (0.10-15m thick) in Building D (IV.2) supported an *opus signinum* floor in room x and a tessellated pavement over pinkish cement in room xi. In room viii of the same building the mosaic was supported by *opus signinum* over gravel. The crushed tile and mortar would not only have spread the floor load but also served as a damp proofing course. The mosaic in room viii was set into a thin white cement bedding over the *opus signinum*, which appeared to have been faintly scored along the lines later adopted by the tessellated design. These perhaps served as guide lines (see below).

Most *tesserae* were of hard white chalk; occasionally white and grey-white limestone tesserae were used, some of which did not originate from south-east Britain. The grey-black *tesserae* which, combined with the white, formed most of the designs proved puzzling on analysis but are considered most likely to be a heat-treated mixture of clay and crushed chalk (analysis by Dr T G Greensmith of Queen Mary College London with Dr E Robinson of University College London). A number of *tesserae* were made of red chalk and red-stained white chalk. Ceramic *tesserae* were rare in the early levels, but were used in the later Milk Street mosaic for buff and red; chipped tile fragments provided the red.

The pavements in Watling Court

by David Smith

Fragments of pavements were found in Buildings D, F, and H, all constructed in the Flavian period, Building F being slightly later in date than the others (Fig 39). All were destroyed by the Hadrianic fire in the 120s. The *tesserae* in the fragment surviving in room viii of Building D were irregular but notably small cubes of *c* 5-7mm, but those in the other fragments were generally irregular cubes of *c* 10-15mm such as were normally employed in Roman *opus tessellatum*. The predominating colours were black and white.

In the dimensions of the rooms the north-south measurement is given first.

(a) Building D, room viii (IV.2) (2.15 > x *c* 3.85m) (Figs 75 and 76)

In this room there remained only a roughly triangular fragment of mosaic preserving decoration in black on white. Its length was *c* 2.0m, its maximum width *c* 0.60m. The *tesserae* had been bedded in white mortar of little depth laid on a foundation of *opus signinum*. Lines scored in the latter apparently corresponded with the pattern.

Along the longest side ran a band of elongated black isosceles triangles, contiguous at the basal angles. Their width at the base was *c* 100mm and their height *c* 200mm. The apices were tangent to a

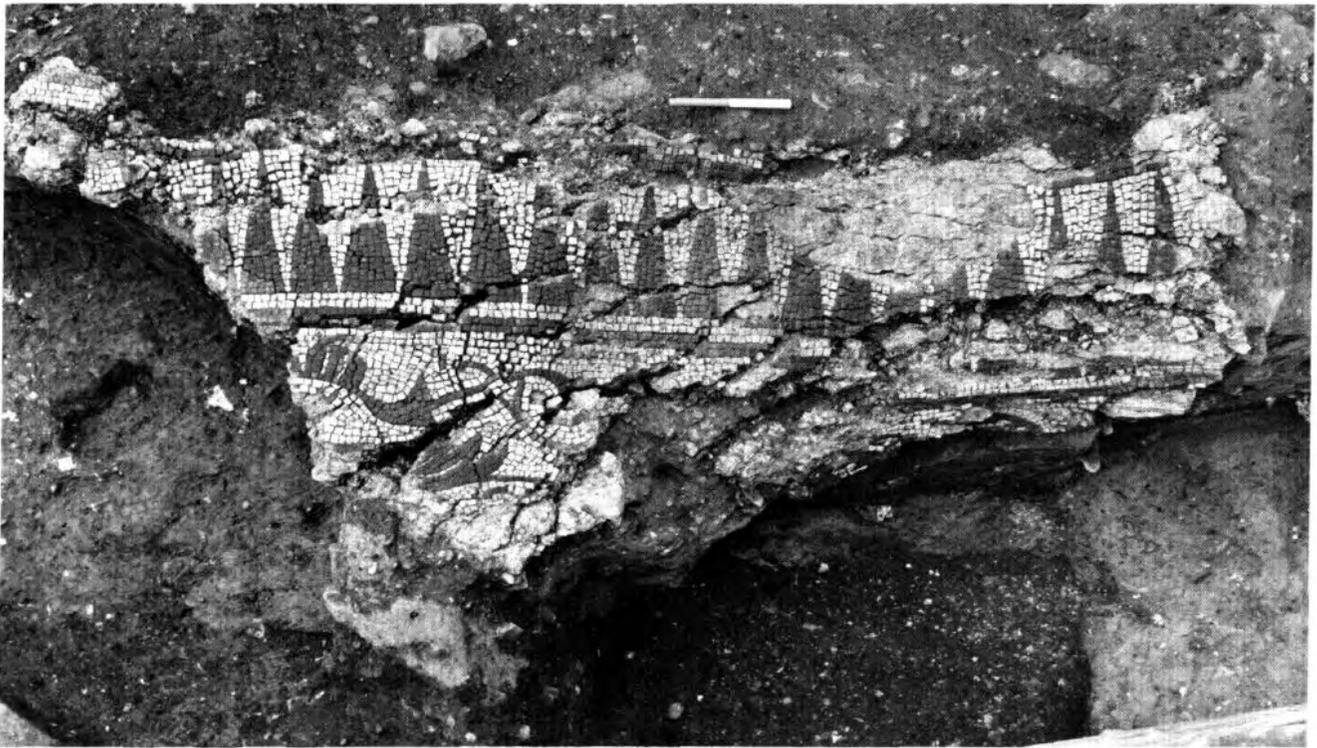


Fig 75 Watling Court: mosaic pavement in room viii of Building D (IV.2), viewed from the south; see also Fig 76.

double fillet (*ie*, two contiguous rows) of black *tesserae*. On the other side of this there was a triple fillet of white and then another double fillet of black. In the rest of the fragment was part of what appears to have been an irregular, conventionalised pattern of foliate tendrils. The band of triangles suggests a border, with their apices pointing outwards. The foliate pattern was probably an inner border.

As a straight band bordering a mosaic, the pattern of tangent elongated isosceles triangles is unparalleled in Britain, but an exactly comparable band borders a 1st century black-and-white mosaic in Pompeii (Blake 1930, 106-7, pl 26,3: *cf* 23, 2, 27, 3). There is no reason to doubt that this mosaic was laid towards the end of the 1st century.

The guidelines for the pattern are interesting both as a rarely observed instance of preparatory procedure by a Roman mosaicist and as the earliest instance known in Britain.

(b) Building D, Room v (IV.4 and IV.6) (4.00 > x 5.15m) (not illustrated)

The pavement in this room was of *opus signinum*, containing red fragments of tile, and may have included a central rectangular panel of mosaic measuring an estimated 1.85 x 1.85m; only a narrow strip of black border survived of this panel. This may have been the pavement uncovered in 1877, recorded only as consisting of a border of red *tesserae* with others of white and black. (Merrifield

1965, site 87, but note that the reference to *J Brit Archaeol Assoc* should be vol 33, 260, *not* vol 38, 260; Perring 1981, 106).

(c) Building D, Room vii (IV.4) (? x 2.9m) (not illustrated)

This room had a pavement of *opus signinum*, compounded with fragments of tiles and relieved by a pattern of regularly spaced crosslets formed of five *tesserae*, the central *tessera* black and the others white. Little remained, however, and the possibility that the pavement also incorporated other decorative features cannot be excluded: see Pavement 2 of room iii (below).

(d) Building D, Room iii (IV.6) (3.1 > x 3.75m) (Pls 6 and 7; Figs 77-9)

This room preserved remains of two pavements, one (Pavement 2) laid on the other.

The first pavement (Pl 6; Fig 77) was of *opus signinum*, compounded with fragments of buff-coloured terracotta. It was relieved by a pattern of crosslets, like that in room iii, spaced at intervals of 400mm. Sufficient survived to suggest that there was no other form of decoration.

The second pavement (Pl 6; Fig 78 and 79) was also of *opus signinum*, but compounded with fragments of tiles, and again relieved by a pattern of crosslets, here spaced at intervals of 170mm. In the remains of this pavement, however, were three roundels of *tesserae* *c* 230mm apart. Each roundel

(g) Building H (IV.52) (Fig 34)

Amongst debris collapsed from an upper storey were remains of a mosaic. The *tesserae* were black and white, the white predominating, but unfortunately insufficient survived to suggest the design or pattern.

Evidence for a mosaic in an upper storey has not hitherto been positively identified in Britain.

(h) Miscellaneous fragments

The excavations also yielded a fragment of mosaic of white *tesserae*, and one of black *tesserae* in *opus signinum*, both fragments *c* 100mm square.

The mosaic at Milk Street (Pl 8, Fig 82)

by David Smith

Sufficient remained of this mosaic (from a Period VII room, 3.30 x 12.68m) to show that it depicted a cantharus within first a linear circle and then a circle of *guilloche*, the latter contained in a square of *guilloche* surrounded by a dark band, the whole forming a panel *c* 1.64m square. In each angle of the *guilloche* square was a heart-shaped leaf, point outwards, with a stem split and curving in opposite directions with both ends terminated by a short crosspiece.

The lower part of the body of the cantharus was represented as gadrooned and with a cushion-shaped stem and conical foot. The gadroons on either side, and also at least the sides of the upper part, as well as the handles — voluted at both ends — were rendered in red. Red was also employed in the tips of the leaves. The other colours, apart from the white of the background, were buff and three shades of grey. The panel was executed throughout, including the outer grey band, in *tesserae* approximately 12.7mm square and was set in a pavement of slightly larger white *tesserae*. The edges of the pavement were overlapped by a surrounding quarter-round moulding of *opus signinum*.

External evidence suggests the 2nd century as the period of the mosaic; and the remains of the cantharus, the outer dark band, and the general character of the panel would be compatible with a dating between *c* 140 and *c* 200. Neal (1981, no 64) notes a single black *tessera* in the upper part of the vessel which may have been all that remained of a swastika-like feature as seen in canthari in certain mosaics of the mid/late 2nd century in Britain (*cf* Smith 1975, pls cxiii, 1; cxvi (Neal 1981, no 39), cxxi, 2 (Neal 1981, no 75)). The subject was presumably chosen as a symbol of conviviality.

Roofing and other aspects of building superstructure (Fig 83)

There was little evidence for the upper parts of these buildings. The depth of the debris from the better preserved destruction horizons (rarely in excess of 0.4m) was generally consistent with the collapse of single storey structures (p 78). Of the buildings considered here only one, Building H at Watling Court, can be said

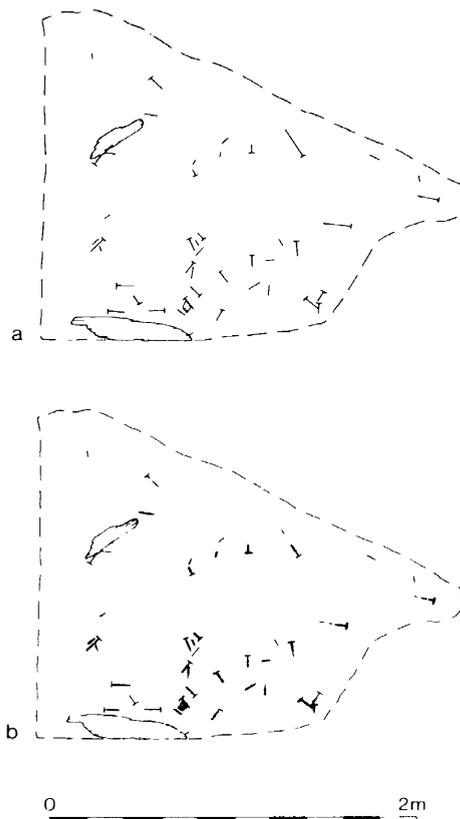


Fig 83 Watling Court: part of a collapsed timber structure held together by nails, found in the destruction debris over Building A (II.5). (a) The distribution of nails as found, (b) suggested lines of reconstruction of the timbers. Scale: 1:40.

with any certainty to have had an upper storey. Here the debris (IV.52) was in excess of 1m thick and the walls were slightly wider than normal (p 79). The best evidence for an upper storey, however, was a band of articulated *tesserae* bedded in mortar and found inverted within the destruction debris over the floor of room i. The context and nature of the pavement strongly suggest that it had collapsed from an upper floor (p 38).

Collapsed timbers associated with nails and charcoal spreads were found in some of the buildings destroyed by fire, including buildings in which it is unlikely that nails had been used in wall construction (as Building K at Newgate Street, VII.49). Most of the nails were flat, disc-headed and 50-80mm long, with heads 1-3mm thick and square-sectioned shanks tapering from 4-8mm to a point; many had not been clenched. None of the timbers was well preserved but some, if not all, were circular sectioned, and 50-100mm in diameter. In one example, from Building A at Watling Court (II.5) (Fig 83), it can be suggested that the timbers had been nailed together grid-fashion. The most likely context for such an arrangement would have been in the attachment of common purlins to rafters in the construction of the roof. The use of rafters at 0.34m centres is deduced above (p 87) as an explanation of post alignments along the inner faces of some walls.

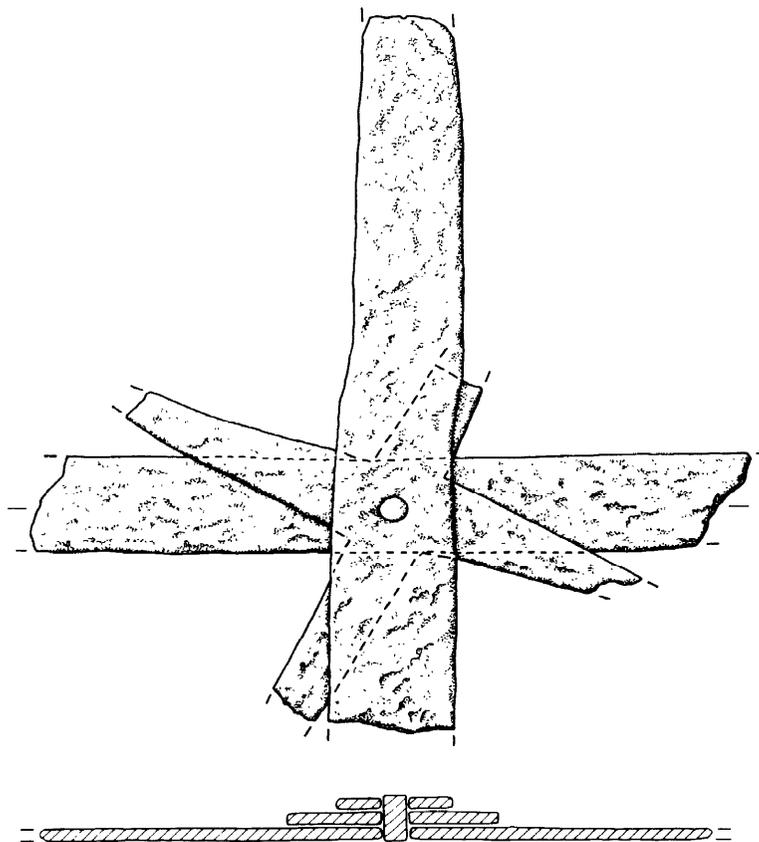


Fig 84 Watling Court: fragment of an iron window grille from the destruction debris of Building L (Period IV.57). Scale: 1:2.

Larger nails were found in certain instances, notably the considerable quantity in the destruction debris of Building H at Watling Court (IV.52). The end of several of these had been clenched. The only nearly complete example from this group was *c* 130mm long and had been bent at a point *c* 75mm from the head. The form of the nail was similar to those of the smaller nails, but larger. Iron bindings were also found in this debris. This group of iron objects was unusual and is most likely to have derived from a specific piece of furniture or fitting (such as a strongbox).

Although it is probable that nails were used in the construction of certain buildings there were others for which such evidence was not forthcoming despite comparable survival. The Period III buildings (most notably Building D) at Newgate Street produced few nails in their destruction debris and it is unlikely that any had been used in their roofs. This was perhaps also true of Building F at Watling Court: from the limited evidence the nails seemed to have been used in more sophisticated structures.

Roof tiles were absent from most of the fire destruction horizons. Where such tiles were found, over Building H (and to a lesser extent Building D) at Watling Court, it is likely that they had been used in the wall construction. Thatch, or perhaps shingles, is likely to have been the roofing material for the buildings considered here.

Drains from Well Court, Milk Street and Newgate Street were found immediately adjacent to the buildings they served (p 100). These were probably open and it is likely that they had been positioned so that they could also function as eavesdrips: at Newgate Street the drains added to the sides of Building K (VII.21) were set *c* 0.10m from the walls. At Well Court the sequence of drains at the street frontage (Fig 48) were on average *c* 0.30m from the wall line.

Internal Appointments

Doors, windows, and other apertures

(Figs 84 and 85)

Surprisingly few doorways were found. This was at least partly due to an unusually low rate of survival; Building F at Watling Court (Fig 30) was traced in plan over a large area but, in all but one case, the doorways must have been in areas cut away by later pits. In the timber buildings the deficiency is accounted for by the fact that doorways needed no special construction: the load bearing timber uprights could also serve as the doorframes. It was only possible to locate thresholds by the extent of the occupation surfaces. The clay built structures, however, required the insertion of timber



Fig 85 Watling Court: the west face of the wall between rooms ix and vi of Building H (IV.31; see Fig 29)) showing the air vent into which some of the dried bricks have collapsed. For other views of this wall, see Figs 35 and 70. Scale in 0.1m units.

frames around openings through their walls. Building H at Watling Court (IV.31) contained a number of these frames (Fig 33). In threshold areas, 1.10-1.74m wide, wall construction trenches were infilled by base plates into which the frame was set. Jambs survived tenoned into the base plate of the frame between rooms i and iii.

In all instances the fire debris over the doorways contained no metalwork attributable to the attachment of doors to jambs. Such doors must have been hinged with timber or leather. It should be noted that a similar lack of hinges, bolts, or pivot shoes in the doorframes of the Lullingstone villa was taken to imply the absence of internal doors; swinging curtains were suggested instead (Meates 1979, 64). However evidence from the north side of room i suggests that a door had been inserted between the timber built partitions. A notch cut into the wall on one side of the opening could have served as a door stop, and a small hole cut into the *opus signinum* floor roughly in the centre of the doorway would have served admirably as a socket for a bolt.

Most of the better preserved doorframes at Newgate Street were found set through the walls of Building K. Two charred timber threshold ground beams *c* 1.02m wide led into rooms v and vi (VII.1), and another had been inserted into the east wall of the main block (VII.29). Nails at the ends of this inserted threshold suggest that the timber frame had been nailed

rather than jointed into place. All the doorways found were probably for single-leaved doors, as none of the thresholds was wider than *c* 1.60m. It should be noted, however, that no main entrances were found.

Window glass was a rarity on all of the sites and was generally found in reworked contexts. It seems highly unlikely that any of the buildings were generally provided with glazed windows and it must be assumed that most window openings would have been shuttered; there were, however, some concentrations of window glass towards the rear of Building J at Newgate Street (in rooms ii and iii). Part of an iron window grille, of a type known in London and *Verulamium*, was found in Building K/L at Watling Court (Fig 84). A number of rooms in the Period IV buildings at Watling Court had no external walls and must consequently have been difficult to light. Principal rooms could have been heightened and lit from above but in other rooms the natural lighting would have been poor. In such rooms artificial lighting would have been important (note the discovery of oil lamps in Buildings F and H). This lack of natural lighting was not unusual. Even the houses of Ostia, despite the many facades of large open windows, were often provided with completely unlit rooms (Packer 1971, 62).

Small openings through some walls may have been for ventilation. The most complete examples were in Building H at Watling Court (Figs 70f; 85), where



Fig 86 Newgate Street: bowl-shaped hearth (arrowed), probably industrial, set in the floor towards the rear of Building H (V.47; see Fig 10). The line of the rebuilt north wall of the building can be seen immediately behind the scale (in 0.1m units) where there is a change from a brickearth to a gravelly surface.

openings, one each from rooms ii and vi, were let through walls into room iii (IV.31). Room iii was possibly a corridor against the side of the building and may have been open fronted and well ventilated. The tile foundations had been built up from the base of the construction trench around the 0.30m wide timber lined apertures, showing that they had been planned in the construction of the building. The top of the only aperture to have survived to its full height was some 0.30-0.45m above floor level. The floors in the adjacent rooms had not been raised, and no traces were found of drainage channels.

Another presumed air-vent may have been set in the north-west corner of the main block of Building K at Newgate Street (VII.1) (Fig 14), where a gap 0.30m wide and at least 0.30m high, was found. A 0.37m wide aperture, of unknown height, was also set through the east wall of Building M at Newgate Street (VIII.4) (see Fig 20).

Similar features have been noted in stone walls at *Verulamium* (Wheeler & Wheeler 1936, 100; Frere 1983, 134, 150) and it is possible that air vents were a more common feature than has always been recognised in excavation, as they can easily be mistaken for small doorways or large post positions where the walls do not survive above floor level.

Hearths and ovens (Figs 86-8)

The excavations at Newgate Street produced dozens of hearths and ovens, whereas only five hearths were found

at Watling Court. This illustrates the different character of occupation on the two sites. The concentration of hearths might be an indication of industrial activity (p 101) but most certainly reflects the poorer quality of the buildings. No hearths were found in the extensively mosaic-paved Building D at Watling Court and it is probable that portable metal braziers were used in this and the other more sophisticated houses. Ironmonger Lane produced a nearly continuous sequence of hearths, but such features were very rare at Well Court and Milk Street.

There was a variety of hearth types. The basic form consisted of a small clay spread, perhaps slightly hollowed, and was without any form of superstructure. These were common, partly because they had such a short lifespan; most rebuilding or resurfacing programmes within the building would require the replacement of such hearths. All the hearths at Ironmonger Lane were of this simple type, as were most of those in Buildings F and H at Newgate Street. In fact some of the latter were represented by scorched hollows without even a clay base. The dimensions of these were fairly standard, mostly between 0.36 and 0.46m in diameter and 0.06-0.07m deep where hollowed (Fig 86). The nature of the hollowed area varied considerably. Hearths of this type were used throughout the building sequence at Newgate Street but were most common during Periods V and VI. An advance on this form involved building up the sides of a clay base to form a slightly raised, rather than sunken, dish-shaped hearth. One example, in room ix of Building F at Watling Court (IV.24, and p36), continued in use throughout the period of occupation, needing to be relined but not replaced.

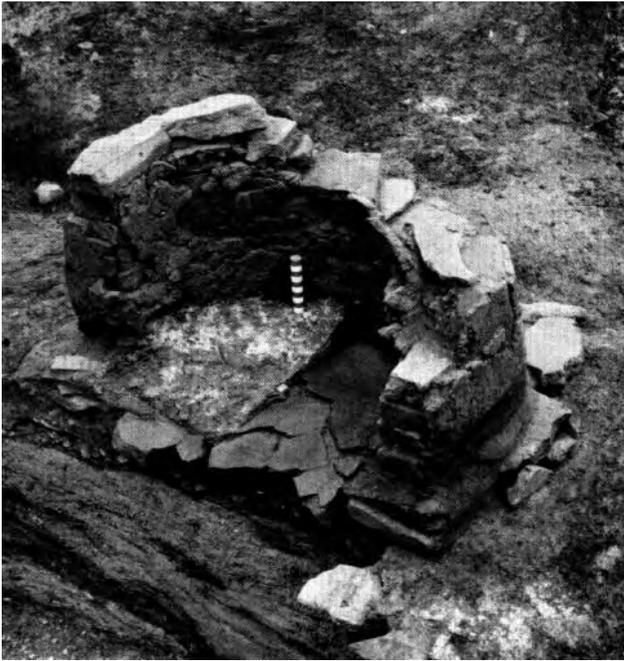


Fig 87 Newgate Street: tile-based hearth with a semi-circular open fronted breastwork of tile fragments set in brickearth; room iii of Building J (VII.32; see also Fig 17). The hearth had been set against a timber partition which failed to survive. Scale in 10mm units.

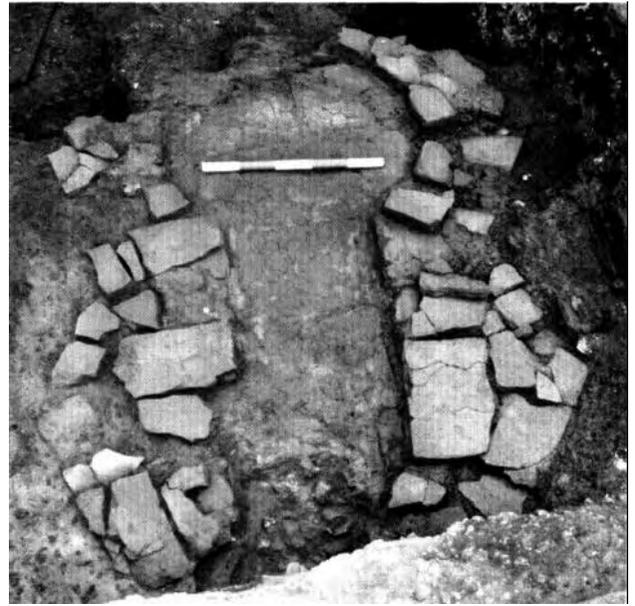


Fig 88 Newgate Street: tile-walled oven in Building M (VIII.8). Scale in 0.1m units.

The form of hearth was made more elaborate by the insertion of tiles or tile fragments laid flat in the clay base. These increased the heat retention level of the hearths, and added to their structural permanence. At Newgate Street hearths of this type were rare before Period VII. The best examples were from room v of Building J at Newgate Street (VII.4) (Fig 16) and room viii of Building F at Watling Court (IV.23). Only the Newgate Street example survived fully and that measured 0.60m square. Behind both a strip of brickearth *c* 0.05-0.10m wide had been added to the wall. At Watling Court arms of brickearth, 0.08m wide and 0.36m long, had been added to enclose the sides of the hearth.

A further form of hearth employed clay and tile superstructures around the bases (Figs 14; 87 and 89). At Newgate Street one of the examples of this form was in room ii of Building J; all the rest were from Building K (VII.1). Two were built into alcoves against the east walls of rooms v and vi in the rear unit of the building (Fig 15); the regularity of the plan suggests that another would have been set in room iv (Fig 90). The semi-circular open fronted breastworks of clay bonded tile fragments (surviving in irregular courses to a height of 0.53m) were set into brickearth built outwards from the walls. A slightly raised platform projected outwards from the enclosed area for 0.50-0.60m.

Two features recorded in the Watling Court excavation (in room ii of Building H (IV.31) and Building S (V.28)) may have been tile walled hearths of a similar nature, but both had been so badly damaged by later activity that this could not be established.

The tiled hearths were generally permanent features, introduced when the buildings were erected, and each was set centrally against a side of the room which it served. Their character and context is consistent with their interpretation as domestic fireplaces. The small, impermanent and irregularly positioned clay lined hollows might merely have been poorer quality alternatives to these, but could also have been used for heating small objects as part of an industrial process; small scooped areas, approachable from all sides, are excellently suited for such purposes.

In addition to the hearths, a series of ovens was recorded at Newgate Street, none being identified on the other sites. Most were found built against the outside face of the west wall of Building J and its successor Building M. Hearths were first established in this position at the start of Period V (V.19), and the first oven was built here later in the period (V.54). The first Period VII version of this feature was typical. It comprised a keyhole-shaped brickearth lined area with a bowl shaped centre *c* 0.50m in diameter, *c* 0.05m deep, with a westwards projecting stokehole 0.04m long, and was set within a rectangular platform, 1.20 x 1.00m, of large roof tile fragments (VII.5) (Pl 3). Four Period VII replacements or relinings of this feature were recorded (VII.16, VII.26, VII.33, VII.42). In Period VIII three further replacements were built (VIII.8-10), one of which might have been differently built. A central tiled area was surrounded by a wattle and daub superstructure rather than a tile and clay one; this was represented by a group of stakes set within a band of clay around the tiled centre. The largest oven (Fig 88) was set against the same wall but within Building M rather than outside it (VIII.8). The tile lined bowl-shaped centre was 0.40m wide and the flue 0.45m wide by more than 0.9m long. Such ovens must have served a specific function, but no evidence was found to suggest what that function may have been.

A group of shallow holes (with a maximum size of 0.85 x 0.55m and 0.20m deep) were cut into the floor of room iv of Building H at Newgate Street (VI.9, VI.13 and VI.15). Burnt bone and charcoal was found in several of these and some might have been scorched. They may have been used as hearths or in association with hearths or braziers. Their significance was not clear but it seems likely that they were associated with an industrial activity rather than a domestic one.

Other internal features

There were other more or less permanent features within the buildings. The clay base in room vii of Building F at Watling Court (IV.22) (Figs 30 and 32) perhaps supported a freestanding unit removed shortly before, or destroyed in, the fire destruction. The feature with projecting arms in room ix to the west (IV.24, p 36) was located in a similar position to the clay base; both features occupied the central point of the wall opposite the assumed position of the doorways, and both were primary features. Permanent fixtures of this nature are rare in Romano-British houses and the only parallels have, in most instances, been interpreted as household shrines (*lararia* or *aediculae*). The forms of these vary. At *Verulamium* (Frere 1972, 57-60, figs 12-14) two adjacent masonry built structures, interpreted as *aediculae*, resemble the feature in room ix. Arms projected from the wall to present two open fronted cupboard-like areas, slightly less than 1m square. In addition to being larger and masonry built they also differed from the Watling Court example in that their walls were plastered, and they were set over a base some 0.30m (1ft) above the floor level. Rectangular platforms were found against the walls of a number of houses in Silchester (Boon 1974, 164). These, although of different building materials (brick and tile), and slightly larger, were otherwise similar, especially in their positioning within the rooms, to the base in room vii as described above. These examples were compared by Boon (*ibid*; see also Boon 1983) to cases in the Rhineland, and were deemed to have served as the bases for house-like *lararia* built of timber. A similar platform, but of dry stone construction, from Chelmsford has been interpreted in the same way (Drury 1975, 165). Shrines of this type — a diminutive temple raised on a foundation — were one of the more common fixtures to be found in the houses of Pompeii (Mau 1899, 262) and accounted for most of the raised platforms. It is difficult, however, to account for the presence of two shrines in adjacent rooms. A possibility is that the building had been divided into separate occupancies, the partition between the two rooms forming the boundary between two apartments (p 105).

The amphora bases set in Building K/L at Watling Court (IV.37) and Building N/O at Well Court (VI.5) were probably used as containers (p 101). The timber lined feature in the cellar at Well Court (Building G, V.8) may also have been a container. The location, nature and context of this feature were almost identical to that of the 'box' (pit 20) in the Period III cellar at *Verulamium* (Frere 1972, 105, fig 22). The pit, possibly a sump, in the centre of the Well Court cellar was also directly paralleled in the *Verulamium* cellar (*ibid*).

No evidence was found of any other furnishings within the buildings, unless the brushwood in the corner of room v of Building K at Newgate Street (VII.29, see p 15) had been a crude base for a bed rather than fuel for the adjacent hearth. This absence of evidence also applied to the fire horizons. Although certain items might not be identifiable in such horizons, the general impression is that the occupants had managed to clear out the contents of the buildings in advance of their destruction. The only objects found within these buildings which were clearly associated with their occupation were ceramic oil lamps and coarseware pots (p 96 and 15).

Organisation within the insulae: property boundaries and services

On all sites the identified property boundaries were aligned at right angles to the adjacent street frontage. At Well Court, Ironmonger Lane and Watling Court (and perhaps at Milk Street) the boundaries established in the first building periods were clearly respected by all succeeding developments (see above p 70). Here there can be no doubt that the properties were laid out with reference to the street system, and the absence of any previous stratigraphy suggests that the plots were established roughly simultaneously with the streets, presumably as a deliberate and organised apportionment of land.

At Newgate Street the boundaries which marked the later properties can be traced back to Period IV (AD 60-70), but the earlier situation was not clear. Building C bore no relation to its successor Building H, and it is possible that Building E straddled the line of the later property boundary. The only Period III wall line which was adopted by a later building was the east wall of Building B, over which was built the west wall of Building H. But in the subsequent period this wall may not have marked a property boundary. The consistency of the sequence across the site prior to the Boudiccan fire might suggest that the site had not at that stage been divided into properties. The post-fire scheme may have represented the subdivision of a large pre-fire property, or the first introduction of property boundaries into a previously unorganised area. The early settlement here (p 116) was perhaps a roadside sprawl which could only easily be regularised after the razing of the area in Period III. The more central locations of the other sites were less susceptible to haphazard growth and these were set out in an organised fashion from the beginning.

The nature of the properties generally seems to have reflected the demands of their sites. Narrow strips extended back from the busier street frontages. This was most evident at Newgate Street during the 2nd century, but may also have been the case at Well Court where the excavated areas revealed parts of three separate structural sequences from at least Period IV (Hadrianic to early 3rd century). This was clearly a consequence of demand, and where the commercial value of the frontages was high narrow tenancies and properties would evolve. This is also found at Orange where rents of one *denarius* per foot were assessed by the width of frontage occupied (Piganiol 1962, 330). Away from the major frontages the decreased commercial demand

allowed a greater freedom and diversity. Here residential areas developed with larger or at least broader plots.

The evidence from Watling Court and Milk Street suggests that, through the use of paths and lanes (considered below) to communicate with plots otherwise inaccessible from the street frontages, the entire area of the *insulae* in residential areas was eventually developed for housing. As a consequence much of the city was very densely occupied, with a peak during the 40 year period before the Hadrianic fire (c AD 85-125). The excavations have not produced a large enough sample to permit an estimate of population totals, but it is clear that the city was very much more densely occupied in the early 2nd century than it had been at the time of the Boudiccan revolt. Thus estimates of population based on the numbers alleged to have been slain on that occasion (as Frere 1974, 297, who arrives at a figure of 30,000) will considerably underestimate London's population a mere generation later.

The street system was perhaps the most important, and certainly the most conspicuous, service facility. Fortunately it was possible to examine street frontages on three of the sites dealt with here. All the streets were gravel surfaced with a slightly cambered or flat topped surface. Marking out ditches were identified at the Well Court and Ironmonger Lane sites, but at Milk Street the evidence was inconclusive. At Well Court it was clear that the V-shaped ditch (I.1) (Fig 48) could not have served as a street side drainage gully, since it was backfilled prior to the laying of the first gravel street surface (II.2). These ditches must therefore have been dug as part of the initial marking-out of street and property boundaries. The foundation slab for the first street was also extended across the adjacent property as a foundation for the street side building (II.1). This was the only period in which there was a co-ordinated development of street and property at Well Court.

The subsequent road surfaces at Well Court were generally about 0.10m thick, although some were as much as 0.30m. A total of 15 street surfaces were recorded. The street is believed to have been regularly maintained for a period of about 150 years (p 54) and would consequently have been resurfaced on average once in every 10 years. The resurfacing contrived to keep the street roughly level with the ground surface of the adjoining buildings. This seems to have been due in large part to drainage requirements, and problems of this kind are illustrated by the relationship between Building A and the street (IV.1, p 51). The drain associated with this building frontage was set higher than the adjacent street, which was apparently not served by publicly-maintained drainage. With the construction of Building B (IV.1) the drain fell into disuse and heavy deposits of silt were formed over the street, which by now was some 0.30m lower than the adjacent building: it seems likely that for a period parts of the street must have been covered by large puddles. Early in Period IV, and at the beginning of Period V, thick new street surfaces had been laid which must have compensated for the difference in level since no evidence of subsequent flooding was found in the deposits of this period. The need for good drainage evidently required

that street surfaces rose at the same rate as the build-up of adjacent properties.

At Ironmonger Lane the marking out ditch (Period II.1) was a wide, shallow feature cut through natural gravels and was backfilled before the construction of the earliest street and associated buildings (Period II.2-4, p 57). In some later phases, in contrast to the situation at Well Court, there were clear signs of co-ordination between the development of the street and that of the adjacent buildings. This was perhaps best illustrated by the phase 2 demolition of the first building of Period II in which a single dumped horizon served to level off the building and to provide the preparation for a new road surface. At other periods also street renewal was conducted concurrently with building works. The gravelled yard to the side of the building (and clearly within the same property) was resurfaced with the street on at least one occasion and in another phase a tiled pathway leading to the entrance porch was extended into the road for a considerable distance (Fig 51). These illustrate a degree of co-ordination which might indicate that the owner of the property was also responsible for the maintenance of the road, as was probably his legal obligation (Nicolet 1987).

The streets described above provided the main access to the buildings and were probably 5-6m wide, although only at Well Court was the full width clearly established. In addition to these streets a number of lanes and alleyways were found. These were constructed of gravelled surfaces and on occasion were difficult to distinguish from the streets. The alley 4.50m wide between Buildings F and G at Watling Court, for instance, had been refurbished on at least five occasions with a total build-up of some 0.90m of gravels. It must have been an alleyway rather than a street, however, since it formed a cul-de-sac against the south side of Building H. In all the cases examined the alleys, lanes, and paths were maintained in common with the adjacent building sequence, and most of them probably lay within and were part of the same properties as those buildings rather than extensions of the public street system.

Drains, usually plank lined (Figs 19; 48), were found against the sides of certain streets but most of these were built to serve adjacent buildings, probably as eavesdrips (p 95). Other than these there were very few drains associated with the buildings — although the gulley which had probably been lined with timber and lead in Building H at Watling Court (IV.31) might have been a drain or waterpipe — and the evidence suggests that there was no organised supply of running water (p 118).

Rubbish and sewage disposal must, in some instances, have presented problems. Early on, and in peripheral areas, it was possible to excavate rubbish pits or make use of holes left by brickearth quarrying. Rubbish dumps have been found in most of the quarry pits, while the open areas around and to the rear of the buildings at Newgate Street were extensively pitted. Alternative provision would have been needed in the more intensively developed areas. For instance not a single rubbish pit or dump was found associated with Period IV buildings at Watling Court, despite the fact that the site apparently covered an area towards the

middle of an *insula* and consequently to the rear of the properties. There must therefore have been an alternative means of disposing of rubbish. Organic waste could have been used as fertiliser, in fulling or tanning, or burnt. Other materials could have served as hardcore. The pushing forward of the waterfront during the Roman period would have required considerable quantities of such material in the consolidation of the timbered revetments (Miller *et al* 1986).

Rubbish tips might have been organised by the city but this would probably not have been necessary. The same applies to the channelling of fresh water and the sinking of wells (Wilmott 1982, 9-17) which could equally have resulted from private initiative. It would therefore seem that beyond the apportioning and regulation of property within the public street system, services to individual properties were probably minimal and left to private improvisation.

Building design and use

Circular buildings

Circular buildings were found only in the Periods I and III levels at Newgate Street. This building form has clear associations with pre-Roman Iron Age building traditions (p 106). The earliest of these structures, Building A (Figs 4 and 5), predated the introduction of rectangular structures on the site. It was represented by a curved gully, perhaps an eavesdrip, defining an area *c* 4.20-5.60m in diameter (I.1). The gully contained no silt fills so that its interpretation as an eavesdrip depends on the assumption that it had been cleared out shortly before being backfilled, or that the building had had a very short life.

Elements of the walls of two or three roughly circular structures of Period III were identified (Buildings A, D and E). Building D (Figs 7 and 8) was *c* 6.5m in diameter, as were the others. They were apparently ancillary to the rectangular buildings against the presumed street frontage to the south, and might have been stores or outhouses, rather than houses. The earlier structure, Building A, apparently stood in isolation and might have functioned as a dwelling.

Only one other example of a circular building has been excavated in London, from an early Flavian context in the suburb to the south of the river (Sheldon 1974, 10-12). Circular buildings have been found in the suburbs and fringes of a number of other Romano-British towns (*eg* Silchester, Cotton 1947, 127; Lincoln, Jones 1981, 86-7).

Industrial and commercial buildings and activities

Differences in character between the Watling Court and Newgate Street sites suggest that whereas the occupation of the former was almost exclusively residential, the occupation of Newgate Street might have been more mixed, including commercial and perhaps industrial activities. The commercial activities were illustrated by the number of Roman coins which had been lost. A total of 332 were found on the Newgate

Street site compared to only 25 from a larger area at Watling Court (excluding the coin hoard, p 29; Hall 1982). The mosaic and *opus signinum* floors in many of the rooms in the Watling Court buildings would probably have reduced coin loss and the site was occupied for a shorter period than Newgate Street (it was also excavated more hurriedly), but the scale of the disparity must also reflect widely different activities at each site. It seems reasonable to conclude that coins were in more frequent use at Newgate Street and that this indicates specifically commercial activity.

As previously mentioned (p 98), some of the hearths and ovens from Newgate Street might have had an industrial function, as might some of the features in Building H (p 99). A large amount of slag was found at Newgate Street, much of which no doubt derived from the use of these hearths. Most of this was fuel ash slag, but there was also a considerable quantity of ironworking, smithing, slag. The slags were present, albeit in small quantities, from the first period of occupation on the site. Most of the material was found in rubbish dumps and pits, or in the dumps of hardcore material laid in preparation for floor or lane surfaces. There were distinct concentrations of slags in levels associated with Buildings F, H and J, and a general dearth of the material in or around Buildings A-E and K. The buildings around which the slags were concentrated were also the buildings which contained most of the small sunken hearths. Some fuel ash slags were clearly associated with the group of ovens to the west of Building J.

The nature of the slags did not perceptibly change during the period of occupation and the general ratio of ferric to non-ferric slags remained constant. It therefore seems likely that the same activities were persistently conducted throughout. The ferric slags indicate that these included small scale ironworking; in many cases quite large flakes and fragments of iron had been incorporated into slag, but the scale of the evidence did not compare with that from excavated smithing sites (*eg* Manchester, Jones 1974, 49-65; Bestwick & Cleland 1974, 147-53). Nor was there any evidence for the raised hearths and anvil positions that should be present in smithies (Manning 1976, 143-4). There are however many other industrial activities in which some ironworking would have been involved, notably certain specialist woodworking industries where iron strips or sheets were used as bindings.

A completely different industrial activity may have been conducted at Newgate Street when the site was left open during Period III. Series of stakes possibly formed drying racks, and irregular pits and gullies may have served as sumps and drains. There is the possibility, however, that the stakes supported climbing plants and that irregular pits had been left when trees or plants were removed. The industry of this period could have been agricultural.

Generally, the other sites did not produce enough evidence to point to specific industrial or commercial activities. The sequence of hearths at Ironmonger Lane (p 97) may have been used for industrial activity, although this cannot be established, and some of the buildings at Well Court may have been shops. This is suggested by the amphorae set behind the front wall of Buildings N and O, of Period VI. These amphorae had

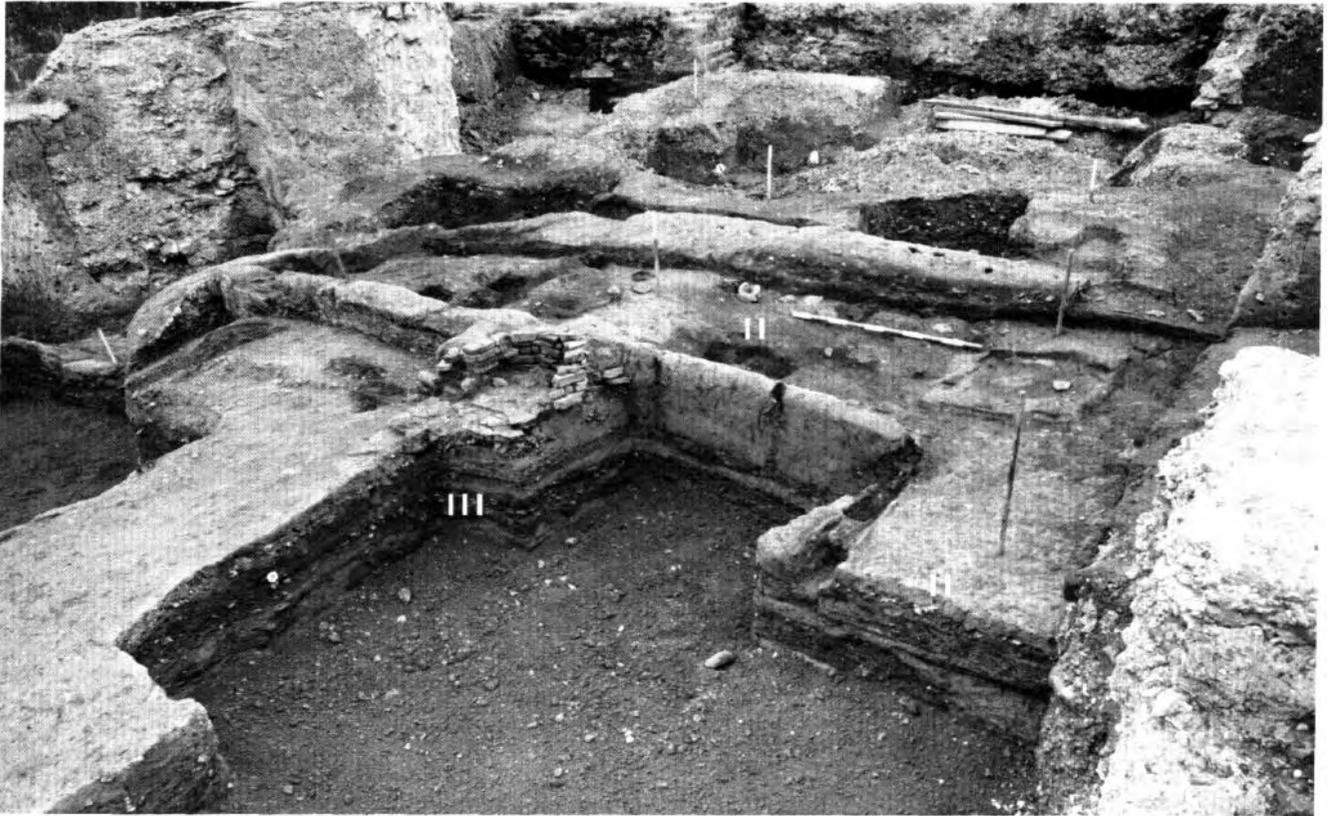


Fig 89 Newgate Street: the reception quarters of the strip building, Building K (VII.1 and VII.29), looking north-eastwards towards the lane (cf Figs 14, 18 and 90). One of the main rooms of the building, perhaps a dining room (room iii), is in the foreground left. Timbers can be seen inside the brickearth wall to one side of an open fronted domestic hearth. To the right of the wall a timber threshold leads from the entrance passageway (room ii). Beyond, next to the scale (which is in 0.1m units), is a hearth in what may have been a kitchen area. Part of the narrow room to the left was perhaps a latrine.

been so positioned that they could have been set into a shop counter as receptacles for the wares, an arrangement well known in small shops such as those in the strip building from Herculaneum illustrated in Figure 90. The commercial development of the street frontage at Well Court was perhaps also suggested by the presence there of a cellar (p 54). This had very marked similarities with a cellar excavated in *Verulamium* which is thought to have been owned by a scrap merchant (Frere 1972, 106). It is, however, possible to suggest (Perring forthcoming) that cellars were designed for use in cultic practice. The evidence from Well Court cannot be used to support either argument.

Two other buildings described here may have been built as stores (Building B at Watling Court and the Period VI building at Milk Street). These were built over slots which were perhaps cut to contain joists to support a raised timber floor. Raised floors are a standard element of granaries and other bulk dry storage areas, as illustrated by the timber floored storage buildings excavated against the waterfront of London (eg Milne 1985, pl I). In both these examples, however, the buildings were located some distance from the street frontages and were not associated with other evidence for commercial activity.

Shops and strip buildings (Figs 89 and 90)

The plans of the earliest structures which housed the commercial, and perhaps industrial, activities survived poorly. It is possible, however, that certain buildings (such as those of Periods IV and V at Newgate Street) had been built with their long axis against the street frontages. These might have been of the type in which a rectangular block against the street was subdivided to form a row of small shops, best illustrated in the early phases of *insula* xiv at *Verulamium* (Frere 1972, 14-19). The rooms of these early buildings had a somewhat utilitarian character.

The later, and better preserved, buildings at Newgate Street (those of Periods VI to VIII) were not of this form. The narrow rectangular blocks which extended back from gable-ends against the street frontage were of the type generally referred to as strip buildings, a type presumed to be of Latin origin (Boethius 1960, 137 ff) and well represented in the towns of Roman Britain (Wacher 1974, 63-4). These commonly contained shops against the streets with workshops and then living quarters behind. Evidence from Newgate Street, especially that of Period VII, allows some definition of room function.

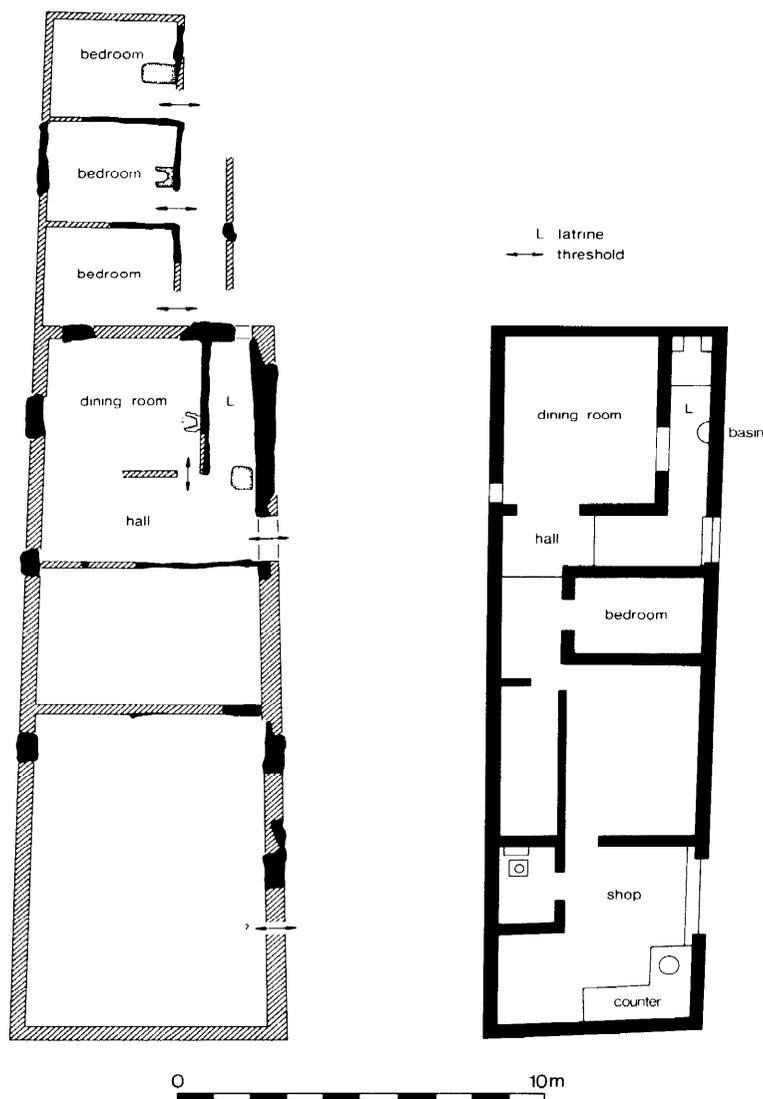


Fig 90 Plan of Building K at Newgate Street (left) indicating suggested functions for some of the rooms, compared with the plan of a building from Herculaneum (right; this plan has been reversed in order to illustrate better the points of similarity). Both buildings were placed on street corners and would have been approached from bottom right (as drawn). Scale: 1:200.

Three rooms in Building K were provided with plastered walls; rooms ii, iii and iv (Figs 14; 89). The largest of these was room iii and this was probably a principal room such as a dining or reception room. The east-west arm of the L-shaped room ii extended across the width of the building, and in its revised form provided access into room iii from an entrance on the lane to the east. The room therefore had certain aspects of an entrance hall and allowed access to the better quality rooms independently of the presumed shop or workshop entrance to the south. A hearth was located in one corner of this hall, just inside and to the right of the doorway onto the lane. This would have been well placed to cater for the household cookery; separate

kitchen units were rare in most Roman houses and where present were usually small and placed where they would least interfere with the working of the rest of the building. The hearth effectively divided the northern wing of room ii from the hall. The plastered walls suggest that this northern wing was more than a storage area, yet its narrowness limited the range of possible uses. Its proximity to the suggested cooking area and the presence of the air vent at the end of the room indicate that this might have been a latrine. Only a narrow space would have been needed, and since the facility would have been used by guests it would have justified plastered walls. The building was not provided with a running water supply, in common with all the buildings

considered here. Any latrine facilities would have been of the chamber-pot variety, and would in consequence be unlikely to leave any distinctive evidence.

The arrangement of rooms suggested above is strongly paralleled by the evidence from *insulae* and strip buildings at Ostia and Herculaneum (Packer 1971). The most closely comparable example is illustrated with Building K (Fig 90), and the coincidence of plan and suggested function is remarkable. The most consistent element is the location of the main room at the far end of the main part of the building or apartment, away from the street entrance (Meiggs 1973, 247).

To the rear of Building K was a separate group of three rooms (including the plaster finished room iv) reached by a corridor (room viii) which did not have any communication with the main part of the building (Fig 15). These three rooms were roughly the same size and had been arranged and appointed in a similar way. Small square rooms of this type were frequently used as lodgings or bedrooms, an interpretation reinforced by the presence of the substantial tile built hearths which were probably used for domestic heating (p 98), and could also have been used for cooking. A small group of pots was found on the floor of one of the rooms, next to the wall, and these could have been for kitchen use.

The provision of three rooms here, when other domestic rooms may well have been located between the working and reception parts of the main building, suggests a large household. There is however a distinct possibility, implied by the way they seem to be set apart from the main building, that some or all of these rooms were built as separate tenancies. Single rent earning rooms are known to have existed as accommodation for the urban poor in Imperial Rome (Frier 1980, 27), and similar rooms may well have existed in London. An alternative is that these rooms housed slaves, although a slave wing seems out of place in so modest an establishment.

In Building J at Newgate Street the principal room lay within the rear unit of the building (room v, Figs 13 and 16). It was clearly identifiable since it contained the only mortar floor in the building, in addition to being one of the few rooms provided with wall plaster. The shape of room vii to the rear of the building was similar to the suggested latrine in Building K, and room vi could have been a bedroom. Room iii was provided with a tile based hearth and was perhaps also part of the domestic quarters. Room ii, by contrast, contained concentrations of slags and a number of irregular hearths (p 101), and had most probably been a workshop. During the occupation of the building this room was divided into first two and then three units (Figs 17 and 18); perhaps the workshop activities had been transferred into lean-to or ancillary structures against the west side of the building. Smaller rooms formed out of room ii could have served as further domestic rooms or stores. Roughly contemporary changes in the block to the rear left a principal room (v) adjacent to a possible latrine area (vi), beyond which lay a room which might have been a hall and a further principal room or bedroom (viii).

These Period VII strip buildings were the most sophisticated to be excavated at Newgate Street and illustrate a fairly complex social organisation, contrasting sharply with the buildings of earlier periods.

Town houses

The high standard of construction work and the quality of the decoration, both of painted wall plaster and of mosaic floors, of the buildings at Watling Court indicate that they were occupied by people of some wealth and social standing. The buildings were large and the accommodation could have included a number of reception and guest rooms. These buildings were almost certainly town houses rather than, as at Newgate Street, commercial buildings with attached living quarters. Most of the other such town houses to have been found in Romano-British towns have been dated much later (Walthew 1975; Perring 1987). The Watling Court buildings therefore represent a rare group, and the form they adopt is of considerable interest.

All the structures except Building F extended beyond the limits of excavation (Fig 30) and it is therefore difficult to establish the type of building plan. The excavated part of Building D (Period IV) could, for instance, have been the rear wing of a winged or courtyard house (a possibility which might account for the arrangement of foundations at the eastern end of the building, p 30), a building type well represented in the western empire (Walthew 1975, 203). The largest and possibly best decorated room (v) could have been sited facing the entrance of the house across the courtyard. If this were merely one wing of a courtyard building it would also account for the disproportionate number of rooms provided with mosaic or *opus signinum* floors. Seven of the 11 rooms inside the main part of the building were so provided. The service rooms would have been located in the unexcavated wings of the building.

The evidence is, however, most inconclusive and it seems unlikely that any of the other Period IV Watling Court structures were built to a courtyard plan. The distinguishing feature of this period was the comparative absence of associated open space.

The 'irregular buildings' of Ostia have been examined in some detail by Packer (1971), who attempts a classification. Under his type IIc he describes a group of residential buildings where a central open *atrium* had been replaced by a principal covered hall (testudinate *atrium*), around which the rooms were arranged. Room i in Building H (Fig 33) could have functioned in a similar way to this. This room with painted walls and an *opus signinum* floor probably served as some kind of hall; at least four wide doorways opened from it.

The entrance into the hall was perhaps from the street to the east (the continuation of which was found at Well Court). The irregular floor and rubbish deposits in room vii against the north side of the hall (Figs 33; 60) suggest that this small space could have been an understair. Its walls were built of timber (excluding the wall shared with room viii) and could have supported a timber stair whereas all the other walls in this part of Building H were built of brick and earth.

The other Watling Court building for which a substantial part of the plan was retrieved was Building F, which in outline formed a simple rectangular block (Figs 30 and 32). The construction techniques and decoration show that this building was of poorer quality than its neighbours. The best room excavated (room i) had a tessellated design set in the centre of its mortar

floor (p 92) and may have been a dining room. This room was in the corner of the building furthest from the main frontage. Narrow rooms to its south (rooms ii-iv) were perhaps used for storage and service purposes. These rooms were separated from the rest of the building by a corridor (rooms v and vi) which ran across the width of the building and could have provided independent access to the group of rooms at the rear of the building. There was, however, no corridor or evident means of access which would have allowed communication along the length of the structure. The presence of a number of sizeable and potentially principal rooms, but the comparatively low standard of their decoration, might suggest that the building had been designed to function as a number of separate units (perhaps two or three). If so, rooms i to viii could have formed a complete apartment with a bedroom (room viii) and a bedroom or reception room (room vii) on the side of the hall (room v/vi) opposite the dining room and service rooms (rooms i-iv) described above. This division into apartments might account for the presence of the two *aedicula*-like features in separate rooms of the building (in rooms vii and ix, p 99).

Of the other early town houses studied (notably those at Milk Street) none presented enough information to permit speculation as to the function of particular rooms. It is worth noting, however, that the rooms with mosaics were found towards the rear of the buildings within which they were located.

The evidence for the later houses of Roman London is limited, partly due to the extent of the 2nd century contraction (p 120). The only near complete late Roman house plan from the city is that of the winged house found opposite Billingsgate (Marsden 1980, 151-5). It illustrates the introduction of private hypocaust systems and heated bath blocks, typical of late town houses (note also the bath block found at Pudding Lane; Milne 1985), but rarely found in town houses of the 1st and early 2nd centuries.

Large winged buildings are a common feature of late Romano-British towns and reflect a higher standard of town housing than had previously obtained (Perring 1987). In London their introduction coincided with improved construction technique (p 84), and post-dated the contraction of the town. The character of urban living had markedly changed. The similarity of mid to late 2nd century Romano-British town houses to villas has been commented on (Walthew 1975, 189ff). These later houses were less urban in several respects, especially in their poor utilisation of frontages and inefficient use of space. This subordination and neglect of commercial requirements is perhaps the most significant aspect of the structural changes of this period and will be considered below.

Ownership, tenure and occupation

At Newgate Street boundaries established during Period IV show that the site had been divided into a series of narrow, independently occupied strips. In the early periods these could have served to demarcate areas of fixed tenure within the same property, but from Period VI (c AD 85-100), if not previously, the buildings were free-standing and developed separately,

features which suggest that they were also separately owned.

The Period VII households could have included tenants in rented rooms (see above) and perhaps a small workforce in addition to the family of the principal occupant. The floor areas of these buildings approximated to the 150-300 sq m of the Ostian and Roman apartments in which there was an estimated average of 6.8 occupants (Frier 1980, 6). There are many alternative estimates and this figure should only be taken as a very general indication. The design and decoration of the Period VII buildings, with painted walls and reception quarters, illustrate that by the early 2nd century even the artisan inhabitants of the suburbs of the city could expect to live in some degree of style.

The Period IV buildings at Watling Court clearly represent a higher level on the social scale. Of these, Building D, with its numerous mosaic floors and painted walls, is one of the best Romano-British town houses of the 1st century to have been discovered. This building was owned and presumably occupied by a wealthy and highly romanised member of the community. The strong Italian influence in the design of the pavements implies that Italian mosaicists had been employed and it is also possible to suggest that they had been working for Italian or south Gaulish clients (p 92).

In this context the presence within the destruction debris of Building D of a fragment of a bronze (military) diploma granting citizenship and marriage rights, presumably to a veteran of the Roman auxiliary army, is most interesting. This document has been studied by Margaret Roxan whose comments form the base of most of the following discussion (Roxan 1983, 67-72; 1985, 143-4). The text is a standard one in the style of the Trajanic period and the name of one of the witnesses of the document (Q Pompeius Homerus) supports a date between 98 and 108. It was found in the Hadrianic fire debris within room iv of the building, in a context which indicates that it had been inside the building when it was destroyed, and not in a dump or rubbish horizon. The fire probably occurred c AD 120-125 or slightly earlier (p 64) so that the diploma is likely to have been 10-27 years old when buried. The most probable explanation for its presence is that the building was occupied by its recipient or his immediate heirs, a possibility consistent with the quality of the building, since it is likely that army veterans would have been among the better-off members of society (Birley 1979, 79; although see also Mann 1983, 21).

The date of issue of the diploma probably post-dated the construction of Building D by a few years. Discharged veterans could wait for some time between their discharge and the receipt of a diploma (Nesselhauf 1959, 73ff), and serving soldiers could establish various interests near to their place of service, such as a commercial enterprise or house (Mann 1983, 62-3). This raises the probability (suggested by Margaret Roxan) that the recipient of the diploma could have been seconded for service as a *singularis* (a soldier attached to the governor's guard) of the governor of Britain.

Building F at Watling Court was built on a plot of land which was perhaps part of the same property as Building D. In earlier phases none of the activities (such as the Period II quarries) respected any boundary between the sites of the two buildings, and the later alleys around the buildings (alleys 1 and 2) may have

been commonly maintained (it seems likely that when one alley was resurfaced so was the other). Building F may have been divided into separate tenancies, as implied by its plan (see above), and these could have supplied rents to the owner of the plot, most probably the occupier of Building D. Tenants were not necessarily always drawn from the poorest levels of Roman society (for the situation in Imperial Rome see Frier 1980, 17) and buildings of some quality could be divided into apartments.

The context and development of building traditions in early Roman London

There were three major potential influences on the development of London's first buildings: building traditions of the pre-Roman British Iron Age; Roman military building practice; and civilian building forms introduced from elsewhere in the empire by merchants and settlers. These did not necessarily result in three diverse approaches to building. Traditions of the pre-Roman British Iron Age might have elements in common with the pre-Roman traditions of other provinces in the north-west and could therefore be introduced to settlements by immigrants, while the veteran settler, though now civilian in status, might adhere to familiar military building practices. These qualifications aside, there remain distinctive elements which merit examination.

The clearest case for the use of British rather than Roman building practice among the present sites was provided by the circular houses at Newgate Street (pp 3 and 101). With their wattle and daub walls, roofs of thatch or shingles and in one case an eavesdrip gully, these can be paralleled in countless British Iron Age settlements. The Newgate Street evidence combined with that of the circular hut from Southwark (p 101) suggests that native settlements may have been established in certain areas peripheral to the initial town centre. The later development of the Newgate Street site suggests that in this area at least the settlement was fairly rapidly romanised, but whether through integration or resettlement is less clear. The first clearly defined property boundaries on the site were those of Period IV and these, combined with the evidence for the concurrent interruption of the structural sequence, might imply a re-organisation of the settlement after the Boudiccan fire. None of the later buildings here betrayed signs of anything other than Roman influence.

The Period III arrangement on the site, immediately prior to the Boudiccan fire, is of interest in that rectilinear buildings co-existed with the circular ones. Although it could be that the circular huts were the outhouses built by the native tenants of the Roman built main building, the daub fragments (p 74) suggest a similar approach to wall construction between the circular and rectilinear structures. By contrast, the daubs associated with the later, more obviously romanised, structures (Buildings J and K) displayed a number of differences from the early material. If the circular buildings were of 'native' construction it would

seem probable that there was an indigenous element in the building of the contemporary rectilinear structures also. Excavations at Skeleton Green (Partridge 1981, 38) have clearly illustrated the presence of rectangular timber structures with clay daubed walls in a pre-conquest context. Circular wattle and daub huts similarly associated with rectangular timber buildings of the late first century AD have been identified in the 'small town' of Godmanchester (M Green 1975, 183-210; fig 9), where it is proposed that the buildings were constructed according to pre-Roman traditions.

It has sometimes been assumed that the most important influence on the early development of Romano-British urban housing was military. While this supposition might readily be applied to the early *coloniae* (Mann 1983, 7), it requires more careful examination when applied to other towns. Perhaps the most crucial test concerns the nature of the origin of the first buildings in *insula* xiv at *Verulamium* (Frere 1972, 10-11). The plan of these buildings is said to recall a military barrack-block. The simplicity of the plan, and the apparent predominance of a larger end unit, owes much to projected and conjectured wall lines, but it also reflects the functional nature of buildings which consisted of rows of single and two roomed shops. Similar shop rows may have been present in London on the Forum site (Philp 1977, 7-9), where a military origin has also been suggested (Merrifield 1965, 32-5; 1983, 41-6), and perhaps also at Ironmonger Lane and Newgate Street (p 102).

This form of building can, however, be related to a number of earlier and roughly contemporary examples in entirely civilian contexts (as at Lyons, Rue des Farges, (Desbats 1981, fig 1), or outside the Herculaneum gate at Pompeii). The argument for a military origin of the shops at *Verulamium* hinges, however, on wall construction technique. Timber framework was used in the walls of these shops, and the style finds parallels in the Roman fort at Valkenburg, Holland (Glasbergen 1967). This style was similar to that of the walls set over timber ground beams considered in this report (p 72), and the framework had been infilled by daubed wattle or lath uprights woven around horizontal laths, similar to the wattle and daub infill described above (p 76). Further parallels from military sites are cited by Richmond (1961, 15-26), although in most of these the walls were built without the use of a timber ground beam (similar in fact to the suggested construction of Building J at Newgate Street), while the excavations at Lion Walk, Colchester have produced similar walls in what may well have been a legionary context (Crummy 1977, 7-81).

Although this form of walling is attested in military contexts, it is also represented in civilian building traditions. In addition to the cited examples from London and *Verulamium*, timber framed construction with wattle and daub infill is well represented among the buildings of Lyons (Desbats 1981, 55-81), where it was used for internal partitions from the late 1st century BC onwards. There is nothing inherently military about this form of wall construction, which was probably introduced into the north-west provinces by both civilian and military builders. On the contrary, half timber work supporting brick, wattle and daub, or rubble was probably a standard element of the early *insulae* in Rome (Boethius 1960, 148).

It is further suggested by Frere that the considerable quantities of timber utilised in the construction of the Period I buildings at *Verulamium* would have been supplied by the army from their stockpiles. There is, however, no archaeological evidence of the existence of such military stock-yards (Hanson 1978, 293-305); and in all likelihood locally available unseasoned timber would have been used by the army in most if not all situations. It is improbable that there was any shortage of building timber during the early decades of the Roman occupation; the large scale deforestation indicated by the quantities of timber employed was doubtless as much a consequence of the need to clear land in order to feed the growing urban population as of the need to build their houses.

The evidence for the involvement of military architects, engineers or builders in the early development of Romano-British urban housing is inconclusive. The only towns where the army can be seen to have made an impact on the housing design are the *coloniae*. In both Colchester (Crummy 1977) and Gloucester (Hurst 1988, 56-8) buildings of the early *colonia* were apparently based on their legionary predecessors; and this clearly reflects only the particular nature of the *coloniae*.

Both the forms and construction techniques of most of the early houses of London can be placed within a tradition of building originating in the architecture of other provinces of the north western part of the empire. Perhaps the most significant aspect of this was the widespread use of mass built clay walls in south-east Britain (Williams 1971, 176). The early use of walls built in this fashion was demonstrated by the building destroyed by the Boudiccan fire beneath the south-east corner of the Forum (Boddington & Marsden 1987; see p 80). This closely resembled clay walled buildings from Gaul (Lasfargues 1985), where it has been considered possible that this form of building was indigenous (Février *et al* 1980, 240). Stone founded clay block walls do indeed have a long period of pre-Roman use in the area but also have Mediterranean antecedents (André 1976, 95-128).

Whatever the point of origin, the closest parallels to the early Romano-British examples (stylistically and geographically) are Gallic and Italian (*eg* Carandini & Ricci 1985, 64-5). London was always a natural centre for immigrant settlement with its central administrative and commercial role, and the apparent absence of an earlier native community or military establishment on the site (p 119). The building techniques employed might suggest that a significant proportion of the alien

population originated from the Gallic and Italian provinces. This is perhaps supported by the evidence of the names represented in surviving inscriptions from the province of Britain. These have been studied by Birley (1979, 18) and an above average incidence of *Julii* is suggested as being primarily the result of an influx of Gauls in the first decades after the conquest and secondarily of the settlement of army veterans of that name. The legionaries recruited to serve in Britain prior to AD 117 were mostly from north Italy or southern France (Mann 1983, 23, table 9).

It is from these two main sources that London's first citizens were perhaps drawn. If the town was an unofficial settlement of such citizens (a *conventus civium Romanorum*), as first suggested by Haverfield (1910, 169), Gallic and Italian influences on the town's buildings are to be expected.

The changing building practices in the Roman city have already been examined in detail but broadly consisted of a development from predominantly timber construction in the first decades of the settlement to the more widespread use of mass built clay walling in the later Flavian and Hadrianic period. The increase in the use of clay walling reflected the increasing prosperity of many of the town's inhabitants. During the 2nd century the evidence suggests a complete change in building practice with the introduction of spacious stone buildings (p 81). Clay walling consequently was only widely used for about a century. This has led to the contention that clay walling should be seen as a failed experiment (Williams 1971, 176). It would seem far more likely, however, that clay walling had been replaced by stone when the latter had become more readily available, and the later residents of London were prepared or able to spend more on their houses. This suggested change in building practice coincided with and in part reflected the reduction in the density of occupation.

The contraction of the town's population was perhaps partly due to the departure of the entrepreneurial settlers who had perhaps never felt the need to build for permanence. The later occupants of Roman London seem to have adapted to a more permanent lifestyle, where the pressures on land space were less. They employed more durable stone construction techniques, which also allowed the installation of hypocaust systems and heated bath blocks, and adopted plan forms with a more liberal use of space and a relative disregard for a commercial utilisation of the available street frontages.

IV The topographical and functional characteristics of the settlement west of the Walbrook

The information gained from the recent excavations can be combined with that from much earlier observations to attempt a reconstruction of the main elements of the western part of London in the early Roman period. For this purpose, Figure 92 includes relevant archaeological sites as find-spots and is based on DUA excavations of 1973-82, on Merrifield's gazetteer and map (1965) and the published work of W F Grimes (1968). Since the size of the area and the scope of the review limits the amount of detail which can be presented, both the figure and the following text should be used in conjunction with Merrifield and Grimes whenever additional information is required. The key to Figure 92 identifies the site reference numbers used in those two works as well as the addresses, site codes and archive reports of post-1973 sites. The study must start with the limits of the settlement in the successive phases of its occupation. Then the street system will be considered, followed by a discussion of the natural resources.

The limits of the settlement (Figs 91-3)

The limits of the settlement are best indicated by two sets of evidence. A change in alignment of the east-west axial street, at a point where it was intersected by other roads, can be combined with the distribution of burials to suggest that this crossroads formed the original western limit of the settlement. The burials also suggest that the northern limit lay within the later defences.

East-west axial street

The earliest known element in the layout of the city is the east-west axial street beneath modern Fenchurch Street in the east and Cheapside-Newgate Street in the west (Fig 93, Road 1). In the east its line is well documented (Merrifield 1965, 118; Marsden 1980, 20). Here it was to flank the south side of the Forum, having previously bounded a gravelled area thought to have been a market place (*ibid.*, 23). Buildings destroyed by the Boudiccan fire lay on the other side of the road, which had been re-metalled several times by that date. A parallel road to the south has been postulated by Merrifield (1965, 122) at a distance of $3\frac{1}{2}$ *actus* (130m), roughly halfway between Fenchurch Street and the river. Thus there is some suggestion of a planned layout at an early date in this area and no evidence for roads diverging directly from the bridgehead (*op cit.*, 116).

To the west of the Walbrook the situation is less clear cut. The point at which the axial east-west road crossed the stream can be identified with some certainty. At Site 1 (Fig 92), several traces of a gravel roadway were

found at a point where a tongue of high land capped with natural brickearth provided a firm west bank. Further west, at Site 2, more Roman gravel metalling was seen at various points and pre-Boudiccan deposits were recorded in its immediate vicinity. Though in neither case was the edge of the gravel recorded, they provide a series of metallings along a mean line. At the former site, the street was carried across a tributary of the Walbrook. This may have been achieved by means of a wooden bridge, since piles have been recorded, or by an embankment, the metallings being laid on the piling and the stream being led under the street through culverts.

Beyond this point the line of the street roughly followed the shoulder of the hillside, where it has been observed at Sites 3 and 4; a pre-Flavian samian cup was found in the earliest metallings at the former site. The gravelling further west at Site 5, though not as consistently aligned, undoubtedly represents a continuation of the same road. The inconsistent alignment was probably a local aberration, perhaps marking the junction with a side street.

The main street may also have been observed to the west at Site 6, and also at Site 10 where pre-Boudiccan deposits were found close by. Beyond this point, however, its line was markedly different. Observations at Sites 7 and 8 imply an east-west thoroughfare to the north, under modern Newgate Street. There must therefore have been a change in alignment between the metallings seen at Site 6 and those at Site 7, a deviation probably preserved by the relative alignments of modern Newgate Street and Cheapside. The buildings at the Newgate Street site (Site 9) were aligned with the western part of the road from Period III onwards (*c.* 50-55/60) (p 116). This demonstrates that the deviation existed before the Boudiccan fire and was therefore a primary characteristic of the street.

The importance of the street is implied by its width (at least 10m, the north edge not as yet established) and by the fact that it is the earliest known topographical feature to either side of the Walbrook. Its continuing importance is suggested by a late 4th century pot in the backfill of one of its street-side ditches, by a coin of Valentinian (364-75) in the make-up of its latest surface at Site 5, and also possibly by its influence on post-Roman streets along its line.

The position of this primary street was influenced by the nature of the Walbrook valley. It crossed the stream at the optimum point, where there were solid banks on either side and not too wide a gap to bridge; to the north the headwaters of the stream were spread in a much wider flood plain formed by successive tributaries (Maloney C 1990) whilst further south the banks diverged once more (Fig 93). The change in alignment at the junction with Newgate Street further west may be

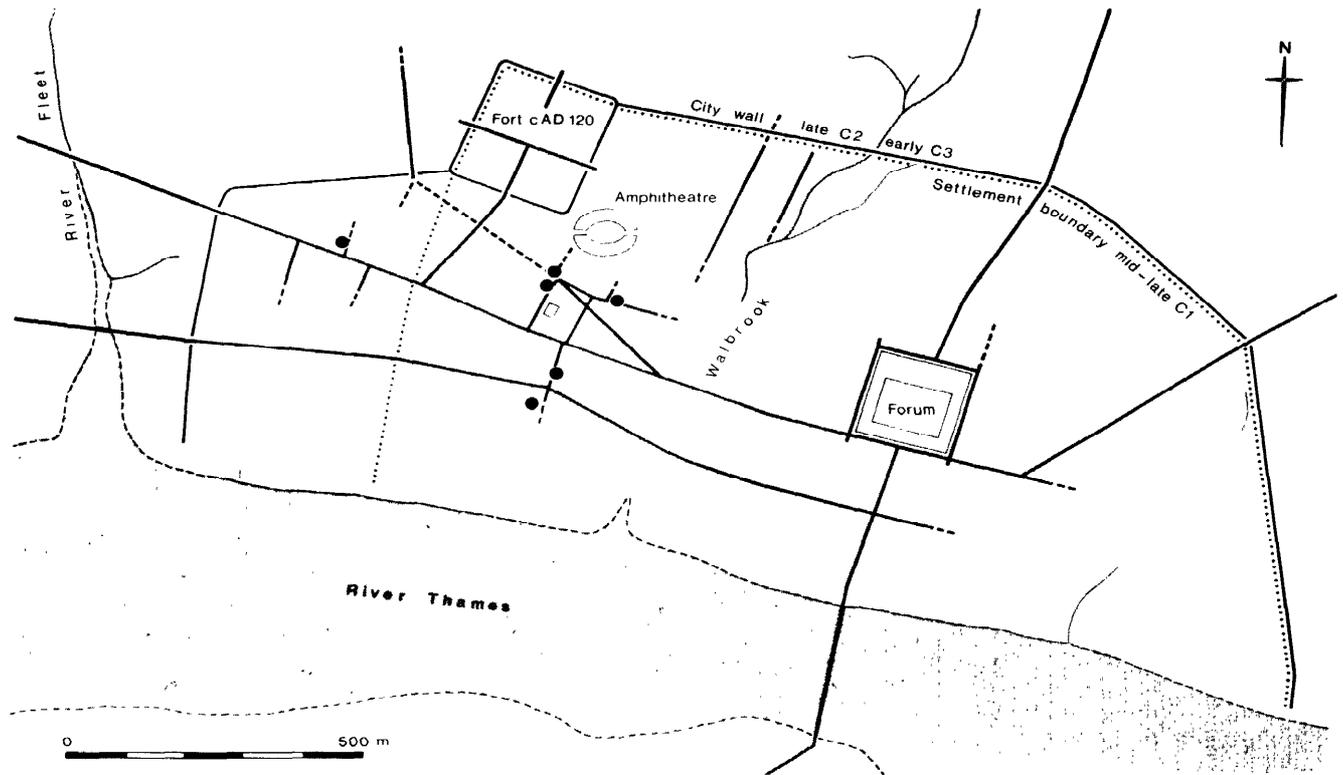


Fig 91 The Roman city, boundaries and principal routes; the study area (shown in detail in Fig 93 is highlighted, and the principal sites within it are marked with dots). Scale: 1:12,500.

related to a distinct rise in the level of the natural brickearth in the vicinity of Site 6 (Fig 93). However, the displacement to the north beyond this point also has a bearing on the western limit of the settlement as originally conceived. Three roads — one postulated at Paternoster Row (the evidence for which is 'circumstantial'; Bentley 1985, 128; not illustrated on Fig 93), another more certainly identified through Aldersgate (Site 21, Bentley 1985), and a third found recently at Foster Lane (Site 19, p 113) — each aim directly for this point and imply the existence there of an important crossroads (Fig 93, Roads 1, 9 and 10).

Burials

The likelihood that the change in the alignment of Roman Cheapside and Newgate Street and the site of the crossroads coincide with the western limit of the original settlement is reinforced by the location of the early cemeteries.

The main evidence for burial lies in the vicinity of Smithfield. Excavation at St Bartholomew's Hospital has led to a re-examination of the evidence from the so-called Newgate-Smithfield-Farringdon Street cemetery (Bentley & Pritchard 1982). Cremations of mid 1st to mid 2nd century date were found alongside modern Newgate Street and Paternoster Row, and continued as far east as St Martin-le-Grand, well within the line of the city defences as established at the end of

the 2nd century (Maloney 1983). A late Roman inhumation cemetery, by contrast, lay beyond these defences just outside Newgate, mainly to the north of the present Holborn Viaduct and on the high ground to the east of the river Fleet.

As burial in the Roman period was legally confined to areas outside the limits of the settlement, the distribution of the early cremations suggests that the city boundary originally was well to the east of the position eventually adopted by the 3rd century defensive walls. The original boundary lay perhaps on the line, and therefore dictated the position, of the western side of the early 2nd century Cripplegate fort, not least because that line coincides with the deviation in the course of the main east-west road and the position of the crossroads; it can also be shown (p 114) to have influenced the Flavian gridding of the area to its east.

Some burials have been recorded within the line of the western boundary proposed here. The cremations have been tentatively interpreted (Marsden 1980, 24) as suggesting the Walbrook stream as the initial western limit of the settlement. However, two inhumations and 2nd century cremations in the same group must have been buried within the town proper, as is already accepted for several early cremations on the other side of the Walbrook at the very centre of the earliest part of the settlement. All are most likely to be casual incidents and not indicative of a formal cemetery in any particular period. The same may not be true, however, of the early cremations in the Coleman Street area between the fort and the Walbrook. Here, burials both south and north of

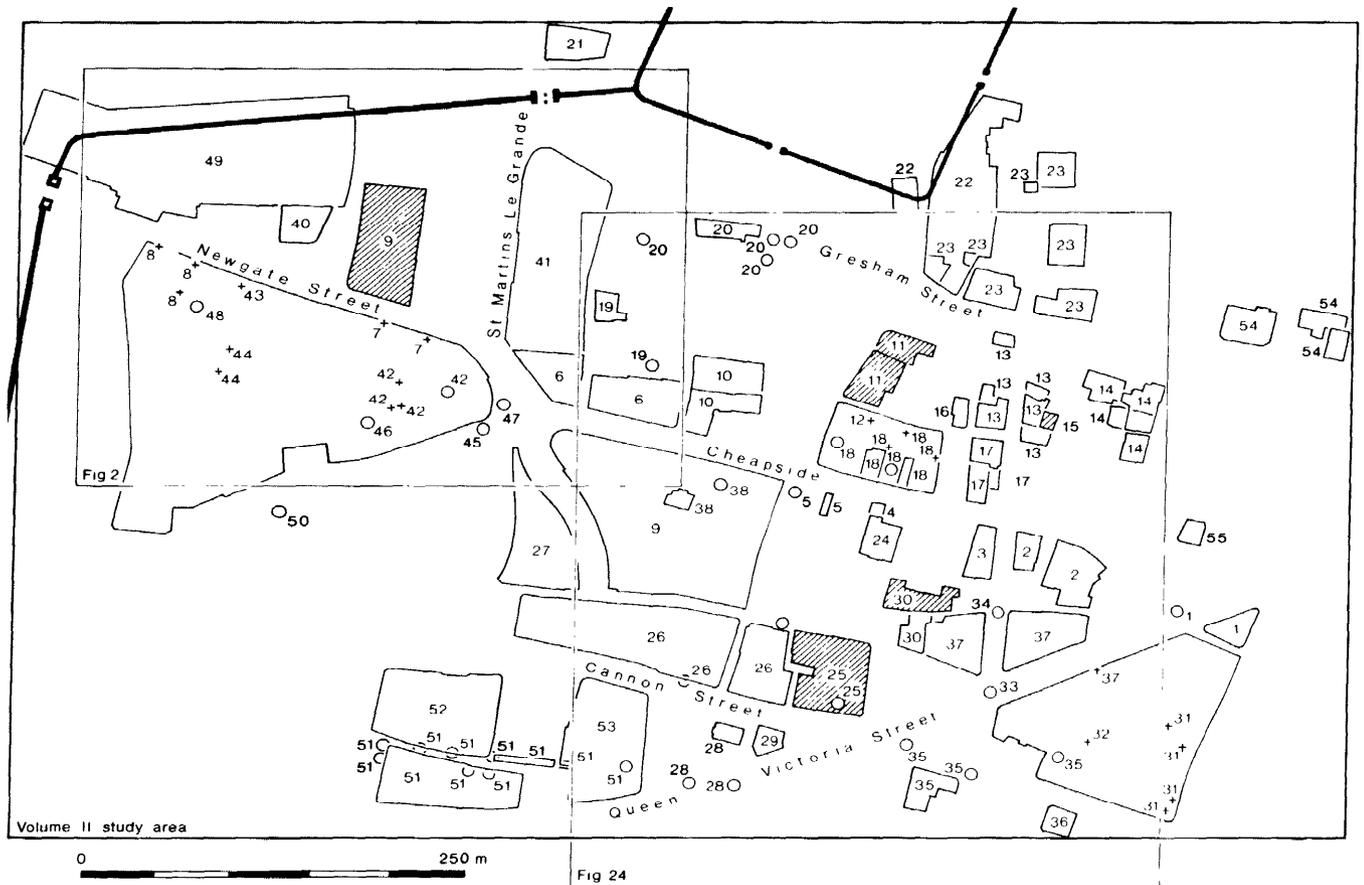


Fig 92 Location of sites of archaeological discoveries within the study area. The numbers refer to individual sites or to several sites grouped together according to a common theme, and follow the order in which they are discussed in the text. The outline of the individual sites represents the extent of redevelopment superimposed upon the modern street pattern. Sites marked with a circle (O) cannot be located exactly, while the crosses (+) mark specific observations within an overall excavation. The key below includes (a) the site number; (b) (in upright bold) the modern addresses; (c) (in parentheses) former addresses or site descriptions, the date of excavation and bibliographic or archival references. References prefixed with 'M' and 'G' are to Merrifield's Gazetteer (1965) and Grimes (1968) respectively; references prefixed with 'DUA' are to site codes of excavations by the Museum of London. Scale: 1:5,000; based on the 1988 Ordnance Survey 1:1,250 map with the permission of the Controller of HMSO, Crown Copyright reserved.

- 1 **1 Queen Victoria St** (Bucklersbury, National Safe Deposit Company site; 1872-3; M196); **Queen Victoria St** (during construction of the street, nr junction with Bucklersbury; 1869; M193)
- 2 **76-80 Cheapside** (and, formerly, 1-2 Hucklersbury; 1963; M191; M192); **72-3 Cheapside** (1930; M65)
- 3 **67-8 Cheapside, Regina House** (1937-8; M64)
- 4 **St Mary-le-Bow church, Cheapside** (Wren, excavations for the present church; 1671-80; M62)
- 5 **46-55 Cheapside, Bow Bells House** ('NE corner of Bread St'; 1595; M60); (at former 51 Cheapside; 1955; M61, G38)
- 6 **150 Cheapside, St Vedast House** (1962; M36); **134-47 Cheapside, Cheapside House** (1957; M37)
- 7 **Paternoster Square** (formerly 41 Newgate St; 1961; M14, Marsden 1963); formerly 42-7 Newgate St; 1961; M15 (incorrectly gives as 48 Newgate St), Marsden 1963)
- 8 **Paternoster Square** (formerly 16 Newgate St; 1961; M3 (incorrectly states as W not E of Warwick Lane), M4, Marsden 1963); (formerly 10-13 Newgate St; 1962; M5, Marsden 1963)
- 9 **81 Newgate St, British Telecom Centre** (DUA GP075; 1975-9; this volume & Roskams 1982)
- 10 **130-3 Cheapside** (1979; DUA WOW79, Milner 1980); **125 Wood St, St Alban's House** (formerly Goldsmith House; 1961; M43, Marsden 1963)
- 11 **10 Milk St** (1972; DUA MIL72, this volume); **1-6 Milk St, State Bank House** (1976; DUA MLK76, this volume & Roskams et al 1986)
- 12 **101-16 Cheapside** (Sun Life Assurance Company building, at former 5 Russia Row approx; 1956; M52)
- 13 **30 Gresham St** (formerly 26 King St; 1960; M45); **33 King St** (formerly 8-9 Lawrence Lane; 1938; M46); **34-5 King St** (1955; M47); **13-14 King St** (1965; M48); **9-12 King St** (Atlas Assurance site; 1963; M49); **3-7 King St** (at former 7 King St; 1926-7; M50)
- 14 **11 Ironmonger Lane** (1949 & 1983; M151 & DUA BOA83); **27-32 Old Jewry** (formerly part of St Olave's church; 1888; M152); (1953; M153); **33-4 Old Jewry** (1952; M154)
- 15 **24-5 Ironmonger Lane** (1980; DUA IRO80, this volume & Norton 1985)
- 16 **22-3 Lawrence Lane** (formerly Blossoms Inn, 24-7 Lawrence Lane; 1930 & 1955; M44, G41)

- 17 **39 King St, Windsor House** (also formerly 94-6 Cheapside/2-3 Lawrence Lane; 1935 & 1960-1; M58, M59, G42); **36-7 King St** (1985; DUA KNG85)
- 18 **101-16 Cheapside** (W side, formerly 2-6 Honey Lane Market; 1955-6; M51); (N edge, formerly 2-6 Honey Lane Market; 1955-6; M53); (formerly 106 Cheapside & 109-11 Cheapside; 1955; M54, G40); (formerly 107-8 Cheapside; 1955; M55, Marsden 1976); (formerly City of London School, Honey Lane Market, Milk St; 1861; M56); (E end & alley, formerly 1 Freeman's Court; 1956; M57)
- 19 **Gutter Lane, ?Saddlers Hall** (1946; G25); **10 Foster Lane** (formerly 7-10; 1982; DUA OST82, Blair forthcoming)
- 20 **Goldsmiths' Hall, Foster Lane** (1830; M38); **Gresham St, Wax Chandlers Hall** (1956-7; M39); **Gresham St** (sewer trench at Wood St corner, N side of former St Michael's church; 1843-4; M40); **Gresham St** (sewer trench, formerly Wood St, junction with Maiden Lane & Lad Lane; 1843 & 1923; M42); **Wood St** (sewer trench, W side, formerly Huggin Lane; 1851; M41)
- 21 **10 Aldersgate St** (formerly 7-12 Aldersgate St; 1984; DUA ALG84)
- 22 **66-75 Aldermanbury, Barrington House** (formerly 70-3 Aldermanbury; 1951; M34); **Guildhall Library, Aldermanbury** (formerly 1-19 Aldermanbury; 1965-6; Marsden 1968, 4-10)
- 23 **Guildhall** (rear of; 1951; M127); (site of Council Chamber; 1882-3; M 128, Norman & Reader 1912); **Guildhall Library, Aldermanbury** (formerly 71-5 Gresham St; 1908; M 1.30, Norman & Reader 1912); (formerly 3 Church Passage/Aldermanbury, Fountaine Court; 1911; M131); **St Lawrence Jewry church** (1671; M132, Norman & Reader 1912); **Guildhall Art Gallery/Guildhall Yard** (1987-9; DUA GAG87); **81-5 Gresham Street** (1985; DUA GDH85)
- 24 **St Mary-le-Bow church** (1915; M63)
- 25 **47 Cannon St/12-13 Bow Lane/19-26 Watling St** (formerly Watling Court/11-14 Bow Lane/41-53 Cannon St; 1978; DUA WAT78, this volume & Perring 1983); (Cannon St N side, just W of Bow Lane; 1877; M87)
- 26 **31-7 Cannon St/12-16 Watling St, Watling House** (1954; M 74, M75, M 76, M 77, M78, M79, M80); **Watling St, Gateway House** (1954; M68, M69, M70, M71, M72); **Watling St** (sewer trench; c 1833; M73); **Cannon St** (sewer trench, formerly Little Friday St; 1845; M85)
- 27 **New Change, St Paul's cathedral Choir School** (1965; Marsden 1968, 2-3)
- 28 **Bread St** (St Mildred's church; 1973; DUA MIL73, Marsden et al 197.5); **Queen Victoria St** (sewer trench at former junction of Bread St & Knightrider St; 1844-5; M103); (sewer trench, formerly Great Trinity Lane; 1845; M104)
- 29 **30 Cannon St** (former Fire Station; 1906; M86)
- 30 **67-9 Watling St** (1961; M88); **44-8 Bow Lane, Well Court House** (1979; DUA WEL79, this volume & Allen 1987)
- 31 **Queen Victoria St, Bucklersbury House/ 11-16 Walbrook** (formerly 6-14 Walbrook; 1955; M247); (formerly 10-12 Walbrook, structures S of Mithras temple; 1954; M250); **Queen Victoria St, Bucklersbury House/20 Walbrook** (formerly 19-21 Walbrook, Roman road at S end of site; 1955; M251); (formerly 19-20 Budge Row, structures at SE corner of site; 1955; M252)
- 32 **77 Cannon St, Temple Court** (formerly 31-2 Budge Row; 1958; M255)
- 33 **Queen Victoria St/Watling St** (1869; M92)
- 34 **Queen St** (1836-41; M90)
- 35 **Cannon St** (sewer trench, formerly Little St Thomas Apostle St; 1848; M105); **Cannon St/Queen St** (sewer trench; 1850; M106); **50 Cannon St** (formerly 48-50 Cannon St; 1975; DUA CS75, Boddington 1979); **Cannon St/Tower Royal** ('below the medieval fragments of Tower Royal'; 1852; M107)
- 36 **62-4 Cannon St** (1980; DUA CAN80)
- 37 **10-15 Queen St/61-2 Watling St, Aldermary House** (1960; M89, Wilmott 1982); **40-66 Queen Victoria St/82 Queen St** (site of the Bank of London & South America; 1953-4; M91, Wilmott 1982); **Queen Victoria St, Bucklersbury House** (formerly 23-5 Queen Victoria St; 1954; M246, Wilmott 1982)
- 38 **Cheapside/New Change, Bank of England Annexe** (adjoining former St Matthew's church, Friday St; 1844 & 1866; M66); (formerly 63-4 Friday St/1-14 Bread St, New Change House; 1953-4; M67, G37)
- 39 **Cheapside/New Change, Bank of England Annexe** (N end of former New Change House; Marsden 1976, 46)
- 40 **Newgate St, Christchurch Greyfriars** (1976; DUA CHR76, Herbert 1981)
- 41 **2-40 St Martin's-le-Grand** (former site of Post Office (1825); 1845 & 1913; M35)
- 42 **Paternoster Square** (11-12 Paternoster Row/Newgate St, W of Panyer Alley; 1961; M16, Marsden 1963); (11 Paternoster Row/Newgate St, W of Panyer Alley; 1961; M17, G28, Marsden 1963); (12 Paternoster Row, E of Cannon Alley; 1961; M20, G28, Marsden 1963); (at E margin of site; 1961-2; G26)
- 43 **Paternoster Square** (formerly 23 Newgate St; 1961; M11, Marsden 1963)
- 44 **Paternoster Square** (formerly 1-12 Paternoster Square; 1961; M9, Marsden 1963); (behind former 21-9 Newgate St; 1961; M10, Marsden 1963); (1961; M6, M12, M13, Marsden 1963)
- 45 **Paternoster Square** (formerly St Paul's Churchyard, NE corner; 1841; M21)
- 46 **Paternoster Square** (formerly 56 Paternoster Row; 1843; M19)
- 47 **Paternoster Square** (formerly Cheapside/Paternoster Row; 1834-6 & 1839-41; M18)
- 48 **Paternoster Square** (formerly I Paternoster Row; 1883; M8)
- 49 **Newgate St, General Post Office** (former site of Christ's Hospital; 1908-9; M1)
- 50 **St Paul's cathedral** (1672; M22)
- 51 **110-28 Queen Victoria St/Peter's Hill/Distaff Lane** (drainage trench, Peter's Hill; 1863 & 1961; M93); (sewer trench, Peter's Hill; 1845 & 1961; M100); (sewer trench, former Knightrider St; 1844 & 1863; M94); (formerly 55-55A Knightrider St; M95); (sewer trench, former Old Change; M96); (sewer trench, former Lambeth Hill; 1845; M101); (formerly 114A-134 Queen Victoria St; 1961; M102, G31); **110-12 Queen Victoria St, Bracken House** (formerly 57-6 7 Knightrider St; 1955; M97); (formerly 69-71 Knightrider St; 1956; M98)
- 52 **Carter Lane, Old Change Court** (formerly 13 Carter Lane/11-17 Carter Lane/47-9 Knightrider St; 1960; M83)
- 53 **8-18 Cannon St, Bracken House** (1955; M84)
- 54 **3-4 Lothbury/1-5 Moorgate** (1907; MISS); **2 Moorgate** (formerly Founders' Court, site of Founders' Hall; 1927 & 1930; M157); **6 Lothbury** (1931-2; M160)
- 55 **35-6 Poultry/Grocers' Hall Court** (former & 33-5 Poultry; 1936; M177)

Fig 93 (opposite) Detailed topography of the study area, based on information from the sites located on Fig 92. The map shows the road pattern and the buildings on the five principal sites at the beginning of the 2nd century AD. Quarries, kilns, wells and other structures of this date are shown as black symbols; those of different or uncertain date are shown in tone. Scale: 1:2,500.

the later defensive wall seem to form a single group, all formally lying outside the settlement proper. The original northern limit may therefore have lain further south than the line of the later defences.

It has been suggested that the Walbrook stream was the 'natural axis' of Roman London (RCHM 1928, 15). The present evidence indicates that the east-west thoroughfare beneath Fenchurch Street, Cheapside and Newgate Street was the initial artificial axis of the settlement, its position probably determined by the easiest crossing point of the stream. Building alignments at the Newgate Street site imply that the displaced course of the road was established before the Boudiccan fire, coinciding with a suburban area beyond the western boundary of the original settlement. If so, the large space between the boundary at the point of the deviation and the Walbrook stream must always have been regarded as part of the urban area proper.

The street system (Figs 91-93)

The street system west of the Walbrook did not conform to any overall plan but instead comprised several different components. The areas on either side of the primary east-west street were systematically set out and incorporated some elements of formal planning. Within these the street plan dictated a consistent layout of buildings and associated features on common alignments, although adaptation to the natural topography occasionally resulted in more than one dominant alignment. Elsewhere the street plan was less regular and the internal features not as systematically organised. In all areas the form of development was strongly influenced by variations in natural topography, especially where the ground sloped down to the Thames and into the valleys of the Fleet and Walbrook.

Area north of the main axial street

The area to the north of the primary east-west street was crossed by several streets (Fig 93). The evidence for these has recently been brought together by Shepherd (forthcoming), who has been able to identify parts of seven streets (Roads 2 to 8, see Fig 93), five of which met in a staggered junction at the north end of Milk Street (MIL 72, Site 11). Road 3 was of special importance since it followed a line between lower ground to the west and the outline of the Walbrook valley and its tributaries to the east. Its metallings were recorded over a distance of 32m along the east side of the Milk Street site (MIL 76, Site 11); the survival of both its edges there enables its alignment to be projected accurately (p 49). Further metallings have also been recorded immediately to the south (Site 12) and it would presumably have continued southwards to join the primary east-west street (Road 1), but there is no record of the street further north of Milk Street. The best evidence for its construction date is provided by the street-side ditch at Milk Street, which was most probably pre-Flavian (Fig 45). The street was of major importance to the overall planning of the area since it followed the edge of the level hill-top to the west, the ground to the east sloping down into an area of

tributary streams at the western edge of the Walbrook valley. This change in the natural topography of areas to either side is reflected in their contrasting development.

To the east the gravel metallings of an east-west street (Road 2) survived patchily in several places (Sites 13 and 14) but controlled excavation between these sites at Ironmonger Lane (Site 15) has given the alignment of the street's northern edge and details of its setting out. Its line was defined by a shallow marking-out ditch prior to construction. The earliest street metalling sealed a Neronian pit and was itself sealed by levelling incorporating redeposited burnt debris. This material is dated to the early Flavian period and is unlikely to have been related to the Boudiccan fire of AD 60-1 (p 61). The street must, therefore, have been laid out in the early Flavian period or just before, at about the same time as its north-south counterpart at Milk Street.

The street's alignment is problematic. If projected further to the west it would cross Site 16 where, instead of gravel metallings, there was a sequence of Roman timber buildings. However, the building recorded in greatest detail was on a noticeably different alignment from that of others in the area (Grimes 1968, 136), and the most likely explanation is that the street ran to the north of the site on a slightly new alignment (see below), thus accounting for the orientation of the building, and joined the north-south street at the northern limit of the Milk Street 1976 site. The line of the street seems to have been influenced by the broken ground which it traversed and, in particular, by the course of streams which flowed diagonally to the regular street alignment. It is uncertain whether this street crossed the Walbrook valley, although a second crossing point so close to the more favourable one on the main street to the south does not seem necessary. Nevertheless, despite their irregular layout, the streets at Milk Street and Ironmonger Lane were established at the beginning of the Flavian period.

Recent excavations at 36-7 King Street (Site 17), within the area bounded by Roads 1, 2 and 3, have uncovered another street junction. Road 5, on an alignment possibly intended to be parallel to that of Road 3, probably continued northwards from this junction to join Road 2. The abnormally wide spread of gravel metalling observed at two points in the south-west part of Site 13 (Merrifield 1965, Nos 46 and 47) probably marked the position of this junction and was perhaps the point where Road 2 changed direction. Road 5 also extended southwards and would have joined Road 1 at an angle of about 75°. The other road found at Site 17 (Road 6) was on a completely different alignment from that of the other streets considered here. Its projected line (north-west to south-east) would have met Road 1 at an acute angle on a line perpetuated by modern Bucklersbury. To the north-west it would have joined Road 2 at, or perhaps just before, the junction with Road 3.

The excavations at the junction of Roads 5 and 6 showed that both were laid out at the same time and that buildings built alongside these streets had been destroyed in a fire dated as Neronian or early Flavian, since deposits directly over the fire debris were dated no earlier than AD 70 (Rowsome in Shepherd forthcoming). It is therefore possible to suggest that these two streets were contemporary with Roads 2 and 3. The major building within this area was a small bath-

house (Site 18), which was located to take advantage of the local springs (p 118). Its date is uncertain, although it was modified in the early 2nd century and remained in use until the early 3rd century. However its position, set back from the primary street to the south, suggests that it was built after the setting out of the local street system at the beginning of the Flavian period. The springs caused some minor flooding but this was contained and did not prevent extensive development of the surrounding area. To the east of the bath-house the excavations at Site 17 (Rowsome 1987) and in adjacent areas (Sites 13, 14, 16 and 18) indicate development in the late Neronian or early Flavian period.

By the early 2nd century the area around the bath-house had become densely built up with the construction of substantial stone and brick buildings with *opus signinum* floors, in some cases set well back from street frontages (Site 18; Marsden 1976, 42-5). Their quality suggests that they were domestic. By contrast, a broadly contemporary timber building which lay between the bath-house and the main street to the south may have been part of commercial development along that street. The bath-house and surrounding buildings were laid out in conformity with the alignment of streets to the south and west, to form a coherent planned, predominantly residential, development away from major street frontages. Development further east in the Ironmonger Lane area was quite different, and is more typical of that seen in the upper Walbrook valley (p 114).

The bath-house was obviously an important feature of the area but was not part of a large complex like the major public baths at Huggin Hill (p 116). This has caused some debate as to its precise status (Marsden 1976, 45-7). It is unlikely to have been part of a private house, and the suggestion that it served a *mansio* located between it and the thoroughfare to the south (Marsden 1980, 55) remains difficult to prove. Another suggestion is that it served the fort to the north (*ibid*), but the surrounding residential area and the major thoroughfare to the south are much more likely to have been the major sources of custom. Probably the bath-house provided a public amenity, most likely in the form of *balnea* (small public baths), in a more central location than that at Huggin Hill. Its limited size was almost certainly a result of the more localized supply of water compared to the major spring line which supplied the Huggin Hill baths, rather than of the requirements or character of the local clientele.

To the west of Road 3 there is good evidence at the Milk Street site (Site 11) of planned development contemporary with that to the east. Extensive early Flavian buildings (Period III) were regularly laid out on its alignment. Further west (Site 10), similarly aligned Flavian buildings must have been part of the same overall development. To the north-west of this (Site 19), the earliest of a series of timber structures may also have been Flavian. On all these sites structures sealed rubbish pits and brickearth quarries, suggesting Flavian expansion into a previously undeveloped area.

Further west still, it was generally assumed until recently that a street laid out at right angles to the main thoroughfare ran north to the south gate of the Cripplegate fort. There is however no physical evidence for such a street and metallings recorded at the western

edge of Site 10 lay too far to the east to be proof of it. Work at Foster Lane (Site 19) has now produced the western edge of a series of successive well-surfaced and regularly laid gravel metallings, sometimes with a camber, which formed a street (Road 9) aligned south-west to north-east. The street represented the first important development on the site and Flavian pottery from its earliest surfaces suggests that it was laid out at the same period as that at Milk Street to the east.

The alignment of Road 9 was quite different, however, from those of both the Milk Street road and others to the south and east, and cannot be explained in terms of irregular natural topography. If projected, it would provide a direct link between the south gate of the Cripplegate fort to the north and the main street to the south, just inside the point at which the latter passed through the original western limit of the settlement. Although late 1st and 2nd century buildings at Foster Lane fronted onto the street's western edge, the area immediately to their west, as far as we can tell, remained largely undeveloped. This increases the likelihood that the original boundary of the settlement was located just beyond the junction with Road 9.

It is more difficult to identify the northern limit of the planned area, although it is probably reflected in the very different character of activity at the north end of the Milk Street site (Site 11). The earliest buildings here fronted onto the north-south street recorded to the south (Road 3) but were not constructed until the late 1st-early 2nd century, after the extensive Flavian development noted elsewhere. Unlike their southern counterparts, these northernmost buildings were not subsequently replaced, perhaps because they remained of marginal interest. It may also show that the street system was only extended further to the north in the Hadrianic period, with later modifications in the Antonine period (Road 7). At neither time was the extension aligned with the original street to the south, the two being joined by a staggered crossroads. A series of drains and rough surfaces was recorded to the east of the new north-south street but there is no evidence of related buildings. It is probable that the new streets were laid out to improve access to the amphitheatre and fort to the north, facilities which were added to the town some time after the laying out of the initial streets to the south.

Roman streets and buildings to the north-west of the Milk Street site are unfortunately not closely dated but their relationship with the area to the south can largely be deduced from their alignments. A gravelled street at Site 20 is said to have run across the site in a north-westerly direction, on a completely different alignment from that of streets and buildings to the south. This may have been a continuation of Road 2 and could have linked up with a road (Road 10) recently identified at Aldersgate (Site 21, Bentley 1985). Immediately to the north, a series of domestic buildings were also laid out on various alignments, although one of them appears to be consistent with the alignment of the Foster Lane street (Road 9) a little to the south-west.

Overall, the area to the north of the main thoroughfare was initially developed shortly prior to, or at the very beginning of, the Flavian period as a direct result of the establishment of a network of streets. This was planned to take maximum advantage of variations in the natural topography of the area. The diagonal street,

Road 6, strongly suggests that Road 2 did not bridge the Walbrook when the street system was first laid out, and that the area was planned around the need to direct traffic to and from the point where Road 1 crossed the Walbrook. Road 2 presumably extended eastwards into the Walbrook valley in order to maximise the use of land here. The northern and eastern limits of the street system were broadly defined by the Walbrook valley, and its western limit by the initial boundary of the settlement. These limits match those suggested by the distribution of early burials. The westernmost street in the arrangement (Road 9) ran just inside this boundary but followed an irregular alignment, as if to give direct access to what, in the early 2nd century, was to become the site of the Cripplegate fort. Extensions of the street system to the north (Roads 7 and 8; see below) in the early and mid 2nd century were probably also related to the use of the amphitheatre and fort but other building development there remained peripheral and irregular.

Some aspects of the layout of this area were planned, but the layout was adapted where necessary to make best use of the river crossing, to include marginal land and to provide access to the amphitheatre and fort to the north. With the exception of the Ironmonger Lane site (see below), the character of the buildings suggests that the area was residential.

The fort, amphitheatre and upper Walbrook valley

To the north-west an outline plan of the Cripplegate fort has been reconstructed by Grimes (1968, 17-32), who identified its defensive circuit, gates, and principal streets. There is some evidence of previous occupation surfaces sealed beneath the fort but, apart from an 'enigmatic early wall' below the west gate, there is no definite evidence of buildings: previous activity is largely represented by features interpreted as pits and gullies. However, it is often difficult to distinguish between these and robbed beam slots, and little appears to have been recorded in plan in any case. The presence of timber buildings should therefore not be entirely discounted, though pre-fort activity first occurred in the late 1st century and was on a lesser scale than that in the area to the south.

The fort itself was probably constructed in the Hadrianic period. It was located on high ground overlooking the Walbrook valley, lying inside the line of the proposed early boundary of the settlement immediately to the west, and was aligned with the course of the axial east-west Road 1 to the south. The northern extension of the street system was contemporary with the construction of the fort and almost certainly related to it. The new road (7) laid out in the Antonine period, leading north from the Milk Street site (Site 11), would have run alongside the east wall of the fort, presumably to give access to its east gate. It is possible (see drawn section; Marsden 1968, Fig 5) that the large amount of sand and gravel washed into the fort ditch there was derived from a street on precisely this line (Site 22). The destination of the original Road 3 in the Hadrianic period is less clear, but it is probable that the re-alignment of the crossroads at the Milk Street 1972 site

involved no more than a local change in layout. If so, the east gate of the fort would have been linked to the streets in the south from the Hadrianic period onwards.

Although the fort was connected with the street system to the south, the two were essentially separate physically, as well as in date. Not only was the fort constructed well to the north of the developed area, but each was organised as an independent entity. Connecting streets were no more than a matter of convenience.

An amphitheatre has now been discovered just outside the south-east corner of the fort (Site 23). This discovery is too recent for its topographical implications to be properly assessed, but since the structure dates to the late 1st century (Frere 1988, 461), it would clearly have directly influenced the layout of Roads 7 and 8.

To the east of the fort, the main stream of the Walbrook followed the regularly formed eastern side of the valley and was fed by a series of tributaries spread over a wide area to the north-west. To the south, a spur of the settlement's western hill forced the tributaries together as a single stream, and marked the transition between its upper and lower reaches. The upper valley was extremely broad and shallow, with a very gradual change from the valley proper to the high ground to its west (see Maloney C 1990 for a full consideration of the development of this area).

To the south of the amphitheatre the spur of the western hill created more favourable conditions peculiar to the western side of the valley. Tributary streams flowing into the valley from the west (Sites 13, 18, 19, 5, and 25) cut directly from the brickearth-capped hilltop down the side of the valley, leaving the areas of relatively high ground in between completely dry. Even where springs occurred in a localized area at the edge of the valley (Sites 16 and 18), there was no widespread flooding and excess water would have been carried away by local streams flowing into the valley itself. Although pierced by streams, marginal ground at the western edge of the valley was therefore well-drained compared to that at its centre.

Access to this area was provided by the east-west street (Road 2) recorded at the Ironmonger Lane site (Site 15, pp 57-63). Development along the line of this street was quite different from that of the residential area to the west. A hearth and associated water channel was a recurrent feature of successive Flavian and early 2nd century buildings at Ironmonger Lane, and suggests that they were used for industrial or commercial purposes. Further broadly contemporary hearths have been recorded to the south of the street and to the west (Site 13), in one instance related to a timber water channel, while a building which probably fronted onto the street a short distance to the west (Site 16) was similar to that at Ironmonger Lane. It would seem that the industrial/commercial development seen at Ironmonger Lane extended along the entire length of the street.

A gravelled street at Site 13 (Road 8), in use during the early 2nd century, ran north-north-east from that recorded at Ironmonger Lane. This street was short-lived and, like Road 7, may have given access to the amphitheatre to the north. Evidence in the area of Road 8 is rather sparse and a full sequence has been recorded in only one instance. Pits and rammed gravel surfaces

here, dated to the late 1st-mid 2nd centuries and sealed by a deposit of humic silt, represent an external area. Above this was a domestic building with *opus signinum* and mosaic floors aligned to take advantage of the ground between tributary streams. Pottery in a gully sealed below the building suggests that it was not constructed until at least the early 3rd century, considerably later than the main period of development around Ironmonger Lane to the south.

Other sites to the north of Ironmonger Lane were recorded in much less detail but suggest that the evidence of Site 13 was typical. A building at the north-eastern extremity of Milk Street (Site 11) was constructed above material dumped in the mid-late 2nd century with no evidence of earlier surfaces. Buildings further east (Site 14) are all undated but were of massive stone construction typical of the late Roman period. All were set well back from the streets to the south and west and, like the building at Site 13, their alignments were irregular and dictated by local tributary streams. To the east there is further evidence of stone buildings, one of which cut a dumped deposit dated to the early 2nd century. Overall, the area to the immediate north of Ironmonger Lane was neither coherently laid out nor built up until the late Roman period. Evidence of organized early Roman activity is limited to the gravelled area at Site 13.

Although early Roman development to the north was apparently quite peripheral, this was certainly not true of development along the actual street found near Ironmonger Lane. Industrial/commercial activity there, though in sharp contrast to the residential area to the west, was nevertheless an integral part of the Flavian street system in the area as a whole. It is probable that the exploitation of marginal land at the edge of the Walbrook valley and the location of industrial activity in the Ironmonger Lane area were closely related. The proximity of tributary streams would have been a positive advantage to processes at Sites 13 and 5 which evidently required a supply of water. The good drainage at the edge of the valley made the extension of the street system and the construction of buildings in this zone relatively straightforward.

The area south of the main axial street

Here, fewer streets have been located but the planning of the area can, to a large extent, be deduced from the general layout and alignment of buildings. In particular, buildings at Watling Court (Site 25) and adjacent sites for up to 100m to the west (Site 26) were all laid out on very similar alignments and were obviously part of the same overall development.

At Watling Court some buildings may have been destroyed in the Boudiccan fire but the main period of development was early Flavian, with the site eventually becoming completely built up by the late 1st century. Development to the west apparently followed a similar pattern. There, buildings were constructed above pits dated to c AD 60-80, except one building in a more central position (Merrifield 1965, No 76, part of Site 26) which overlay a pit dated to the late 1st-early 2nd century (Shepherd 1986). As at Watling Court, this

seems to represent later infilling after the surrounding area had been built up in the Flavian period. The regular layout of buildings and alleyways, together with the density of the development, implies that the area was coherently laid out and developed. The character of the buildings suggests a residential district set out some distance south of the main street and broadly comparable with the development seen at a similar distance to the north of the street.

The northern limit of this local development was defined by a gravelled street, recorded as running roughly east-west along the line of modern Watling Street (Road 12). The street is undated but Flavian buildings immediately to its south apparently fronted onto it. Gravel surfaces at Site 27 could have been part of a westward continuation of this road (Shepherd 1986, 136). The western limit of the built-up area is not known precisely, although development to the west of Site 26 was completely different. To the south, a late 1st century building at Site 28 was similar to adjacent and contemporary buildings at Watling Court and shared their alignment, as did a small sunken bath nearby (Site 29). Both of these were clearly part of the same general development but must have been at its very edge since the area to their south was laid out very differently in a series of terraces (Williams forthcoming a). The general layout of buildings and alleys at Watling Court may imply a frontage onto a street running along the southern limit of the site on the line of modern Cannon Street, and separating Watling Court from Sites 28-9. However, in the absence of more specific evidence, the existence of such a street can only be proposed in very general terms.

The eastern limit of the development is well defined by a north-south gravelled street (Road 11) traced for a distance of 22m at the Well Court Site 30. This ran precisely along the edge of the brickearth-capped hilltop which immediately to the east sloped down into the Walbrook valley, and would have continued northwards to join Road 1 at a point opposite Road 5. A marking-out ditch established the line of the street and that of the later, regularly laid out, buildings at its western edge. There was however no corresponding development on its eastern edge: buildings located further east down the side of the valley were set well back from the street and, in at least one instance, lay on a different alignment from it. The street therefore formed the eastern limit of development, coinciding with the change in natural topography at the western edge of the Walbrook valley.

The street at Well Court was most likely laid out in the early Flavian period, contemporary with the first major development at Watling Court to the south-west, and would have been an essential part of the initial planning of the area. It probably extended further south, on a slightly modified alignment, to run alongside the buildings at the eastern end of the Watling Court site. Significantly, development in the Walbrook valley to the east was not as coherent and followed completely different alignments. On the east bank of the Walbrook (Site 31 and Wilmott forthcoming) a gravelled street on an embankment (probably the eastward continuation of Road 12) must have been carried across the stream, since its line was continued to the north-west by a row of piles at its northern edge and by further areas of gravel

metalling recorded on the western side of the valley (Sites 32 and 33). The street perhaps extended to meet others recorded to the west (Site 26) and north (Site 30) at an irregular crossroads at the north-eastern corner of the Watling Court site.

Buildings with stone walls and tessellated floors have been recorded to the east, at the edge of the Walbrook valley (Sites 30, 34 and 35) but, apart from 2nd century floor surfaces at 62-4 Cannon Street (Site 36), none of these is accurately dated. The evidence of domestic buildings in the eastern part of the Well Court site suggests however that, even if these buildings were constructed in the early Roman period, they would not have been related to the street system or laid out to a regular plan. The area to the east of Well Court (Site 37; Wilmott 1982) was unsuitable for large-scale building development because of the abnormally high water table. Instead a large concentration of wells sunk in the area from the Flavian period onwards probably served as a public water supply (p 118). The banks of the Walbrook stream itself were consolidated with piles and revetment structures in the Flavian period and the first half of the 2nd century (Grimes 1968; Wilmott forthcoming). Wooden platforms and other occupation surfaces have been recorded along both of its banks (Sites 1 and 31), although it is uncertain whether they were related to buildings or to other structures. However, there is convincing evidence of leatherworking at Site 31 and it is probable that, like its upper reaches, the lower Walbrook valley was used as an industrial area. Overall, development to the east of the Watling Court site was irregular and the form of activity varied with changes in natural conditions within the valley.

At the Well Court site itself, successive Flavian and 2nd century buildings were laid out at the street's western edge providing good evidence for commercial development along the street (p 102). Some elements of timber and stone-founded buildings of unknown date (Site 38), and a late 1st century pit which contained evidence probably derived from glassmaking or enamelling (Site 39), have been identified in the area between Watling Court and Cheapside; despite the paucity of the evidence, the area was presumably an integral part of the commercial development.

The Watling Court area was laid out on a set of alignments different from those of the main axial road and the area to its north. It is possible that the streets around Watling Court were related to another major thoroughfare, since the position of Ludgate to the west and of the southern crossing point of the Walbrook to the east together imply the existence of such a road. However, a direct route linking these points would have passed through the middle of the Watling Court complex, which archaeological evidence clearly contradicts. It must therefore have been diverted to pass to one side of the development. The alignment of the street at the Walbrook crossing points to the choice of the northern route (see also Shepherd 1986, Fig 13). Like the laying out of the area itself, this choice was probably dictated by the configuration of the western hill.

To the south of modern Cannon Street, information on the early topography is sparser and less well recorded. The main topographical feature of this area, distinguishing it from the area to the north, is a sudden, steeper southwards slope towards the river. On

the lower parts of the slope a series of large masonry buildings have been identified. Most of these buildings were, with the exception of the Huggin Hill baths (Marsden 1976), probably of 3rd century date if not later and thus unrelated to the expansion of the settlement in the late 1st-early 2nd century. A full review of the evidence for the use of this area is in preparation (Williams forthcoming a).

The suburban area to the west

The best evidence for early activity immediately adjacent to the main street is found on the Newgate Street site (Site 9; p 3). The first structure on the site, a hut, may antedate the setting out of the street, but drainage ditches of the succeeding period align with the street and the substantial buildings above this, burnt in the Boudiccan fire, show that the street-side area had been developed by AD 61. The north-south lane which flanked the easternmost property here from the 2nd century, if not before, was clearly an access-way rather than any part of a street grid. The area to the north yielded corresponding structural evidence, but of somewhat later date, presumably because it lay further back from the main frontage. To the west (Site 40), 2nd century timber structures overlying 1st century quarries had disappeared by AD 200. Once again, their situation well back from the main street accounts for the later start. Thus, although the commercial buildings of the Newgate Street site, lying immediately beside the main thoroughfare, continued westwards, behind them there was no sign of sophisticated residential structures such as were seen at Milk Street and Watling Court.

Further west still, a possible exception was located at the St Bartholomew's Hospital site (not on Fig 93) in 1978. Here a good quality building was constructed in the 2nd century, falling out of use by AD 200 to be covered by a late Roman inhumation cemetery (Bentley & Pritchard 1982).

Just to the east of the Newgate Street site, but separated from it by the presumed road leading to Aldersgate (not on Fig 93), was another very large site (Site 41) recorded during building operations. No horizontal strata were observed, because the natural brickearth had been largely removed before observation. However, pits for quarrying and rubbish disposal intruding into natural gravels were recorded. Flavian features were very numerous and concentrated in the south, early/mid 2nd century cases quite numerous further north. Their distribution suggests an alignment (perhaps a property boundary) perpendicular to the main Roman street to the south. Late Roman features were very scarce and randomly distributed. The shallow foundations of any timber structures would have been dug away before recording took place, but several pits contained substantial amounts of building material, perhaps locally derived.

The positions of the pits suggest a general correspondence between this and the Newgate Street site. The pits lay within north-south properties, with organised activities initially concentrated in the south. By the 2nd century, this area was built up and unavailable for pit digging, which therefore took place

only to the north. After the Antonine period, this organised disposition was superseded by random, small-scale, late Roman features.

Less information is available from the southern side of the east-west thoroughfare. Gravels and occupation debris, seen in section (Site 7), might be evidence of structures similar to those excavated at the Newgate Street site. Rammed gravel metallings to the east (and on site 42) suggested the presence of a road (Road 13) roughly perpendicular to the main road. Another road or track, on a slightly different alignment, may have been to the west (Sites 43 and 44; Marsden 1969, 41). Pottery suggests that the earliest occupation on these sites can be dated to the mid-late 1st century. Mosaic and tessellated pavements noted adjacent to the eastern of these roads (Sites 42, 45, 46 and 47) are not securely dated.

Further to the west several kilns (Sites 48, 49 and 50) have been recorded, one dated by late 1st to early 2nd century pottery. Some of these were possibly for pottery production (Marsden 1969). This industrial quarter was interspersed with cremation cemeteries, which confirms its suburban context in the late 1st and early 2nd centuries.

Exploitation of raw materials

(Figs 92 and 93)

Only a few natural resources were available for exploitation. The removal of timber, however dense its coverage, was probably to facilitate future building, rather than exploitation in itself, and would only have been short-lived. The same is true of turf. However, the natural brickearth and gravels covering nearly all the area were quarried throughout the early Roman period, whilst water supplies were also tapped in various ways and for various reasons.

Brickearth and gravel

The quarrying of brickearth and gravel served three uses: for nearby timber buildings; for construction elsewhere (usually gravel for streets or courtyards); and for kilns.

The first type of usage was best demonstrated at the Newgate Street site (Site 9), where small-scale, random, pre-Boudiccan quarries were superseded by a larger Flavian quarry pit. The latter can be securely associated with building construction on the site (p 67). A similar sequence might be suggested at Site 41 immediately to the east. Further east still, at Site 10, the absence of natural brickearth at the north end of the site must also be due to quarrying. Re-deposited material of late 1st century date which took its place correlates with the dumped horizon to the north dated to *c* AD 70. Pre-Flavian buildings at the south end of the site may have utilised the quarried material. Similarly, at Watling Court (Site 25), quarrying was broadly contemporary with nearby buildings, and the brickearth removed may therefore have been incorporated into their superstructure. Quarries at Ironmonger Lane (Site 15) and Milk Street (Site 11), if they existed, were unlikely to be found because of the limited scale of excavation.

Quarrying material for use elsewhere is suggested at several sites in the suburban area far to the west. At St Bartholomew's Hospital, the natural horizon of Thames terrace gravel was cut away in places and the intrusions filled with redeposited gravel mixed with a little domestic refuse of late 1st century date. This suggests the quarrying of material for external use, either for roads or courtyards, neither of which existed on the site in question.

To the south lay another group of quarries. At Site 51, deposits filling such a feature were cut by a late 1st century pit, in turn overlain by the enigmatic late Roman walls of Knightrider Street (Williams forthcoming a). At Site 52, sporadic digging for brickearth and gravel is suggested, the pits being filled with debris containing 4th century pottery at their surface. The initial quarrying could have been much earlier, and the pits may have remained open for a long time. Lastly at Site 53 to the east were Roman pits, some of which were too large to be anything but quarries.

The overall picture therefore is of the removal of the natural brickearth and, in places, the underlying gravel during the late 1st century, though the activity may have continued into later centuries or the features may have been left open for an extended period of time. The latter possibility strengthens the suggestion that these waterfront localities were unoccupied backwaters during the early development of the settlement. Quarrying here is therefore likely to have been intended to obtain material for construction in other areas.

Quarrying to provide material for industrial use seems to have occurred in the western part of the study area. Near the track suggested at Site 44, the natural brickearth had been cut away in the Roman period down to the top of the natural gravel. This suggests that the large intrusion was specifically for the removal of brickearth and, given the proximity of kilns at Site 48, the material is likely to have been procured for the production of pottery and tiles. Similarly, near Site 49 to the north, an earlier observation recorded many pits of Roman date near the site of kilns. At Site 50 to the south-east another quarry pit was described and one of the kilns reported as being 'amongst gravel pits and loam-pits' (Lethaby 1923, 195). Although this activity cannot be directly related to the kilns, its proximity to other quarries which are thus associated, together with the general context of the area, make that relationship a probability. Since the kilns were in use in the early Roman period the pits would also have been dug at that time.

In sum the distribution of quarries is consistent with other evidence of their use. They served as a source of brickearth for adjacent buildings; as a source of gravel in outlying areas where other activity was of a peripheral nature; and as a source of material for the production of pottery and tile in the industrial area to the west.

Water supply

Wacher (1978, 104) has suggested an aqueduct as a source of running water in London. Finds of wooden pipes and iron junctions have been cited as evidence for this and a route postulated from either Hampstead or Highgate, with a distribution point in the area of the

Bank of England. However, there is no convincing structural evidence for such a feature. In apparent contrast with most other large towns (*op cit*, 104), there is no real evidence that an aqueduct played any part in the water supply of the settlement. It seems instead to have relied on wells, springs and streams.

The main source of water in the Roman town was almost certainly wells (Merrifield 1965, 148). A concentration in the Queen Street area (in the west of the Walbrook valley — Sites 37 and possibly Site 3) is discussed elsewhere (Wilmott 1982; 1984): it may have served the intensive occupation represented by the buildings in the nearby Watling Court area. Further wells, generally of early-Roman date and either square and plank-lined or barrel-lined, have been found further up the Walbrook valley (Sites 2, 54, 55, and elsewhere to the north and east). No particular concentrations are apparent and they probably served localised needs, perhaps those of industrial processes evident in the valley or, as suggested for similar features elsewhere (*loc cit*, 16) to provide fresh water for domestic buildings located further away.

To the west, at Site 19, a well was recorded which included a timber lining at the base but a clay lining higher up, the latter added to conform with the raising of the surface of the timber buildings with which it was associated (Grimes 1968, 21). This closely resembled the clay-lined well at Milk Street (Site 11, p 49) set in an external area associated with an Antonine timber building to the south. In both cases the features would have supplied water for domestic buildings and were presumably for their exclusive use. Another well of earlier date was found at Milk Street, but its stratigraphic relation to the buildings was less clear.

Further wells were found nearby at Site 18, some of which accompanied the adjacent bath-house. There is also evidence of springs in this area (Sites 16 and 18), and water was very near the surface in some places. A tank associated with the bath-house was sunk into the river gravels and, although its sides were lined with timber and clay to make them watertight, its bottom was left unlined in order to tap rising ground water (Marsden 1976, 40-1). Significantly, the tank eventually overflowed in the mid or late 2nd century. Contact springs are an unlikely source here in view of the nature of the drift geology, while the junction of the second and third terraces of the Thames lay some distance to the north. This group of springs is therefore more likely to have resulted from a local abnormality in the underlying London Clay, as has been suggested further south (Wilmott 1982, 3-6). Elsewhere, it is possible that artesian welling was used, and the water rose under its own head.

To the west, a proposed well at the Newgate Street site (Site 9) was in use with an early 2nd century building which it abuts. A similar situation may have pertained at Site 41 immediately to the east, where a Roman barrel-lined feature was seen. Lastly, two wells were seen further south at Site 38, but since these are not accurately dated, they cannot be definitely associated with the occupation at Watling Court. In all cases these wells are likely to have been solely for the use of the occupants of the properties on which they lay.

At the eastern and western limits of the study area were two streams which may have supplied water. The

Walbrook, to the east, has been discussed elsewhere (Wilmott 1982, for the southern part; Maloney 1990, for the northern part). It is suggested that its valley was, at least in part, an industrial area, which spread out to the north-west at its headwaters and was here probably considered to be outside the town proper, at least until the 2nd century. In contrast, the Fleet to the west shows no sign of consistent Roman activity in its larger valley, possibly because of its steeper sides. Isolated cremations in the north and limited structural activity in the south represent the only Roman evidence so far recovered.

Between these two main streams however, and just inside the line of the later city wall, is a third. The evidence for this stream has recently been reviewed by Bentley (1987). It was, at least in part, a man-made feature drawing on water from a spring-line to the north of the line of the later town wall. To the south a number of brick-lined culverts imply the presence of small streams flowing to the Thames (discussed in more detail in Williams forthcoming a). Considerable quantities of water would have been available at the junction of the London Clay and second terrace of Thames gravels. Cisterns at such points could have collected sufficient water to require fittings such as the wooden pipes and iron collars, previously held to indicate the provision of an aqueduct. Given the existence of several bath establishments along the line, these sources are likely to have been common knowledge, not accidental discoveries.

At two sites early Roman water channels have been found. Four such features were seen at Cannon Street (Site 35) in the south of the Walbrook valley, sharing carefully engineered drops in level and evidence of plank-revetted sides. These channels are likely to have been for disposal rather than supply and may have been dug initially for land drainage but used finally for effluent disposal. Further, early drainage channels were suggested at Newgate Street (p 5) though here the features quickly went out of use when building took place.

Street-side drains have been found alongside the main axial road, with the insubstantial channels in the west being replaced (Site 1) by a large stone sewer near the Walbrook. The apparent absence of drains elsewhere along the road may be due to lack of survival, or because local topography required only their occasional construction (*eg* where the street dropped into the Walbrook valley). Other drains, for example at Milk Street and Well Court, though running alongside a public thoroughfare, were constructed in association with adjacent buildings and were presumably intended for waste disposal from them or to carry away water from their roofs (p 95).

Thus the overall view of water supply is one in which, in domestic and commercial areas, wells were used, either individual and private as to the north of Cheapside or in a concentrated group, perhaps publicly organised, as for the houses around Watling Court; industrial processes utilised some wells, or more usually streams which either determined their locations or were themselves diverted to suit local needs; and effluent was disposed of either by re-using channels originally dug for land drainage or utilising purpose-built, street-side drains.

V Conclusions

As a result of the detailed evidence presented above, it is now possible to give a chronological outline of the development of the area west of the Walbrook.

Origins

The city was intended from its start to be laid out around an east-west trunk road whose changes in alignment seem to indicate a large area of proposed settlement on both sides of the Walbrook stream. Although the early town destroyed by Boudicca may have been concentrated in the area between Gracechurch Street and the stream, it was by no means confined to that area. The pre-Boudiccan buildings some distance to the west, with their predominant use of wattle and daub and their circular form reminiscent of Iron Age structures, imply a cheap and perhaps short-lived response to the needs of its first inhabitants. After their destruction in the Boudiccan fire, some of the outlying sites such as Aldgate in the east (Chapman & Johnson 1973, 13) and Newgate Street in the west show a hiatus in occupation lasting until the Flavian period. The response in more central areas (*eg* at the south-east corner of the Forum; Boddington & Marsden 1987) may have been more immediate. The crisis of confidence which followed the rebellion and the consequent restriction in the flow of capital into the province may have meant that even prime commercial sites such as the Newgate Street site were not built on for a decade.

Though street grids have been considered unlikely (Merrifield 1965, 126), development west of the Walbrook can now be suggested as having taken place in the areas adjoining modern Cheapside on either side of the first main Roman road during the early Flavian period. The areas north and south of the main street were developed in a similar way, but on different axes and with some local differences in the exploitation of natural topography. The residential quarters around the Milk Street and Watling Court sites were both early Flavian developments undertaken after the main east-west street and the boundaries of the settlement had already been established. Both areas were regularly laid out on the relatively level ground of the hill top between the initial boundary of the settlement to the west and the Walbrook valley to the east. They incorporated good quality town houses, most evidently at Watling Court, which were presumably occupied by persons of wealth and social standing. The whole development was limited to the north by tributaries of the Walbrook and to the south by the steep slope overlooking the Thames.

To the east, development in the Walbrook valley was more constrained by natural conditions, but the area was nevertheless exploited systematically. Springs at the edge of the valley provided a source for a small public bath-house and for public water supply. To the north of the main street, marginal land around the Ironmonger Lane site was developed as part of the Flavian planned area to the west, probably for the location of industrial activity at the edge of the valley.

In the suburban area to the west of all these activities, the area adjoining the approach roads was occupied by commercial and industrial buildings interspersed with cremation burials. As the 1st century progressed the density of commercial occupation of this area increased. The addition of larger, better-appointed rooms behind the shops and workshops, and of small bedrooms towards the rear of these suburban properties, may reflect the commercial vitality of the area. Behind them, the more marginal areas reveal similar but less dense occupation, with rubbish pits and occasional domestic structures. Lanes gave access from the main thoroughfare to these backlands.

During the early 2nd century, the northern area was extended by adding further roads giving access to the amphitheatre and newly constructed fort. There is no evidence, however, that this extension affected the domestic character of the area beside the main road to the south. The area by the river apparently remained a backwater throughout the early Roman development of the settlement (although see Williams forthcoming a).

In the Roman world, the distinction between commercial and industrial areas is dubious because, in many cases, goods were produced at the rear of the premises and sold in a shop at the front. The division, then, is rather between trades which required a principal frontage and those which, for reasons of environment or water supply, were placed on the outskirts. In London, consideration of structural form and associated finds and features shows that the trades of the former kind clustered beside the axial thoroughfare, while those of the latter kind were favoured in the Walbrook valley and suburban areas to the west. Both can be distinguished clearly from residential areas set back from the main axial street; topographical planning is only evident on any scale in the residential zones.

Hadrianic fire

The ample scale on which London was envisaged suggests a confidence which was, at first, well founded. Its initial success, which caused pressure on space by the end of the 1st century AD, required an expansion of the already considerable urban area in the early 2nd century. At about that time a fire seems to have destroyed part of the city: 'the Hadrianic fire' originally recognised by Dunning (1945). Further evidence of its extent and impact in the eastern half of the city has been given by Marsden (1980, 109) though at some sites the evidence is not entirely secure since some material is redeposited and some of an earlier date. In the western part, however, the impact of the fire cannot reasonably be doubted. Here the distribution of its debris matches other evidence in showing concentrated occupation near the main street; more scattered occupation in domestic areas to the north and south; and a total absence south of the area of study (Roskams & Watson 1981, 64).

In contrast to the fortunes of outlying areas after the earlier Boudiccan fire, rebuilding after the Hadrianic fire seems to have taken place immediately on every site.

At the Newgate Street site, in a commercial area, response was vigorous with buildings replaced on almost exactly the same lines and even extended. However, replacements at the residential Watling Court site were less sophisticated than their predecessors and might imply less pressure on space than before. At Milk Street, also previously residential, there was a short term provisional shelter, followed by a good-quality building.

In part, these differences could be due to specific circumstances, in which the occupants of one site were keener to move back than those on another. However, the reaction, vigorous in commercial areas, weak in domestic ones, might also relate to trends in the development of the settlement. It is moreover possible to distinguish in the rebuilding after the Hadrianic fire tendencies which were to be characteristic of the 2nd century as a whole.

Late 2nd century decline

Although sites were reconstructed after the Hadrianic fire, replacements represent the last main phase of Roman building on all the main sites discussed here. This is not simply due to the accident of survival. It seems that, perhaps as early as the end of the Antonine period, both commercial timber buildings and their domestic counterparts had either been dismantled or fallen into decay and had been covered with a stratum of dark earth. The baths at Huggin Hill were dismantled in the late 2nd century, and those at Cheapside in the early 3rd century, their water supply system having clogged up even earlier. The situation in the industrial area in the west at this time is largely unknown, though at least one building, that at St Bartholomew's Hospital, had fallen out of use in the middle of the 2nd century. In the Walbrook valley, some activities seem to have continued into the 3rd century, but elsewhere in the area late 2nd century dumps have been recorded covering earlier buildings (Merrifield 1965, 46). Either the stream had become silted up or it was no longer needed for a supply of running water.

The city wall, whose construction defines the end of the period of this study, was built between AD 180 and 210 (Maloney J 1983). Although its specific line is undetermined in the south-west near Ludgate, its general course is well known. It clearly enclosed many areas which, despite earlier signs of vigorous structural development, no longer contained many buildings. Any later structures were generally of stone, whether because of a lack of timber and clay building materials or because of investment in better quality materials, perhaps to reduce fire risks. The new buildings therefore stand in marked contrast to their predecessors, and the difference is further emphasised by their plan, in which there is a reduced emphasis on commercial street frontages, and by their relative isolation one from another, as distinguished from their closely-packed predecessors.

It is uncertain whether the stratum of dark earth had been deposited by the time the city wall was built, though this is likely in at least some cases (p 65). Further dating evidence for the deposition of the dark earth comes indirectly from culverts set into the city wall as primary features to cater for passage of water across its

line. Where recorded, these led from south to north to drain water out of the settlement, not to facilitate supply into it (T Wilmott pers comm). The implication is that the function of the Walbrook had also changed, and had done so before the city wall was built: the late 2nd century dumps in its valley may therefore be seen as the counterparts of dark earth seen elsewhere in the city. Consequently the paradox is presented of a 'defensive' wall enclosing a very large area much of which was no longer occupied by buildings and some parts of which may have been converted to agricultural or horticultural use by that time (p 65).

Future research

The sites discussed here can be set beside other archaeological evidence to outline the character of Roman London as a whole. The picture which emerges fits closely into the traditional view of a Roman town with its provision of facilities for social, administrative and economic functions.

The social and administrative needs were met by the construction of temples, baths, forum, fort and amphitheatre. These were surrounded by buildings, including residential accommodation, which shared explicitly Roman structural techniques and decorative motifs. Whether Gallic and Italian immigrants or would-be Romanised Britons were involved, the desire to follow imperial taste in architecture and art was clearly strong.

The economic role of the settlement is suggested by waterfronts in the east and by the siting of London itself on roads which communicated with rich mineral and agricultural areas; thus London's position was significant in the exploitation of the province. Participation in trade and the extraction of natural resources is reflected in the area of the present study by the manufacturing processes in the Walbrook valley, the western suburb, and alongside its axial road. Local production of goods is readily explained by the demand of the town's rapidly growing population, a stimulus which can also be charted in the growth of industries such as pottery and salt production in the hinterland (Davies & Richardson forthcoming; Miller *et al* 1986, 89, 131-2).

The initial definition of a large urban area presupposes an intention to develop a major settlement from the start. But how this was then filled out in detail, and exactly when, is less clear. In London there was no single grid for the whole area but streets were set out on various alignments, partly due to the natural topography. Whether all elements of this layout are contemporary is also uncertain. Where evidence exists, it suggests Flavian development, but this often only dates the buildings rather than the adjacent thoroughfares, which could be pre-Flavian in origin. Even if they were shown to be of Flavian date, this covers several decades. Only further excavations at carefully selected intersections could prove the exact chronology of these streets.

Similarly, there are indications of broad zones of relatively homogeneous activity across the area; commercial immediately beside the roads, domestic some distance behind these frontages, and industrial and

cemetery areas in the more marginal suburban land to the west. But whether this was the result of central control or a natural response (certain activities concentrating on street frontages and corners) is uncertain. Investigation of artefactual assemblages for spatial patterning would throw light on these matters, as would further topographical detail from new excavations. Even if detailed planning and controlled zoning cannot yet be demonstrated, the evidence from the present sites suggests that the western hill was developed in an organised manner.

The traditional view of the Roman town usually involves the same kind of assumptions as does the question of the development of Roman Britain as a whole. New military bases or existing Iron Age centres are portrayed as providing the original stimulus for town foundations which then took off steadily and became increasingly mature as the province itself matured. Many aspects of London, however, fit much less well with this model of urban growth.

Firstly there is no reason to believe in a pre-Roman centre below London, nor in a Roman military origin. The re-orientation of roads in the area which attended the creation of London was unrelated either to the initial needs of military strategy or to a native power base. Secondly, as the present excavations clearly demonstrate, the settlement did not grow steadily. It was founded perhaps ten years after the initial conquest, expanded rapidly until AD 60-61, levelled off in the following decade and came to full fruition in the Flavian period, with these gains then consolidated in the first half of the 2nd century. Basic transformations are then visible on the present sites, with a reduced intensity and different form of occupation dating from the middle of the 2nd century. This is not a steady maturing through the Roman period. Corresponding demise in the late Roman period can be discerned elsewhere in Roman London and in other towns in the south-east of Britain.

During this period, however, in the early-mid 3rd century, London's wharves were being extended; and other aspects of the Roman economy — for example, the regionally-based pottery industries, towns in the north of the province and rural villas — were vigorous. The late Roman period, therefore, cannot be viewed simply as a process of decay, either locally or within the province as a whole. It has long been recognised that the *bas empire* was different in kind from its predecessor; the evidence from the London sites west of the Walbrook supports the suggestion of a qualitative change from at least the 3rd century.

The uneven development during the first two centuries, and the late Roman changes in London, have sometimes been explained by accidental factors, notably the Boudiccan and Hadrianic fires which both destroyed large parts of the settlement. But fires of themselves do not explain fundamental changes. Further, any complete account of the archaeological evidence given here must analyse the relationships between the administrative, economic and social facets of the settlement. For London, we must account for the lack of the two stimuli usually seen as determining factors in town foundation, as noted above, and use the increasingly tight chronology now available from closely stratified excavations to throw light on the changes in Romano-British society.

This excavation report, it has been decided, is not the appropriate context in which to explore these questions; but, in conclusion, it can be inferred from the present account, and from those appearing from many other major Roman towns, that rescue archaeology has spent considerable resources in the last 15 years in accumulating a vast body of data. If such expenditure is to be justified, we must start to manipulate that data and explain its patterning. Urban archaeologists must now begin the difficult task of moving from describing the past to understanding it.

Appendix

The following is a list of all the archive reports that are available for the Roman (and pre-Roman) phases on the five principal sites. Further details may be obtained from the Archives Officer, Department of Urban Archaeology, Museum of London, London EC2Y 5HN.

Newgate Street (GPO 75)

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- , nd *Intaglio (GPO 75)*, DUA Archive Report, Museum of London
- Macdonald, J, 1975 *Note on Collared Urn*, DUA Archive Report, Museum of London
- Macphail, R, 1980 *Soil report on the dark earth at GPO 75*, DUA Archive Report, Museum of London
- Roskams, S, 1982 *Excavations at the GPO site Newgate Street*, DUA Archive Report, Museum of London
- Tyers, P, 1984 *Roman pottery from GPO*, DUA Archive Report, Museum of London
- West, B, 1983 *Human, animal and bird bones from early Roman buildings*, DUA Archive Report, Museum of London
- See also, Henig, M, 1976 *A Roman Tripod Mount from the GPO site*, London, *Antiq J*, **56**, 248-9

Watling Court (WAT 78)

- Burnett, A, 1982 *The Watling Court Hoard*, DUA Archive Report, Museum of London
- Hillam, J 1989 *Tree-ring analysis of Roman timbers from Watling Court, City of London*, Ancient Monuments Lab Rep 100/89
- Perring, D, 1983 *Excavations at Watling Court 1978*, DUA Archive Report, Museum of London
- Roxan, M, nd *A Military Diploma from London*, DUA Archive Report, Museum of London

Milk Street (MLK 76)

- Betts, I, 1985 *MLK 76: Important Roman tile (Milk Street residual Roman)*, DUA Archive Report, Museum of London
- Roskams, S, Allen, P, & Schofield, J, 1986 *Excavations at 1-6 Milk Street (MLK 76)*, DUA Archive Report, Museum of London
- Smith, D, nd *A mosaic from Milk Street*, DUA Archive Report, Museum of London
- West, B, nd *Milk Street: Animal Bone*, DUA Archive Report, Museum of London

Well Court (WEL 79)

- Milner, J, & Allen, P, 1986 *Excavations at Well Court/44-8 Bow Lane*, DUA Archive Report, Museum of London

Ironmonger Lane (IRO 80)

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General

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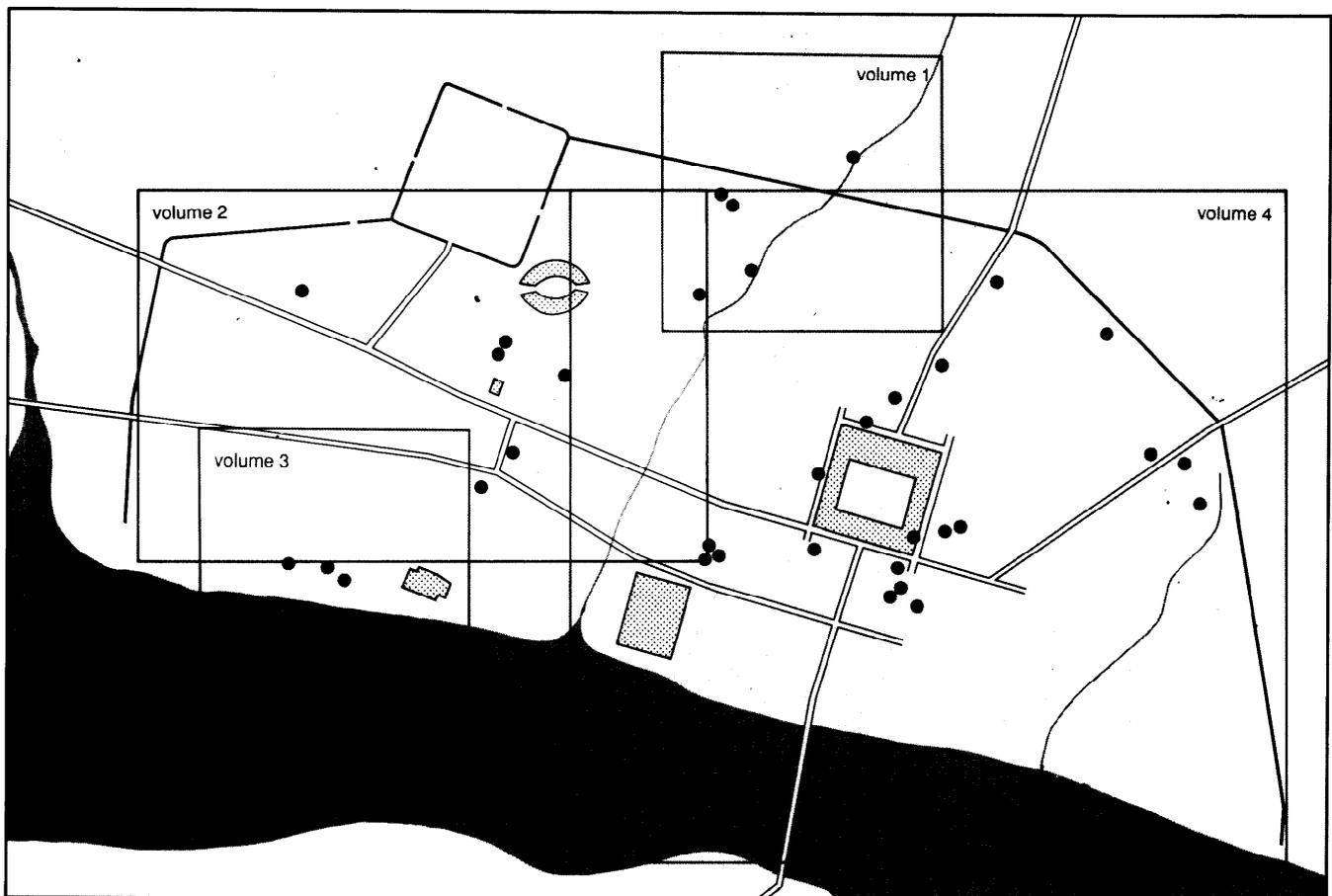
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Public Buildings in the
South-West Quarter of
Roman London

Tim Williams



The archaeology of Roman London,
Volume 3:

**Public Buildings in the
South-West Quarter of
Roman London**

by
Tim Williams

With contributions by: Ian Betts,
Barbara Davies, Jennifer Hillam and
Peter Marsden

Illustrations by Majella Egan

Erratum:

The front cover reconstruction painting is by Peter Froste and not by Martin Bentley as stated on page iv.

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Front cover: The Period II complex under construction in the late 3rd century; looking northwards, with the Riverside Mall in the foreground. All the main elements in this monumental building project can be clearly seen: the oak foundation piles, the overlying chalk raft, and the massive blocks of the superstructure.

(Illustration by Martin Bentley)

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Kieron Tyler Craig Spence Ken Steedman

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Tim Williams, London. December 1990.

Summary

Excavations in 1981 and 1986 revealed massive Roman foundations in the waterfront area of the south-west quarter of the City of London, and also shed light on earlier observations made during the 19th and early 20th centuries. Together these have provided the evidence for at least two periods of major public works within the south-west quarter of the late Roman walled town.

The earliest structures (Period I) were laid out at the foot of the hillside in an area of relatively flat land bordering the Thames. They appear to have marked the first colonisation of the area and were probably constructed during the late 1st or early 2nd century, possibly as part of a programme of public building in the waterfront area which included the public baths at Huggin Hill. A temple possibly formed part of the complex and as such would provide a context for the monumental masonry re-used in the later riverside wall. The monuments indicate that the complex was refurbished or repaired on a number of occasions, the most notable being marked by a possibly Severan monumental entrance and a mid-3rd century rebuilding of a temple.

During the second half of the 3rd century (c AD 270 or slightly later) a riverside defensive wall was constructed along the southern edge of the complex, probably severely affecting its riverside vista.

In the last years of the 3rd century the Period I structures were levelled to make way for another, larger, public building complex (Period II). This new development stretched over more than 150m of the waterfront and extended about 100m northward, covering an area of not less than 1.5 ha. This complex was terraced into the hillside; the lowest terrace was constructed by partially cutting into the slope and partially utilising the reclaimed land behind the riverside wall, the latter now effectively forming a retaining wall and riverside limit to the complex.

Massive masonry foundations, varying between 2.75m and 6.2m in width, were constructed on carefully-prepared chalk and timber pile foundations. The ground around the foundations was also meticulously prepared, using compacted building debris laid in horizontal bands to prepare an extensive area for surfacing. The size of the foundations indicated that a substantial superstructure was envisaged, but the nature of the surviving evidence did not conclusively

demonstrate that the complex had ever been finished, or indeed, how much work had taken place above the prepared surface. No single foundation can be traced over the known extent of the complex, or even over a substantial length of it. Rather, the area appears to have comprised a number of discrete structures or enclosures.

This phase of building has been dated with some precision to AD 294 on the basis of the dendrochronological analysis of the piles beneath the foundations. The oak was still sheathed in bark, and it is unlikely that seasoning occurred; the dates formed a tight group, even suggesting that the foundations were laid from east to west, during the spring/summer of AD 294. This date coincides with the brief reign of Allectus, who had taken over from Carausius in AD 293 and who was in turn removed after the reconquest of Britain by Constantius in AD 296. It is possible that the Period II complex was never completed; Constantius' arrival might have cut short this ambitious development, redirecting the resources in keeping with the pressures of a wider empire.

This building programme appears to have been the last flourishing of the so-called 'British Empire'. Parallels in military architecture suggest that military engineers, if not labour, had been diverted to the task from the Saxon Shore forts. It is unlikely that the complex was purely military itself, being situated upstream of the bridge and being poorly positioned to defend London, but the monumental size of the construction, and the elaborate nature of its preparation, suggest that it was intended to form an impressive monument within the urban landscape, dominating the riverfront. Allectus, whose base is thought to have been London, may have been seeking to construct a palace, mint, treasury and supply base complex along lines common within the reorganised late 3rd century Empire. The land already lay within public ownership and would have provided an ideal site for such works. The care with which the complex was constructed suggests that Allectus was building for a future which neither he, nor possibly the complex, ever enjoyed. At least part of the site was occupied by a timber building from the mid-late 4th century, suggesting that, by that time at least, it had ceased to serve any public function.

Résumé

Des fouilles entreprises en 1981 et 1986 ont mis à jour de très importantes fondations de l'époque romaine dans un des quartiers au Sud-Ouest de la Cite adjoignant à la rivière. Ces fouilles ont également clarifié certaines observations faites auparavant au cours du 19ème et au début du 20ème siècle. On a pu ainsi reconnaître au moins deux époques de travaux publics d'importance majeure dans le quartier sud-ouest de la ville romaine intramuros de l'époque récente.

Les bâtiments les plus anciens (Période 1) étaient disposés au pied de la colline dans une zone assez plate au bord de la Tamise. Ils marquent le tout début de la colonisation de cette partie de la ville et leur construction date de la fin du 1er ou du début du 2ème siècle; peut-être faisaient-ils partie intégrale d'un programme de construction publique qui aurait compris les bains de Huggin Hill près de la rivière. Un temple fait aussi partie de cet ensemble de bâtiments et devait être à l'origine des importants ouvrages en Pierre qui ont été réutilisés à une date ultérieure dans le mur qui longe la rivière. Ces monuments montrent que l'ensemble des bâtiments ont été refaits ou réparés plusieurs fois, le plus remarquable d'entre eux étant une entrée monumentale de l'époque de Severe et la reconstruction d'un temple au milieu du 3ème siècle.

Pendant la deuxième partie du 3ème siècle (environ 270 après JC ou un peu plus tard), un mur défensif a été érigé le long de la rivière sur le côté sud de l'ensemble d'immeubles; il est probable qu'il ait entièrement bloqué la vue sur la rivière que l'on devait avoir de ces bâtiments.

Pendant les dernières années du 3ème siècle, les structures de la Période I ont été démolies pour être remplacées par un autre ensemble de bâtiments plus grands (Période II). Ce nouvel ensemble s'étendait sur plus de 150m le long de la rivière et sur environ 100m vers le nord couvrant ainsi une surface d'au moins 1.5 ha. Cet ensemble était construit dans le flanc de la colline; la terrasse la plus basse était construite en partie dans la pente et en partie sur des terrains asséchés situés derrière le mur longeant la rivière, celui-ci formant à la fois un mur de retenue et une limite à l'ensemble de bâtiments.

D'énormes fondations de Pierre, d'une largeur allant de 2.75m à 6.2m, étaient placées sur des fondations de craie et de bois préparées avec soin. Le sol autour des fondations avait également été bien préparé; on s'était servi pour cela des débris de bâtiments très tassés et disposés en couches horizontales pour former une large

surface de préparation. La taille des fondations montre que l'on avait prévu une superstructure importante mais ce qui a survécu de leurs restes ne prouve pas que l'ensemble ait jamais été terminé ou même que les travaux entrepris sur cette surface soigneusement préparée aient été importants. On n'a pas pu retrouver de fondation unique à tous les bâtiments ni même une section importante d'une seule fondation. Il semblerait plutôt qu'il y avait à cet emplacement un certain nombre de bâtiments et d'enclos séparés les uns des autres.

Cette phase de construction a été datée de façon assez précise 294 après JC, grâce à l'analyse dendrochronologique des piliers sous les fondations. Le chêne était encore couvert d'écorce et il est peu probable que l'on ait laissé reposer le bois. Les dates sont très rapprochées et suggèrent même que les fondations ont été posées est/ouest pendant le printemps/été de 294 après JC. Cette date coïncide avec le règne bref d'Allectus qui avait succédé à Carausius en 293 et qui fut déposé après la reconquête de l'Angleterre par Constantius en 296. Il est possible que les bâtiments de la Période 2 n'aient jamais été terminés. L'arrivée de Constantius a peut-être coupé court à cet ambitieux projet en reconvertissant ses fonds pour pouvoir faire face aux pressions d'un empire toujours plus étendu.

Ce projet de construction semble avoir été le dernier de ce que l'on a appelé 'L'Empire Britannique'. Des cas parallèles en architecture militaire semblent indiquer que des ingénieurs militaires ou même leur main d'œuvre aient été déplacés des forts saxons des côtes pour s'acquitter de la tâche. Il est peu probable que le complexe ait été lui-même purement militaire, situé comme il l'était en amont du pont et donc mal placé pour défendre Londres; mais la taille monumentale de l'ensemble et les préparatifs élaborés suggèrent qu'il s'agissait là d'un monument impressionnant dans le paysage urbain et qui dominait la rive. Allectus, dont la base se trouvait sans doute à Londres, cherchait peut-être à construire un palais ou un Hotel de la monnaie, ou encore un endroit pour garder trésors et équipement comme on le trouvait communément dans l'Empire reorganisé du 3ème siècle. La terre était déjà propriété publique et aurait constitué un site idéal. Le soin avec lequel l'ensemble fut construit semble signifier qu'Allectus construisait pour un futur dont ni lui, ni même peut-être son projet, ne virent le jour. Au moins une partie du site était occupé par une construction en bois à partir de la moitié ou la fin du 4ème siècle et ceci suggère qu'au moins à cette date là, le site n'occupait plus aucune fonction publique.

Zusammenfassung

Ausgrabungen im Flußgebiet, im südwestlichen Teil der Londoner City haben 1981 und 1986 massive römische Fundamente freigelegt, die auch ein Licht auf früheren Beobachtungen im 19. und frühen 20. Jahrhundert werfen. Zusammen gesehen liefern sie den Beweis für zumindest zwei Perioden größerer, öffentlicher Bautätigkeit im südwestlichen, befestigten Teil der spätrömischen Stadt.

Die frühesten Anlagen (Periode I) befinden sich am Fuß eines Abhangs auf relativ flachem Land entlang der Themse. Es scheint daß diese Arbeiten im Zusammenhang mit der ersten Besiedlung dieser Gegend stehen und wahrscheinlich im späten 1. oder frühen 2. Jahrhundert möglicherweise als Teil eines öffentlichen Bauprogramms, zu dem auch das öffentliche Bad in Huggin Hill gehörte, im Flußgebiet ausgeführt wurden. Es könnte durchaus sein daß darin auch ein Tempel eingeschlossen war. Dieses würde jedenfalls das Vorhandensein umfangreichen Mauerwerks erklären, das später für den Bau der Ufermauer wiederbenutzt wurde. Die Monumente deuten darauf hin, daß die Anlage mehrere Male umgebaut oder repariert wurde, am auffälligsten belegt durch das gewaltige Eingangstor (möglicherweise von Severan) und den Wiederaufbau eines Tempels, Mitte des 3. Jahrhunderts.

Während der zweiten Hälfte des 3. Jahrhunderts (ca. 270 n. Ch. oder wenig später) wurde am Südrand des Komplexes entlang des Flußes eine Verteidigungsmauer errichtet, die wahrscheinlich den Blick auf den Fluß gehörig behinderte.

Während der letzten Jahre des 3. Jahrhunderts wurden die Bauwerke der Periode I eingeebnet, um Platz für noch größere öffentliche Bauten zu schaffen (Periode II). Das neue Bebauungsgebiet erstreckte sich über mehr als 150m entlang des Flußes und ungefähr 100m nördlich, insgesamt also über nicht weniger als 1,5 ha. Die Anlage ging in Terrassen den Abhang hinauf. Die unterste begann auf trocken gelegtem Land direkt hinter der Flußmauer, die jetzt die eigentliche Sicherung und Abgrenzung zum Fluß bildete, und war auf der anderen Seite in den Abhang gebaut.

Die überaus starken Fundamente (zwischen 2,75m und 6,20m breit) waren auf sorgfältig vorbereitetem Kalkboden und Holzpfählen verlegt. Der Boden um die Fundamente herum war ebenfalls sehr sorgfältig mit mehreren Lagen gestampften Bauschutts für den späteren Bodenbelag ausgelegt. Obwohl die Ausmasse der Fundamente auf die Planung ansehnlicher Bauwerke hinweisen, ergibt das noch erhaltene Material keinen schlüssigen Beweis, daß die Anlage je fertiggestellt oder wieviel Arbeit nach der Erstellung der

gestampften Böden überhaupt noch geleistet wurde. Die Fundamente reichen weder über die soweit bekannten Grenzen hinaus, noch sind sie innerhalb der Anlage besonders lang. Es sieht vielmehr so aus, als ob das Gebiet mehrere von einander unabhängige Bauwerke und Einfriedungen enthält.

Diese Konstruktionsphase kann mit Hilfe dendrochronologischer Analyse der Pfeiler unterhalb des Fundamentes mit ziemlicher Sicherheit auf das Jahr 294 n. Ch. datiert werden. Die Eichenpfähle waren noch mit Borke umgeben und es ist unwahrscheinlich daß sie vorher gelagert wurden. Die Daten der einzelnen Stämme bilden eine so geschlossene Gruppe daß sogar vermutet werden kann daß das Fundament im Frühjahr/Sommer 294 von Osten nach Westen gelegt wurde. Dieses Datum fällt in die kurze Herrschaft des Allectus, ab 293 Nachfolger von Carausius. Allectus wurde nach der Wiedereroberung Britanniens 296 von Constantius abgesetzt. Es ist durchaus möglich, daß die Bauperiode II des Komplexes nie vollendet wurde. Constantius mag unter dem Druck wichtigerer Erfordernisse im Reich das ganze ehrgeizige Bauprojekt eingestellt haben, um die Mittel anderweitig einzusetzen.

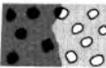
Der Bau scheint das letzte groß angelegte Programm im sogenannten 'Britischen Imperium' gewesen zu sein. Parallelen mit Militärarchitektur der Forts an der Küste, gebaut zur Verteidigung des Landes gegen die Sachsen, lassen vermuten daß Militäringenieure, wenn nicht sogar auch Soldaten, zur Bauarbeit herangezogen wurden. Es ist jedoch unwahrscheinlich daß die Anlage rein militärischen Zwecken diente, da sie von der Brücke flussaufwärts lag und daher für die Verteidigung Londons von geringem Nutzen war. Andererseits deuten die sorgfältige Vorbereitung der Fundamente und das monumentale Ausmaß der Anlage darauf hin, daß ein eindrucksvolles, die Silhouette des Flußufers beherrschendes Bauwerk, geplant war.

Allectus, dessen Macht sich auf London stützte, mag den Bau eines Palastes, einer Münze, eines Schatzamtes oder einer Nachschubbasis geplant haben. Dies würde dem Denken des reorganisierten Reiches im späten 3. Jahrhundert entsprechen. Das Gelände gehörte schon der öffentlichen Hand und bot sich damit als ideale Baustelle für ein derartiges Vorhaben an. Die Sorgfalt mit der das Projekt angegangen wurde läßt vermuten daß Allectus für eine Zukunft baute, die weder er noch möglicherweise der Bau je erleben sollten. Da in der zweiten Hälfte des 4. Jahrhunderts auf einem Teil des Geländes ein Holzgebäude stand, liegt die Vermutung nahe, daß hier zumindest zu dieser Zeit keine offiziellen Veranstaltungen mehr stattfanden.

Study area interpretive plans - figs 2, 4, 6, 11 & 27

	site outline		watercourse: found and conjectured
	exact site location not known		wall line
	contours: 0.91m (3ft) Intervals		section
	major Roman road		

Phase plan

	site outline		watercourse: found and conjectured
	limit of excavation		timber piles set within chalk raft: found and conjectured
	wall: found and conjectured		timber lattice with chalk packing raft: found and conjectured
	wall retained		threshold
	hearth: found and conjectured		surface: as annotated

Sections: the more common inclusions- figs 10, 11, 13, 39, 44, 50 & 52

	tile		mortar
	chalk		timber piles found and conjectured
	ragstone		

Drawing conventions

The drawings within this report follow conventions developed and standardised by the Department of Urban Archaeology, the majority of which fall into the categories of location maps and plans, phase plans, sections and interpretative period plans.

Symbols used for the drawings vary according to their category (see Key). The outlines of the sites and

excavated areas as presented in Figure 2 are used consistently throughout the phase and interpretative period plans: the outline of the excavated area shown on the phase plans always depicts the maximum area of controlled excavation, while the outlines of the sites which appear on the period plans depict the area of redevelopment.

Part I: Introduction

Previous work in the area (Figs 1 and 2)

The evidence for at least two periods of major public works within the south-west quarter of Roman London (Fig 1) has been slowly amassed over the last 150 years. The first indication that the area was of some importance came during the construction of a sewer beneath Upper Thames Street in 1840-1 (Fig 2), when the antiquary Charles Roach Smith observed a number of substantial Roman walls which suggested the presence of unusually large structures in the area.

A number of additional, and unfortunately often sketchy, observations were made in the 1920s (RCHM 1928), but it was not until 1961 that further evidence came to light; during the construction of the Salvation Army Headquarters in Queen Victoria Street (Fig 2), Peter Marsden, working for the then Guildhall Museum, recorded a number of substantial foundations terraced into the base of the hillside. It was not possible

to record the stratigraphy in more than the most basic form, as the resources of the Guildhall Museum were stretched to their utmost by the quantity of construction work taking place elsewhere in the city at the time, particularly in the area of the Forum. As a result, the observations on the Salvation Army Headquarters site were intermittent and the full extent of many of the features was not established. Nevertheless, it was clear that substantial structures existed in the area, and that they belonged to at least two distinct periods of activity, although very little dating evidence was recovered (Marsden 1967; also Merrifield 1965).

These early observations became increasingly linked in the ensuing years to the question of the existence, form and date of a Roman riverside wall (Marsden 1967). In 1975 the excavation and watching brief at Baynard's Castle (Fig 2) at last produced

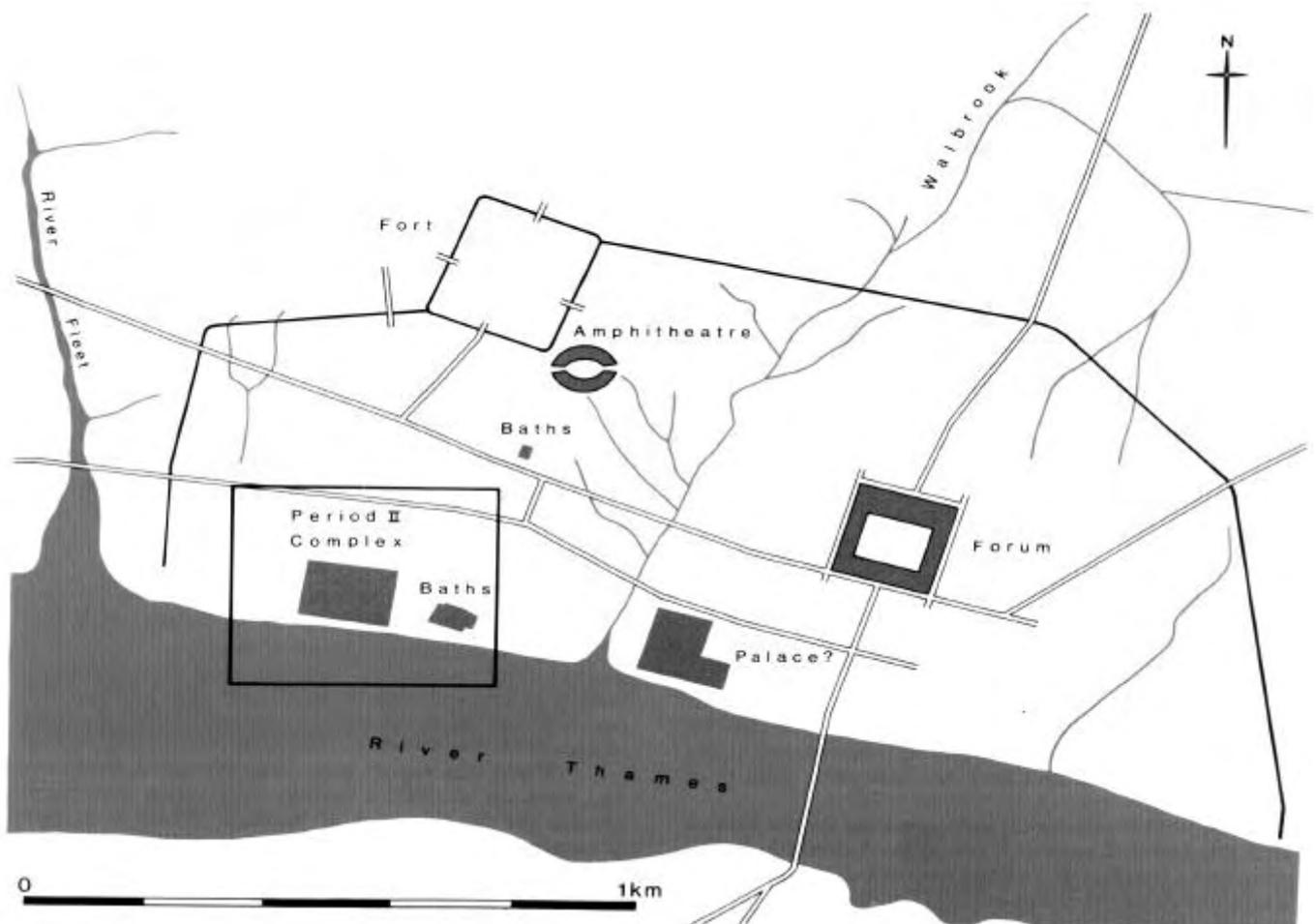


Fig 1 Location of the study area in the City of London, showing principal Roman streets and public buildings.

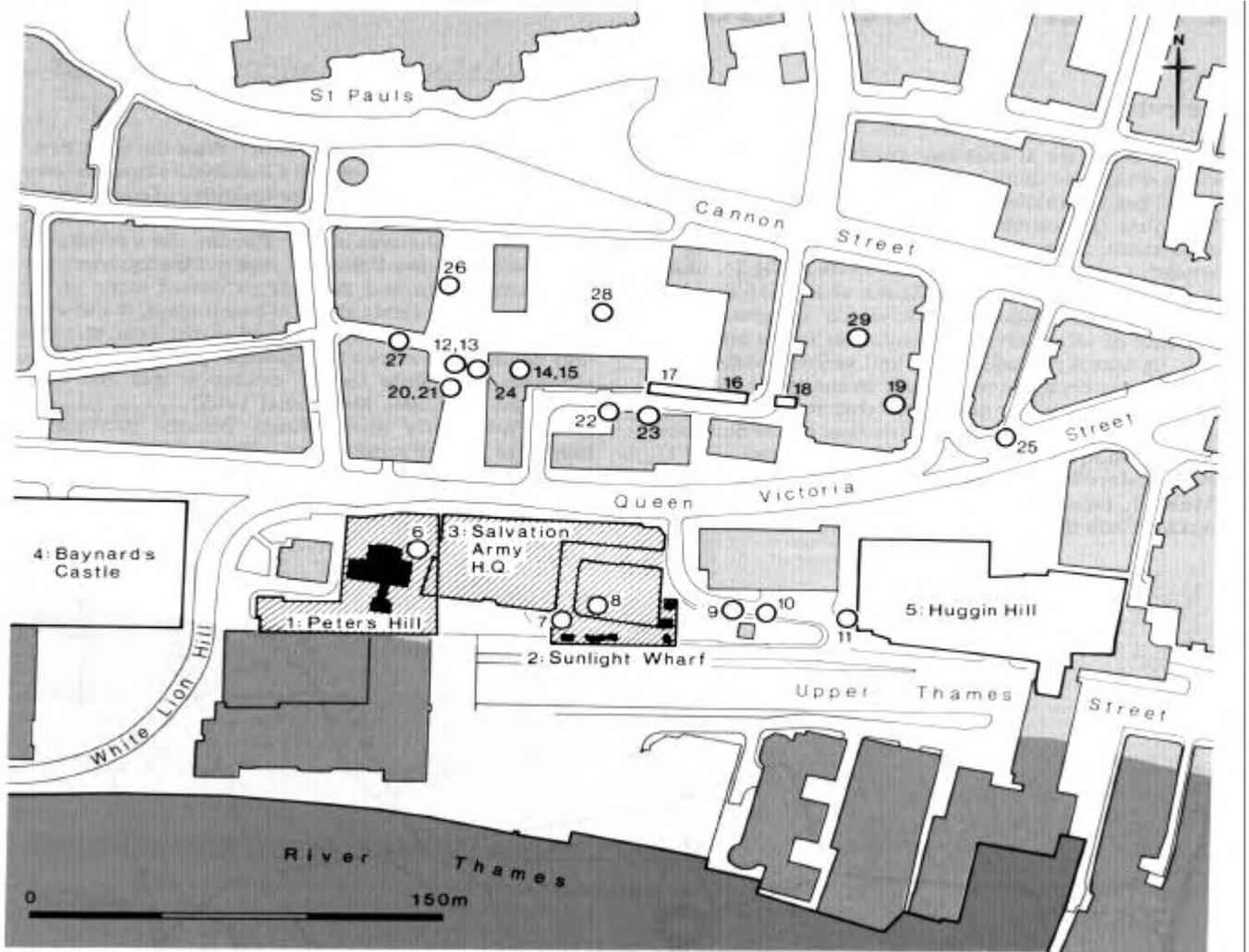


Fig 2 Position of the sites within the study area. Principal sites are hatched. Circles denote observations without secure locations. Dark blue represents the modern line of the Thames; light blue the approximate line of the late Roman riverbank. Reproduced from the 1980 Ordnance Survey 1:1250 Map, with the permission of the Controller of Her Majesty's Stationery Office; Crown Copyright.

detailed evidence for the existence of a late 3rd century wall (Hill et al 1980; see below for a discussion of the dating evidence). It also provided further indications of the character of occupation in the area, in the form of re-used masonry which was thought to have derived from impressive public monuments constructed in the vicinity during the 2nd and 3rd centuries (Hill et al 1980, 191-3).

In 1962 Professor Grimes, working for the Roman and Medieval London Excavation Committee, had recorded a number of isolated features to the east of the Salvation Army Headquarters (Grimes 1968), but the opportunity to conduct a large open-area excavation in the south-west quarter did not come until 1981, with the development of the site of the future City of London

Boys' School on Queen Victoria Street (Peter's Hill, Fig 2). This excavation produced a complex stratigraphic sequence, supported by detailed dendrochronological dating evidence, which indicated the presence of impressively large public structures of the late 3rd century.

While this report was being compiled, based on the work up to 1981, a further observation took place during the development of Sunlight Wharf on Upper Thames Street (Fig 2). This provided important additional information concerning not only the construction and layout of the late 3rd century public buildings in the area, but also the supposed association of some of the earlier 1840s observations with the riverside wall.

Organisation of the report

A central aim of this report is to present, in Part II, a discussion of the development of the public building works in this area (divided into two chronological periods, discussed in Chapters 1 and 2). An attempt is then made to place these periods within the wider framework of the development of the south-west quarter of the town, and examine their relationship with the whole urban landscape: reasons are suggested for their location, for areas of specialised land-use, and for the public ownership of land (Chapter 3).

In support of these discussions more detailed archaeological evidence is presented in Part III. This section includes syntheses of the site sequences from the excavations at Peter's Hill (Chapter 4), Sunlight Wharf

(Chapter 5) and the Salvation Army Headquarters (Chapter 6). The attempt to bring this disparate evidence together into a coherent whole also entails the presentation of the observations of the 1840s (Chapter 7), and a consideration of the possible significance of materials re-used in later monuments (Chapter 8).

The basis of the Part II discussion section is the proposition that the Peter's Hill excavation (and to a lesser degree that of Sunlight Wharf) provides a detailed and well-dated framework against which the earlier observations can be compared and re-interpreted. The strength of their association is explored throughout Part III (summarised in Chapter 9).

Various specialist reports are presented as appendices: dendrochronological information (Appendix 1), building materials (Appendix 2), and

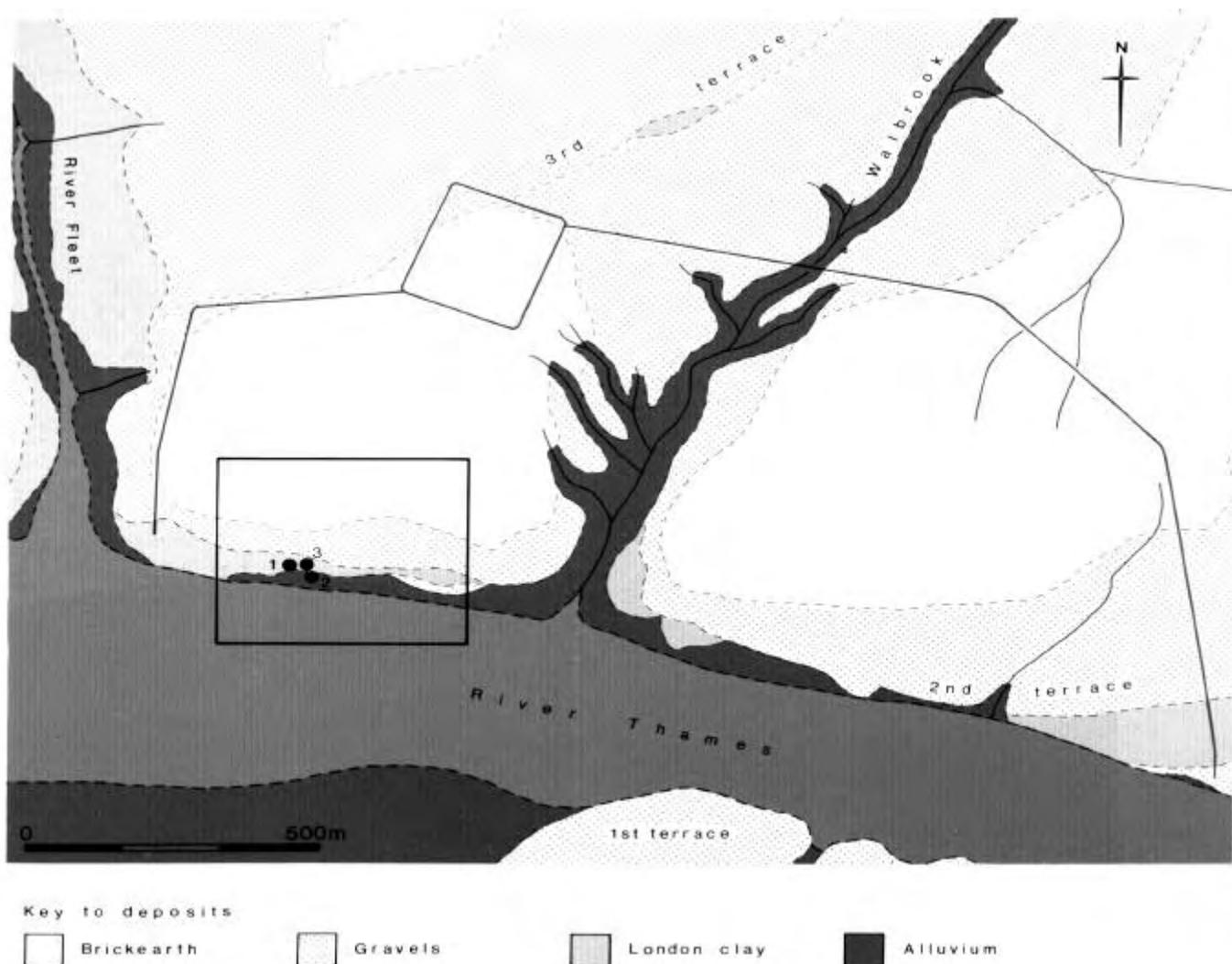


Fig 3 Geology; showing river terraces and principal watercourses. The sites lay on the exposed London clay, just below the second river terrace. No traces of the first terrace remained in the study area. 1: Peter's Hill. 2: Sunlight Wharf. 3: Salvation Army Headquarters.

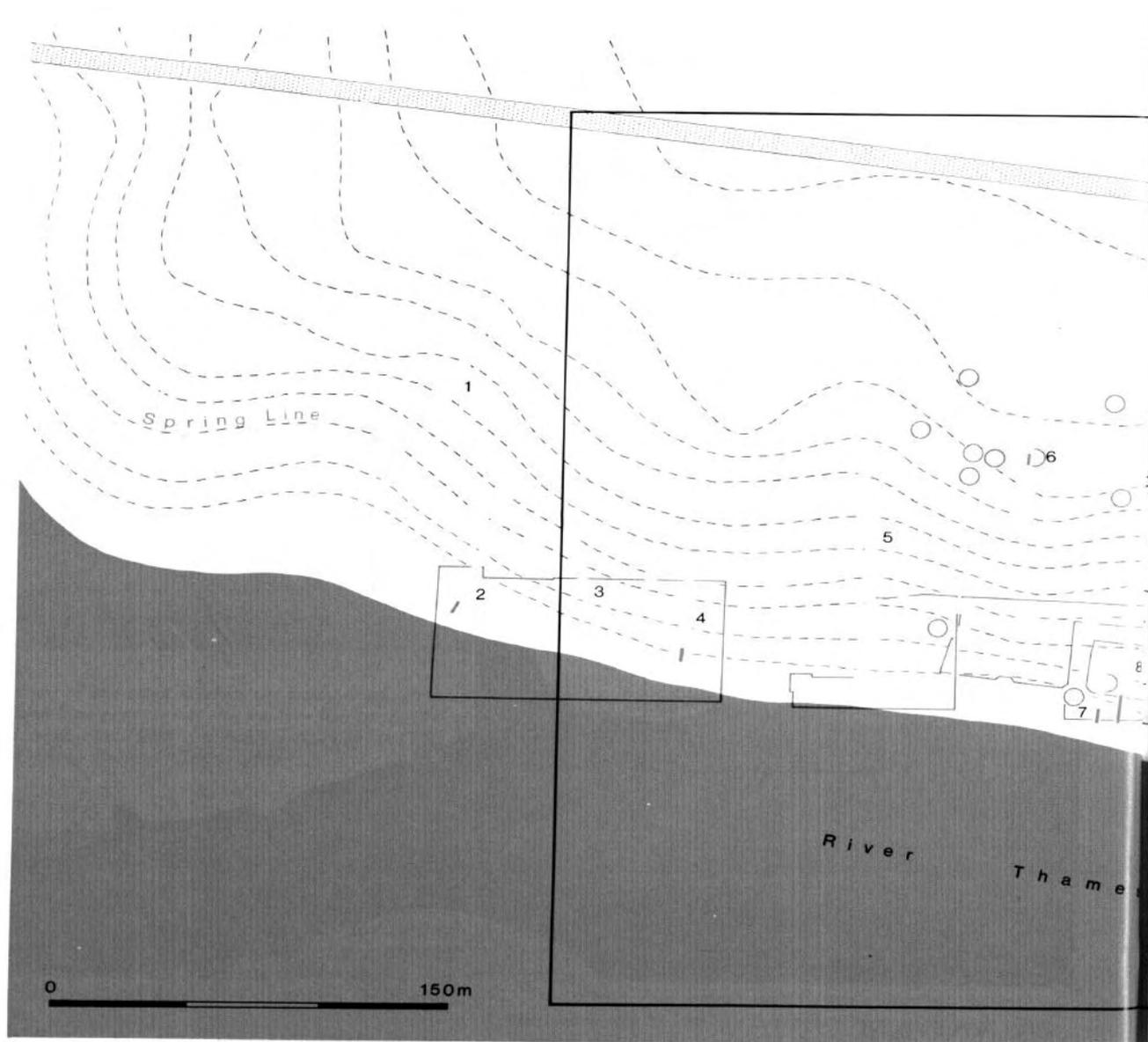
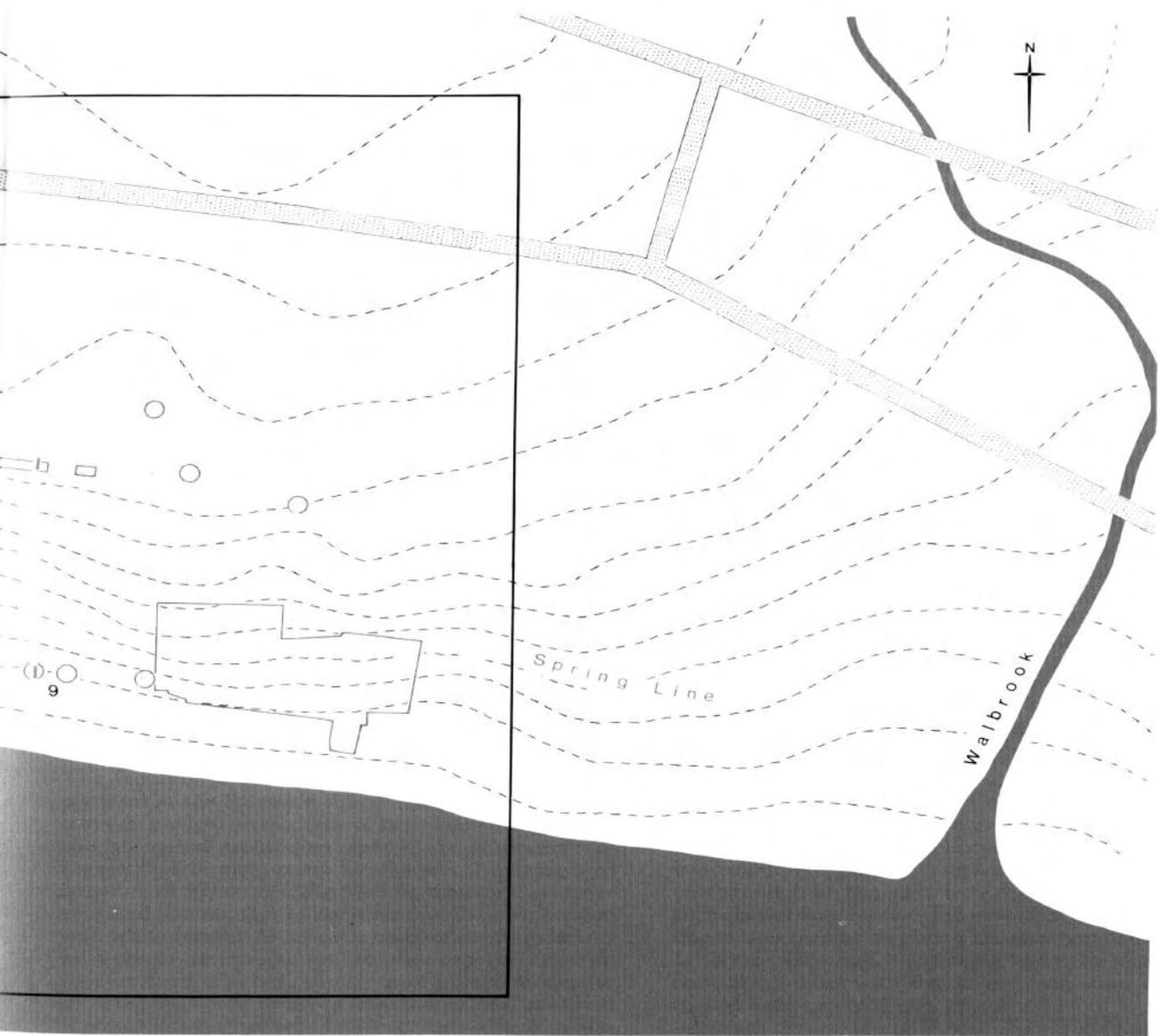


Fig 4 Natural topography; showing the suggested watercourses and the approximate springline. Watercourses are numbered as in the text; dark blue indicates observed evidence, light blue conjectured. Contours, at 3 feet intervals are derived from the 1841 survey of the City area. Roman streets, leading to Ludgate and Newgate, are shown to the north. Principal site outlines in grey. (1:2500)



timber supply (Appendix 3). Archive reports are listed in Appendix 4, and for an explanation of the site numbering system, see Appendix 5.

Geological and topographical background (Figs 3 and 4)

The south-western quarter of the Roman town encompasses an area of diverse topographic, hydrographic and geomorphological character. The physical contours shown on Figure 4 are derived from an 1841 survey and cannot be said to reflect Roman conditions precisely. However, the survey was conducted prior to the major Victorian landscaping of the city and it is likely that these contours at least provide a general framework within which to discuss the Roman topography.

The land in the south-western quarter of the Roman town sloped gently from a high point, roughly beneath the present St Paul's Cathedral, until it reached a sharp break, some 70-80m to the south, at which point the ground fell away more steeply towards the south and the River Thames. At the same time the mouths of the Fleet to the west and the Walbrook to the east also caused the ground to drop sharply towards the south-west and south-east respectively (Fig 4). The geological formation of the area consists of London Clay, overlain by river terrace gravels which are, in turn, overlain by brickearth. Due to the erosion of the area by river valleys, these deposits are exposed at varying points on the slope of the hillside. Accurate plotting of the interfaces between these deposits is not available for much of the area, but observation on an increasing number of sites allows some estimation of their position to be made (Figs 3 and 4).

The hydrographic map of the area is more complex. It is evident that a number of watercourses, radiating from the hilltop or fed by an upper spring line (Bentley 1987), carried water down the hillside to discharge into the Thames, the Fleet and the Walbrook. The approximate course of some of these can be suggested from a variety of fragmentary evidence (Fig 4). Some have been partially observed, either directly (course 9 at Observation 16, p81) or implied by other

features such as culverts (course 6 at Observation 15, p80; courses 7 and 8 at Sunlight Wharf, p60; course 9 at Observation 16, p81, and Observation 9, p76). Others are suggested by the contours; in general terms (course 1), by archaeologically observed irregularities in the natural contours (courses 2, 3 and 4 at Baynard's Castle, Hill *et al* 1980, fig 3), or by both (course 5, general contours to north and recorded archaeologically at Peter's Hill, p41). In addition, the outflow of watercourses along the Thames frontage may also be marked by the position of the later, medieval, inlets, which in some cases can be linked to the course of a stream (eg course 1 at Puddle Dock; Schofield 1984, 38).

It is probable that many of these channels were either man-made or at least artificially modified. Those with the most obvious effect upon the contours (courses 1, 5 and 9) are the most likely to have been pre-Roman streams, but considerably more work in the area is required if the situation is to be clarified.

In addition to the watercourses, a natural spring line existed on the slope, producing water at the interface between the London Clay and the overlying river gravels (Figs 3 and 4). This spring line was not only an important source of fresh water, but must also have been taken into account in the construction of any structures on the downslope, as the quantity of water produced, combined with the natural run-off from higher up the slope, is likely to have been considerable (see the siting of the Huggin Hill baths, p34).

The extent and character of the marginal land along the sides of the rivers, particularly the Thames, is unclear. The quantity of rain and spring water flowing down the hillside is likely to have resulted in the formation of at least some marshy areas along the foreshore in pre-Roman times. Indeed, there have been suggestions that well into the Roman period stretches of the waterfront were frequently waterlogged; for example, at Baynard's Castle the natural strand was 'colonised with reeds and sedges' (Hill *et al* 1980, 35) prior to the construction of the late Roman riverside wall (c AD 270). Furthermore, during most of the Roman period the Thames was subject to significant tidal fluctuations (Milne 1985, 81-4) and the low lying land behind the immediate river's edge, in those areas where it was not revetted, is likely to have been both marshy and inundated by the tide.

Part II: Discussion

1. THE PERIOD I COMPLEX (?1st to the 3rd century) (Fig 5)

1.1 Introduction

The evidence for Period I activity primarily derives from the Salvation Army Headquarters site (site 3, Fig 2), where a number of walls were stratified beneath the extensive chalk raft which marked the beginning of the Period II development (the evidence consists of Features 12, 14, 16, 25 to 28, 30, 32, 33, 35, 40; see Chapter 6 for details of both construction and sequence). An earlier observation in this area also produced evidence of possible Period I activity (Observation 8 - north wall; see Chapter 7, p74-5, for details of construction and reasons for association with the Salvation Army Headquarters). However, no evidence was found of earlier walls in the Peter's Hill excavation, which lay immediately to the west (site 1, Fig 2); occupation prior to the Period II complex was represented by a single rubbish pit (p39), probably dating from the late 1st or early 2nd century. To the south, on the Sunlight Wharf site, the land appears to have been low lying, at the very edge of the Thames, and it was not until reclamation for the riverside wall/Period II complex that the area was colonised (~57).

The structural sequence on the Salvation Army Headquarters site suggests that there may have been more than one phase to the construction and use of the site prior to the Period II complex (p69). Although this is too vague to amount to additional 'Periods' of activity, it should be noted that the term 'Period I' encompasses such evidence as is available for activity prior to the construction of the Period II complex in the late 3rd century. It would be a mistake to assume that events up to this point were simple; such a sequence of development is, however, all that is presently available.

1.2 The construction of the Complex (Fig 5)

The features recorded beneath the Period II chalk platform at the Salvation Army Headquarters site fell into two groups, on the basis of their known alignments and structural techniques (p169). It is possible to suggest that the main group formed part of an integrated structure or structures (Fig 5). The structural evidence consisted of a number of ragstone foundations, bonded with white cement. Where the bases of the foundations were observed, circular timber piles had been used to support them. The only surface encountered on the site lay to the east of the observed foundations, and consisted of gravel with horizontally laid fragments of broken tiles (Fig 5). Its character suggests that the area was probably external.

Other structural features pre-dating the Period II chalk raft did not have securely observed alignments, due to later collapse or insufficient archaeological observation (p69). The westernmost feature on the site

was poorly recorded (Fig 5), and its alignment might be more a consequence of this than a genuine reflection of any change in structural activity (p69). However, two other features appear to have been constructed in a different fashion; the top of the features had been chamfered, to produce a curious 'bevelled' shape (Feature 14 on the Salvation Army Headquarters site, p67, and the northern wall of Observation 8, see discussion on p75). It is possible that these foundations formed part of a long east-west wall line (Fig 5), but it is not clear whether they were part of the same phase of construction as the rest of the structures discussed here; at no point were any direct relationships observed, other than the fact that all the features predated the Period II raft. Similarly, if more than one phase of activity is represented, it is not possible at present to order them chronologically.

1.3 Layout (Fig 5)

The plan of this phase is very incomplete; only relatively small areas of foundations were exposed and numerous possibilities arise for their reconstruction. However, a notable aspect of the layout of the foundations was the close proximity of the two parallel southern foundations (Fig 5). Both were 1.14m wide and kinked, with an interval of some 2.00m in the west, narrowing to c 1.00m east of the kink, the foundations remaining parallel throughout (Fig 5). It is difficult to be certain what form of structure would have required such closely spaced elements, but the most likely interpretation would point to at least one, if not both, of the walls supporting a colonnade or similar feature, possibly as part of an ambulatory or portico. The easternmost north-south foundation on the site lay on exactly the same line as the kink in the northernmost of these foundations, suggesting that it may have formed a junction at that point (Fig 5). The additional width of the north-south foundation does not exclude this possibility; varying foundation widths may simply reflect the differing roles of the superstructure. This north-south foundation also corresponds with a possible change in the level of the contemporary ground surface. The only surface encountered to the east was probably external. No surfaces were observed to the west (Fig 5), which may be due to later truncation during the insertion of the Period II terrace, although if surfacing had been present at a comparable level with that to the east, some evidence should have survived (see Features 24 and 39, p67-8). Any such change in the level of the surfaces would not have been caused by the local terrain, which sloped downwards to the south. It might be suggested, therefore, that the surfaces to the west of the main north-south foundation (Fig 5) were at a higher level than those to the east, possibly reflecting a change from external to raised internal use.

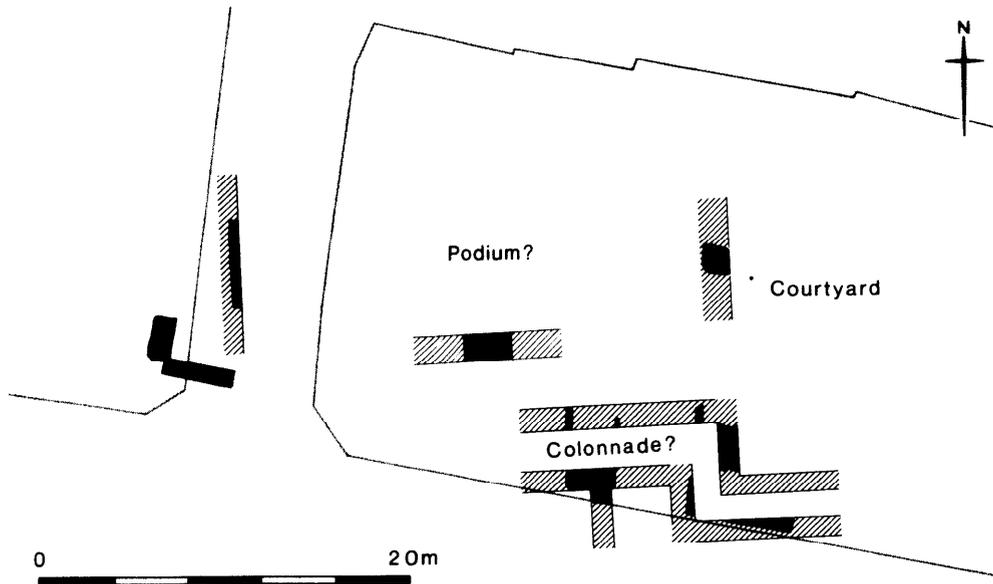


Fig 5 Period I complex; core area. The precise alignments of the foundations indicated in grey are not known. (1:400)

If the southern foundations were indeed part of a riverside ambulatory/portico, and the area to the east an external courtyard area, it is possible that the larger north-south foundation provided the eastern limit of a building lying to the west (Fig 5). The increased width of the north-south foundation might suggest that it supported an increased load, possibly the eastern facade of the structure where it faced onto the courtyard. In addition, the kinking of the southern ambulatory would have increased the length of this facade, thus enhancing its effect. The suggestion that the surfaces to the west were somewhat higher than those in the courtyard also suggests the possibility that the building was raised, as on a podium.

1.4 Extent (Fig 6)

The western and southern limits of the complex have been broadly identified (Chapter 1.1), but to the north and east its extent was unclear. To the north, the Period I complex could have been terraced into the hillside; the terracing of Period II probably removed any traces of more northerly structures (Fig 6), indeed it only survived in a very fragmentary form itself above the lowest, riverside, terrace (p26). In addition, much of the area to the north has been largely unexplored. Further north, some 100m from the waterfront, lay the east-west walls at Knightrider Street (Chapter 7, p77-87). Although not securely dated (p83), the walls appear to have been the first structural activity in the area, post-dating quarrying (p86). However, they lay on a very different alignment from the Period I structures (Fig 6), and are thought to have formed part of the Period II development (Fig 24, p26). Although by no means conclusive, it is suggested that the Period I complex did not extend this far north. Thus, it is felt most likely that the Period I complex was confined to the area of relatively level ground at the base of the hillside.

The eastern limit of the complex is even more problematic; it may or may not have continued to the

east of the Salvation Army Headquarters site, no well observed archaeological investigation having taken place between here and Huggin Hill over 100m to the east (Fig 6).

1.5 Dating

No dating evidence was retrieved from either the construction or disuse of this phase. The demolition or levelling of these structures during the construction of the Period II complex, at the very end of the 3rd century (p27), provides only a very general *terminus ante quem* as it cannot be demonstrated that they were still in use at that date.

The complex was situated very close to the line of a suggested late 1st century western boundary to the town (p35). The dearth of contemporary activity further to the west (at Peter's Hill, p39) suggests that the Period I complex's location may have been governed by (or governed?) this feature, being constructed in the then south-west corner of the settlement (Fig 27b). If so, then it must have been laid out some time before the town boundary was moved further west in the late 2nd century (p36). This association, albeit tenuous, would give the Period I complex a 1st or early 2nd century construction date, similar to that of the major public baths complex at Huggin Hill, immediately to the east (p34).

1.6 Discussion (Figs 5-8)

The reconstruction of the plan of the Period I complex is inconclusive (Fig 5). The closely juxtaposed southern foundations are best reconstructed, in the author's view, as a riverside ambulatory or portico, probably constructed to utilise the waterfront vista. The increased width of the north-south foundation, on the eastern part of the site, might suggest that it supported a

more substantial wall than the other foundations; possibly the eastern facade of a building lying to the west and fronting on to the courtyard which lay immediately to the east. Similarly, the southward turn in the portico could have been intended to increase this eastern facade, by extending it across the width of the portico. There is also some suggestion that the floor levels to the west, within the structure, were raised.

The substantial size of the foundations, their careful preparation and the area over which they extended, indicates that the activity was almost certainly of public inspiration. The function of the complex, therefore, is best assessed in the light of a considerable body of evidence from the surrounding area, which suggests the general character of the development.

The main evidence consists of large quantities of re-used building material incorporated into later structures in the area (a detailed description of the re-used material is presented in Chapter 8).

The evidence comprises four principal groups:

(a) Dumps of almost pure building debris from the construction of the Period II complex at Peter's Hill (Chapter 8.1). The debris contained bricks, tiles

(including roofing tiles and soot covered roller-stamped flue tiles), painted plaster (including marble-effect splash decoration), *tesserae*, and marble veneers, all of which suggest that the structure, or structures, from which they derived were of an elaborate nature.

(b) Large stone blocks re-used in the Period II foundations (see Plates 2-4, Figs 13, 39, 40, 49, 50 and 61; Chapter 8.2) also suggest the presence of earlier substantial structures. The sheer quantity of stone used in the foundations indicates extensive use of this material, although there is no indication of its original structural role. Decorated stonework was recovered from Observation 7, which might point to some elaboration in the demolished monuments. At least one highly decorated piece might have been a fragment of an altar.

(c) The western stretch of the riverside wall at Baynard's Castle (site 4, Fig 2) contained fragments of a monumental arch and a Screen of Gods (Fig 7), two altars (Fig 8), and a frieze of 'Mother Goddesses' (Chapter 8.3).

(d) Finds of PP.BR.LON tile stamps from the area (not accurately provenanced; Marsden 1975, 70-71;

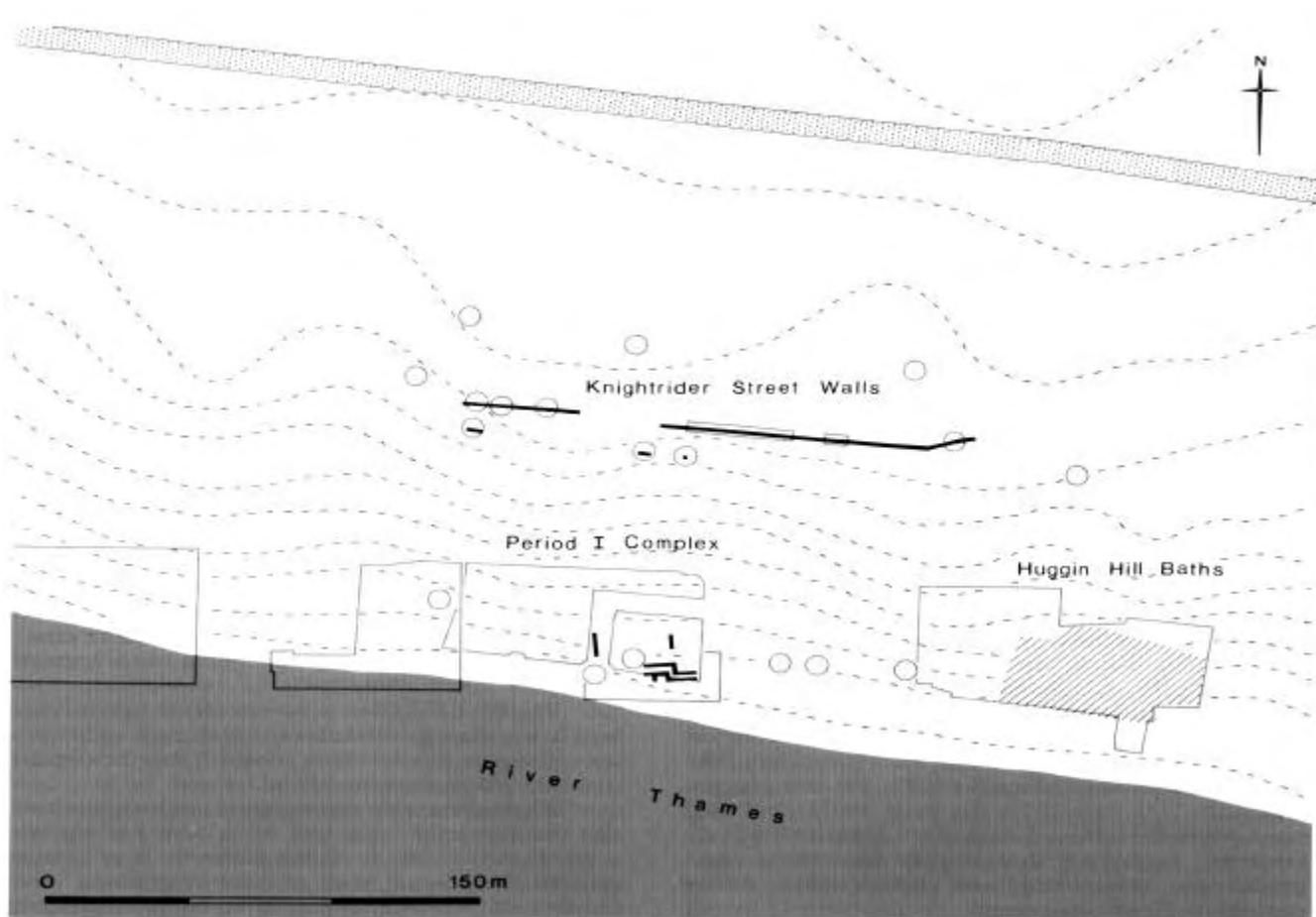


Fig 6 Period I complex and its environs. The walls in the Knightrider Street area lie on a different alignment from those of the Period I complex. Hatched area indicates approximate extent of Huggin Hill baths complex. (1:2500)

2. THE PERIOD II COMPLEX (late 3rd century) (Fig 9)

2.1 Introduction

The evidence for the Period II complex is more widespread than that of the Period I development. Primarily it comes from the excavations at Peter's Hill (detailed in Chapter 4), Sunlight Wharf (Chapter 5) and the Salvation Army Headquarters (Chapter 6), but it also includes numerous observations made during the last 150 years (Observations 6-24; Chapter 7).

The understanding of the individual structures within the Period II complex is restricted by their fragmentary observation. The complex was terraced into the hillside and most of the structural evidence only survived on the lowest, riverside, terrace. The area for some distance to the north has yielded few opportunities for observation and, even where it has, differential truncation of the hillside has removed the Roman strata. Nevertheless, many of the observations could be correlated with some certainty on the basis of all, or some, of the following: stratigraphic position, construction technique, alignment or dendrochronological date. In both the case of the construction technique and the date, the strength of the comparisons is striking; the construction technique, while being complicated, is closely reproduced in all observations, and the dendrochronological date could hardly be more precise or consistent.

2.2 The riverside wall

The riverside wall, although discussed here, is not thought to have been laid out as part of the Period II complex. Rather, it was constructed shortly before the inception of the complex. However, it merits discussion here because of its influence upon the riverside form of the latter.

The construction of a riverside wall

(Fig 10)

A substantial east-west wall was constructed at the foot of the hillside at Peter's Hill (site 1, Fig 2), at the margin of the north bank of the Thames (Fig 9). It was well constructed, with a coursed concrete and rubble core, ragstone facing, tile courses and offsets (Fig 10; p40-41). The base of the foundation, however, was not observed (*ibid*).

The marked similarity of both fabric and alignment to the riverside defensive wall observed at Baynard's Castle in 1975, some 60m to the west (site 4, Fig 2; see Fig 24) (Hill *et al* 1980)¹, suggests that both were part of the same construction. Projected further eastward, the alignment of the Baynard's Castle and Peter's Hill wall would run immediately to the south of the Period II complex foundations at Sunlight Wharf (Figs 9 and 24). The identification with the Roman riverside wall is further supported by the relationship of the wall with the line of early medieval Upper Thames

Street; the latter appears to have utilised the surviving wall as a southern kerb, when the street was laid out probably in the late 11th century (Hill *et al* 1980, 72; Williams 1986; Dyson 1989, 24; *cf* Steedman *et al* forthcoming).

No dating evidence was found at Peter's Hill for the construction of the riverside wall itself, but dumps against its northern face (see below) contained 3rd century pottery (p55) and pre-dated the construction of the Period II complex, which is dated to AD 294 (p27). Evidence from the Baynard's Castle excavation suggests that it was constructed *c* AD 255-70 (Sheldon & Tyers 1983; Hillam & Morgan 1986); a single pile from New Fresh Wharf has recently been dated to AD 268+, suggesting that a date late in the range is probable (Hillam forthcoming)².

Dumping to the north of the riverside wall (Figs 11 and 29)

On Peter's Hill a series of dumps, primarily of redeposited natural clay mixed with small quantities of building material, were deposited against the northern face of the riverside wall. The dumps extended some 10m north of the wall in the east of the site (Fig 11c), increasing to nearly twice that distance in the west (Fig 11 a), where they compensated for the natural slope of the area (Fig 21). It is not clear whether the dumps were originally intended to form a level platform behind the wall or, as has been suggested of similar deposits found behind the riverside wall at Baynard's Castle (Hill *et al* 1980, 36-7)³, were part of a bank which was subsequently truncated by the Period II terracing of the area. This process of dumping at the foot of the hillside was also observed at Sunlight Wharf, where it extended some 10m north of the line of the riverside wall (p57), possibly further east at Observation 10 (Fig 11e; p76), and in excavations beneath Thames Street (Thames Street Tunnel; Richardson 1979, 261). If all of these dumps were part of the same process, then they would have extended over at least 250m.

The deposition of this material probably took place soon after the construction of the riverside wall (*c* AD 255-270; above), as the dumps at Peter's Hill sealed the wall's foundations (Fig 11 a)⁴. This would place them somewhat earlier than the Period II terracing (AD 294), suggesting that they were deposited in association with the riverwall, rather than with the subsequent terracing. This is supported by the character of the clay within the dumps, which differs from that of the natural hillside, and which it might have been expected to resemble if it had been deposited during the cutting of the Period II terraces (p41).

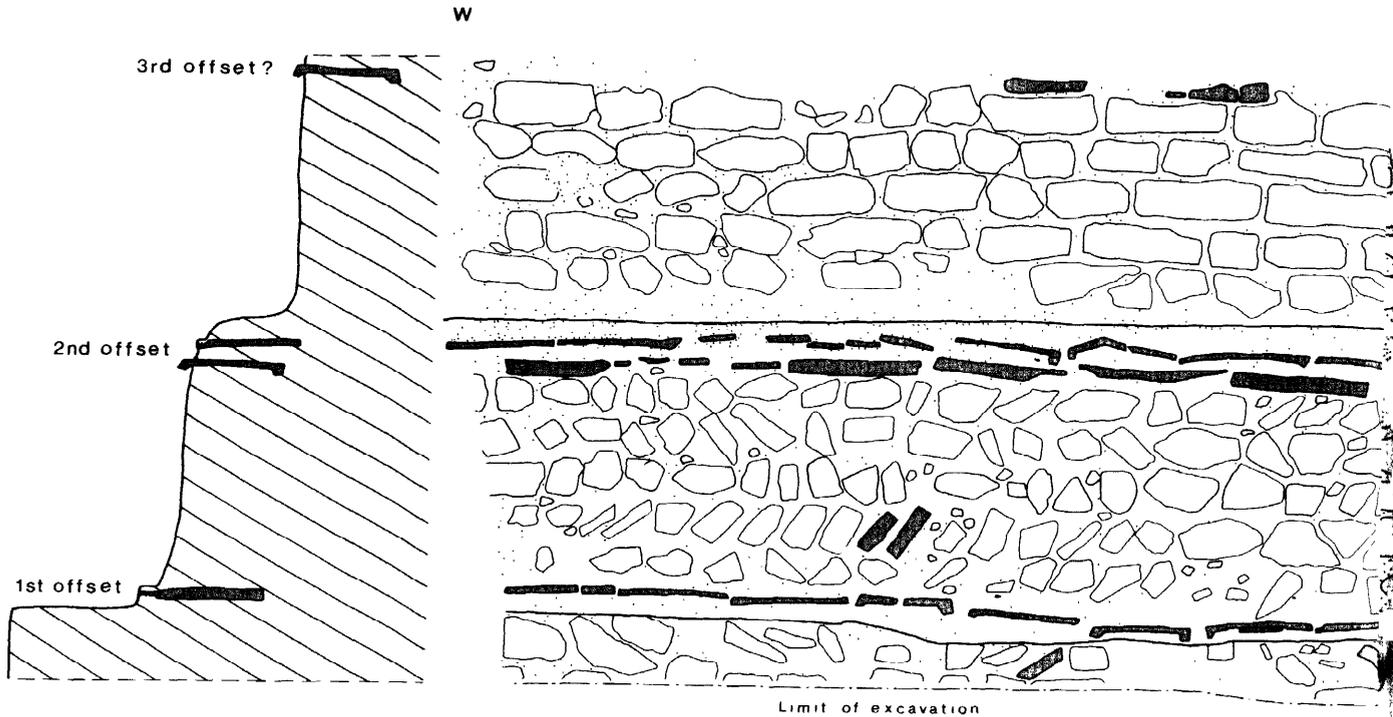


Fig 10 North face of the riverside wall at Peter's Hill. The ragstone facing was laid in a herringbone pattern below the 2nd off-set. Tile courses comprise inverted roofing tiles (*tegulae*), laid in alternate courses showing flange or profile. Heavy stippling indicates the layer of *opus signinum*. (1:20)

2.3 The construction of the complex

Terracing (Fig 11)

The Period II complex was founded on at least two terraces cut into the natural hillside, the lowest of which partly overlay the dumps behind the riverside wall, which may have been levelled as part of the process (above). Only at the Salvation Army Headquarters was the more northerly terrace observed in any detail, and even here only in section at the west end of the site (Fig 11 d). The chalk raft of the upper terrace lay some 2.75m above that of the lower (p64).

The terracing probably extended the length of the complex, but it was not delimited by a continuous terrace wall. Rather, a number of terrace walls were used, each of which lay at a slightly different point upon the slope, creating the impression of a series of smaller platforms within the whole (Fig 9). This is probably explained, at least in part, by the nature of the buildings and open areas on the terrace, which seem to have formed independent elements each occupying its own platform (p27-8).

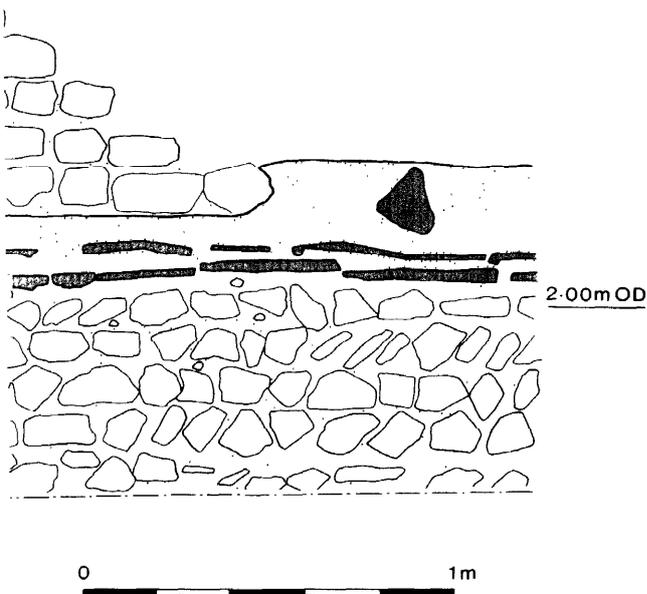
These local differences were reinforced by the character of the retaining walls for the upper terraces, which also varied in construction: at Peter's Hill and Observation 6 the wall, some 0.9m thick, was

constructed of tile, bonded with large quantities of *opus signinum*. The wall was well-built, with offset courses (Figs 12, 43 and 44). Some 8-9m to the east, at the western end of the Salvation Army Headquarters site, the terrace line had moved further north (Figs 9 and 11d), where the wall, some 1.02m thick, was constructed of ragstone and cement.

The lower terrace cutting did not attempt to achieve a simple level platform. Rather, it was tailored to suit the specific needs of individual foundations; at Peter's Hill, only the area that was to be occupied by the masonry foundation was extensively cut back into the hillside, forming a platform some 26m north-south behind the riverside wall (Figs 11 b and 29). The area immediately to the east of this was less disturbed, but a step was cut into the slope, at the point where the east-west terrace wall was to be constructed (Fig 11c).

The main foundations (summarised in Fig 13) (Plates 1-4, Figs 13-18)

The structure of the lowest, riverside, platforms was highly elaborate. The reader is referred to the site sequences in Chapters 4-7 for detailed accounts of the structural evidence from each of the observations. The best example of the structural complexity came from the excavations at Peter's Hill (Chapter 4).



A large area of the complex was prepared with oak piles. These usually comprised circular timbers, complete boles, with bark still adhering (Figs 14, 15 and 17); at Sunlight Wharf, and to a lesser extent at Peter's Hill, a few squared timbers, cut to approximately the same size, were also used (Appendix 3). The timbers were very straight, and varied between 2m and 3.5m in length; considerable effort would have been required to drive these into the relatively stiff clay dumps and the natural hillside beneath. The pile heads were left projecting some 0.15m above the level of the terrace (Fig 13). The densely packed piles did not appear to have been arranged in either rows or arcs, although the areas examined were relatively restricted (Fig 15).

All the masonry foundations whose bases were actually observed were found to be supported by piles. At Peter's Hill, which was the only large-scale open area excavation, the piles appeared to be restricted to the line of the subsequent foundations, extending only some 0.4m either side of that line; they did not extend across the whole base of the terrace. They were, however, stepped out at the suggested corner of the foundation (Figs 33 and 34). This area almost exactly corresponded to that of the clay dumps behind the riverside wall (Fig 29), suggesting that the piles were used both for the line of the subsequent foundations *and* for the area of levelling dumps. At Sunlight Wharf, piles within the northernmost area also appeared merely to consolidate the clay dumps, with no indication of subsequent structural activity (p57). It would be incorrect, therefore, to suggest that the distribution of the piles

accurately reflects intended wall-lines: the extensive piling observed on the Salvation Army Headquarters site (Fig 54) does not necessarily indicate foundation lines.

Observations of the higher terraces of the complex were extremely restricted (p26), but on the Salvation Army Headquarters site the timber piling was also seen on the northern terrace (Fig 11d). In this case it seems likely that it was intended to consolidate the dumped material at the south edge of that upper terrace; the piles again appear to correspond to general areas of consolidation, in addition to the specific lines of masonry footings.

All the piles were sealed by an extensive chalk raft; relatively pure chalk nodules were rammed around the pile heads to form a smooth and roughly level platform. At Peter's Hill the chalk was carefully rammed only in the area of the subsequent foundations; elsewhere it was left in a more nodular, uneven, state (Fig 16). This correspondence could not be tested elsewhere, as too small an area lay outside the lines of the masonry foundations on Sunlight Wharf, and no such record was made at the Salvation Army Headquarters site, although a photograph taken during the construction works of 1960 (reproduced as Fig 17) suggests that the chalk may have been rammed smooth in the area shown in the photograph; unfortunately, it is not known precisely which area of chalk this photograph shows.

Overlying the chalk raft was a second layer of chalk (Fig 13), noticeably less pure than the first, which had been rammed around a framework of horizontal timbers (Plate 1, Figs 35-7). This technique was observed at both Peter's Hill (p46) and Sunlight Wharf (p58); it is probable that its presence on the Salvation Army Headquarters site was missed due to the nature of the observations, although once again a photograph might indicate its existence in at least one area (Fig 17). A close relationship between the area of timber framing and the *opus signinum* setting for the subsequent masonry foundations (see below) strongly suggests that the areas outside the foundation lines were not framed. The timbers appear to have been removed after the deposition of the second chalk layer, and the resultant slots were backfilled with unconsolidated sands and clays (see p23-4).

The base of the main masonry foundations normally consisted of a single course of massive stone blocks, averaging 0.9 x 0.45 x 0.40m, set on an *opus signinum* and tile bedding (Fig 18) (for details see p48-50 for Peter's Hill and p58-61 for Sunlight Wharf; see also Chapter 2.4 for parallels). The blocks were only closely set along the margin of the foundation, with large gaps occurring in the core; these were filled with large fragments of tile and poured *opus signinum*. At the north end of the Peter's Hill foundation (p48), and along the south face of the east-west element at Sunlight Wharf (p58-9), the massive blocks increased to two courses, possibly strengthening these points.

At Peter's Hill the blocks were almost exclusively Lincolnshire Limestone, whereas those from Sunlight Wharf were more mixed, and included a number of sandstones (Appendix 2). However, given that these observations were some 75m apart, it is hardly surprising that different sources of material were utilised (see p11 for a discussion of their possible

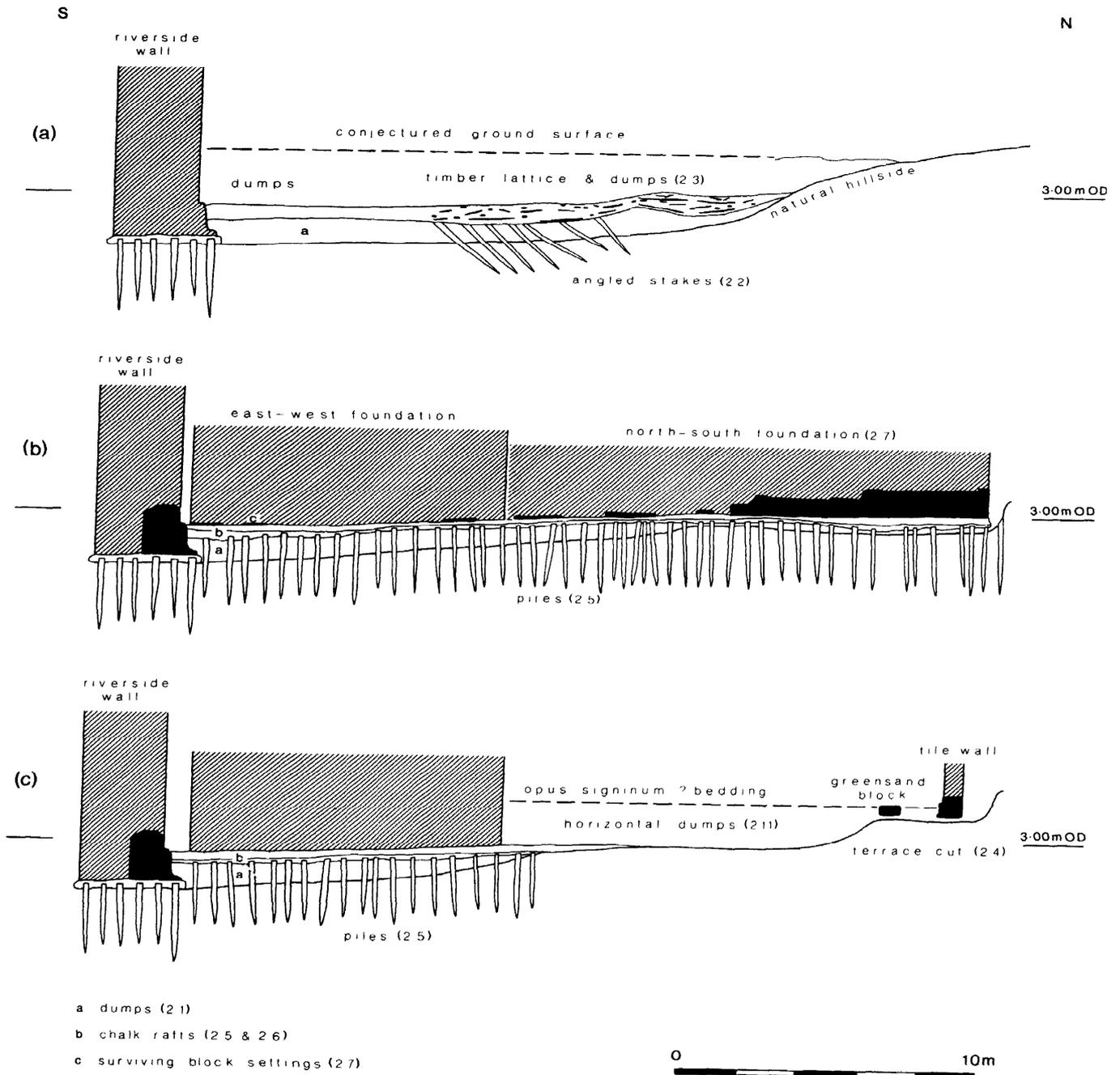


Fig 11 Reconstructed sections through the hillside at the time of the Period II complex. Profiles (a-c) are directly comparable, as they lie at corresponding points on the north-south slope. Numbering on profiles (a-c) refers to Peter's Hill phasing Groups (p39). Features annotated on profile (d) refer to Salvation Army Headquarters observations (p57). (Sections at 1:200)

(a) Peter's Hill, unaltered natural hillside, with timber lattice and dumping (2.3) consolidating the base of the slope, followed by the more extensive levelling dumps (2.10).

(b) Peter's Hill; slightly sloping platform created by the dumping (2.1), and the chalk rafts (2.5 and 2.6). Note the sharp profile of the terrace cut in the north, which was designed to accommodate the monumental foundation (2.7). Compare this with the more gradual profile shown in section c.

(c) Peter's Hill; dumping in the south (2.1) and the terrace cutting to the north (2.4) formed a roughly level terrace. The ground was then carefully prepared with horizontal dumps (2.11). Note the platform within the terracing to the north for the east-west tile wall (also 2.11).



Fig 16 Peter's Hill; first chalk raft showing an uneven (nodular) and uncompacted finish outside the line of the later foundation. (Scale 10 x 0.10m)

and gravel. These deposits infilled the area at the base of the slope, and only extended to the level of the base of the masonry foundation (Fig 11a). Their function appears to have been to consolidate the low-lying area immediately adjacent to the course of the main foundation, providing the latter with support against lateral movement.

The timber lattice was overlain by a series of less compacted gravel and sand dumps, which raised the area by c 2m, to the height of the surviving adjacent foundation, at which point the sequence was truncated. The character of the make-ups suggests that they were intended to support a widespread surface; however, this is unlikely to have been of the quality of that prepared so meticulously to the east of the foundation (above), and was perhaps composed of gravel. It is not clear whether this area was external to the complex proper (p26), but it was still carefully laid out, probably as part of the initial landscaping of the area for the presentation of the Period II monuments.

Drainage

Tile-built culverts were constructed as an integral part of the riverside foundation at Sunlight Wharf (Fig 22). A considerable amount of water would have been generated by the hillside's natural run-off and springline (p8), and any roofed areas within the complex would have intensified the need for adequate drainage. The presence of such drainage features need not be indicative that water supply, or disposal, was an aspect of the function of the complex. Elaborate culverts have been found elsewhere in structures whose function is unconnected with the use of water, for example the Temple of Claudius at Colchester (Drury 1984, 17), or



Fig 17 Salvation Army Headquarters; timber piles and chalk raft exposed during building works. Arrows indicate possible slots in the second chalk raft: evidence of a horizontal timber framework. (Scale 6 x 1')

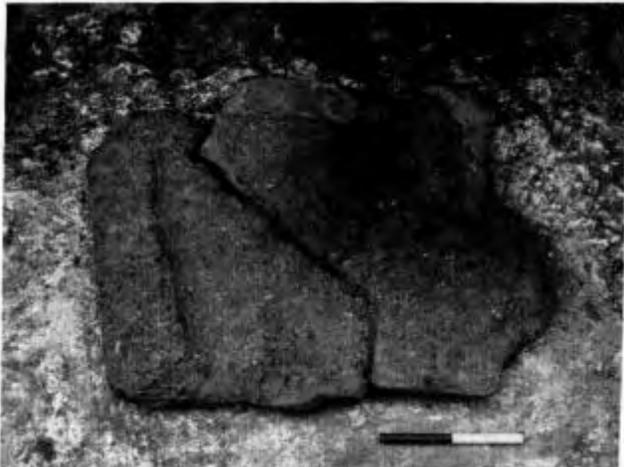


Fig 18 Peter's Hill; tiles and opus signinum were used to support a course of massive re-used limestone blocks in the monumental foundation. Blocks were positioned while the bedding was still wet, and their impressions can be seen in this bedding material - here ridges have been created as the material was forced up by the weight of the blocks. The blocks had been removed in antiquity. (Scale 2 x 0.10m)

the defensive wall at Dax (Johnson 1983b, 269). Rather, the planning of the complex appears to have taken account of one of the major problems of its siting, the water run-off from the hillside.

2.4 Construction methods and their parallels (Fig 23)

Timber piles supporting a chalk raft

The technique of pile and chalk preparation is well recorded in the Roman period and has been explored in detail elsewhere (Grenier 1931; and more recently Hill *et al* 1980, 59-60; Johnson 1983b, 263-9). In particular, it has been associated with the construction of masonry walls in areas of geologically unstable ground, often when the land was of a low-lying or waterlogged nature. The comparison with the Period II complex seems obvious.

The use of a second chalk raft with horizontal timber framing

The use of a horizontal timber framework, retaining a second chalk raft, is an unusual constructional feature, although it does have parallels within the Roman world; Vitruvius advocated the use of lateral timbers of charred olive wood within foundations, as the timber 'remains serviceable even if buried underground or placed in water. Not only a city wall but also substructures and any internal walls which need to be made as thick as a city wall will last undamaged for ages if they have ties in

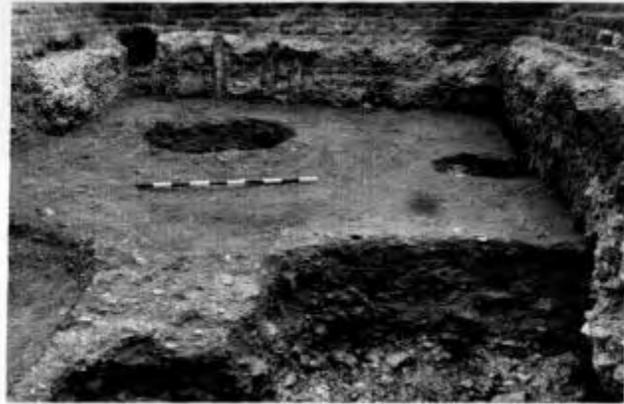


Fig 19 Peter's Hill; roughly level bands of heavily compacted building debris in the east of the site (Group 2.11). These deposits painstakingly consolidated the area prior to the laying of an opus signinum bedding layer (see Fig 20). (Scale 10 x 0.10m)

this way' (Vitruvius, Book I, V). However, this technique does not appear to have been extensively employed until the late 3rd century.

The technique has been recognised in Gaul, where the use of lateral timbers was noted as early as 1875 (Leger 1875, 108- 13). Since then the technique has been identified at other Gaulish sites, for example, in the late 3rd century defensive circuit at Bordeaux (Johnson 1983b, 268), in the external bastions of the later wall at Strasbourg (Johnson 1983b, 33), and at Dax, where 'the foundations rested on a bed of 0.3m square timbers of which only decayed fragments were found' (Blanchet 1907, 237). Timber beams have also been found in a number of the massive wall foundations on the Rhine frontier, for example, at Alésia and Breisach (Johnson 1989, 32).

In Britain, the use of a timber framework within foundation courses has been identified in many of the Saxon Shore Forts (Fig 23): Richborough (Bushe-Fox

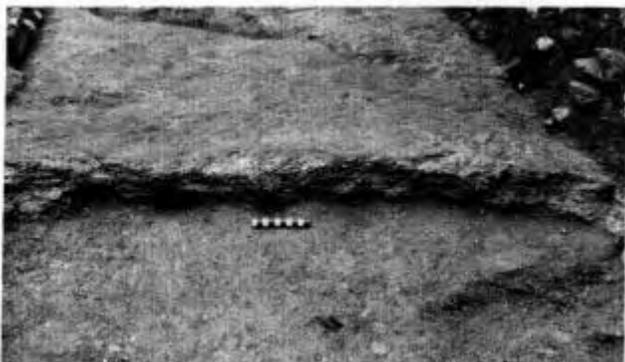


Fig 20 Peter's Hill; opus signinum bedding, poured in situ, partially excavated to expose the heavily compacted make-up dumps beneath (cf Fig 19). This deposit was not noticeably worn and may have provided the base for a surface, such as flagging. (Scale 10 x 10mm)



Fig 21 Peter's Hill; dressed block of greensand (foreground), set within compacted dumps of building debris (Group 2.11). (A 19th century foundation dominates the centre of the picture.) Trone probably served as a free-standing pier or statue base (cf Fig 42). The tile built terrace wall lies to the right, and the theth-south monumental foundation occupies the background. (Scale 5 x 0.10m)



Fig 22 Sunlight Wharf; culvert within the monumental foundation (looking south-west). The base of the culvert utilised the re-used blocks of the monumental foundation. The sides were tile built for the first 0.3m, and then the core of the monumental foundation was faced with ragstone. (Scale 2 x 0.10m)

1928, 23nd pl xi fig 1; 1932a, 30, 50 and pl 1 and li), Pevenseyushe-Fox 1928, 23; 1932b), Porchester (Cunliffe 3, 221; 1975, 14-15), Burgh Castle (Bushe-Fox 19353; Taylor & Wilson 1961, 183; Cunliffe 1968, 66-ee also Johnson 1983a), and Bradwell-on-Sea (RCI 1923; Hull 1963).

At Ichester, the foundation between bastions 14 and 15 consisted of:

a baaf of timber and flint. Timber baulks 1 ft (0.3m) square were laid on a mortar bedding parallel to the wall faces. Cross members were placed right angles with the intervening spaces cross-bedded. The spaces between the timbers were cased with flints and mortar, and the lateral timbers were faced externally with 1 ft (0.3m) of flint mortar masonry. (Fig 23b). (Cunliffe 1975)

An examination of the evidence from Richborough also demonstrates close similarity:

Above chalk packing was a layer of timber strap, the holes for which were located in severe excavation sections. This was packed with rougher chalk and loose flints, and above this flint, the wall was constructed. (Fig 23c). (John 1981, 24)

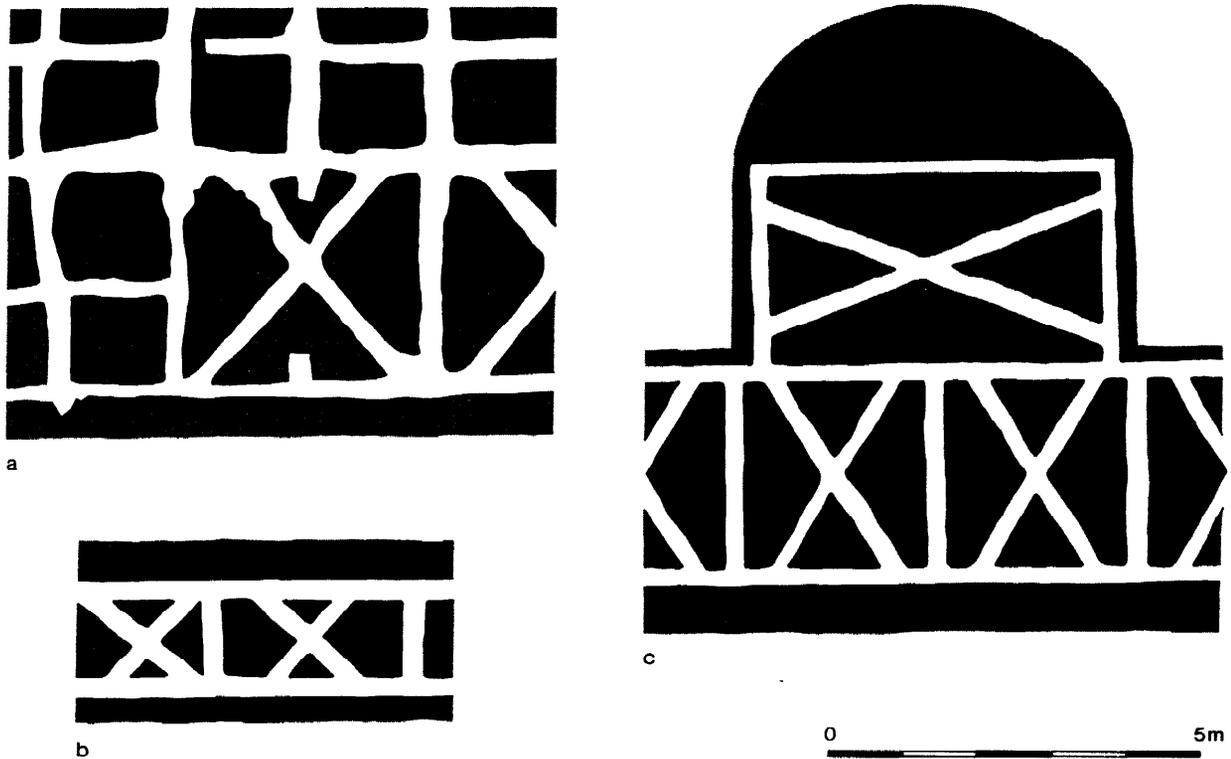


Fig 23 Packed chalk raft (grey), with negative impression of horizontal timber framework, used within monumental foundations: (a) the Period II complex at Peter's Hill; (b) the Saxon Shore Fort at Porchester (after Cunliffe 1975, fig 9); (c) the Saxon Shore Fort at Pevensey (after Cunliffe 1975, fig 10). (1 :100)

And at Pevensey a similar picture was recorded:

The impressions of the beams in the surface of the chalk-and-flint foundation could be clearly seen. (Bushe-Fox 1932b, 60)

The grooves can only represent the position of wooden beams long since decayed and the method of construction would seem to be as follows. A trench was first dug and filled with flint and chalk, and the beams, which appear to have been framed together, were laid upon the surface of this, the space between them being packed with chalk. The masonry wall was then built upon this foundation. (*op cit*, 62)

In all these cases the character of the foundations conforms to a common pattern of construction, in which a prerequisite was a stable and roughly level platform upon which to place the timber framework. Solid material, often chalk or flints, was rammed around the framework once in position. Even the size of the timbers appears to have been remarkably consistent: c 0.3m in cross-section (see Porchester, Richborough and Dax above; Burgh Castle, Bushe-Fox 1932b, 64; Pevensey, Bushe-Fox 1928, 23; the Period II complex, p46 and p58). This similarity might suggest the use of a standard timber size (Appendix 3).

The diagonal arrangement of timbers noted in this complex (Figs 23a, 35 and 37; p46), has also been recorded from a number of other sites (Fig 23; see also Leger 1875, 108-13, figs 1, 2). None of the commentators, in the previously published examples,

have commented upon the variation of arrangements (from parallel to diagonal), primarily because the two have not previously been noted on the same site. There is no indication, however, that the structural function of the arrangements was in any way different. (For a possible explanation of the variation, see p26.)

Leger suggested, more than a century ago, that the function of the horizontal timber-framing was to increase the stability of the foundation, largely against the possibility of localised subsidence (1875,113). Since then, other commentators have followed this view, Bushe-Fox stating that 'the purpose of a timber-framing in this position was to consolidate the surface of the packing stones and chalk by preventing it from spreading out at the sides and thus forming an uneven and unstable foundation for the masonry above' (1932b, 62). Cunliffe reinforced this, saying that they would have imparted lateral strength to the wall, 'greatly reducing the possibility of subsidence cracks' (1975, 15), a suggestion echoed by Wilcox who stated that 'the longitudinal timbers also prevented the walls from sinking unevenly; they encouraged uniform settling and helped to prevent cracks' (1981, 27). The technique appears, therefore, to have been particularly well suited to use in waterlogged conditions, or in areas of unstable geological bedding. The Period II complex, which partly occupied an area of made-ground, and was clearly intended to support a substantial load, would seem to be consistent with this explanation.

In this complex, however, the timbers appear to have been removed prior to the construction of the masonry foundation (the timbers remained *in situ* in the Saxon Shore Fort examples, as was evidenced by the voided nature of the slots when found). The careful preparation of the area, principally by installing the oak piles and chalk raft, seems inconsistent with the removal of the timbers and, particularly, with the backfilling of the resultant slots with unconsolidated material. As the second chalk raft would not have provided a significant addition to the foundation - the first chalk raft served the purpose of sealing and binding together the piled area, and providing a stable platform upon which to construct the masonry foundation - the second chalk raft had no function beyond that of infilling the timber-framing. This suggests that the latter was originally intended to remain within the foundation and its removal would seem to indicate a significant change of plan. At first glance it might appear that the removal of the timbers would have introduced lines of weakness into the foundation. It is possible, however, that the size of the stone blocks used within the basal course of the masonry foundations, which directly overlay the slots, offers a solution. In the areas in which the foundations survived there was no sign of even minor subsidence into the backfilled slots, which suggests that the unusually large size of the blocks resulted in only a very small percentage of their surface lying directly over one of the slots - thus spanning any potential problems.

This, in itself, does not seem to explain the removal of the timbers after the trouble of positioning them: why were they supplied in the first place? One possibility is that the foundations were initially constructed according to pre-determined specifications, based upon particular engineering teams' working practice (p21), in which timbers were considered essential for such a construction. The massive blocks used here would not have been available as a matter of course. None of the Saxon Shore forts, for example, employed such material, the core of the foundation being constructed directly on the chalk raft. It is possible, therefore, that the availability of the blocks may not have been taken into account when the programme was designed. However, once the blocks started to be incorporated, it would have become clear that the timbers were superfluous; the blocks provided an effective platform to which the timber framing could have added little. The amount of high-quality timber involved was substantial, and must have represented a considerable investment of resources, possibly explaining the effort expended in retrieving them (see Appendix 3). Although it is impossible to be certain as to the motives behind the removal of the timbers, it is clear that during the course of this carefully conceived and executed project, major changes arose both in plan and procedure.

The Period II complex was constructed from AD 294 onwards, and it is noticeable that the parallels for the use of timber framing also date from this period: the Saxon Shore Forts, Burgh Castle (after AD 250-75), Richborough (AD 275 +), Porchester (post AD 261) (all Johnson 1983b), and the Gallic town walls of Bordeaux (after AD 268; *op cit*, 268-9) and Dax (no firm dating evidence, but probably late 3rd century; *op cit*, 109). This suggests that the technique became extensively

adopted in the late 3rd century, and its occurrence in a number of public works of this period has particular relevance to the London complex, and is further explored in the discussion of its function and historical context (Chapter 2.9).

Re-used blocks within the masonry foundations

The incorporation of re-used masonry within the basal courses of the foundations was a practice common in the late Roman world, the best known examples being the defensive circuits of the late Empire (Blagg 1983), notably in Gaul (summarised in Blanchet 1907 and Johnson 1983b, 112-3, 263-9; but see also Bayard and Massy 1983, 228-34 (Amiens), and Étienne 1962, 203-4 (Bordeaux)). In London, re-used masonry has been observed in the late Roman bastions (Maloney 1983, 105-l). Most of the Gallic town walls are suggested as being late 3rd century, or later; Beauvais, for example, probably post-dates AD 285-6 (Johnson 1976, 220), and Grenoble dates from the period of the Tetrarchy (Johnson 1983b, 104) (the most recent discussion of the Gallic evidence is in Johnson *op cit*). In these cases the pressure of circumstances, times of 'crisis', have often been given as the explanation for the demolition of earlier structures for building material. Johnson argues that defence was 'no longer symbolic either of the status of a town or of the pretensions to which it aspired' (*op cit*, 115), but rather was inspired by 'a realistic necessity' (*op cit*, 116), and there is little doubt that the stimulus of defence accounts for much of the re-used material. This may, however, be too simplistic a model; a number of non-defensive constructions were also undertaken at this time (see Chapter 2.9), and it is clear that re-used material could be incorporated into a variety of structures, particularly when it was derived from the refurbishment or reconstruction of an existing complex. An example of this comes from the East Forum Temple, Sabratha, where a large quantity of sandstone blocks from the Period I temple were re-used within the Period II foundations (Kendrick 1986, 58). It is interesting to note that the re-used stones were the plainer building blocks of the first temple; the more elaborate architectural fragments, such as the columns and decorated entablature were used within the Period II temple in something approaching their original role. It is evident, therefore, that the mere presence of re-used material does not presuppose that the London complex was defensive in function or that it was the product of a period of general instability and decay.

2.5 Layout (Figs 9 and 24)

The layout of the structural elements so far identified is shown in Figures 9 and 24. It is important to recognise that there are large areas in which no observations have taken place, and that the full extent of the complex is at present unknown (see Chapter 2.6). Nevertheless, it can be seen that, while not forming an easily identifiable pattern, the observed foundations do suggest a basic

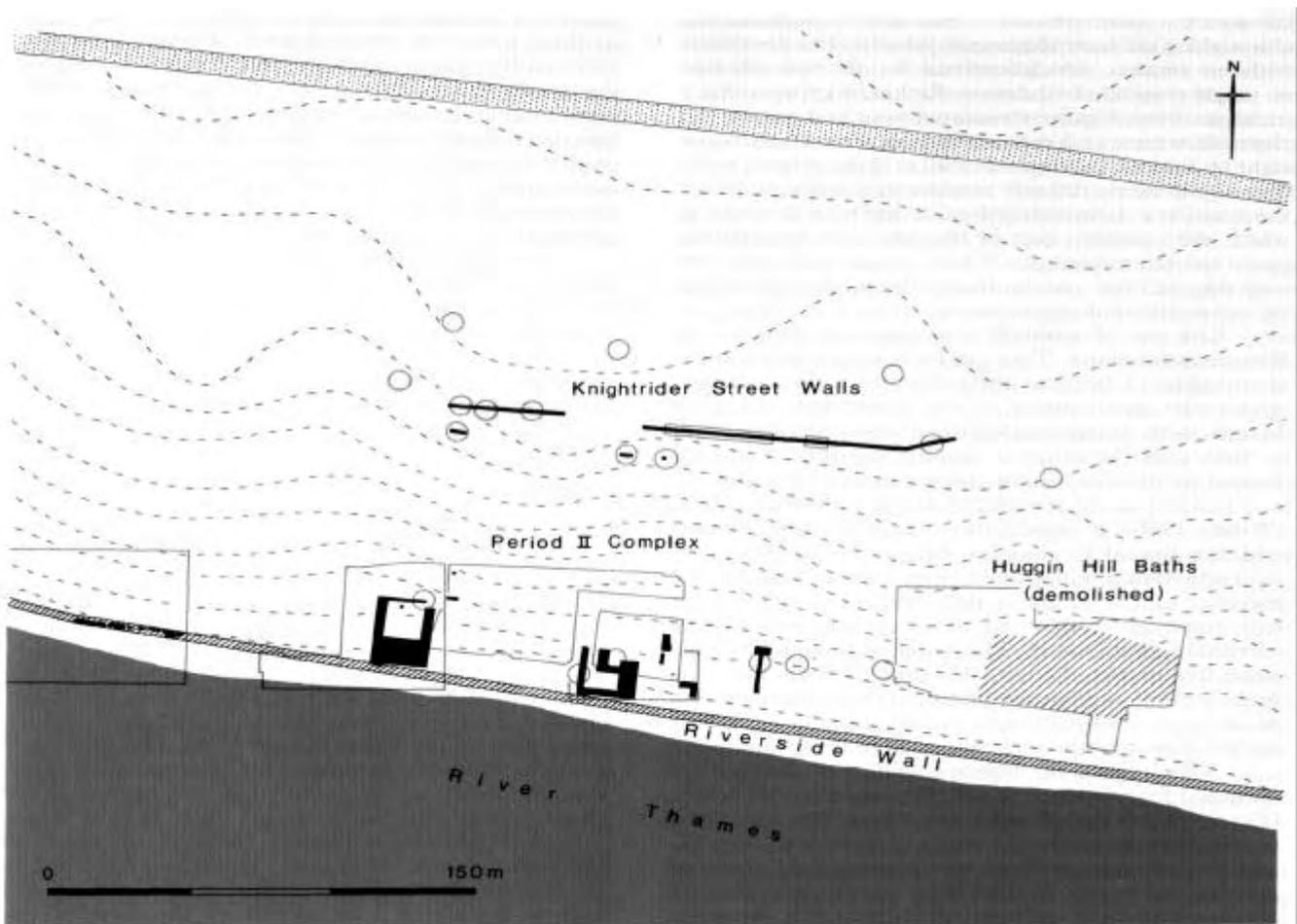


Fig 24 Period II complex and its environs. The long north wall at Knightrider Street probably formed the northern boundary for the complex. The angled western stretch of the riverside wall is a later addition, possibly constructed around the time of the Period II complex. Hatched area indicates approximate extent of Huggin Hill baths complex. (1:2500)

regularity within the complex as a whole. No single foundation can be traced over the known extent of the complex, or even over a substantial part of it, with the exception of the possible northern precinct wall, suggesting that the area comprised a number of discrete structures or enclosures. Even the terrace to the north lay at varying points on the slope (p14).

It is particularly interesting that along the southern frontage no common, or unified riverside facade was constructed, as might have been expected. The southern foundation at Sunlight Wharf does not appear to have extended as far west as Peter's Hill, as Observation 7 stated that the wall turned northward (p73). Roach Smith, who made this observation during the construction of a sewer beneath Upper Thames Street in 1840-1, stated that no other obstruction had been met during the sewer's construction between Blackfriars and this point (Roach Smith 1841a, 150). However, at Peter's Hill the sewer was observed in the modern excavation to have cut through the southern foundation, at a point where the masonry courses had

been robbed out in antiquity, and where only the timber piles, chalk raft, and horizontal timber framing remained (Fig 37; p50). This suggests that the course of the foundations was only archaeologically visible in 1840-1 when still extant as masonry, and raises the question of where else foundations might have crossed the line of the sewer and not been recognised at that time. Nevertheless, any riverside foundation would have to have been robbed out over a considerable distance, in fact all the way up to the Lambeth Hill junction, to have avoided detection during the cutting of the sewer. In addition, Roach Smith specifically stated that he observed an angle at Lambeth Hill and that 'the delay occasioned by the solidity and thickness of this wall, gave me an opportunity of making careful notes as to its construction and course.' (Roach Smith 1841a, 150). Thus a continuous riverside facade seems improbable.

It is also notable that the east-west foundations, both at Peter's Hill and at Sunlight Wharf, diverged from the course of the riverside wall (Fig 9). The

complex's southernmost east-west foundations, although on the same alignment, were not in a direct line with one another, which confirms that the complex had no single riverside foundation. Rather, it appears that a number of rectangular structures were laid out on the riverside terrace and that while these were constructed right up against the riverside wall at their western ends, they significantly did not emulate its alignment. Thus the junction at Lambeth Hill coincided with the point at which the southern face of the east-west foundation, projected from Sunlight Wharf, would have met the riverside wall line - no doubt explaining why the former turned northward at this point.

The use of riverside frontages was common in Roman architecture. They can be demonstrated to have been exploited from an early date, for example in the spectacular development of the waterfront at Lepcis Magna, with its colonnaded warehouses (Haynes 1956, p1 10a), and continued in popularity throughout the Roman period; see for example the even more elaborate and impressive facade of Diocletian's Palace at Split (Wilkes 1986), a construction roughly contemporary with the Period II complex. However, the complex's riverside facade must have been complicated by the presence of the riverside defensive wall, constructed only some 20 years or so before, which would have inevitably obscured it. The latter is thought to have stood to a height of c 8m (Hill *et al* 1980, fig 29). It is probable that its presence accounts for the apparent lack of a continuous riverside facade, and the possible inward-looking aspect of the complex (Fig 9).

The apparently massive width of the robbed east-west foundation at the south of the Peter's Hill site (Fig 9) is worthy of some attention. The horizontal timber framing spanned a width of some 10m (Fig 35), and the presence of block settings, patchily observed over the entire width (Fig 38; p50), suggests that the framing supported a foundation of that width. However, a change in the angle of the horizontal timber framing, from parallel to diagonal, in the south of the area (Fig 35; p46), might indicate that the platform was intended to carry more than one foundation. The southern diagonal framing was c 3.8m wide, which closely compares with the c 4m wide framing for the north-south foundation on the same site (Fig 38), possibly suggesting that the southern frame supported a foundation of similar size, running east-west. If so, a second foundation may have been supported on the northern part of the massive southern framing (Fig 9).

The difference in both the construction and position of the northern terrace wall, as between Peter's Hill and the Salvation Army Headquarters site (Fig 9; p51 and p64), suggests that some form of structural division lay between the two areas. The intervening area has never been observed, but the discovery of *opus signinum* and tile fragments immediately above the chalk raft in the extreme western section of the Salvation Army Headquarters site (Feature 4; p66) might indicate the presence of block settings similar to those identified on Peter's Hill (p50). If so, a north-south foundation might have been present in this area, lying approximately 12 to 16m to the east of the north-south foundation observed on Peter's Hill, and possibly forming a return of the southern foundation (Fig 9). If so, the increased width of the southern foundation may

have been the result of a discrete structure, lying on the northern part of the foundation raft, and within the area enclosed by these conjectured foundations (Fig 9). To the north, the substantial tile terrace wall probably completed a rectangular enclosure. It was within this area that the well compacted building debris dumps, the poured *opus signinum* bedding and the free-standing pier base were found at Peter's Hill (Fig 9; p50-51). Possibly the enclosed ground was a high quality courtyard, containing free-standing features, such as statues (*ibid*).

Similar courtyards probably existed elsewhere within the complex, but the ground-plan is at present too fragmentary to identify them. Indeed, it is not possible to be suggest what form the structures at the eastern end of the complex took, except to say that they were also of monumental proportions, and that they give the impression of having formed a series of rectangular enclosures, be they delimiting internal or external spaces.

2.6 Extent (Fig 9)

The southern boundary of the complex was formed by the riverside wall - constructed only a few years earlier than the Period II complex and subsequently used to retain its southern terrace (p40).

The western boundary may have been formed by the north-south foundation at Peter's Hill, where the gravel dumps to the west were in sharp contrast to the preparation of the area to the east (p20). This difference might be explained in terms of the external nature of the area, and might not necessarily indicate the limit of the structures, as courtyards, *etc.* are likely to have been a feature of the complex (above). However, the failure of the chalk raft and timber piles - techniques employed to consolidate the dumped ground at the base of the hillside elsewhere - to extend to the west of the north-south foundation strongly suggests that the western limit of the complex may have been reached. This also coincides with the position of one of the possible streams that flowed into the Thames (Course 5 on Fig 4; p8). As such, this feature may have formed the effective western boundary of the development; potentially it would have been a difficult obstacle to straddle within the built-up area.

To the north, the structures were laid out on at least two terraces (p41), their extent being obscured by a combination of truncation and lack of observation. Some 100m to the north of the waterfront lay the long east-west wall at Knightrider Street (Chapter 7, p77-87) (Fig 24). The size and extent of the Knightrider Street walls suggests a public venture, and although the date of their construction is unreliable, varying from the 2nd to 4th centuries (p83), they lay on the same alignment as the Period I I structures in the riverside area (Fig 24) and it is probable that they formed part of that complex. The long northern wall possibly bounded the northern *temenos* of the complex, separating the relatively undeveloped land to the north from the built-up area of the complex to the south (p86).

To the east, the identification of the complex's limit is complicated by the lack of well observed evidence (Fig 24). Observation 9 would seem to be sufficiently similar to the main complex to be part of it

(p76), but Observation 11, some 35m further to the east, is less securely associated (p77). In either case, no evidence was found at Huggin Hill, which lay some 75m east of Observation 9, for any comparable late buildings, implying that the complex terminated somewhere between Observation 9 and that point. If the minimum option is adopted, and Observation 9 is taken as its easternmost point, while the north-south foundation at Peter's Hill is taken as marking its western end, then the complex would have extended along 145m of the waterfront, enclosing approximately 1.5 ha.

2.7 Dating

The Period II complex has been dated with some precision to AD 294, or later, on the basis of the dendrochronological analysis of the oak piles beneath the foundations at Peter's Hill and Sunlight Wharf (see Appendix 1 for details).⁶ The piles were complete boles, not squared timbers, and thus had complete profiles from heartwood to sapwood. They were also still sheathed in bark, which suggests that they were not seasoned prior to use, as the bark would have been stripped off during the piling process, if it had not been removed for other uses already, such as tanning (Wacher 1978, 186). In addition, the similarity of the timber has been taken to suggest that it derived from the same area of woodland (possibly managed estate land, p101), and, therefore, that it had not been stockpiled prior to use. This assertion is reinforced by the distribution of the timbers in the complex; the timbers to the east, at Sunlight Wharf, are dated to the spring of AD 294 (very little of the AD 294 growth ring), whereas those at the western end of the complex were slightly later, sometime in the late spring or early summer (a partial AD 294 growth ring). This suggests that the foundations were laid from east to west, during the spring/summer of AD 294. As the piling was one of the first elements in the constructional process - only the terrace cutting taking place beforehand - this provides us with an exceptionally close date for the commencement of the project.

2.8 The intended appearance of the complex

Three factors are relevant to the interpretation of the form of the structure(s) supported by the very substantial foundations of Period II. First, the virtually identical construction techniques employed throughout the complex (including the nature of preparation), secondly, the scale of the foundations and, thirdly, the relationship of the structural elements to adjoining areas.

The width of the foundations (c 3.75m at Peter's Hill, possibly two foundations on a 10m wide raft in the south of that site, and varying between 2.30m and 6.30m at Sunlight Wharf) was greater than that found in most Roman structures. The closest parallel for walls of such substantial scale are defensive circuits, where late Roman walls have been observed to range from a common 2-3m to 4-6m in exceptional circumstances, as

at Beaune (5m), Bordeaux (4-5m), Périgueux (4-6m) and Dax (4.25-4.5m) (Johnson 1983b, 268-9). Defensive circuits were not, however, the only context in which such large foundations were used. Vitruvius refers to the construction of massive foundations for 'not only a city wall but also substructures and any internal walls which need to be made as thick as a city wall' (Book I, V). One instance of this might be the foundation for the western precinct wall of the Temple of Claudius at Colchester, which was some 4.57m (15') thick (Lewis 1966, 134).

In a defensive role, foundations carried single large walls, but in other contexts they might have supported a variety of above-ground elements; the precinct foundation at Colchester supported both substantial piers for arches, and a separate thin screen wall (Lewis 1966, 134; Drury 1984, 27). In addition, the podium foundation at Colchester, some 4m thick, supported both the wall and colonnade of the temple (Drury 1984, 31). In the context of the Period II complex, the combination of a number of structural elements on a single foundation might have been regarded as structurally sound, especially given that the fear of subsidence appears to have conditioned most of the effort expended upon the foundations (timber piles, chalk raft, horizontal timber framing, and even the timber lattice to the west of the foundation at Peter's Hill). The need to integrate colonnades and walls is a vital aspect of any such construction; any strain between the elements could have a serious effect at roof level. In the Baths of Caracalla in Rome, for example, elaborate iron ties were used to integrate the portico of the *palaestra* with the main wall of the building (DeLaine 1985, 200). It was important, therefore, to avoid the possibility of independent movement between these elements, as would be caused by differential subsidence. It is argued, therefore, that in the Period II complex at least some of the foundations acted as plinths, supporting a combination of above-ground walls (of more normal proportions) and/or colonnades. The foundation would then be seen as integrating elements which were linked at roof level, helping to ensure that they did not settle unevenly; thus the massive foundations provided a practical solution to the problems posed by the siting of the complex.

The huge foundation raft at the south of the Peter's Hill site poses problems of a different nature. It has been suggested already that two foundations were supported on this single raft (p26), but even so the juxtaposition raises the question of their function. Their position, at the junction of the north-south foundation and a presumed east-west return, allows for a number of possibilities: for example, two east-west foundations, one returning to the north to form an enclosure, whilst the other supported a structure within that area. Alternatively, it may have been a special feature placed at the extreme south-west corner of the complex that dictated the increased width of the raft; for example, the base for a tower. Towers became popular within the late 3rd and 4th centuries, particularly in the construction of elaborate villas (see Mogorjelo, Ward-Perkins 1981, 467), and at palaces, for example in the waterfront facade of Diocletian's palace at Split (Wilkes 1986). A tower would have increased the visual impact of the complex from the river, and very effectively emphasised its extent (assuming that a similar structure lay at its eastern

termination). It may also have overcome some of the problems caused by the riverside wall obscuring much of the complex's frontage (p26).

The construction of substantial buildings on terraces is a well documented practice within Roman towns (MacDonald 1986, 135); for example, the circular library at Timgad (Raven 1984, 114), or the dramatic Baths of Caracalla in Rome (DeLaine 1985, 198). Terracing was a means of both utilising the area and exploiting its potential for display, factors which are unlikely to have been overlooked in the Period II development, given the scale of its construction. Once again, they may also have aided the builders in commanding a riverside aspect, despite the presence of the riverside wall.

Even though an exact understanding of the nature of their superstructures cannot be achieved, knowledge of their potential range is of significance when considering the function of the complex. The possible above-ground forms are numerous, ranging from simple ambulatories with two colonnades (eg the Kaiserthermen, Trier; Ward-Perkins 1981, 457), to precinct walls with engaged columns and integrated colonnades (eg the precinct wall of the Temple of Claudius, Colchester; Lewis 1966, 134). Even more elaborate structures would also have been possible, such as raised porticoes extending above the level of the surrounding courtyards, as at the Temple of Isis at Sabratha (Haynes 1956, 126-8).

In the late 3rd century, when the complex was constructed, a variety of architectural mediums would have presented themselves, not least the increased use of brick for larger public building programmes. In Rome, 'except for a few monuments of purely traditional character, such as the triumphal arches, squared stone masonry is hardly found after the middle of the second century' (Ward-Perkins 1981, 436). Although there was 'no single, clear cut stream of development' in the western provinces (*op cit*, 437), it is worth noting that in Trier, at the close of the 3rd century, brick-faced concrete was a vital component of public architecture (Wightman 1970, 107). Brick could also be used in a variety of functional forms, in many instances replacing masonry; for example, brick columns were used in the contemporary *Verulamium* I temple, which was constructed c AD 300 (Wheeler & Wheeler 1936, 132). The use of a light-coloured rendering for brickwork was also current in the late 3rd century, as on the basilica at Trier (Ward-Perkins 1981, 445). There is no evidence that any of these techniques were employed here, but they illustrate the potentially dramatic nature of the construction; for example, lightly-coloured rendering could have been combined with the reflective qualities of the river to produce a startling effect.

Whatever their final form, the degree of preparation for the foundations, combined with their size, suggests that the structures placed upon them were themselves substantial.

2.9 The function of the Period II complex

As it has proven difficult to isolate individual structures, ascribing specific functions to the various areas of the Period II complex is hardly possible. The exception to this is the long wall in the Knightrider Street area, which may have formed part of a boundary wall, or less convincingly, a circus (p86-7). Furthermore, archaeological interpretations of buildings or complexes are often based upon their ground-plan, especially if few associated surfaces or artefacts survive (as is the case here). Unfortunately the layout of monumental structures, a category into which this complex certainly falls, is not readily interpreted on the basis of scattered observations. Even the relatively large excavation at Peter's Hill only comprised about 2% of the total area of the Period II complex (this assumes that the northern boundary was in the area of the Knightrider Street walls: if the complex terminated immediately to the north of the site and was confined to two terraces, the excavation would still have covered only some 5% of the total).

The public status of the venture, however, can hardly be disputed. A number of other factors can be identified which may help to elucidate the complex's function: its considerable size, its location in the south-western quarter of the town (removed from the earlier focus of the basilica and forum on the eastern hill), its multi-terrace layout, the use of large and possibly high quality open spaces, the likely grandeur of the above-ground structures, and its date of construction (late 3rd century). The known public building forms from the Roman world (MacDonald 1986, 111), therefore, can be considered in the light of these factors.

Not all public buildings provide plausible candidates. A theatre, utilising the natural slope of the hillside, might appear to be a suitable interpretation for a public structure in the area; parallels for hillside theatres from elsewhere within the Empire are certainly abundant, such as at Djemlia (Février 1971, 63). The presence of such a structure within this general area has been suggested by a number of authors (Fuentes 1986; Humphrey 1986, 431-2) although their actual choices seem very unlikely. The evidence from the complex, however, does not seem to be comparable with any known theatre plan, and as the Period II structures extended over more than 145m this function would seem highly improbable. Nevertheless, the possibility remains, however remote, that it formed a part of the development, combined with other monuments, such as baths (eg Tivoli; Hansen 1959, fig 7), temples (eg Altbachtal complex Trier; Lewis 1966, fig 110), or both (eg Alésia; Mangin 1981).

A *macellum* would also appear to be an extremely unlikely candidate, especially given the peripheral location of the complex within the town. The size of the Period II complex, coupled with the massive and probably elaborate nature of the above-ground elements, was surely upon too grand a scale for such a function. Furthermore, the late 3rd century date of the complex does not offer an attractive context, for at this time the town may well have been changing its commercial and redistribution functions (Milne 1985, 144-9).

It is also unlikely that the complex was purely defensive, in either inspiration or function; it was located upstream of the bridge, and therefore at the wrong end of the town to provide an effective defence against sea-borne attacks. A more plausible candidate for a late Roman defended enclave has already been advanced for the south-eastern corner of the walled town (Maloney 1980; Parnell 1985, 33-4); a location of considerably more strategic value than that of the Period II complex. In addition, the elaborate degree of preparation within the internal area of the complex, in particular the meticulously levelled area on Peter's Hill, finds no obvious parallel in fort construction.

More profitable areas for comparison can be found in other public structures: baths, temples, warehouses, mints, and palaces, either individually, or in some form of combination.

Baths and temples

The position of the complex on the hillside, just below the natural spring line (p8), would have provided a favourable location for the construction of a baths complex (*cf* Huggin Hill; Marsden 1976, 5). This exploitation of the natural hydrography has been demonstrated in many towns, where hillside sites were utilised for bathing establishments, for example, the Seaward Baths and the Baths of Oceanus at Sabratha (Haynes 1956, 121), or the Baths of Caracalla in Rome (DeLaine 1985, 196). The location of the complex, well away from the centre of the Roman town, would not have been unusual, as there are numerous examples of major public baths located on the very fringes of towns and well away from the principal thoroughfares (*eg* the Hunting Baths at Lepcis Magna, which lay some 200m outside the town boundary). An adequate supply of water was more important in the choice of site than its location within a town.

The architectural grandeur of baths buildings, and the use of open spaces in the form of courtyards, porticoes and *palaestra*, are well attested. The use of imposing facades was also a characteristic feature of such monuments, particularly in the later Roman period; the exterior of the Baths of Diocletian in Rome, constructed around AD 298-305/6, 'relied for (its) effect almost exclusively on the marshalling of the masonry masses' (Ward-Perkins 1981, 421).

The overall size of bathing establishments varied considerably throughout the Roman Empire, but the suggested size of the Period II complex, some 100 x 150m, provides no obstacle as similar sized, or even larger, complexes were being constructed around the same time; the Kaiserthermen in Trier, for example, was constructed sometime after AD 293 (Wightman 1985, 235), and covered some 220m x 130m, while the Baths of Diocletian in Rome, built c AD 298-305/6 (Ward-Perkins 1981, 418), extended over an area of some 350m x 300m. In comparison to these, the probable maximum extent of the Period II complex would appear to be large, but perhaps not exceptionally so. However, although the date of the Period II complex raises no problem in terms of parallels, the question of the need for such a massive public baths within late Roman London is possibly harder to explain; were resources

really diverted to this task, and was the population of London and its locality sufficiently large to warrant such expenditure? It would seem unlikely that the complex was exclusively used for this purpose.

The siting of a temple complex within the south-western corner of the town, away from the administrative focus of the town in the east, would also not have been unusual. Large temple enclosures were often removed to such areas - providing their own sense of focus. Similarly, a hillside setting would be appropriate; indeed, such locations were often sought for their dramatic effect. The magnificent Sanctuary of Hercules Victor at Tivoli (Hansen 1959, fig 7), or the Temple of Liber Pater and the Forum, Sabratha (Haynes 1956, pl 18), provide striking examples.

The arrangement of space within a temple precinct could also be extremely varied. The focus of such enclosures often lay in their courtyards and facades, rather than in the actual interior of their structures. Indeed, the temple buildings themselves frequently occupied less than 10% of the entire complex, the rest being courtyards and ambulatories. The use of porticoes and ambulatories was a basic feature of most temple precincts, delimiting the various courtyards in which the shrines and temple structures were placed and creating their distinctive overall appearance. Porticoes were also often used to bind otherwise disparate elements together into a more cohesive whole, or to bring elements of different dates into unison with later modifications, such as at *Verulamium* (*Verulamium* I; Lewis 1966, 136). The complex might contain a variety of shrines and temples enclosed within a single *temenos*. The complexity of the ground plans of temple precincts, therefore, offers considerable scope for comparison.

The size of temple enclosures varied considerably; within Britain alone they varied between the massive 2.12ha *temenos* at the Temple of Claudius, Colchester (Drury 1984, fig 11) and the mere 0.07ha enclosure at Caerwent (Caerwent I; Lewis 1966, 132). The London complex, if a temple precinct was its exclusive function, covered c 1.5 ha. In addition to the evidence from the site itself, nearby sites suggest that a tradition of religious use can be documented for the area (see Observation 7 in Chapter 7, the monuments from the riverside wall, in Chapter 8.3, and the discussion of Period I's function, in Chapter 1.6). In addition, there is always the possibility of a combination of functions, an association attested elsewhere within the Roman world, as at Champlieu (Ward-Perkins 1981, 230, fig 140), or Alésia (Mangin 1981).

A trend in the construction, and/or renovation, of temple precincts in Britain in the last years of the 3rd century can be suggested; civilian temples survived well into the 4th century (Lewis 1966, 143), and there are examples of late 3rd century repairs and embellishments to temple complexes, notably the Insula XVI temple at *Verulamium* - which received an impressive new portico around AD 300 (Lewis 1966, 124) - and the refurbishment of the Temple of Claudius at Colchester - comprising alterations to the precinct and rebuilding of the temple, in the early 4th century (Drury 1984, 8). Indeed, a resurgence in both temple building and refurbishment seems to have taken place throughout the Roman Empire during the late 3rd century

(Warmington 1954; Fentress 1981), and there are individual examples of elaborate reconstructions on an even larger scale than that of the London complex, as at Grand (Burnand 1978, 339-44). Was the Period II complex a manifestation of this upsurge?

Administrative buildings

Large scale warehouses offer a promising analogy, especially given the waterfront location of the complex. Certainly architectural grandeur, as suggested for the complex, would not be out of place in such structures; for example the massive seaward facade of the Imperial warehouses at Lepcis Magna (Haynes 1956, pl 10a) illustrates the elaborate and visually impressive sophistication employed in supposedly functional structures. Constructions of a comparable date are particularly noteworthy; the *horrea* S Irminio at Trier (Fig 25) (Wightman 1970, 117-9; Rickman 1971, 264), and the *horrea* at Aquileia (Ward-Perkins 1981, 1464) and Veldidena (Rickman 1971, 264-5; Ward-Perkins *loc cit*), were all constructed in the late 3rd or early 4th century. Architectural pretensions were evident in these constructions, notably in their facades (Fig 25), and the quality of their construction cannot wholly be viewed within the context of functional demand.

Structurally late Roman warehouses also exhibit a number of similarities to the Period II complex. Most were floored with simple hard-wearing solid mortar surfaces (Rickman 1971, 264; Wightman 1970, 118), rather than the elaborate raised floors of granaries; such flooring closely compares to the only area of surfacing found within the complex, the solid *opus signinum* bedding on Peter's Hill (p51, Figs 20 and 41). Their overall size also bears some comparison; the *horrea* S Irminio at Trier were c 85m in length, and earlier

warehouses in Ostia, for example the *horrea* of Hortensius, were commonly around 100m (Meiggs 1973, 45, 281). Little is known about the internal arrangement of the structures at the west end of the London complex; the presence of a single column/pier base within the area (Figs 9 and 21) might be compared with the use of regularly arranged columns to divide the internal area of the late warehouses (S Irminio *horrea*, Fig 25), although a single pier is hardly conclusive.

The size of the foundations in the complex, however, argues for greater elaboration than was present in any of the other late Roman examples; the S. Irminio warehouse, one of the largest of the 4th century examples, had walls 1.65m thick (Rickman 1971, 264), with blind arcading rather than elaborate porticoes (Fig 25). Nevertheless, the paucity of excavated examples of late Roman warehouses does not allow for exhaustive comparisons, and there would seem to be sufficient variety in the construction, even in the few examples known, to suggest that architectural elaboration is likely to have varied according to location and association.

In the case of both treasuries and mints, the architectural form of the buildings is incompletely understood. In part this is because they were often located within larger complexes, where the specific association of function to structure is difficult to demonstrate archaeologically. In the case of mints, there is no reason to suppose the structures were of any elaboration. The absence of deposits associated with the use of the Period II complex - whether as a result of truncation or its incomplete nature (p31-2) - has resulted in a commensurate lack of associated artefacts. The latter would be the only way of positively identifying a mint. The association of a mint and/or treasury with the Period II complex, therefore, can only be based upon a historical model (below).

Late Roman 'palaces'

The monumental nature of the complex, its considerable area, and the scale of the resources devoted to it at the end of the 3rd century, might suggest that it was intended to house more than one function. A number of combinations are possible, such as a temple-bath complex, but it is the multi-functional late Roman 'palace' complexes which would seem to offer the most striking comparison with both the scale and the character of the development. The term 'palace' is used here reservedly; it implies more than a single palatial residence, even with the addition of state rooms, that may have been so described in the early Empire. Within the context of the late Roman world it refers to a more multifarious development, which contained a number of military, state, and civic functions; military camps and imperial residencies being laid out along the same lines. Indeed, as Ward-Perkins has aptly stated, 'in the starkly militaristic climate of the late 3rd century it is hardly surprising that in many respects the distinction between monumental military and civil architecture was becoming increasingly hard to draw' (1981, 361). Furthermore, 'the old regional barriers were everywhere breaking down', and 'even allowing for the differences of climate and craftsmanship, of methods and materials, the formal requirements of an imperial

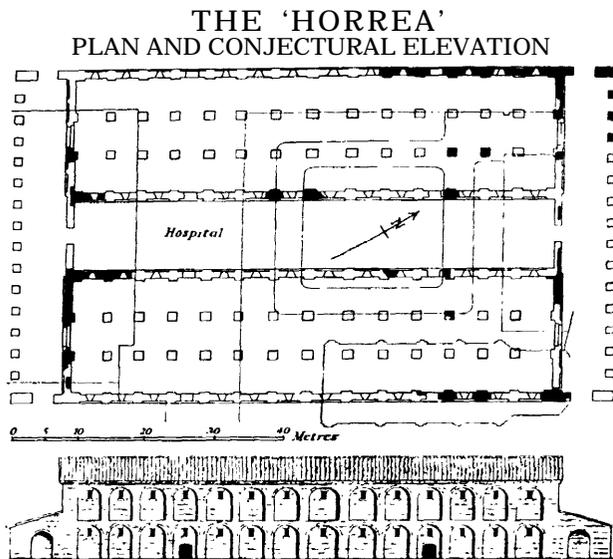


Fig 25 Ground-plan and conjectural elevation of the *horrea* S Irminio, Trier, late 3rd/early 4th century. The use of blind arcading belies the functional nature of the building.

residence or a public bath-building were very much the same in Syria as on the Danube or in Gaul' (*op cit*, 441).

Earlier 'camps' of this kind, with a military and administrative role, had been constructed within the empire, for example at Lambesis (Ward-Perkins 1981, 361), but they became more common towards the end of the 3rd century, in particular, under the Tetrarchy, when palaces, military camps and imperial residences were established in many of the provincial capitals: Antioch, Nicomedia, Sirmium, Milan, Trier, Salonica (Thessalonike), Palmyra, etc (Ward-Perkins 1981, 441-54). Many of these sites are poorly understood at present, but some throw light upon this conglomeration of functional elements. Diocletian's Camp at Palmyra, for example, was constructed at the end of the 3rd century and contained military warehousing, temples, fora, residential quarters and elaborated arcaded colonnades, within a defended enclosure (Browning 1979, 184-90; Ward-Perkins 1981, 361). In Salonica, the Palace of Galerius (constructed AD 293-311) included within its boundaries state rooms, baths, temples, military areas and public amenities (Ward-Perkins 1981, 449-54). In addition, Diocletian's imperial residence at Split encompassed state, residential, bathing, religious, and military areas within its enclosure (Wilkes 1986).⁷

The siting of a palace complex within this quarter of the town would also seem plausible; the late 3rd century palace complex at Trier, for example, was situated in the eastern area of the town, away from its previous centre, and apparently making use of the free space that the area afforded for the construction of a lavish complex (Wightman 1985, 235). The topographic location of the London complex may also be significant, providing a spectacular setting for such a development. It was common for palaces to expend considerable effort on their visual impact; the elaborate nature of the seaward facade of Diocletian's palace at Split, constructed with massive arcades (Wilkes 1986, 63), offers the most notable example of a contemporary date. The scale of construction at Split, covering an area 180 x 216m, is also worthy of note. The palace at Trier also covered a considerable area - the Imperial Baths (Kaiserthermen) alone covering an area of some 220m x 130m (Wightman 1970, fig 6). In this context, the size of the London complex, some 150 x 100m, was not exceptional.

Historical context

Any argument concerning the historical context of the Period II complex depends upon the precision of its inception date, AD 294. It has been argued elsewhere (p27) that this date is secure, and thus provides a narrow historical framework within which to assess the function of the public building programme, but it should be recognised that a slight re-adjustment - to c AD 296/7 for example - would cast a different light upon the debate.

The date of AD 294 coincides with the brief reign of Allectus (Fig 26), who assumed control of the breakaway 'British Empire' in AD 293. Carausius, who had split Britain and parts of Gaul from the Roman Empire in AD 287, lost the Gaulish possessions in AD 293, and was deposed by Allectus in the same year.

Allectus held control for just three years; in AD 296 Constantius reconquered Britain for the Empire.

The massive scale of the Period II complex indicates that considerable resources were expended on the work - far in excess of anything that might reasonably be assumed to have been the direct inspiration of the local administration - on a scale that can only be envisaged, within the context of the late 3rd century 'British Empire', in terms of direct control. The size of the enterprise indicates that the town occupied a special role within Britain at that time, possibly as the capital and administrative headquarters of the breakaway empire. As such, it provides a rare insight into this brief three-year period. This, in turn, may help to explain the function of the complex.

The need for a massive complex solely dedicated to either bathing or religion is hard to envisage within this context; were resources really diverted from the



Fig 26 Coin of Allectus, probably minted in London during his brief reign (AD 293-6).

Shore Forts for this purpose? Even if the programme took place after Constantius' reconquest, would such resources have been provided to these ends? Possibly a religious development might be more easily understood, with its roots in both the prestige and the social control of the administration. The relationship between beliefs and practical considerations is often difficult to assess; Allectus, for example, may have indeed felt that he needed all the help, spiritual as well as temporal, he could get.

The late 3rd/early 4th century warehouses found elsewhere in the Roman world formed part of the reorganisation of the late Imperial system, functioning as military stores and redistribution centres (Rickman 1971, 264-5). As such, the complex provides an interesting parallel; administrative reorganisation, which may have used London as its main base, could have provided the catalyst for the construction of similar stockpiling facilities. Similarly, a mint is known to have been founded in London by Carausius during the 280s, and continued in use after the reconquest of AD 296

(Shiel 1977; Salway 1981, 532). The original mint cannot have been on this site, as this suggests that it was in production prior to Allectus' reign; a site in the area of the Tower might provide a reasonable location (Parnell 1985, 33-4). However, Allectus' reorganisations may have involved the construction of a new mint, as part of an integrated complex of administrative buildings. As such, it may still have formed part of the initial planning of the complex, whether or not it ever moved to this location. A treasury is also known to have been in existence sometime after the reconquest of AD 296 (Not Dig Occ xi 37), and once again, it is possible that this was one of the intended functions of the complex.

The fact that Britain was not part of the Empire at this time does not mean that it ceased to require these functions; the very presence of the mint indicates the continued nature of the administration. Carausius and Allectus were more Roman, in their administrative and military outlook, than they were 'British'; there is no reason to see them as provincial outcasts. Allectus, given his suggested administrative background (Salway 1981, 306), may have attempted to centralise facilities along the lines current within the Roman Empire at this time (see also his coinage reforms; Shiel 1977 and Casey 1977).

Interestingly, the upsurge in the construction of 'palaces' and 'camps' under the Tetrarchy dates from c AD 293 onwards, with many of the developments not taking place until after c AD 300 (above); thus Allectus' development may have been one of the first manifestations of this late Roman tradition. It is probably too much to suggest that some of the inspiration for this form of administrative centralisation actually stemmed from developments in London, but it does suggest that Allectus was responsive to changes being undertaken elsewhere in the Roman world.

It is suggested, therefore, that the complex functioned as an administrative centre for the 'British Empire', commissioned by Allectus to house the primary functions of the late Roman state: armoury, treasury, mint, supply base, administrative offices, residential quarters, temples, public amenities, *etc.*, within his capital and base, London. (See Chapter 3 for the impact of this programme within the town.)

2.10 The end of the Period II complex and later Roman activity

The exact date of the complex's demise is unknown. The massive masonry foundations were partially robbed, at Peter's Hill and Sunlight Wharf, during the early medieval period¹ (p56). No evidence was found of late Roman robbing of the foundations; the

removal of the superstructure, if it ever existed, is a different matter.

The absence of any decorative details, even redeposited in later intrusions, seems unusual, although not without comparison: at the Temple of Claudius, Colchester, very little material, either decorative or from the superstructure, survived in the archaeological record (Lewis 1966, 62). However, the absence of even small quantities of *tesserae*, plaster or other architectural decoration from the area of the London complex suggests that the process of truncation was either extremely thorough, or that the materials were not present in the first place, the complex not having been completed. The level of truncation, which extended almost uniformly below the level of the contemporary ground surface, leaves little room to test these suggestions. The only possible survival above the contemporary ground level was the *opus signinum* surface on Peter's Hill (Figs 13, 20 and 41), which capped the carefully prepared make-ups in the area (p50-51). It seems unlikely that a floor or surface of this nature would have been laid without the basic superstructure of the building having previously been constructed, unless perhaps the surface was to serve as a basic constructional platform itself. Even if the superstructure was completed, it does not preclude the possibility that the complex was never 'finished-off; for example, the Imperial baths at Trier, which were broadly contemporary in date, did not have their water pipes installed, the complex being adapted for use as a palace (Wightman 1970, 102). It is perhaps significant that the date of the Period II complex provides a historical context, in the reconquest of Britain by Constantius, for either a failure to complete, or a shift in function.

A late Roman domestic building found at Peter's Hill (p52-3), indicates that the area of the complex had probably ceased to serve any public function sometime during the 4th century. This has no direct bearing on whether the complex was ever completed; the possibility that such a substantial complex would have been abandoned or modified to this extent within fifty years cannot be convincingly ignored within a late Roman context. The late Roman domestic structure itself only survived in a very fragmentary form; it was at least partially constructed of timber, although it also re-used some of the Period II foundations, if not walls (p52) (Fig 46). Numerous earth floors and hearths were recorded within the building, and although it is not clear when this structure fell into disuse, the number of replacements suggest that it remained in use for an extended period of time. No other Roman strata survived truncation, so that it is impossible to be certain of the nature of the rest of the area at this time.

¹The similarity is with the eastern stretch of walling, rather than the later western addition which contained the re-used monumental masonry. The foundation of the eastern wall was supported by squared timber piles and a chalk raft, which by analogy may have supported the wall at Peter's Hill (Fig 11).

²The 4th century date suggested in the original report (Hill *et al* 1980, 93) has been disproved by these more recent studies.

³The existence of a bank behind the riverside wall is discussed elsewhere (Williams in prep).

⁴The dumps themselves contained some 3rd century pottery, but it was not sufficiently diagnostic to establish a closer date of deposition (Fig 47).

⁵The *opus signinum* surfacing was truncated in this area, so that this relationship can only be suggested on the basis of comparative levels.

⁶The only ceramic dating came from Peter's Hill, and conforms to the more precise date offered by dendrochronology.

⁷It is interesting to note that in all the above examples a circus was attached to the palace development (Ward-Perkins *op cit*); the possible interpretation of the Knightbridge Street walls as part of a circus, although not thought to be convincing (p000-000), might assume some significance in this context.

⁸The quality of the stone may have attracted early church builders, although the effort involved in removing it provided sufficient deterrence to prevent all the foundations from being robbed.

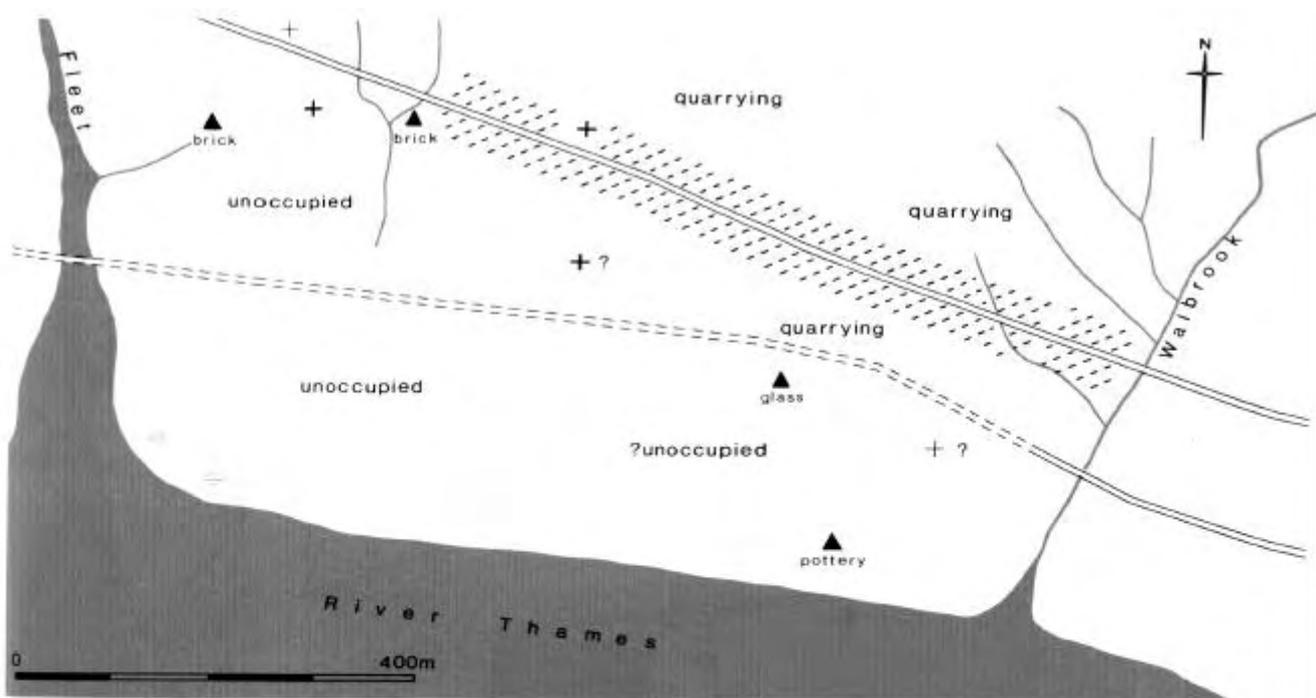
3. DISCUSSION: THE SOUTH-WEST QUARTER — DEVELOPMENT AND CONTEXT

The whole of the western settlement lay outside the original planned Roman town, which was probably confined, at the outset, to the area east of the Walbrook valley (Williams 1990 and forthcoming). The mid-1st century western suburb primarily consisted of strip-buildings, of a mixed residential and commercial function, in a ribbon-development along the main street leading from the town through Newgate (Fig 27a) (Perring & Roskams 1991). The rest of the western hill seems to have been sparsely occupied, except for a number of isolated activities of a suburban nature: industrial sites include a possible pottery production site

at Sugar Loaf Court, in use up to c AD 60/70 (Barker 1986; Richardson 1987b), glass-working debris from Gateway House, deposited before c AD 70 (Shepherd forthcoming), and mid- 1st century brick kilns at the Old Bailey (Bayliss 1988), and burials of a mid- 1st century date clustered around the main east-west road, although some cremation urns have been found close to the western bank of the Walbrook (RCHM 1928,155) (Fig 27a). In addition, a number of brickearth and gravel quarries were dug.

It was not long, however, before an area of land west of the Walbrook was included within the formal

Fig 27 Sequence of figures schematically representing the development of the south-west quarter of Roman London. Streets indicated ran to Ludgate (south) and Newgate (north).



Key to Figs 27 (a-d)

▲	industrial activity (specified)		tidal marsh
+	single burial		approximate area of commercial/residential occupation
+	multiple burials		approximate extent of late 1st century town boundary
	road		town wall
	possible road		approximate extent of dark earth

(a) Mid-1st century (c AD 50-5). The area was purely suburban, the formal town lay east of the Walbrook.

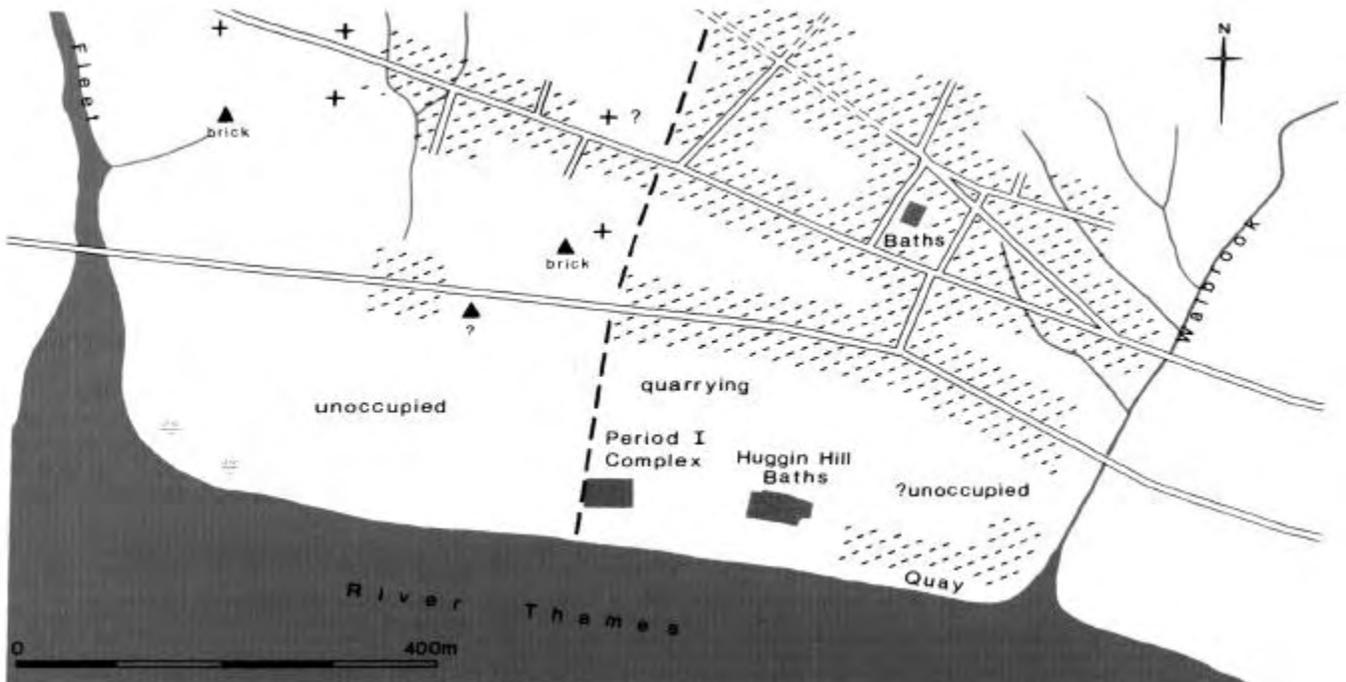
town. In recent years it has been convincingly argued (Maloney 1983; Bentley 1985; Perring & Roskams 1991) that a 1st century western boundary to the town was established to the west of the Walbrook, enclosing a smaller area than that protected by the later defensive circuit (Fig 27b). The precise date of this new western limit to the town is not known. However, the Sugar Loaf Court pottery production site was replaced by domestic buildings in c AD 70 (Barker 1986; Richardson 1987b), and the glass-making waste from Gateway House was found to pre-date domestic buildings of the same date (Shepherd 1986), suggesting that industrial activity was moved to new suburban locations in accordance with Roman law. The demise of these activities might thus provide a *terminus post quem* for the establishment of the boundary.

There may have been some planning of the newly enclosed land, particularly in the areas immediately to either side of the principal east-west streets, leading to Newgate and Ludgate (Fig 27b) (Perring & Roskams 1991).² The Flavian development of this area appears to have been vigorous, with commercial/domestic buildings rapidly occupying the major street frontages. To the south, a substantial waterfront revetment, found in a tunnel beneath Thames Street and dated to the mid-late Flavian period, c AD 80-90 (Richardson 1979, 261; Hillam 1980), suggests that the area underwent commercial development comparable with that of the eastern town of the same period (Milne 1985, 27-9).³ The waterfront to the west of the new quays, within the

newly delimited south-western corner of the town, was also rapidly developed. Here the extensive baths at Huggin Hill, begun in the late 1st century (possibly around AD 70) (Marsden 1976, 19-20), indicate a public control over the development of this area of waterfront; the date may also suggest that it was envisaged as part of the planned expansion and layout of the western town.⁴

The enclosure of land west of the Walbrook within a new town boundary seems to have been part of the expansion of commercial and social activities recognised elsewhere within the town (Marsden 1980, 40-1; Merrifield 1983, 61ff; Milne 1985, 143; Perring & Roskams 1991; Perring 1991). What is particularly interesting is the measure of control implied by the street planning, the waterfront development and the reservation of prime waterfront land for public amenities. The growth of the newly enclosed area was neither *ad hoc*, nor solely concerned with the simple development of a planned street system; a whole infrastructure appears to have been envisaged.⁵

The area within the new town boundary was not completely colonised: undeveloped land remained. The most notable cases were areas of continued quarrying - the district to the north of the Period I complex, for example, appears to have remained marginal land throughout the life of the Roman settlement, possibly due to its poor street access and the difficulty of infilling early suburban quarries - and the lower Walbrook valley, north of the waterfront zone, where the absence of early structural activity may have resulted from the



(b) Late 1st-early 2nd century (c AD 90-120). An area of land west of the Walbrook was enclosed within the formal town c AD 70. This was rapidly infilled with residential/commercial buildings, quays, and public buildings, although some areas remained unoccupied. Suburban activities continued to the west of the new town boundary.

difficulty of colonising this steeply sloping terrain (Fig 27b).

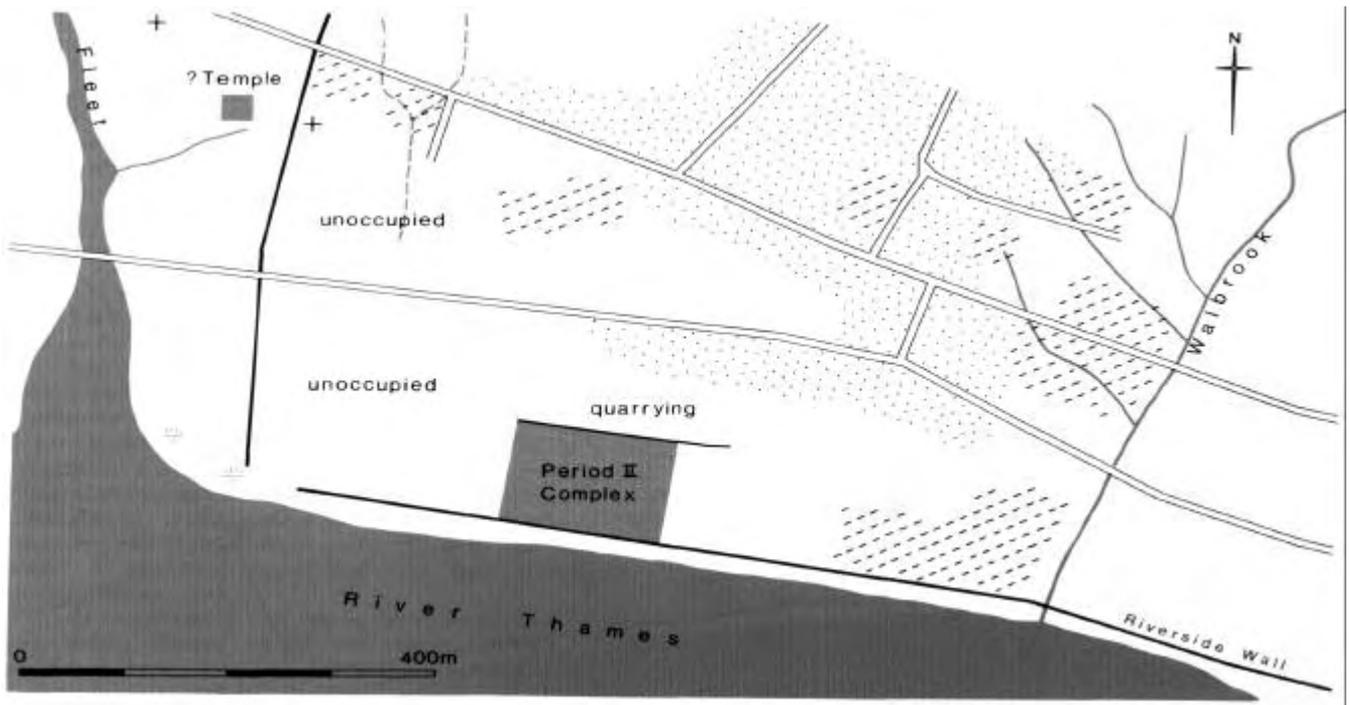
A suburban area to the west of the new town boundary was still active, with continued ribbon-development along the main east-west streets leading out of the town (for the northern route, see Perring & Roskams 1991; for the southern, see Pye 1987). Burials continued to concentrate around the Newgate road (Fig 27b), while industrial activities continued to function in this suburban area (near the Old Bailey, Bayliss 1988; in the vicinity of St Paul's, RCHM 1928, 140).

The enclosed area of the western town appears to have flourished, with properties infilling the main frontages during the late 1st and early 2nd centuries. Excavations at Watling Court (Perring 1981; 1982; 1983; Perring & Roskams 1991) suggest that pressure on land, particularly on main street frontages, increased during the late 1st century and that by the early 2nd century at the latest, the area had become densely occupied. The buildings appear to have been of good quality, and the provision of reception rooms may reflect the increased social needs of the householders.

To the south, at about the same time, the late 1st century, the Huggin Hill baths were elaborately and substantially extended (Marsden 1976, 29-30). This development, and the general late 1st/early 2nd century infilling of the town, provides a suitable context for the construction of the Period I complex (Chapter 1), which lay in the then extreme south-western corner of the

town, to the west of the baths (Fig 27b). Substantial buildings, almost certainly of a public nature, were constructed on the lower slopes of the hillside. Although the function of the structures is not clear - a religious purpose has been tentatively identified (Chapter 1.6) - it is probable that they mark a continuation of the public development of the waterfront zone. Unfortunately, the construction date of the Period I complex is uncertain, and equally it is possible that the complex was part of the initial planning of the new western town, in the same manner as the original construction of the Huggin Hill baths, around AD 70 (above), extending the public control of the waterfront along the entire length of the newly enclosed area. Alternatively, the land might have been set aside for public use, without actually being developed at that time; certainly there are no indications that the area was occupied prior to the construction of the public buildings. In either case, the enlarged Huggin Hill baths, and probably the Period I buildings, would have dominated the waterfront of the western town by the early 2nd century.

In the mid to late 2nd century a noticeable shift occurred within the settlement, away from the main street frontages which had previously determined the location and development of properties. But this did not mark the demise of the area, for as the street frontage properties declined, and were covered with 'dark earth' (Perring & Roskams 1991), new areas began to be developed, most notably the lower Walbrook valley,



(c) Late 3rd century (AD 294). The expansion of the town c AD 200 continued westward when the landward defences were constructed, encompassing large areas within the circuit. A riverside wall, constructed c AD 255-270, resulted in the infilling of the Walbrook mouth, but probably left a gap in the marshy south-west corner. The Period II complex dominated the area. The pattern of residential occupation had changed significantly during the course of the 2nd and 3rd centuries, possibly with an emphasis upon the Walbrook valley.

Part III: the archaeological evidence

This section offers a detailed discussion of the structural sequences on each of the sites and summarises the associated dating information. Where applicable, references are made to Archive reports, which are available on request to the Museum (see Appendix 4). The reader should refer to these for the full presentation and discussion of all the stratigraphic units. In the cases where the section derives from previously published works, full bibliographic references are provided.

4. PETER'S HILL

Grid ref: (TQ 3203 8091)
 Site code: PET81
 Archive report: T Williams (see Appendix 4 for availability).

4.1 The Site

The Peter's Hill site was excavated in 1981, before the building of the new City of London Boys' School (Fig 2). No archaeological deposits survived in the northern part of the site due to truncation by 19th century cellars, whilst the areas fronting Bennet's Hill, to the west, and the Salvation Army Headquarters, to the east, lay outside the line of the new building and were not affected by the redevelopment (Fig 28). A large area, however, was still available for excavation and some 2-3m of stratigraphy survived beneath the basement slab throughout most of the area. Beneath the streets, Peter's Hill and Upper Thames Street, there was less truncation, and more than 7m of archaeological deposits survived.

In the available time it was not possible to excavate the whole stratigraphic sequence, but most areas were reduced to their earliest deposits (the initial terracing dumps) which were examined by sondage. An exception was the base of the sequence beneath Upper Thames Street, where it was not possible for safety reasons to proceed beyond the chalk raft. Despite the hope that an opportunity to examine earlier stratigraphy would arise during the subsequent watching brief, a change in the method of the construction of the new building, involving the insertion of piles in the area, prevented this, but the strata have survived in substantial areas beneath the modern development, and should be available for examination in the future.

The recorded activity on the Peter's Hill site has been divided into a number of Groups. Groups 1, 2 and 7 are Roman. (Groups 3 to 6 and 8 onwards detail the post-Roman sequence; the Group structure does not reflect the chronological development of the site, but is based upon the stratigraphic sequence, represented by a number of separate stratigraphic strands (DUA 1986).) Group 1 consists of a single isolated pit that pre-dates Group 2. Group 2 contains complicated structural evidence, sub-divided for the purposes of discussion (Group 2.1 to Group 2.13); each part contains evidence of one aspect of the construction sequence. Group 2



Fig 28 Peter's Hill; general view of the excavations (looking south-west). The modern building behind the Wren Church is the site of the 1975 Baynard's Castle excavation. The photograph is taken from an upper balcony of the Salvation-Army Headquarters building, the site of the 1961 observations.

contains the evidence for the Period II complex on this site. Group 7 (sub-divided into Group 7.1 and Group 7.2), comprises a late Roman timber building, that post-dated, and possibly re-used, some of the Group 2 structures.

4.2 The Excavation

Early activity

A single rubbish pit (Group 1.1), cut into the natural clay at the base of the hillside, was the only feature identified as pre-dating the construction of the Group 2 complex. There were no horizontal strata associated with this feature, perhaps because it lay within the area truncated by Group 2 terracing (Group 2.4, Fig 29). However, the western part of the site, which was apparently not disturbed in that way, showed no signs of earlier activity, and no other intrusive features were found pre-dating Group 2 elsewhere on the site. In addition, the southern area of the site appears to have been low-lying in antiquity, before being reclaimed and levelled (Group 2.1) (see p13). Thus the whole of the area appears to have been sparsely occupied prior to the Group 2 activities.

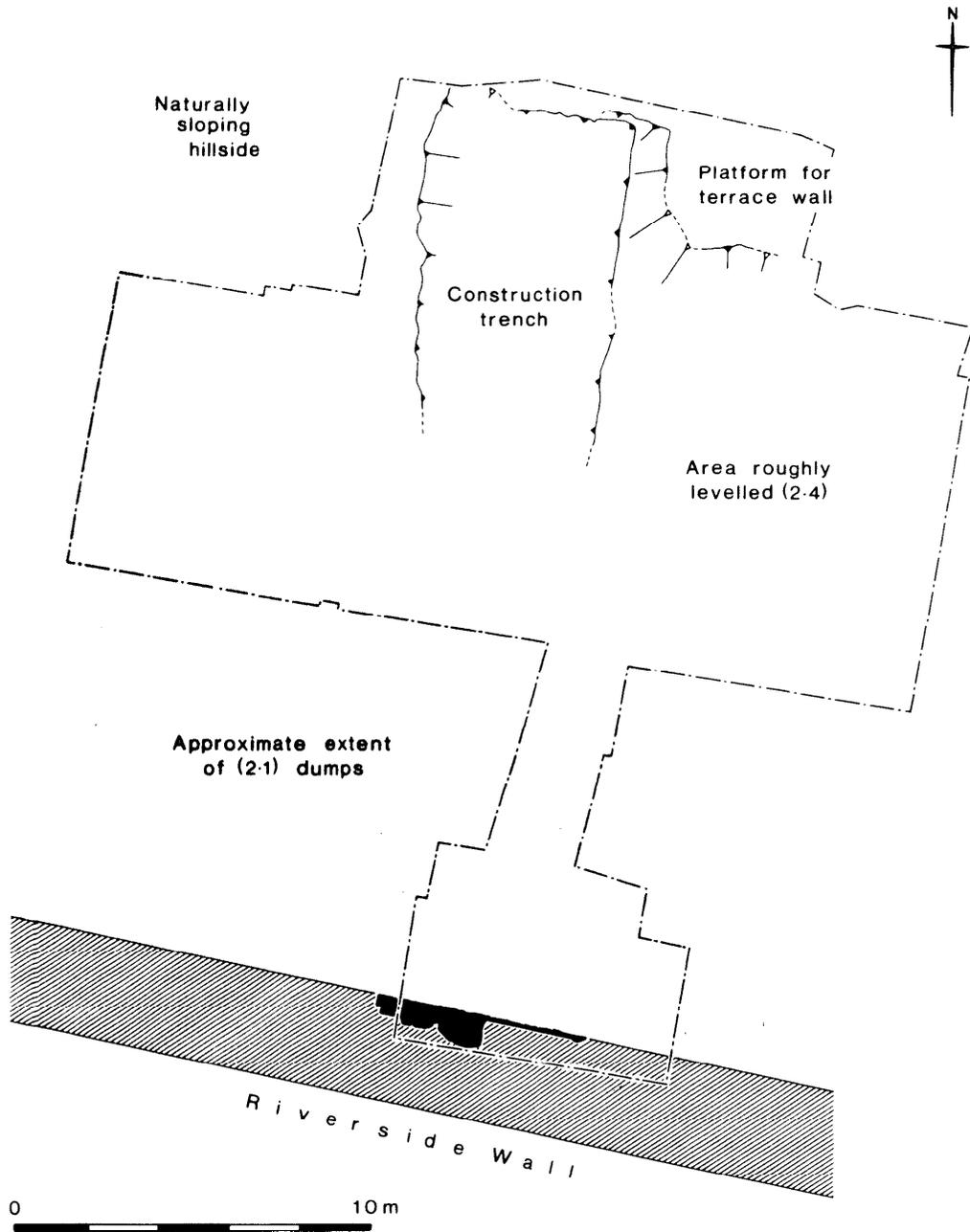


Fig 29 Peter's Hill; riverside wall to the south, with terrace formation to the north. The unaltered natural hillside sloped south-westwards. The terrace cutting was carefully planned to accommodate the Period II foundations; hence the construction trench for the massive north-south foundation, the undisturbed area left to support the tile built terrace wall, and the roughly levelled area for the compacted dumping sequence. (1:200)

Construction of a riverside wall and terracing activities to the north (Fig 29)

Riverside wall

At the extreme southern limit of the excavation an east-west wall of relatively complex construction was recorded (Group 2.1, Fig 10 and 29). The foundation could not be removed for safety reasons, so that it was not possible to examine its base, or to establish its relationship with the slope of the hillside. In the case of the latter, it is suggested that it lay close to the high water mark, since it was later eroded (Group 3.3), and was

probably constructed on roughly level ground at the foot of the hillside (Fig 11).

The lowest observed element of the wall was a compacted raft of rubble (ragstone fragments - average size 0.25m x 0.25m x 0.15m - interspersed with small fragments and chips of ragstone). Above this the foundation was stepped back, with a single tile course (*tegulae*) immediately above this 1st offset (Fig 10). The facing above the 1st offset consisted of ragstones with thin profiles, laid in a rough herringbone pattern (Fig 10). At one point two tiles had been incorporated and occasionally large gaps between the stones had been infilled with flint pebbles. Above this were two courses

of *tegulae*. The lower course consisted of inverted tiles, orientated east-west (mainly whole), with their flanges lipping over the upper course of ragstones. The upper course was also inverted, but in this case laid north-south, into the body of the wall. The wall above the tiles was set back 0.2m, forming a second offset (at c 2.2m OD). The tile courses were bonded with the same mortar as the ragstone course below. The upper course, however, was sealed by a layer of hard *opus signinum*, which extended as a smooth 'coating' along the entire upper surface of the course (Fig 10), possibly indicating a levelling.

Above the 2nd offset, ragstone blocks were used to form a fair face, giving the appearance of a regular, coursed structure (Fig 10). This upper wall was surmounted by another course of inverted *tegulae*, which extended for the full width of the observed wall, with flanges running east-west; the most northerly tiles overlapped the northern face of the wall. It is possible that a 3rd offset may have occurred immediately above the upper tile course (which marked the surviving height of the wall), just as the 1st and 2nd offset, coincided with tile courses (Fig 10). There was a difference in the mortar used above and below the 2nd offset, probably reflecting different batches of mortar in the various constructional stages. It is not suggested that there were any significant breaks during the construction of the wall.

The core of the foundation consisted of ragstone rubble set in concrete, laid in roughly level bands. The core appears to have been bonded with the same material as the north face. The wall was broken through at one point during the excavation, revealing an incomplete width of 1.07m. The south face could not be examined as the wall formed the limit of the excavation area and could not be removed. There was no indication of the original height of the structure.

Dumping behind (north of) the riverside wall

The riverside wall retained a series of homogeneous blue-grey clay dumps (part of Group 2.1, Fig 29), which were deposited against its northern face. The dumps overlay the wall's rubble foundation course (Fig 11b) and infilled the cracks within its ragstone facing, indicating that they postdated it. The fact that the dumps sealed the foundation course may suggest that they were deposited soon after the wall had been constructed. The dumps, whose surface lay just below the 1st offset of the riverside wall, extended away from it, gradually declining in thickness until they petered out some 12m to the north (Figs 11 and 29). In the western area of the site the dumps extended further northward, probably compensating for the contours of the natural ground surface which sloped away towards the south-west (Fig 29); tip-lines within the dumps suggest that they were tipped from the north-east. The dumps therefore appear to have consolidated the low-lying and uneven ground at the base of the hillside, immediately behind the riverside wall.

Creation of a hillside terrace

A roughly level terrace was created at the base of the hillside by utilising the Group 2.1 dumping behind the

riverside wall, which reclaimed low-lying ground, and terracing (Group 2.4) which cut into the base of the hillside (Fig 29). The latter probably occurred sometime after the Group 2.1 dumping; clay dug from the terracing to the north would have been brown in colour, whereas the material in Group 2.1 was blue-grey and contained some crushed building material, suggesting that it derived from elsewhere. The lack of any surfacing above the Group 2.1 dumps might argue that the interval between the two activities was short-lived, although clearance in advance of the Group 2.5 piling programme (p43), coupled with levelling of the area for the terrace, probably truncated any such evidence. The almost identical level achieved by the truncated dumps and the terrace cutting suggests that they eventually formed part of the same process, forming a terrace which extended some 26m north of the riverside wall (Figs 11 b and 29).

The completed terrace was associated with the construction of a substantial structure (Group 2.5 to 2.7) as the hillside on the west side of the site, beyond the point where the Group 2.7 foundation was to be constructed, was unaltered (Fig 11a). In addition, the terrace was only dug back the full 26m in the area of the actual foundation; in the area to the east it was only partially removed, leaving a higher platform for the construction of the northern terrace wall (Fig 29; also compare Figs 11 b and 11c). Observations of the Group 2.1 dumping also suggest that the natural hillside dropped away sharply immediately to the west of the site, as if the location of the structure was chosen to minimise the area that had to be reclaimed or levelled to the south.

Consolidation of the western area of the site (Figs 30-2)

The Group 2.1 dumps in the western part of the site were consolidated by the insertion of a number of stakes (Group 2.2) driven into the deposits from the south at a roughly 45° angle (Figs 11a and 14). These were arranged in distinct east-west rows and formed a band some 2.00m wide.

A few of the easternmost stakes were slightly deflected by the westernmost of the Group 2.5 piles, indicating that the piles had been driven in after the former. The incidence of the stakes shows, however, that they were carefully positioned to avoid the area that was to be consolidated by the Group 2.5 piles - intended to support the Group 2.7 foundation - suggesting that the angled stakes were designed to serve a different function. The proximity of these activities suggests that the stakes were used to consolidate the area immediately adjacent to the foundation, but did not form part of a base in their own right.

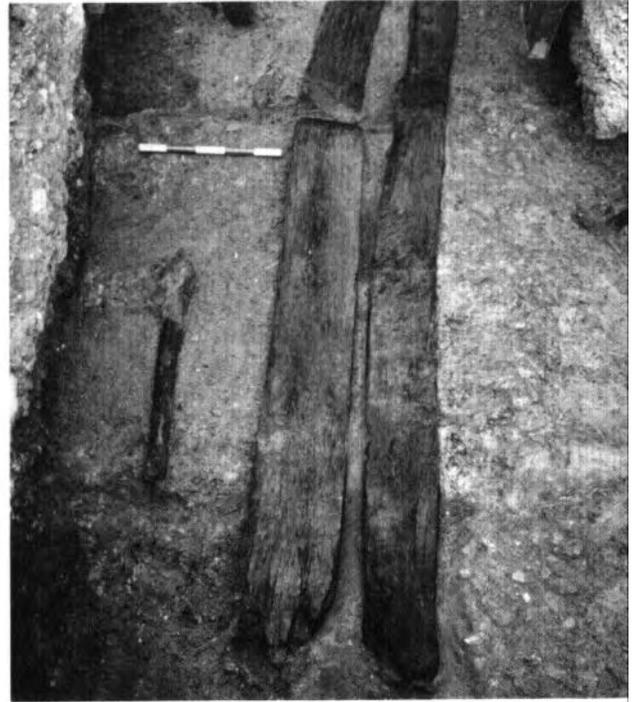
The stakes were then sealed with an alternating sequence of deposits (Group 2.3: Figs 11a and 30-2), consisting of

- i) layers of timbers, orientated either north-south or east-west (the former usually stakes, the latter planks);
- ii) dumps of sand or gravel (occasionally clay).

Fig 30 Peter's Hill; timber lattice (looking west) (Scale 5 x 0.10m)



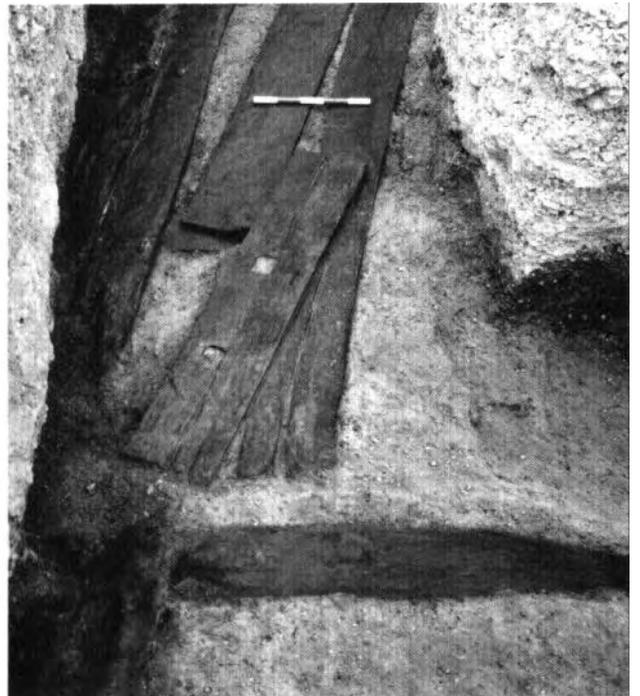
(a) layer of sharpened timbers, laid on the natural clay.



(b) substantial planks laid horizontally on a bed of gravel and clay dumps, which sealed the sharpened timbers shown in (a).



(c) lattice of sharpened timbers, orientated north-south, overlying the east-west planks shown in (b). Intervening gravel and clay dumps can also be seen.



(d) layer of east-west planks. In the foreground, one of the north-south stakes shown in (c) is still visible. Many of the timbers showed signs of re-use.

To the south, an east-west slot (Group 7.2) with ground fast posts may have been associated with these surfaces, possibly forming their southern limit. The tile-built northern terrace wall (Group 2.11) and part of the massive north-south foundation (Group 2.7) survived to a height greater than that of the earth floors and were probably re-used within the structure, either as foundations or as upstanding walls against which a lean-to was constructed. The structure covered an area of at least 8 x 6m.

The character of the surfaces and hearths suggested domestic occupation, a supposition reinforced by the abraded pottery found within the surfaces. The quality of these surfaces should not be underrated, although it is probable that there was never a single, uninterrupted surface; rather, they formed an interdependent group. The function of the hearths was not evident; no industrial waste was encountered in the associated debris and it is possible that they were domestic. The area around the hearths showed considerable signs of use but this cannot be taken to be representative of the structure as a whole, especially since only a small area survived later truncation.

Disuse and robbing of the structures

Our understanding of the disuse or destruction of the Group 2 structure is limited by the level of truncation that occurred in the area. There are, however, a few

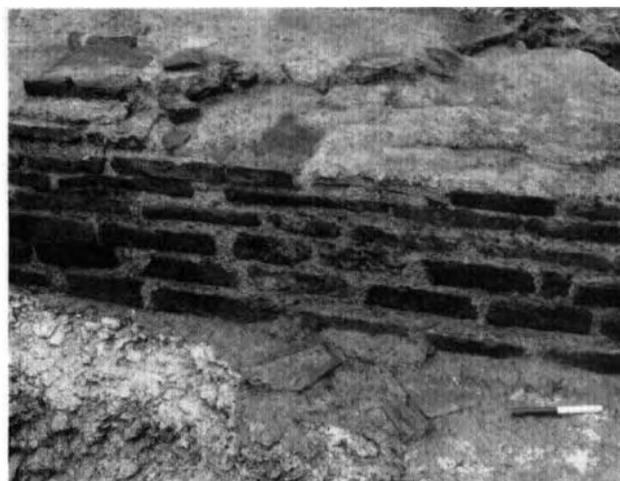


Fig 45 Peter's Hill; detail of the tile built terrace wall, showing construction debris in the foreground. (Scale 2 x 0.10m)

tantalising indications of subsequent conditions. As the construction of the foundation changed almost exactly at the point of truncation - a change suggested as reflecting the transition from below to above-ground construction (p50) - the superstructure might have been removed considerably earlier than the foundations, perhaps

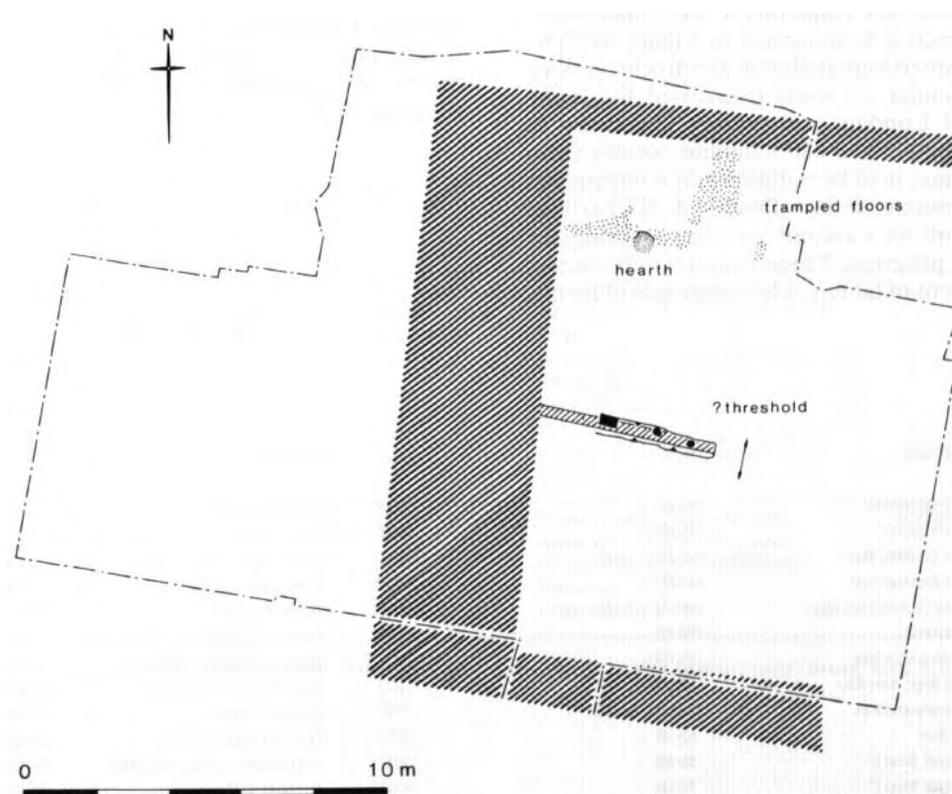


Fig 46 Peter's Hill; late Roman building (Group 7), c AD 350 +, possibly re-using some of the Period II foundations. An east-west post-in-trench wall may have been associated with an area of trampled 'earth' floors and hearths which survived truncation in the north of the area. (1:200)

during the later Roman period. The foundations themselves, only partially robbed, were not removed until the early medieval period (p56).

The late Roman domestic building, probably constructed in the second half of the 4th century (p56), appears to have re-used the north-south foundation and the east-west tile wall (above, Fig 46). The tile wall presumably survived above ground level at this time, as it supported the northern terrace. The massive north-south foundation, however, could have been used to support a timber beam and thus it cannot be inferred from this evidence that any of the massive masonry foundations carried above-ground elements into the later 4th century. Indeed, the re-use offers little indication of the survival or otherwise of the superstructure above the level of the foundations.

The sequence of occupation surfaces within the Group 7 building was truncated by early medieval activity and there is no clear indication of either the nature or the date of the building's demise.

4.3 Dating discussion (Fig 47)

(Adapted from the Archive Report by Barbara Davies.)

The extensive finds catalogues and illustrations published in traditional site reports have been omitted from this volume since its main themes are structural and topographical. Many items will be published in the forthcoming volumes on finds from London excavations (see below), and, in the meantime, copies of the detailed Archive Reports on the pottery are available from the Museum of London (see Appendix 4 for availability). The dating evidence is summarised in Figure 47. The information presented here includes dendrochronology (detailed in Appendix 1), coins (identified by Jenny Hall, Museum of London) and pottery (discussed in detail in Davies 1987). The early Roman pottery (pre-Flavian to Antonine) is to be published in a companion volume in the present series (Davies & Richardson forthcoming); work on a second volume, covering the later period, is in progress. These volumes will contain detailed descriptions of fabrics, a full catalogue of forms,

and additional information about the characteristic composition of assemblages of different date. Here, therefore, it seems appropriate to include in Figure 47 a list of the main constituent wares (those clearly residual have been excluded), the date range assigned to the group as a ceramic assemblage, and data about the size of each group, expressed as a weight in kilograms. A key to the fabric codes themselves is provided in Figure 47, which also shows the date range currently assigned to each ware. It is hoped that this limited presentation will allow for future reassessment, should this become necessary as pottery research proceeds.

Early activity (Group 1)

It was not clear, on stratigraphic grounds alone, whether this feature pre-dated all of the Group 2 activities (p39). The pottery was, however, typical of Trajanic groups (c AD 100-120) throughout the City (Davies 1987, 1), and most probably represents the only trace of earlier activity on the site.

Riverside wall and dumping against its northern face (Group 2.1)

No dating evidence was retrieved from the actual construction levels of the riverside wall. A relatively small assemblage of pottery was found in the dumps to the north, which are thought to have been deposited soon after on stratigraphic grounds (p41). The majority were abraded 1st century forms, but the group also contained some 3rd century fabrics (Davies 1987, 2), which suggest a broad date for the deposition of the dumps that is consistent with the date of c AD 255-270 suggested elsewhere for the riverside wall (p13).

Code	Pottery ware	Date range (AD)	Code	Pottery ware	Date range (AD)
AHFA	Alice Holt/Farnham	— 250-400 —	LONW	London-type Ware	— 70-120 —
AHSU	Alice Holt/Surrey	— 55-160 —	MHAD	Much Hadham	(200) — 325-400 —
BB1	Black-Burnished Ware 1	(105) — 120-275 — (400)	NACA	North African cylindrical amphora	(150) — 250-400 —
BBS	Black-Burnished style	— 120-400 —	NGGW	North Gaulish Grey Ware	(150) — 180-250 — (400)
CGGW	Central Gaulish Glazed Ware	— 50- 70 — (90)	NKGW	North Kent Grey Ware	— 100-200 — (220)
EIFL	Eifelkeramik	— 200-400 —	NKSH	North Kent Shelly Ware	(55) — 80-150 —
FMIC	Fine Micaceous Ware	— 55-120 —	NVCC	Nene Valley Colour Coated Ware	— 150-180 — (400)
GBWW	Gallo-Belgic White Ware	— 50- 70 —	OXCC	Oxfordshire Colour Coated Ware	— 270-400 —
GROG	Groig-tempered Ware	(50) — 150-250 — (400)	OXMO	Oxfordshire mortaria	(130) — 230-400 —
HOO	Hoo Ware	— 50- 95 —	OXPA	Oxfordshire Parchment Ware	— 200-400 —
HWB	Highgate Wood 'B'	— 50-100 —	OXRC	Oxfordshire Red Colour Coated Ware	— 240-400 —
HWC	Highgate Wood 'C'	— 70-160 —	PORD	Porchester 'D' Ware	— 350-400 —
KOAN	Koan amphora	— 50- 95 — (150)	RDBK	Ring-and-dot beakers	— 50- 90 — (100)
LOEG	Local Eggshell Ware	— 70-120 —	RHOD	Rhodian amphora	— 50-150 —
LOMA	Local Marbled Ware	— 70-120 —	VRG	Verulamium Region Grey Ware	— 50-180 —
LOMI	Local Mica-dusted Ware	— 70-120 —	VRW	Verulamium Region White Ware	— 50-180 —

Structural context	Dendrochronology	coins	Pottery	Suggested date for phase
Pit (Group 1)	—	—	FMIC, HWC, LOMI RDBK, VRG, VRW Group size: 0.876 kg Date: AD 100- 120	early 2nd c.
Dumping behind (to N) of Riverside Wall (Group 2.1)	—	—	Chalk type 6 amphora, C186, HWB, HWC, KOAN, LOND, NGGW (+ 1 sherd post-medieval intrusive) Group size: 0.375 kg Date: AD 200 +	3rd c.
Consolidation and dumping, W part of site (Group 2.3)	—	—	GROG, HWB, HWC, LONW, VRW (+ 2 sherds early medieval intrusive) Group size: 0.853 kg Date: AD 100- 120	late 3rd c
Piles below masonry foundation (Group 2.5)	winter AD 293/4 (one) summer AD 294 (eleven) AD 294/5 (one)	—		AD 294
Timber framing and chalk raft below foundation (Group 2.6)	8 BC or later AD 35 or later (incomplete and probably roused)	—	AHFA, BB1, DR20, HWC, LOND, MHAD, NVCC, OXCC, OXRC, PORD (intrusive?), VRW (+ medieval sherds intrusive from later robbing) Group size: 1.358 kg Date: AD 270 +	AD 294 +
Construction debris from foundation (Group 2.9)	—	—	Group size: 0.049 kg	AD 294+
Deposits (?external) to W of foundation (Group 2.10)	—	—	AHFA, AHSU, BB1, C186, CGGW, DR20, FMIC, GBWW, GROG, H70?, HOO, HWB, HWC, KOAN, L555, LOEG, LOMA?, LOMI, NACA, NKSH, copy DR 38 (OXCC?), PE47 PORD (intrusive), RDBK, RHOD, VRG, VRW Group Size: 11.676 kg Date: AD 270 +	AD 294 +
Deposits (?internal) to E of foundation (Group 2.11)	—	—	AHFA, BB1, BB2, BBS, NKGW, NVCC, OXCC?, OXPA?, OXRC, PE47 RHOD, VRW Group Size: 1.633 kg Date AD 300-350	AD 294 +
Internal surfaces (Group 7.1)	—	House of Constantine, AD 330-335 radiate, AD 250-300	AHFA, BB1, BB2, DR20, EIFL, MHAD, NACA, NVCC, OXMO, OXRC, VRW early medieval sherds, AD 1150+ Group size: 1.511 kg Date: AD 350+	mid/late 4th c.
Fill of beam slot (Group 7.2)	—	—	1 sherd not datable	mid/late 4th c.
Medieval robbing of Group 2 structures (Group 2.13)	—	—	Roman residual, early medieval wares including ?Thetford ware (+ several sherds post-medieval intrusive) Date: AD 1050-1150	11th/12th c.

Fig 47 Summary of the dating evidence from Peter's Hill. (For details of the fabrics and forms, see Davies & Richardson forthcoming.)

Construction of the complex

The dendrochronological date of AD 294 for the main timber piled foundation (Group 2.5)¹ provides an accurate construction date for the complex (Appendix 1).² The ceramic evidence would appear to support this date; wares of AD 270 + were found in association and these, coupled with the absence of later, distinctive, 4th century forms, would appear to support the argument that the complex was constructed in or around the last decade of the 3rd century (Davies 1987).

The derivation of the Group 2 dumps and variations in the pottery assemblages

A large quantity of the pottery retrieved from Group 2 was of abraded 1st and early 2nd century forms, the suggestion being that this material was redeposited as a result of the quarrying of earlier deposits (perhaps from higher on the hillside) for the levelling/terracing dumps within the complex. Many of the assemblages contained no late Roman material, despite being associated with this phase of construction and, therefore, by implication, dating to the end of the 3rd century. This would seem to indicate that the deposits were unadulterated by late Roman rubbish disposal; a fact that would appear to be consistent with the impression of order and care with which the construction was undertaken.

The largest assemblage of residual material (11,676 grams) was within Group 2.10, the dumped gravel and sand make-ups. This may be consistent with the scraping up of earlier material during quarrying on the slope to the north of the site. It would have been inappropriate to have dumped contemporary organic rubbish within these make-ups, as their *raison d'être* was not simply raising the ground level, but also consolidating it in a very thorough manner.

The exception to the general pattern of ceramic assemblages was the Group 2.11 dumps. These had elaborately consolidated the area to the east of the Group 2.7 foundation. The assemblage from these dumps contained very little residual material, with a proportionally larger group of late Roman wares (residual forms: 11.5% by weight, compared to 100% in Group 2.3 and 99% in Group 2.10). The explanation for this is probably the source of the material used in the dumping processes. The character of the Group 2.11 dumps, which were largely composed of crushed building material, contrasted with the predominantly gravel dumps of Group 2.3 and Group 2.10. The suggestion is that the gravels derived from terracing/extraction elsewhere on the slope and the cultural material derived as a by-product of this action was, therefore, heavily residual. The Group 2.11 material, in contrast, appears to have derived from the demolition of a substantial building, including fragments of marble (veneer and moulding), which have also been suggested as being 3rd-century in date (Pritchard 1986,187). (The character of the building demolished is discussed in Chapter 8.1). The presence of 3rd century pottery within the Group 2.11 make-ups would, therefore, seem to be a result of it deriving from more contemporary activities than those of the gravel dumps.

The late Roman building (Group 7) and the disuse of the Period II complex

The construction of the Group 7 building, in the 'internal' area of the Group 2 complex, appears to have occurred some time after AD 330 (slightly worn coin of Constantine, AD 330-5), or more probably, after AD 350 (pottery). The assemblage contained very little early, residual, pottery (3.27% by eves and 3.07%, by weight), and 'the relative homogeneity of the Roman assemblage suggests that it is likely that the building was of late Roman date' (Davies 1987, 8). This homogeneity is also consistent with the interpretation of the deposits as occupation horizons. The abrasion of much of the late Roman pottery would also appear to be consistent with its position within the trampled floor surfaces of the building. The length of the building's occupation is unclear. Most of the pottery forms can only be placed within the broad framework of the mid-4th to the early 5th centuries AD. The number of replacement earth floors and hearths suggests that the occupation was of some duration, although the frequency with which such features were replaced is not sufficiently well understood to make any precise chronological statements.

The duration of the Group 2 occupation is unclear, as it is not known how long elapsed between the disuse of the Group 2 structures and the construction of the Group 7 building, although on this evidence, it would appear to have had a maximum life of some 50-70 years.

Robbing of the Period II foundations

The robbing of the Group 2.7 foundations occurred some time during the 10th and/or 11th centuries. There is no evidence to suggest that any part of the below-ground foundation was removed before that time. However, no date can be ascribed to the removal of the above-ground elements.

5. SUNLIGHT WHARF

Grid ref: (TQ 3210 8089)
 Site code: SUN86.
 Archive report: Tyler 1987 (see Appendix 4 for availability).

5.1 The Site

Between July and August 1986 five trenches were excavated as part of the redevelopment of Sunlight Wharf. The site lay immediately to the south of the Salvation Army Headquarters, beneath a disused stretch of Upper Thames Street (Fig 2).

Originally this area was to be covered by watching brief facilities, allowing access for the drawing of sections and the basic retrieval of material. Five areas were explored (Trenches BW, BX, BY, BZ and CA; Fig 48). However, after the machine excavation of two areas (Trenches BW and CA) it became clear that more substantial archaeological access was required. Two weeks were obtained to make a detailed record of Trench BX, which revealed a substantial structure. This time was adequate for the basic recording of the foundations exposed, but it did not allow for controlled excavation, and the feature was subsequently partially destroyed by the piling programme for the modern development (a substantial area of the foundation was, after negotiations, preserved between the pile positions). At a later date, a further area (Trench BY) was machine cleared by the developers and limited access was given for the preparation of plans and records of the exposed structures. Nevertheless, the time was insufficient to allow a fuller record of the stratigraphy to be completed, or for the removal of any of the structures under controlled conditions.

In the Archive Report for the site (Tyler 1987), Group 1 encompasses the Roman strata. It is subdivided into thirty-one parts (Groups 1.1 to 1.31; 1.1 to 1.9 in Trench BX, 1.10 to 1.20 in Trench BY, 1.21 to 1.24 in Trench BW, 1.25 to 1.27 in Trench BZ and 1.28 to 1.31 in Trench CA).

5.2 The Excavation

The sequences observed within the five trenches (BW-BZ and CA) were very closely comparable. The evidence is discussed below, under broad headings which characterise the constructional sequence.

Dumping to prepare the area

The earliest activity in each of the areas (Groups 1.1, 1.10, 1.21, 1.25, and 1.28) consisted of compacted dumps - mainly clays, with some silts and 'rubbish deposits' (oyster shells and crushed building debris). The surface of the dumps formed a roughly level platform, where exposed. They consolidated and raised the ground surface in the area, which would have lain at the foot of the natural hillside. Although not adequately observed, it is probable that they were part of the

reclamation of an area of marginal land close to the contemporary river's edge (see p13).

Timber piling

Driven vertically into the consolidated dumps were a number of oak piles (Groups 1.2, 1.11, 1.22, 1.26 and 1.29), the heads of which projected some 0.15m above the level of the dumps. An insufficient area of piles was exposed to suggest any pattern to their arrangement. During the watching brief, however, they were observed to have extended over the whole of the area. The majority of the piles recorded were complete boles (71%), in most cases with the bark still adhering, and roughly sharpened to a point at their bases. A few timbers showed signs of re-use, with rectangular cross-sections (the proportion of the latter is artificially high as they were singled out for removal because of their unusual and potentially informative nature - the true ratio with the unworked boles would have been significantly lower if full retrieval had been possible).

The piles averaged 0.20m in diameter (minimum 0.15m - maximum 0.26m) and 2.73m in length (minimum 2m - maximum 3.60m). Thus, although within a broadly similar range, the sizes of the piles did not fit into a close group. In particular, there was considerable variation in the length of the piles - a factor which did not correlate with their diameter: the longest pile had the narrowest diameter. Once again, these variations are distorted by the high sampling of the re-used timbers, and the unworked timbers demonstrated a markedly tighter grouping of characteristics.

Chalk raft

The pile heads were surrounded by a very compacted layer of crushed and nodular chalk (Groups 1.3, 1.12, 1.23, 1.27 and 1.30). This had been rammed, forming a roughly level surface with the pile crowns. Where it served as a foundation for subsequent construction the upper surface of the chalk raft was smooth and roughly flat, forming a very solid base. Elsewhere, the finish to the chalk was noticeably more uneven, although it still provided a solid and compacted platform.

In the most northerly trench (BZ) the level of the chalk surface was approximately 3.9m OD, whilst in the other areas it varied between 2.4m and 2.6m OD. This difference, of approximately 1.5m, suggests that some form of terracing occurred towards the north end of the site. Elsewhere, the raft appears to have formed a roughly level platform, sloping down slightly towards the south.

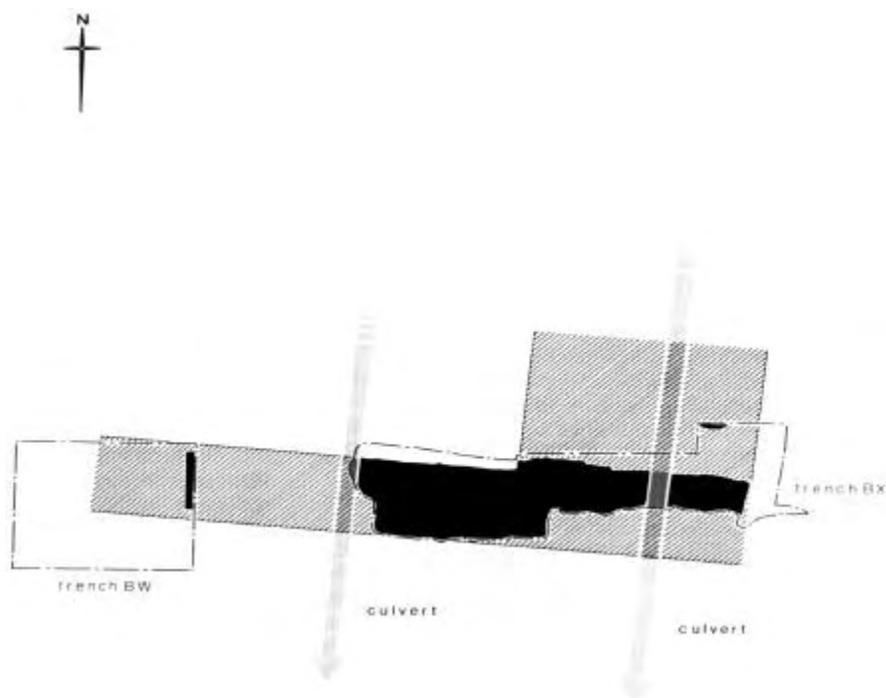


Fig 48 Sunlight Wharf; monumental foundations. Note that the eastern walls are of unknown width, having only been observed in small trenches. The north-south foundation did not appear in Trench BZ, and it is probable that it turned east (?and/or west) at this point. Blue arrows indicate the possible watercourses (cf Fig 4). (1 :200)

Foundations and culverts in Trenches BX and B W (Figs 49-52)

Timber-framing and a second chalk raft

In Trench BX a second compacted chalk raft directly overlay the first (part of Group 1.3). This layer, in contrast to the first, contained some impurities (small quantities of tile and larger proportions - up to 50% in one deposit - of crushed *opus signinum*). Nevertheless, it formed an equally substantial and solid foundation raft.

A series of slots in the second chalk raft formed an interconnecting pattern. These slots are interpreted as having been formed by timber beams placed upon the smooth surface of the first chalk raft, with the second raft being rammed in around them; in the straight sides of the slots the chalk nodules appeared to have been compacted against the timbers. The slots were orientated at a 45° angle to that of the foundation, forming a diagonal pattern.³

The slots were backfilled with clays, some of which contained a large quantity of molluscs, possibly deriving from foreshore material. These fills might suggest that the timbers had not decayed *in situ*, but were removed and the slots backfilled during the construction process.

For a discussion of the function of the timber lacing, see Chapter 2.4.

Bonding layer

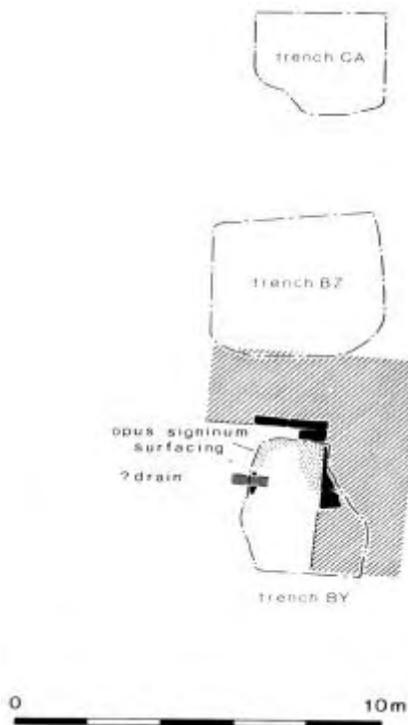
A layer of poured *opus signinum* (Group 1.5) overlay the upper chalk raft (Group 1.3) and sealed the backfilled slots (Group 1.4). This material was apparently still semi-liquid when the large stone blocks of the overlying Group 1.6 foundation (see below) were positioned, as the mortar was partially displaced and forced up the sides of the blocks by their weight. Large fragments of tile, laid on bed within the mortar, may have been used to provide support during the drying stage and/or acted as a rough levelling device (given the irregular size of the Group 1.6 blocks). Insufficient blocks, however, could be removed to test this hypothesis adequately.

In those areas where the overlying Group 1.6 blocks had subsequently been removed the line of the foundation could be seen where the *opus signinum* settings, with clear block impressions, remained.

Masonry foundation

Set on the *opus signinum* and tile base (Group 1.5) was a massive 'L-shaped' masonry foundation, some 2.30m wide (east-west) and 6.30m wide (north-south) (Plate 4, Figs 48-51). This comprised massive stone blocks, which supported a substantial ragstone and concrete foundation, laced with tile courses.

The massive stone blocks were laid in a single course, except along the eastern face of the north-south



foundation, and also along the south face of the east-west foundation; in the west, where the upper elements of the foundation had been truncated, a layer of *opus signinum* with the impression of a second course of blocks indicates its continuation. The northern and western faces of the foundation, and the core of the structure, did not have this second course of blocks, and were continued in a different form (see below).

The blocks varied considerably in size - the largest observed being 1.38m x 0.43m x 0.26m, whilst the smallest was 0.43m x 0.27m x 0.93m. Most of the blocks were not, however, fully observed, as they were partially sealed within the body of the foundation, often with only one face exposed. Of the 31 blocks observed, 17 were limestone and the remainder sandstone (Appendix 2; see also Betts 1987a). The blocks were arranged with an irregular horizontal pattern, but where possible appear to have been placed with an emphasis upon the selection of similar dimensions for the vertical scale, providing a roughly level upper surface to the course (Figs 49 and 50).

The blocks showed numerous signs of re-use, in particular the presence of well dressed faces concealed within the body of the foundation. The blocks could not be fully observed during the excavation, but during the watching brief they were observed for signs of more elaborate workmanship or decoration. No such embellishments existed.

Since the massive stone blocks (and sealing/continue the the culverts of Groups 1.7 and 1.8; see below), as a substantial coursed foundation. The foundation was faced with roughly squared ragstone blocks (average 0.15m x 0.1m x 0.1m), laid in courses and bonded with the same concrete as the core of the foundation (Fig 50). There was some spatial variation in the material used; in the south face of the east-west element roughly squared sandstone was employed though it was not clear in the limited area exposed whether there was any pattern in its use. The most noticeable difference occurred in the western face of the north-south element, where the foundation was offset in step: steps above the third course (Fig 50). The joint in the northern face of the east-west foundation, which stepped to an equal height, clearly lacked any such feature.

The core consisted of ragstone, chalk and brick rubble, in coarse sandy concrete. This was roughly coursed, with 'bands' being observed, varying from 0.22m to 0.30m in thickness (Plate 4). Above this two courses of bedding bricks extended between both faces of the east-west foundation, completely spanning its width. To the east, where these did not survive truncated the rectangular impressions of the first course were observed in the upper mortar of the core, also indicating that they had extended to the east of the culvert (148). Above the tile courses in the west, the remnants of a further concrete and rubble course existed, indicating a vertical continuation of the foundation.

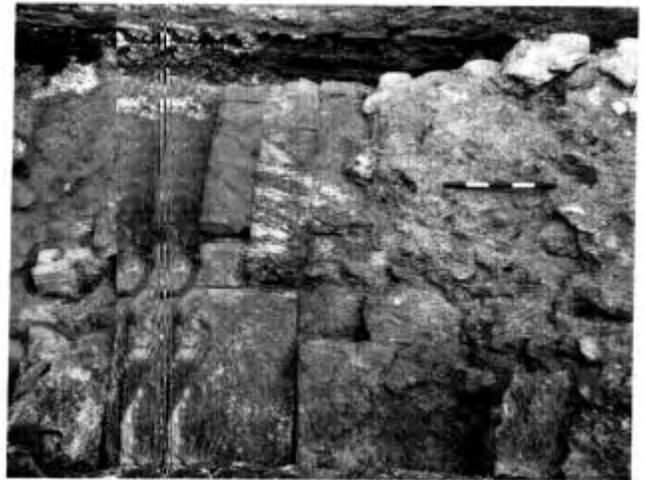


Fig 49 Wightlight Wharf; monumental foundation in Trench Boitheith the Victorian sewer in the background (looking n). M. Massive re-used blocks were arranged in the basal course to present their narrow sides to the face of the foundation. Two. To the left, where the blocks have been removed, tile tile and *opus signinum* block settings are visible. To the right, the coursed ragstone rubble and concrete of the foundation survives. (Scale 5 x 0.10m)

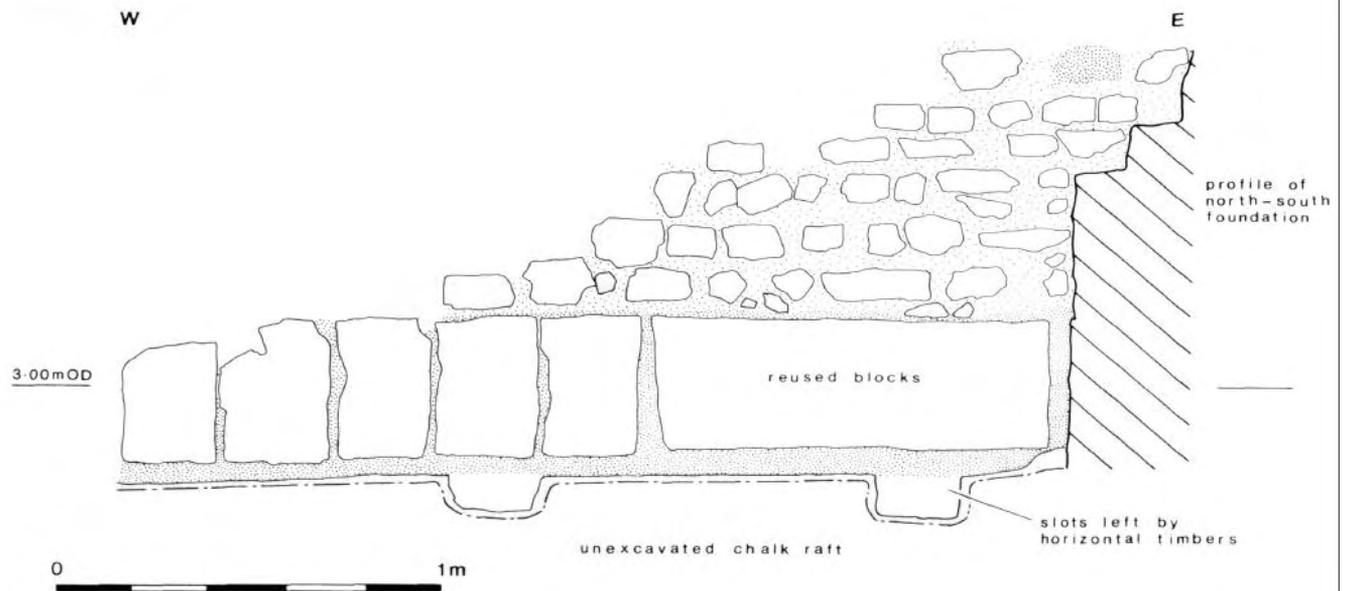


Fig 50 Sunlight Wharf; elevation of the northern face of the monumental masonry foundation in Trench BX. (1:20)

Culverts

A north-south culvert (Group 1.7) was constructed upon the stone blocks (Group 1.6), within the body of the foundation (Figs 22, 48, 51 and 52). The lower courses of the culvert walls were constructed from



Fig 51 Sunlight Wharf; monumental foundation and culvert (looking south-west) - (Scale 10 x 0.10m)

bonding bricks, mortared with a very hard *opus signinum*, whilst at a higher level it was continued by the main core of the foundation (Group 1.9), faced with squared ragstone blocks (Fig 52). The base of the culvert was constructed of tile fragments set in *opus signinum*, and sloped gently down towards the south. It is evident that construction of the culvert commenced prior to the core of the main foundation (Group 1.9) and that it was then incorporated within the latter's ragstone facing. Thus, the culvert appears to have formed an integral part of the initial construction of the foundation, rather than been a later insertion.

To the west a second feature (Group 1.8) lay close to, and ran under, the limit of excavation. Three uneven courses of ragstone, bonded with a sandy mortar, abutted the basal course of stones in the foundation (Group 1.6) on their northern side. Above these, and extending into the core of the foundation above the Group 1.6 blocks, was a layer of tile fragments bonded with *opus signinum*. It is probable that this feature represents the remains of a second north-south culvert, in this case piercing the east-west foundation. No side walls survived, due to the later robbing of the foundation, but the similarity of the construction of the base with that of the Group 1.7 culvert strongly argues the case. The ragstone construction abutting the northern face of the foundation was probably designed to carry the culvert to the north.

The function of these culverts is discussed in Chapter 2.3 (p20-1).

Foundations in Trench BY (Fig 53)

In Trench BY a north-south foundation was uncovered (Figs 48 and 53). This was similar in construction to that already described in Trenches BX and BW (above); a layer of poured *opus signinum* (Group 1.13) with horizontally bedded tiles was laid directly onto the chalk

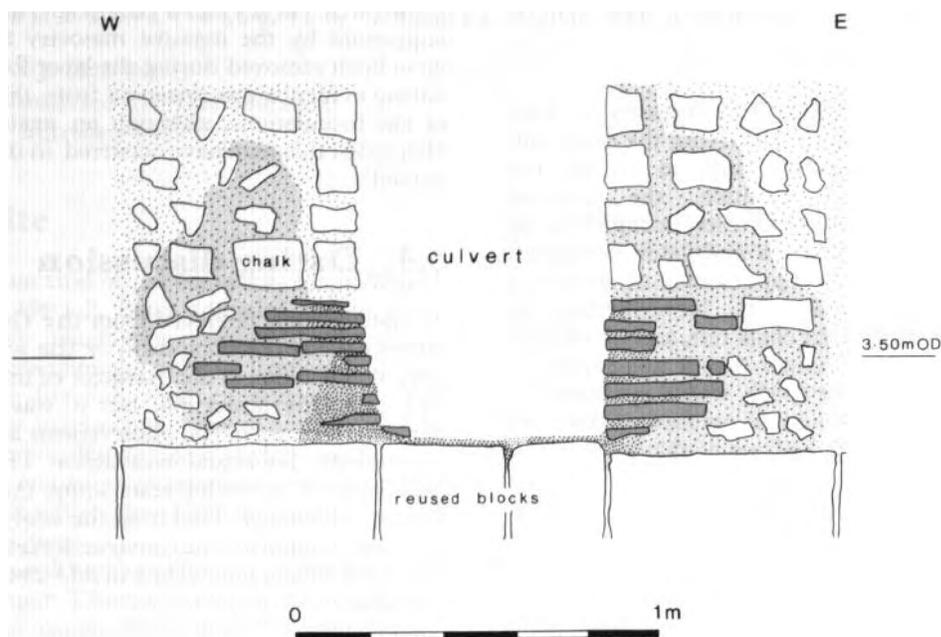


Fig 52 Sunlight Wharf; cross-section through the culvert in the north-south foundation in Trench BX. It was constructed as an integral part of the foundation, initially with tile courses and then with ragstone facing to the foundation core. (1:20)

platform. This layer acted as a base for a north-south masonry foundation (Groups 1.14, 1.15 and 1.16). The lowest (basal) course consisted of massive stone blocks (Group 1.14) set directly into the still wet bedding *opus signinum*. The core of the structure (Group 1.15) consisted of coursed ragstone and chalk rubble set in concrete. The western face was 'rendered' with a coarse sandy *opus signinum* (Group 1.16). The eastern face of the feature was not observed, so that a width for the foundation was not established. No second chalk raft or horizontal timbering was noted in this area, probably because of the limited nature of the observations.

Abutting the north-south foundation was another masonry feature, aligned east-west (Fig 48) (Groups 1.17, 1.18 and 1.19). This feature was only very partially observed, given its position at the edge of one of the modern pile holes, and understanding of it is necessarily limited. The basal course of the foundation consisted of massive stone blocks (Group 1.17), all greater than 0.45 x 0.50 x 0.92m. The blocks had been squared off and well dressed faces were concealed within the body of the structure, indicating re-use. This course had been partially removed in antiquity, possibly during the later medieval robbing of the area (p62). This foundation was not set into an *opus signinum* base, as the other features discussed had been, although the blocks themselves were bonded together by *opus signinum* (Group 1.19).

Overlying Groups 1.17, 1.18 and 1.19 was a possible poured *opus signinum* surface (Group 1.20), with an associated east-west drain/gutter (width 0.30m and depth 0.04m). The gutter was constructed of a single tile course set in the *opus signinum* surface (Fig 48). There was no indication of any higher elements to the feature, and its shallowness suggests that it formed a small gutter or eaves-drip.

Foundations in Trench CA

An enigmatic coursed brick structure (Group 1.31), bonded with *opus signinum*, directly overlay the Group 1.28 dumps; its relationship to the timber piles (Group 1.29) and the chalk platform (Group 1.30) was not recorded. Unfortunately, the scarcity of information concerning this feature does not allow its significance to be adequately assessed.

Trench BZ

In Trench BZ nothing was recorded overlying the make-up dumps, piles and chalk.

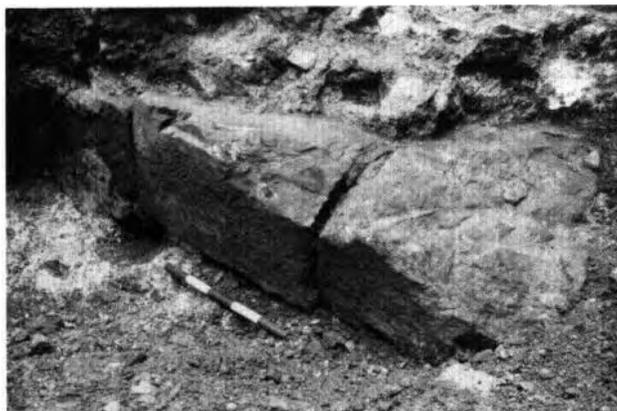


Fig 53 Sunlight Wharf; portion of monumental foundation uncovered during watching brief in Trench B Y (looking north-east). (Scale 5 x 0.10m)

Non-structural sequence above the chalk raft

The later truncation of this area appears to have removed all traces of material overlying the chalk raft; the latter probably survived due to its all but impenetrable nature. In addition, the principal excavation area, Trench **BX**, was solely occupied by the massive 'L-shaped' foundation and later intrusions, thus further reducing the opportunity of observing strata overlying the chalk raft. Nevertheless, the foundations bottomed on the chalk raft, and the western culvert's construction indicated that it was supported above the level of the raft (p60), which suggests that made-ground would have been necessary above the chalk raft, probably along the lines of that identified at Peter's Hill (p50).

Disuse and destruction

Our understanding of the disuse and destruction of the Group 1 structures is obscured by the level of truncation

in the area. As at Peter's Hill (p53), the superstructure supported by the massive masonry foundations may have been removed during the later Roman period. No dating evidence was retrieved from the partial robbing of the foundations, although on analogy with Peter's Hill (p56) this may have occurred in the early medieval period.

5.3 Dating discussion

No pottery was retrieved from the Group 1 activities, either during the excavation or the watching brief. In part, this was due to the character of the deposits, which was primarily structural, but it was also due to the restricted nature of the observations and to the limited opportunity for actual excavation. Thus the dating of the Group 1 activities rests upon the dendrochronological evidence derived from the analysis of the timber piles that supported the construction raft. This indicates that the timbers were felled in AD 294 (see Appendix 1 for details).

6. SALVATION ARMY HEADQUARTERS

Grid ref: (TQ 3210 8092)

Original records compiled by Peter Marsden

Published works: Marsden 1967

6.1 The Site

During the construction of the Salvation Army World Headquarters in 1961-2, Peter Marsden of the then Guildhall Museum observed a number of substantial features which were thought to be of Roman date. No opportunity arose for full scale excavation and the watching brief was intermittent, due to staff pressures arising from extensive destruction elsewhere in the city. The bias towards recording substantial structures, and the variability with which they were recorded, resulted from these restrictions.

The site, located between Queen Victoria Street to the north and Upper Thames Street to the south, lay immediately to the north of the later Sunlight Wharf development. It was originally divided by the curving street of Lambeth Hill (Fig 2), properties on both sides of the street being redeveloped. The archaeological survival varied considerably over this area; in the area west of Lambeth Hill the strata were severely truncated and the pile foundations of Phase 2 were the only features to survive, apart from a deep archaeological sequence which had been preserved behind the basement wall at the western limit of the site (Fig 54). In contrast, to the east of Lambeth Hill a chalk raft and masonry foundations survived above the timber piles. This reflects differential basement levels across the site, the greater survival occurring in the property to the east of Lambeth Hill.

Due to the relatively restricted nature of the observations, the entire Archive Report is included here. The isolated structural elements are numbered from 1 to 54. In some cases the number pertains to more than one feature, such as the chalk raft and the superstructure above it. Features 22 and 23 are omitted here as they were not recorded in 1961-2, but were noted in earlier observations (Observation 8) which are covered in Chapter 7.

6.2 Observations at the Salvation Army Headquarters. Report by Peter Marsden

The main Roman feature on the site comprised a system of chalk terraces, and using this as a datum it is possible to establish a partial chronology of building phases. Unfortunately it is not always clear which of the foundations beneath the terraces belonged to buildings pre-dating the terraces, and which were the foundations of buildings on the terraces. In describing the site, therefore, the features (all shown on Fig 56) have been separated into four groups:

- (1) Those probably pre-dating the terracing (Phase 1).
- (2) Those belonging to the terracing phase (Phase 2).

- (3) Those of either Phases 1 or 2.
- (4) Those of unknown phase.

Phase 1

These are structures that are believed to pre-date the lower chalk terrace. The main reason for attributing them to this phase is that they were on a different alignment from the walls of Phase 2, and one of the walls (Feature 36) underlying the chalk terrace was actually faced on its south side.

The recorded layout of the walls did not make any coherent plan, but fortunately a considerable proportion of the structures of this phase appear to survive in the southern part of the site and further site investigations will be possible in the future.

The main structures consisted of two parallel walls, between 2.28m (7ft 6in) and 1.52m (5ft) apart, which zig-zagged across part of the south end of the site (north wall, Features 25-28; south wall, Features 30, 33, 35). Each wall was built of ragstone and was 1.14m (3ft 9in) wide, was constructed in the grey silty clay, and, at least in the case of the southern wall, had a foundation of circular wooden piles. The southern wall also included some septaria nodules derived from the London Clay. The apparent absence of floors associated with the walls indicates that they were foundations, and apart from the fact they were on a different alignment from the walls upon the chalk terrace, there is strictly no reason to believe that they were not associated with the chalk terrace. However at their east end a portion of wall was found beneath the chalk terrace which was both a retaining wall and was faced only on its south side (Feature 36). Although only a short length of it was found there was some indication that it might have been curved as part of an apse. The wall was 1.01m (3ft 4in) thick and its south face was recorded for a height of about 0.61m (2ft). It had three double courses of red bonding tiles set in pink cement, separated by single courses of ragstone. The tile courses extended 0.61m (2ft) into the wall, at which point the wall construction merged into a structure of rag, flint and pebble concrete. The facing of the wall underlay the lower chalk terrace proving that this piece of walling pre-dated the terrace.

Exactly in line with the east face of one wall (Feature 28), but 8m to the north, lay the east face of a portion of masonry at least 1.52m (5ft) thick. This wall (Feature 40) was constructed of ragstone and white cement, with some patches of pink cement. Its north end petered out to become an irregular end in the hillside gravel. Its relationship to the chalk terrace was not found, but its alignment and the position of its east face following those of the other wall (Feature 28) strongly indicates that it was of Phase 1.

One other wall (Feature 16) on this alignment was located in the centre of the site, and is presumed to

belong to the same phase - particularly as it was adjacent to walls on the Phase 2 alignment. It was a ragstone foundation, of unknown thickness, which lay below the chalk terrace and was traced for a distance of 4.87m (16ft). It is not known if it had a foundation of wooden piles.

Phase 1: conclusions

Portions of the foundations of a building or buildings were found, but insufficient to establish its nature, whether domestic or public. The foundations suggest that these lay on some form of terrace whose level lay at about that of the lower chalk terrace of Phase 2, and that at the southern edge a retaining wall (Feature 36) formed the north edge of the next terrace down.

Phase 2

In this phase the hillside was terraced, and each terrace was floored with chalk. Upon this were built massive walls whose layout does not show the purpose or use of the structures.

Upper chalk terrace

This terrace (Feature 2) was only located at the extreme west end of the site. It was 9m wide (north-south), and was constructed of hard rammed chalk about 0.3m (1ft) thick, overlying a foundation of timber piles (now decayed) which had been sharpened to a point at their lower end. The terrace had been cut into sloping hillside, probably at about the junction of the river gravel and the underlying London Clay. The north end of the terrace lay at 6.27m (20.57ft) OD, and it gently sloped downwards towards the south end, perhaps to allow for a run-off of rain and ground water. The extent of this terrace is not known.

Gravel slope

Although the extent of the upper chalk terrace is not known, it is clear that it did not extend to the area east of Lambeth Hill, for it was there that the natural gravel was found to incline down, as if it was the natural slope. At the base of the gravel was found the northern edge of the lower chalk terrace at about 2.44m (8ft) OD. In this area, therefore, the gravel extended below its level at the west end of the site.

A structure upon the upper terrace

At what appeared to be the northern edge of the upper chalk terrace there was found upon the chalk a reddish-brown sandstone plinth (Feature 1) with pink mortar adhering to it. The stone itself was 0.94m (3ft 1in) long (east-west), 0.96m (3ft 2in) wide (north-south), 0.29m (11½in) thick, and had a chamfered upper corner on its north side. The base of the plinth lay 4.80m (15ft 9in) below Queen Victoria Street (whose level lay at 11.07m (36.32ft) OD), at 6.27m (20.57ft) OD. The significance of the stone is not absolutely clear, but it seems most

likely that it was either the base of a boundary wall, perhaps fronting a street or an open area, or the base of a retaining wall separating the upper chalk terrace from an even higher terrace. It is difficult to judge which is correct, but the fact that the natural surface lay immediately below the chalk underlying the plinth, and that this terrace had been cut into a sloping hillside, is sufficient to suggest strongly that the stone formed the base of a retaining wall associated with an even higher terrace. It is worth noting that at the base of the retaining wall between the upper and lower chalk terraces there was also a block of stone.

Lower chalk terrace

The lower chalk terrace lay at about 2.84m (9ft 4in) above OD, and was constructed of rammed chalk between 0.10m (4in) and 0.3m (12in) thick, often overlying a foundation of oak piles. At the west end of the site the terrace sloped gently down to the south end of the site. The chalk terrace appeared to have extended all over the southern half of the site, but in some places it was absent. In one place (Feature 39) two stone carved blocks were found in the chalk and evidently had been re-used. In another (Feature 4) was a 0.10m (4in) thick layer of *opus signinum* pink cement and tiles lying on the lower terrace, perhaps a repair.

At the west end of the site was a retaining wall (Feature 3) which separated the upper and lower terraces. It overlaid the lower chalk terrace and was originally 1.01m (3ft 4in) thick, though its southern face had been badly damaged. It was built of ragstone and cement, and contained at its base a stone block 0.71m (2ft 4in) wide (north-south) and 0.25m (10in) thick, which appears to have been re-used, as was some mortar. The wall survived to a height of 1.22m (4ft), but as the difference between the two terrace levels was about 2.74m (9ft) it is presumed that this was its original height.

Structures on the lower chalk terrace

It is not absolutely clear which walls stood on the lower chalk terrace, for in some cases only the pile foundations remained, and it is possible that these once supported walls predating the lower terrace. The features can be grouped as follows:

- (a) The walls that definitely survived on the lower terraces are Features 17/18, 23, 50/37 and the stepped structure (Features 42, 44, 45, 51).
- (b) Structures that are likely to have stood on the lower terrace but had been destroyed are Features 5, 6/8/11/12, 7, 9/10, 20, 21.
- (c) Structures which are most uncertain are Features 14, 22.

Structures definitely upon the lower chalk terrace

One of the main features was part of a north-south wall beneath the former Lambeth Hill (Features 17/18). Its northern part was more than 1.32m (4ft 4in) thick (Feature 18), though its western face had been removed by the Lambeth Hill sewer. It was standing to a height of

Feature 52

A roughly built ragstone-lined east-west drain overlying a Roman wall, Feature 44. Finds from the lower filling of the drain (ER 768) show that it was of post-medieval date.

Feature 53

On the east side of Feature 19 was discovered a foundation whose edges were not found. It was constructed of ragstone and cement, and was traced for a distance of 1.6m (5ft 3in). (Not illustrated as not clearly located.)

Feature 54

The chalk terrace was found at a depth of about 3.66m (12ft). At this point there was perhaps a wall of ragstone with broken tiles set in yellow and pink concrete. There were possibly two single bonding courses of tiles, but these may simply have been materials used to construct the terrace. The foundation was of wooden piles 3.35m (11 ft) long, circular in section and 0.23m (9in) in diameter, but cut to a point at both ends.

6.3 Dating discussion

The timber piles were not sampled and no other dating material was retrieved from the site.

6.4 Additional comments

Some features were not commented upon in Peter Marsden's report (Chapter 6.2, above), and warrant some discussion here. In addition, some of the correlations made there can be questioned, as can the interpreted relationship between the pile preparation of the area, and the position of subsequent foundations.

Phase 1 (Fig 54)

Eastern part of the site during Phase 1 - additional feature

Immediately to the east of Feature 40 was an area of gravel, with horizontally laid fragments of broken tiles (Feature 41). This feature appears to have formed an area of surfacing, presumably external. Although its absolute level was not noted and it is not clear whether the north-south wall (40) cut through the surface, or was contemporary with its use, it is likely that it also belongs to this phase of activity.

Western part of the site during Phase 1

Marsden refers to no pre-Phase 2 features in this area in the discussion section, although some features are said to be pre-Phase 2 in their catalogue entries. Feature 12, a ragstone foundation 1.15m wide at its southern end and 1.32m wide at its northern, was recorded as underlying the chalk terrace (p67) (the only comment on this feature comes in discussion of Phase 2, p65). The alignment of this feature seems open to some debate, not least as it appears to have been plotted without any account of the changing width of the structure (Fig 54).

Immediately to the east of Feature 12 was another ragstone foundation, aligned east-west, but which appeared to have fallen over to the south (Feature 14). This wall contained a double course of bonding tiles and was originally at least 1.00m in width. Its top appeared to have been smoothed off, with bevelled edges (in the same manner as the north wall of Observation 8, p75). This feature was partially overlain by the chalk raft at its western end, while to the east it projected some 0.15m above the surface of the chalk (ibid).

Initially, at least, there seems to be a case for suggesting that the pre-Phase 2 structures in this area were on a different alignment from those to the east (Fig 54). It is possible, however, given the ambiguity of both the description and plotting of these features, that they were part of the same development and that the apparent alignment of the western walls is misleading. This suggestion might be reinforced by the bevelled nature of Feature 14, which compares with Feature 22 (north wall Observation 8, see p75), lying within the eastern part of the site. It is not clear whether these foundations were part of the same development identified elsewhere on the site, or part of a separate structure. In either case, they argue the complexity of this early sequence.

Another problematic structure is Feature 36. This foundation underlay the Phase 2 chalk raft, apparently having been levelled during the latter's construction. Its description (p67) suggests that it may have been apsidal, although this is not stated with any certainty. It lay close to the eastern limit of the site (Fig 54), near to the double walls of the Phase 1 structure. It is difficult to see how it can have formed part of that structure, and as such forms the most cogent argument for more than one period of building prior to the deposition of the Phase 2 chalk raft. The implications of this are explored in the discussion of the Period I complex (Chapter 1.3, p7-8).

The fact that Phase 1 features have not been identified in the western area of the site, west of Lambeth Hill (Fig 54), may be a result of the increased level of truncation in the area (p63), combined with the relatively restricted observation. However, pile foundations for Phase 2 were observed, and the piles were only employed in those areas where earlier walls were not present - elsewhere Phase 1 walls had been merely levelled off to provide the basis for the chalk raft which the piles supported. This suggests that no Phase 1 walls existed west of those presently identified.

Phase 1 forms the principal evidence for the Period I complex. As such, its layout, reconstruction and function are explored in Chapter 1.

Phase 2 (Fig 54)

The Phase 1 foundations were partially demolished prior to the deposition of an extensive layer of chalk, which formed the basis for an extensive constructional platform. Although it was not clear what relationship the Phase 1 structures had with the natural hillside, it is clear that in Phase 2 the hillside was terraced.

Lower terrace

In the observations in which the material beneath the chalk raft was noted (Features 8, 50 and 54) the ground

had been levelled or made up with building debris. The observations span the site and suggest that the area had been levelled prior to the construction of the raft. Whether this material derived from the demolition of the Phase 1 structures is unknown, but it bears comparison with the material used for levelling the southern area of the Peter's Hill site, in advance of the construction of the chalk raft on that site (p41).

The lower chalk raft (Features 4, 11, 13, 15, 24, 29, 34, 51 and 54; Fig 54), was rammed around the heads of timber piles, except in those areas where the chalk directly overlay the levelled walls of Phase 1 (in the case of Feature 34 piles were not mentioned, but once again, the chalk primarily overlay Phase 1 walls – Fig 54). The piles appear to have been complete boles of oak (Fig 17). Both ends of the piles of Feature 24 were said to have been sharpened; it would seem reasonable to sharpen their bases, but the sharpening of the tops would seem unlikely. It is probable that this statement results from a misinterpretation of the decay of the pile heads, a phenomenon noted on the adjacent sites (p43). The chalk raft was observed to cover an extensive area of the southern terrace (Fig 54).

A number of timber piles were also observed, without the overlying chalk platform being recorded in association (Features 5, 6, 7 and 8 - Fig 54). These observations were restricted to the western part of the site, suggesting that the area had been subjected to an increased level of truncation (p63). This is supported by the section at the western limit of the site, where an increased level of survival was present due to the protection offered by the adjoining property, and the piles were not only seen to cover the entire width of the lower terrace, but also to be supporting an unbroken chalk raft (Fig 11 d).

Marsden (p65) suggests that the piles (Features 5, 6, 7 and 8) were associated with specific structural elements, but the lack of correlation with structural elements in the eastern half of the site, where fragments of the masonry foundations were actually preserved, suggests that the piles formed a more general foundation raft; Feature 24, for example, was an extensive raft supported by timber piles over its entire area, but with no suggestion of a foundation above it. The apparent banded arrangement of the piling on the eastern half of the site, is likely to have been a consequence of the nature of the observations, within builders' trenches, rather than a true reflection of the original construction. Thus the piles were used to consolidate the lower terrace where the ground level had been raised from the Phase 1 activities, rather than directly form the base for individual structural elements.

The surface of the rammed chalk raft, although relatively even, was not intended to function as a surface in its own right; first, the surface sloped downward, gently, to the south (p64), and secondly, although care was taken roughly to level the surface of the raft, the result was by no means perfect, and some of the collapsed or levelled Phase 1 features, such as Feature 14, partially projected above the level of the raft's surface (p67). It is unlikely that the structures built directly upon the raft would have had no below ground foundations. Analogy with the detailed sequence excavated at Peter's Hill and Sunlight Wharf suggests that the raft functioned as a foundation level, upon

which structural elements were laid out, but which was then raised by substantial dumped deposits (p50 and p62).

One of the few photographs that survives from the site (Fig 17) shows the timber piles and chalk raft in an unknown area of the site. The chalk raft appears to be quite thick, possibly about 0.3m, and extends well above the surviving pile heads. At Peter's Hill and Sunlight Wharf, the first chalk raft was flush with the pile heads, and it was only when the second chalk raft was present that the chalk extended above that level (about 0.15m, to give a combined thickness of about 0.3m; p46 and p58). This would suggest that a second chalk raft was also present here. Furthermore, regular sided slots might just be seen in Figure 17, running from the top of the chalk, down to approximately the level of the pile heads; once again on analogy with Peter's Hill and Sunlight Wharf, these could be seen as the slots left by the horizontal timber framework, in which the beams were placed directly onto the first raft (level with the pile heads), with the second chalk layer then packed around them (Peter's Hill, p46, Fig 13, Plate 1 and Sunlight Wharf, p58, Fig 50). This interpretation, although speculative, suggests the presence of these structural features on the site. There is little doubt that it was also present beneath the Phase 2 foundations observed elsewhere on the site; it would have been difficult to detect in a watching brief, especially if the foundations could not be removed under controlled conditions.

In conclusion, the chalk raft, supported by piles and levelled Phase 1 structures, formed an extensive preparation of the lower terrace of the hillside. The area was carefully prepared, with all the made ground being substantially consolidated. In some areas a second chalk raft, with timber framing, was used to support the massive masonry foundations, but elsewhere the piles and a single chalk raft probably formed a more widespread preparation. This latter use specifically counters Marsden's suggestion (p65) that there was a direct relationship between the piles and subsequent masonry foundations. Instead, unless proven otherwise, piles, and piles and chalk, can only be said to indicate the terracing and consolidation, as at Sunlight Wharf (p61-2).

Features 43, 44, 45 and 51

There are a number of problems with the interpretation of these features, not least their apparently confusing construction (p68-9). The so-called 'steps' are more likely to have been simply offset courses, similar to those identified in the north-south wall at Sunlight Wharf (Fig 50 and p59). Interestingly, the off-sets began approximately 1m above the level of the chalk raft in both foundations. The ragstone facing with tile courses was also very similar. It is suggested that this feature was merely another north-south foundation, which terminated at the north, where it meet the hillside, in the same fashion as the north-south foundation at Peter's Hill (Fig 39, p49).

Feature 4 (part of)

On the lower terrace recorded in section at the western end of the site (Fig 11d), was an area of *opus signinum*,

pink cement and tiles overlying the chalk raft (p66). The horizontal extent of this layer, some 0.10m thick, was not recorded, but it appears to have been very similar to the bedding material used for the massive masonry foundations found on other sites (the block settings; Peter's Hill, p48 and Sunlight Wharf, p58). Furthermore, it was overlain by a thick deposit of grey soil (p66), which may have been backfill after the large stone blocks had been robbed out (*cf* Peter's Hill, p53).

General discussion of Phase 2

The hillside in this area was carefully prepared in advance of this phase of activity. Phase 1 walls were partially demolished, being levelled to the height roughly equal with that of the chalk raft's surface. In these areas, the lower chalk terrace was laid directly onto the levelled walls, which acted as its support; in those areas where Phase 1 walls were not present, the ground was prepared by an extensive dumping and piling programme prior to the deposition of the chalk raft. The surface of the chalk raft, although relatively even, was clearly not intended to function as a surface in its own right, and the area was probably made up by additional dumping, as was the case on the Peter's Hill site (p50).

The structures laid out on the lower terrace appear to have formed a regular pattern of construction, with a common alignment (Fig 54). They also appear to have been constructed in a very similar fashion, including pile and chalk foundations, probably a second chalk raft with timber lacing, large re-used blocks of limestone in the basal course, *opus signinum* bonding and a coursed ragstone rubble foundation above the blocks, faced with squared ragstone with tile coursing.

To the north, an upper terrace was laid out, also supported by a piled chalk raft. This was separated from the lower terrace by a retaining wall. This terrace, however, did not extend across the full width of the site, and its eastern limit is not known. What is apparent is that in the easternmost part of the site the hillside took the form of a sloping gravel bank (Fig 54). At the northern limit of the upper chalk terrace was an enigmatic block (Feature 1, p66) which might indicate that a further terrace existed to the north. No other structures were positively identified on the upper terrace.

Features not phased (Fig 54)

Walls on the eastern gravel slope

At the top of the gravel slope, which stood in the eastern part of the site in place of the upper chalk terrace, two walls were observed, Features 46 and 47 (Fig 54). These walls, both c 0.90m wide, were constructed in a similar fashion, comprising mortared ragstone with double or triple bonding tile courses (the foundations of both walls were not observed). The western wall (46) was aligned roughly east-west and was finished off at its eastern end, as if for a door jamb (p68). The northern face of the wall was plastered (*ibid*). The eastern wall (47) was not directly aligned with it, but rather ran slightly to the north (Fig 54). No surfaces were found in association with these structures.

The features are thought to be contemporary, given the similarity of both their construction and dimensions, but their relationship with the rest of the activity in the area remains problematic; they could have formed part of either the Phase 1 or Phase 2 occupation of the site, or indeed, any other activity in the area. The plaster face of wall 46 suggests that the structure may have been associated with occupation of an internal character; it did not form part of a terrace structure.

Features in the south-western corner of the site
In the south of the site a ragstone foundation (Feature 9) and overlying wall (Feature 10) were recorded, although not in any great detail. There is no indication which phase they related to, as neither their level nor relationship to the chalk raft were recorded.

Feature 38

In the south of the site a north-south foundation was observed (Feature 38, p68, Fig 54). The wall was supported by squared timber piles, rather than the circular ones observed elsewhere beneath the chalk terrace, which suggests that this feature may have been constructed at a different time. However, the relationship of these events is less than clear.

7. EARLIER OBSERVATIONS

A number of observations were made during the 19th and early 20th centuries in the vicinity of the excavations discussed in Chapters 4 to 6. Where possible the original records have been used here. The quality and reliability of the records vary considerably. Nevertheless, they provide important additional insights into the development of the area. The relationship of the observations to the Period I and II complexes is explored in Chapter 9.

Some observations listed in the Merrifield gazetteer were part of the Salvation Army Headquarters site, and have already been discussed in detail in Chapter 6 (sites 11 O-3 and 116; Merrifield 1965, 220-3).

Observation 6: Peter's Hill

RCHM 1928, 141 (Plan A 169)
City Sewer Plan 373
Merrifield 1965, 220

An east-west wall was observed in 1845, during the cutting of the sewer beneath Peter's Hill (Fig 2). No record was made of the construction or size of the structure, although its position was approximately marked on City Sewer Plan No 373. Merrifield (1965, 220) suggested that this wall was part of the ragstone and cement terrace wall found on the Salvation Army Headquarters site, immediately to the east (Salvation Army Headquarters Feature 3, p66, Fig 54). During the Peter's Hill excavation, however, the backfill of the sewer was re-excavated and a large quantity of bonding brick and re-used flue tile bonded with *opus signinum* was found in the sewer trench backfill at the point indicated on the sewer plan. This suggests that the wall

was entirely different from the Salvation Army terrace wall; rather it was a continuation of the terrace wall observed further to the west on the Peter's Hill site, which was constructed from precisely the same materials (p51, Fig 45). The terrace walls on Peter's Hill and the Salvation Army Headquarters site lay at different points on the hillside, the former being lower on the slope; the discovery that the wall observed in the sewer was part of the lower terrace indicates that the change between the two terrace walls must have occurred to the east of the sewer (Fig 62).

Observation 7: Lambeth Hill (including a discussion of further observations in Upper Thames Street)

Roach Smith 1841a, 150-151
Roach Smith 1859, 18-19
RCHM 1928, 92-3
City Sewer Plan 315
Marsden 1967, 149-151
Merrifield 1965, 222

This forms one of the most significant early observations in the area. Made in 1840, during the construction of an east-west sewer beneath Upper Thames Street (Figs 2 and 55), it records a 'massive' masonry structure. The original reports of Charles Roach Smith are detailed below.*

The workmen employed in excavating for sewerage in Upper Thames Street, advanced without impediment from Blackfriars to the foot

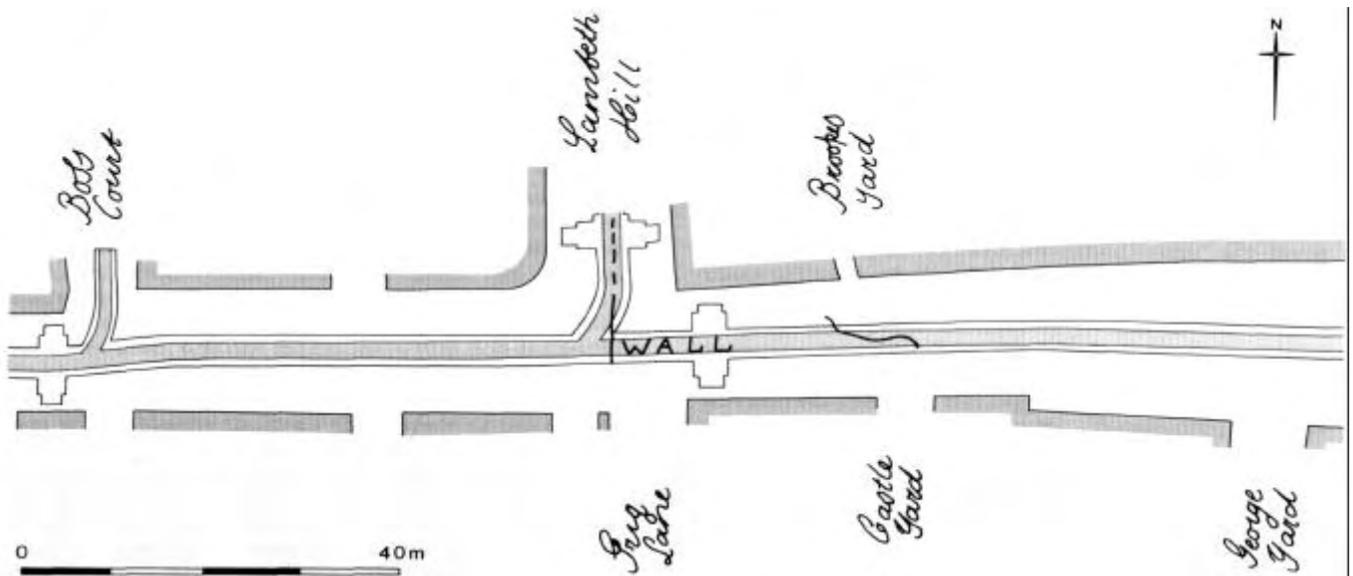


Fig 55 The 1840 City Sewer Plan 315, showing works beneath Upper Thames Street and Lambeth Hill. The grey tone indicates building lines; the blue represents the course of the sewer. The notes are by Charles Roach Smith. (1 :400)

of Lambeth Hill, where they were obstructed by the remains of a wall of extraordinary strength, which formed an angle at Lambeth Hill and Thames Street. (Roach Smith 1859, 18.)

Upon this wall the contractor for the sewers was obliged to open his course to a depth of about twenty feet; so that the greater portion of the structure had to be overthrown, to the great consumption of time and labour. The delay occasioned by the solidity and thickness of this wall, gave me an opportunity of making careful notes as to its construction and course.

It extends (as far as I had means of observing) from Lambeth Hill to Queenhithe, with occasional breaks. In thickness it measured from eight to ten feet. The height from the bottom of the sewer was about eight feet, in some places more or less; it reached to within about nine feet from the present street, and three⁵ from that which indicates the period of the fire of London, in this district easily recognised. In some places, the ground-work of the houses destroyed by the fire of 1666 abut on the wall. The foundation was made in the following manner. Oaken piles were first used; upon these was laid a stratum of chalk and stones, and then a course of hewn sand-stones, from three to four feet, by two and two and a half feet, firmly cemented with the well known compound of quicklime, sand, and pounded tile. Upon this solid substructure was built the wall, composed of rag and flint, with layers of red and yellow, plain and curved-edge tiles. The mortar throughout was quite equal in strength to the tiles, from which it could not be separated by force.

One of the most remarkable features of this wall is the evidence it affords of the existence of an anterior building, which for some cause or other must have been destroyed. Many of the large stones above mentioned are sculptured and ornamented with mouldings, which denote their prior use in a frieze or entablature of an edifice, the magnitude of which may be conceived from the fact of these stones weighing, in many instances, upwards of half a ton. Whatever might have been the nature of this structure, its site, or cause of its overthrow, we have no means of determining. . . . I observed, also, that fragments of sculptured marble had been worked into the wall, and also a portion of a stone carved with an elegant ornament of the trellis-work pattern, the compartments being filled alternately with leaves and fruit. This had apparently belonged to an altar. (Roach Smith 1841a, 150-1)

Roach Smith also made some additional comments in his diary (Roach Smith 1841 b, 113) which were not published in his accounts of the discovery.

There are marks in these of the machinery used in carrying them . . . [followed by a sketch of a bar-cramp hole] . . . One of these found at the turning up Lambeth Hill is of Portland or Purbeck or Petworth marble (?) which is worthy of note. It has been smoothed on one side and is about 4 feet long and I think, was quite under the mass of Roman work the mortar of reddish colour adheres most strongly to it.

The description of the north-south foundation beneath Lambeth Hill, and its immediate eastern return, leaves little doubt that they formed part of the Period II complex; circular piles, chalk raft, a single course of massive re-used blocks bonded with a 'well known compound of quicklime, sand and pounded tile', presumably opus *signinum*, tile coursing, ragstone facing, and a rubble core, are all part of the distinctive Period II construction. In addition, the massive scale of the construction is in keeping with that development. Conversely, the position of the foundation, fairly well established from the sewer plan, dimensions, contemporary street plans, etc, just to the north of the projected line of the riverside wall (Fig 62), strongly argues against its association with that feature. Furthermore, the re-used masonry in the foundation also argues that it was not part of the riverside wall, which did not employ this material in its 3rd century construction (the only use of re-used material came with a later western addition to the wall - see Williams in prep).

Roach Smith's suggestion that the foundation he observed forming an angle at Lambeth Hill extended eastward to Queenhithe, 'with occasional breaks' (Roach Smith 1841a, 151), should be abandoned. There are a number of problems with this suggestion, and it is more likely that the foundations observed further to the east in Thames Street, at Queenhithe (previously cited as part of Observation 7) and near the junction with Queen Street (Merrifield gazetteer (1965) sites 123 and 124), were in fact part of the 3rd century riverside wall.

Recent excavations at Sunlight Wharf, immediately to the east of Lambeth Hill, have shown that another massive north-south foundation was broken through by the 1840 sewer (Fig 55). No mention of a second north-south wall was made by Roach Smith, which seems surprising considering the substantial width of the structure (p58). In his diaries, however, Roach Smith notes that it was not always possible to visit the site every day. He first noted the discovery of the walls at Lambeth Hill on 14 August 1840; further notes were made on 18, 21, and 25 to 29 August inclusive and the 2 September (Roach Smith 1841b, 115-9). On the 9 September he records the death of his sister (*op cit*, 119). He was away from 10 to 15 September, returning to Thames Street on the 16th when walls were being encountered opposite Queenhithe (*op cit*, 129). Further records were made on the 28 and 30 September (*op cit*, 129-31). There was then a break until 26 December (*op cit*, 170) and 8 January 1841 (*op cit*, 171). Thus it is clear that substantial destruction took place, probably including the breaking through of the Sunlight Wharf foundation, while Roach Smith was not present.⁶ He could not have traced a single wall along the course of the sewer.

Unfortunately, there is no record of where Roach Smith actually observed walls in this eastern 'continuation', only that some were observed near Queenhithe. Neither of the published accounts (Roach Smith 1841a; 1859) actually described these observations, the descriptive detail being confined to the Lambeth Hill foundation. Notes in his diary, however, offer some details of the walls observed, on his return to London, in the Queenhithe area,

At Thames St. opposite the church at Queenhithe the excavators have found more Roman walls. In one, the extent of which or width is not seen, because it seems to commence about two feet from the church side of the sewerage. The tiles with the curved edges are thus used [sketch of two *tegulae* stacked one on another, flange on flange]; that is two are placed one on the other a practice I have before observed. This wall has much of chalk rubble and tile of a dense jet black surface as if subject to fire, and this has been visible for a great extent. It may be that this wall is late Roman. (Roach Smith 1841b, 129)

This description, although lacking the detail of the Lambeth Hill observation, suggests that the structure encountered here was somewhat different from that foundation. In particular, the re-used *tegulae* laid in double courses, flange on flange, were not observed at Lambeth Hill or indeed elsewhere in the Period II complex (individual *tegulae* fragments, with flanges intact, were occasionally employed, p49 and p59). However, this arrangement of tiles has been noted in the riverside wall, both at Peter's Hill (p40, Fig 10) and Baynard's Castle (Hill *et al* 1980, 32, 40, figs 16, 19 and 21).

Still further east, additional observations have also been linked with the Lambeth Hill wall (sites 123 and 124 in Merrifield 1965). Site 124 was noted by Roach Smith, who stated that 'in Thames Street, opposite Queen Street, about two years since, a wall, precisely similar in general character, was met with; and there is but little doubt of its having originally formed part of the same' (ie the Lambeth Hill foundation) (1841 a, 15 1; also 1859, 19). In the same year J T Smith recorded site 123, stating that 'In June, 1839, the labourers engaged in deepening a sewer in Thames Street, opposite Vintners' Hall, in the middle of the street, at a depth of 10 ft from the surface, discovered the perfect remains of an old Roman wall, running parallel with the line of the river. The wall was formed of alternate layers of flint, chalk, and flat tiles' (1861, 380). Neither of these observations was accurately located, simply depending on their proximity to known features or streets. As a result there must remain some doubt as to whether these were actually two separate observations, or references to the same feature (a point first made in VCH London 1909, 70).

The description of site 123, although sketchy, suggests a different construction method from that of the Lambeth Hill observation and the Period I I complex in general. No specific mention was made in these accounts of massive blocks of re-used masonry, a notable feature elsewhere. It is once again probable that a different structure from that recorded at Lambeth Hill was observed, possibly the riverside wall. Indeed, it is perhaps not surprising that some confusion took place between the foundations of the Period II complex and those of the riverside wall. The trench for the sewer probably did not expose the base of the foundations (except where it had to be deepened to break through the north-south foundation at Lambeth Hill) or the core of the foundations, as the structures ran east-west parallel with the line of the sewer. The facing of the Period II and riverside wall foundations was fairly similar (roughly squared ragstone facing with tile courses). It

was at the base of the foundations that the most significant differences occurred (in the Period II complex large re-used blocks, and circular piles supporting the chalk raft; in the riverside wall, no re-used masonry, and squared piles). Also the width of the foundations, considerably greater in the Period II complex, would not have been available for comparison. Thus Roach Smith's comment that the wall opposite Queen Street was 'precisely similar in general character' (1841a, 151) is insufficient to suggest that they were actually part of the same structure.

The course of the sewer may initially appear to have lain too far north for the walls observed to have been part of the riverside wall; it has been possible to demonstrate that at Peter's Hill (Williams 1982, 29; 1986) and Baynard's Castle (Hill *et al* 1980, 72) the riverside wall formed the southern kerb of the early medieval Upper Thames Street. This suggests that the sewer, which ran down the middle of 19th century Upper Thames Street, would have passed to the north of the riverside wall. However, Roach Smith's account states that 'in some places, the ground-work of the houses destroyed by the fire of 1666 abut on the wall' (1841a, 151); the construction of the later medieval and post-medieval properties upon the riverside wall is another feature noted at both Peter's Hill (Williams 1986) and Baynard's Castle (Hill *et al* 1980, 72). This implies that the southern edge of the earlier Upper Thames Street was indeed observed - the confusion probably resulting from the widening of Upper Thames Street after the Great Fire; in this area the Victorian sewer ran down the middle of the 19th century street, but down the southern edge of the medieval street.

It seems probable, therefore, that the walls observed some distance to the east of Lambeth Hill were not, as previously suggested, part of the structure identified at Lambeth Hill (which formed part of the Period II complex), but were part of another structure, most likely the 3rd century riverside wall. Thus Roach Smith's 'occasional breaks', which he suggested were because 'in some remote time it had been broken down' (1859, 19), are probably the result of breaks in observation, which obscured the fact that the walls were not part of a continuous structure, but were separate constructions.

See Chapter 8.2 (p89-90) for a discussion of the re-used stone in the Lambeth Hill foundation.

Observation 8: Brook's Yard

RCHM 1928, 93, fig 17
The Times, 18 June, 1925, 12
 Merrifield 1965, 222-3

Also noted as Features 22 and 23 on Site 3 (Chapter 6, p67).

Two walls were observed, in 1924, running east-west across the line of a sewer inserted in Brook's Yard. The most detailed account of the findings came from *The Times*.

... workmen were constructing a pipe sewer from Lambeth Hill to connect with the main sewer that runs underneath Upper Thames Street. A shaft

was accordingly sunk to the depth of 16ft on the north side of the thoroughfare, just opposite to the opening of the narrow passage known as Brook's Yard, and a second shaft was made to the same level in the yard, 60ft to the north of the first.

A tunnel 6ft high and 4ft wide was then driven between the two.

Just under the side walk of Upper Thames Street the way was found to be barred by a wall and when, with great labour it had been tunnelled through, the manner of its building could be seen

At a distance of 8ft apart two parallel rows of piles had been driven into the ground. The piles in each row touched one another. Their diameter was 8 to 9 inches. Their tops were at a depth of 14ft from the street surface, so the excavation exposed 2ft of them. It was found impossible to "draw" them so they were cut off. They did not seem to have been squared, but, although quite sound at the core, they were somewhat decayed outside, where the wood could be easily pulled off in fibrous strings, so that it is just possible that the squared corners had disappeared. The space between the piles was filled with, and the wall above consisted of, rag-stone concrete of the hardest description, with courses of bonding tiles one and a half inches thick at intervals, one such course being just below the level of the top of the piles.

The operation in progress did not reveal to what depth this concrete descended and upon what foundation it rested. The whole 6ft of the masonry disclosed was evidently below the surface in Roman days as no "made ground" was met with at this depth, the soil consisting of loose muddy gravel in which the only "find" was a single fragment of roofing tile a little way inside the wall. Moreover, the course of red sandstone which has always been found forming a plinth at the ground level was not observed here. It was probably a foot or so above the top of the tunnel.

At a distance of 15ft to the north of this was a second wall, or, rather the foundations of one. It was parallel to the other, and it too was built between a row of piles. But these were spaced a little way apart, not contiguous like those of the greater wall. The width of this one was 5ft between the row of piles, but above them it rapidly decreased in thickness, so that at the point where it suddenly came to an end between 2ft and 3ft above them, it was only about 2ft wide. No trace of the superstructure remained. The concrete here was not nearly as hard as that of the other wall, so that it was possible without much difficulty to extract bricks unbroken. They were not impressed with any official or other stamp.

A remarkable feature of this construction was that on the side towards the river and the greater wall, it was protected by a thick facing of puddled clay. This fact suggests that the smaller wall was older than the other, as such a precaution against the action of river water would scarcely have been necessary if that mighty barrier has already been in existence.

The tunnel carried on for a further 30ft to the north, but no other wall was encountered.

This account, along with personal comments by Quintin Waddington, was paraphrased in the RCHM description of the site.

The foundation was laid between two rows of contiguous piles the tops of which were 14 ft below the roadway in Thames Street; the total depth of the tunnel being 16 ft. The wall is of a concrete of Kentish rag-stone with a course of bricks a few inches below the tops of the piles. A second course of bricks was found 2 ft above that just described. Fifteen feet to the N. of the main wall, and parallel to it was a second wall 5 ft thick, and with the foundation also between two rows of piles, but set apart. A thick bonding course occurred just above the heads of the piles, and above this the wall was battered or coped back on both sides and finished with a flat top 2 ft wide. On the S face of this wall was a mass of puddled clay. (RCHM 1928, 93)

The location of these two walls, although not completely accurate, can be estimated from the City Sewer plans, and the measurements given in the descriptions, Their alignment, however, other than roughly east-west, is not known. The walls lay too far north (the southernmost being under the north side of Upper Thames Street) to have formed part of the riverside wall and thus they seem likely to have been part of either the Period I or II development. The description of the southern wall suggests that it may belong to Period II, being similar in respect of its ragstone and tile coursing and the pile foundation. Indeed, the latter is interesting as the piles were circular, the description of the decayed edges sounding very like the heartwood/sapwood distinction evident in all the complete boles found elsewhere (Peter's Hill, p43; Sunlight Wharf, p57).

There is no reason to assume that the two walls were part of the same structure or development. Indeed, the differences in construction technique suggest that they were not. The northern wall is less clearly part of Period II; the descriptions suggest that this foundation was somewhat lower, and may have been an earlier construction. It was also smaller than most of the Period II constructions. Its association with the Period I complex is not easily demonstrable, especially given the lack of clear alignment, but the pile foundations are comparable with those found on the Salvation Army Headquarters site and the basic construction technique and size would seem to make such an association possible, if not probable. Furthermore, the unusual 'battered' top of the wall is paralleled by Feature 14 from the Salvation Army Headquarters site (p67), which is also thought to have been part of the general Period I development (Chapter 1, p7).

The 'puddled clay' probably represents made-ground, infilling the area behind the northern foundation (very like the made ground found elsewhere in the Period II complex, see p 13).

Observation 9: Old Fish Street Hill

JBAA 1846, 45-6

RCHM 1928, 119

City Sewer Plan 373

Merrifield 1965, 223-4

Mr C R Smith reported a recent discovery of some extremely solid and well-constructed foundations of Roman buildings, in Old Fish Street Hill, near the entrance into Thames-street, at a depth of sixteen feet. These works were brought to light by excavations made for a sewer. One wall, three to four feet thick, ran parallel to the street towards Thames-street, and another crossed it at right angles. In the latter was an arch [Fig 56] three feet wide and three and a half feet high, turned with tiles, seventeen inches by eight, projecting one over the other, the crown of the arch being formed by a single tile. The walls were built on large hewn stones, many of which had clearly been used previously in some other building, and these were laid upon wooden piles. By the side of the wall which ran parallel to the sewer, about sixteen feet from the arch, were several tiers of tiles, each tile measuring two feet by eighteen inches, placed upon massive hewn stones, one of which was four feet five inches in length, and was two feet wide, and two feet thick. Mr Smith regretted that circumstances did not admit of his making such researches as the magnitude and peculiarities of these subterranean remains required. The depth of the walls and the piles beneath, when compared with adjoining ground, shewed that the site had been low and boggy. Twenty paces higher up Old Fish Street Hill, the excavators came upon the native gravel, at a depth of five or six feet. (*JBAA* 1846, 45-6)

At the back of Roach Smith's diary (1841 b) a loose paper, presumably inserted at a later date, refers to this observation. The original contains no separate sentences, which have been inserted here for clarity. The spelling has been left. It was probably the work of one of Roach Smith's young helpers.

They dug a little way up Old Fish Street Hill there was a large wall ran up the left hand side of the sewer as the one that went along Thames Street. There was also a few pieces of painted wall in the same sewer but not much colored. There were no signs were it came off the Walls. It came out of the loo rubbish grate. Chalk stones there and that other sort of mortar. There were no sines of any more walls as I could see but the grate stone one which they never got out. They made a little sewer cross to Mr. Fothergills where they found a wall all a cross the sewer about 6 feet wide. They went down on the top of it and no deeper but nothing found. There has been a few peces of painted wall found opposite the house that has been on fire but no signs of any walls. Nothing but dirt and rubbish.

This observation, made in 1844, was not accurately located, although City Sewer Plan 373 marks the position of the east-west element. However, although

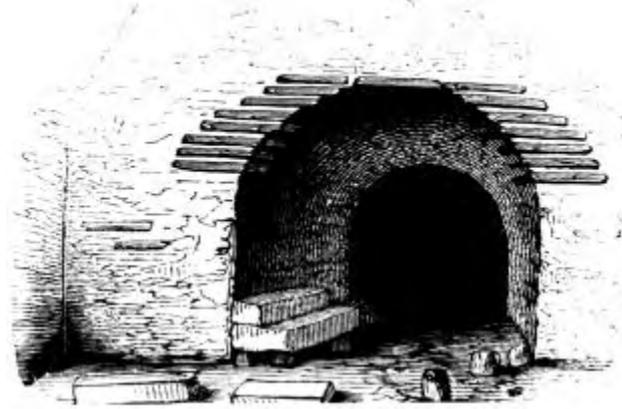


Fig 60 Culvert piercing the long wall at Knightrider Street (Observation 16). (Scale 6 x 1')

the precise alignment of the features is not known, the use of piles and massive stones in the basal course leaves little doubt that they were part of the Period II complex (Fig 9). The tile arch (Fig 56) may have been another drain/culvert within the foundations, as was found at Sunlight Wharf (Fig 52, p60). Similarly, the tile tiers could also have been part of the drain structure. Alternatively, the tile stacks might have been part of a hypocaust, the arch forming a stokehole or flue. The painted plaster referred to seems to have been generally within the debris.

Observation 10: Lambeth Hill

Grimes 1968, 57-9, figs 12 and 13a

In 1962 excavations in the cellars on the east side of Lambeth Hill, and between Queen Victoria Street and Upper Thames Street (Fig 2), revealed part of the natural profile of the hillside. The hillside had been levelled with a series of dumps, downslope (Fig 11e). These consisted of Roman building debris, including stones, mortar, and fragments of wall plaster. The building debris was tightly packed and had the appearance of having been deliberately introduced' (Grimes 1968, 57).

This terracing action would seem to be directly comparable with that found at a similar position on the hillside at Peter's Hill and Sunlight Wharf. The materials used within the dumping also bear comparison. As such, it is probable that this marks a continuation of the dumps which were deposited behind the mid- to late-3rd century riverside wall (p13).

Observation 11: Fye Foot Lane

Merrifield 1965, 224

The information for this observation was taken by Merrifield from a City Sewer plan, although the plan number is not given and no other reference to the findings has been found.

During sewer excavations [in ?1845] two stone walls were found running E-W across the street. The southern wall was 4ft [1.20m] thick, and the northern 5 ft [1.50m]. Further north, a Roman pavement was found at a depth of 4 ft. (Merrifield 1965,224)

The absence of detailed descriptive information for these foundations severely restricts their understanding. They were part of a structure, or structures, of some status, and their size suggests that they were part of a substantial, possibly public, building programme. However, they lay some distance to the east of the other Period I and II observations (Fig 2), and it is probable that they formed part of a separate development.

Observations 12-24: Knightrider Street

Between 1844 and 1961 a number of substantial walls were discovered in the vicinity of Knightrider Street. The first finds came in 1844 with the construction of sewers in Peter's Hill and Knightrider Street, although no detailed records appear to have been made at this time. The sewers were modified and/or extended in 1863, the additional observations being recorded in some detail by W H Black. Apart from a single observation in 1906, well recorded by Norman and Reader, the next opportunity to examine the area came after the Second World War during the redevelopment of bomb sites in the area. In 1955-6 this led to the construction of Old Change House, which was followed in 1961 by the major re-development of the area, monitored and recorded by the Guildhall Museum. The 1961 development also involved the redesigning of the existing street pattern; these changes are reflected in Figure 57, where the streets indicated are those of 1955, while the buildings are those of the post-1961 development. The former are particularly important, as many of the original records and published accounts refer to the streets for the location of the observations.

These discoveries have led to considerable speculation about the occupation of the area. It has been suggested that the observed walls formed a pair of parallel 'long walls', the most striking element being the northernmost, which curved away northeastward at its eastern end. Various authors have gone on to suggest that the northern 'long wall' formed part of a boundary or precinct wall (Merrifield 1965, 92, 146; Morris 1982, 302), while most recently the 'parallel long walls' have been interpreted as part of a circus (Fuentes 1986; Humphrey 1986, 431-2). It is suggested here that the former is more probable, the northern wall forming a major boundary. The southern walls, in contrast, have been poorly observed and may have formed various independent structures within the area delimited by the northern wall. The case for a circus, however, cannot be ignored, and is discussed below (p86-7).

The Merrifield gazetteer (1965) summarised the evidence from these observations, although many were conflated into single entries, where it was suggested that the same wall was observed at different times; for example, during the 1863 sewer works and the 1961 redevelopment of the area. As a result it has been

necessary to abandon the Merrifield gazetteer numbers and introduce a separate numbering system for the observations in this area: Observations 12-24 (Fig 57). In addition, the published positions of some observations have not taken into account all the available information, or made it clear that some of the walls cannot be located with any degree of certainty.

The fullest available description of each wall, taken from the original records of the observation, is given below (for their location see Fig 57).

The long northern wall

Observation 12 (observed 1961)

E R Book VIII, 38-40

The above section lies across the long east-west Roman ragstone wall on this site at a point coinciding with the west frontage of Peter's Hill. Thus we have a further fragment of the wall a few feet further west of that found in the sewer excavations and recorded in the R.C.H.M [here Observations 13 and 14].

The wall in section showed two constructions. The lower half was 4 feet wide and had evidently been constructed between upright vertical posts and planks. From the shape of the post-holes it was seen that they were not pointed at their bases but squared, and the posts did not seem to extend below the base of the wall or foundation [sketch in E R Book].

The lower half of the wall in the section stood about 4' 2½ high, but was not constructed as strongly as the upper half which only existed to a height of 1' 3½. The upper half was constructed of rag and white cement with flint pebbles and was extremely hard. Its sides were extremely irregular and were slightly wider than the lower half of the wall. The decayed timbering did not continue up into the upper half.

The timber framing seems to have kept back the earth while the wall was being built. Thus the Roman pit "A" and "B" *E.R. 746* and *E.R. 747* predated the wall. Beside the upper part of the wall on the N side was another rubbish pit "C" (*E.R.748*) with the lines of rubbish or tip running up to the wall on the N side thus:-
[sketch E R Book]

Thus pit "C" is later or post dates the wall. Modern cement and rubble existed to a greater depth on the S side of the wall than on the north; and a shallow depression on that side, not associated with the wall, was found to contain Roman pottery *E. R. 749*.

This wall (Fig 58) was not accurately located, simply being indicated on a sketch drawing of the area in the E R Book. As the section apparently lay under the western frontage of the then Peter's Hill (above), it has a fairly accurate east-west position; its north-south position has been estimated from the sketch, but lacks precision (see p84 for implications concerning the regularity and alignment of the 'long wall').

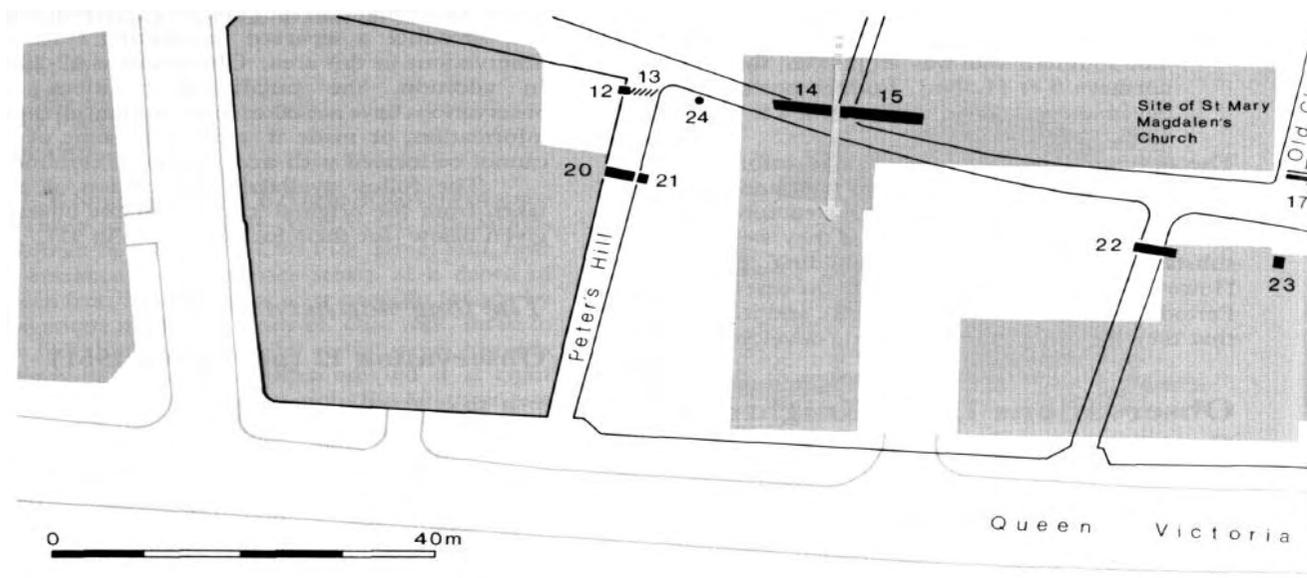


Fig 57 Observations in the Knightrider Street area. Modern buildings and street lines are shown in grey. The black street lines are those of the pre-1961 redevelopment of the area (reproduced from the 1951/2 Ordnance Survey Map, with the permission of the Controller of Her Majesty's Stationery Office; Crown Copyright). The lines shown are street edges, not including pavement lines. Feature 13 is hatched due to its conjectured status. (1:800)

The upper wall was slightly larger than the foundation, with an offset to the north; this might suggest that the wall had been rebuilt at some point, although, if the wall was constructed in stages, with the shuttered foundation first being constructed over some distance, and then the upper wall being placed upon it, it is possible that the slight offset was caused by a mis-alignment rather than by any extended chronological break or rebuilding works. It is unclear whether this change in construction provides any indication of the level of the contemporary ground surface, although the deposits in Pit 'C' lapped up against the wall at exactly this point, which might suggest that it does.

Observation 13 (observed in 1863)

Black 1866, 48

It was on Thursday, the 25th June, that I was passing down St. Peter's Hill, out of Great Knightrider Street, to the Herald's College, by the back entrance, when I observed the workmen belonging to the City Sewers department excavating the ground for drainage, and casting up portions of Roman brick and concrete. I immediately caught up a piece of that brick, which I now produce, and took it into the college, calling the attention of my learned friends, the officers of arms, to the fact, that Roman foundations were disclosed.

It was found to consist of a wall 3 feet 8 inches thick at the base, being rubble to the height of 3

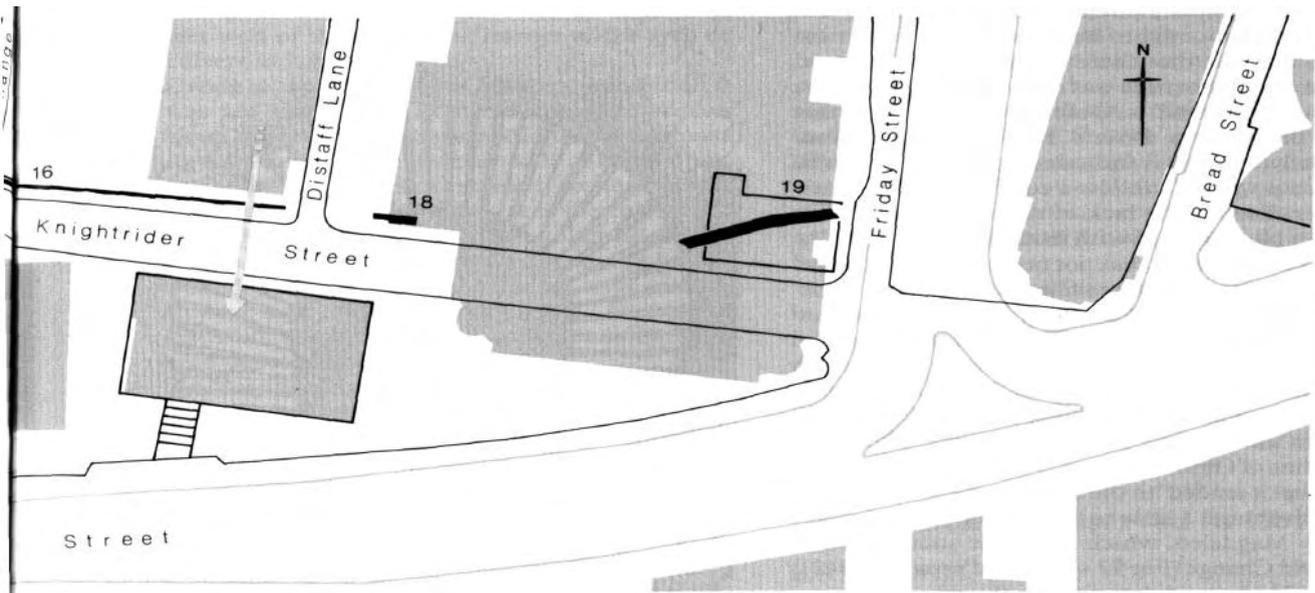
feet from the footing, which stood in the gravel and sand of the bed of the Thames. Then followed Roman bricks, in courses, to the further height of 3 feet 10 inches; then rubble again to the height 2 feet 2 inches, diminishing in thickness from 3 feet 6 inches to 2 feet 9 inches at the top, which lay 5 feet 10 inches below the surface of the ground, almost at the upper extremity of Peter's Hill. The wall, however, did not lie in a direction parallel to Knightrider Street, which bends somewhat northward at that place. Careful measurements were therefore taken, both across the "hill", and northward, at both ends of the line of the wall, to the front of the houses on the north side of Knightrider Street, so that its direction might be traced eastward or westward, to any other point where it might afterwards be traced.

As this feature was recorded with Observation 14, they will be discussed together.

Observation 14 (observed in 1863)

Black 1866, 49

A few days afterwards, on the 7th July, a further portion was discovered on the northern side of the way in Great Knightrider Street,⁸ exactly in the direction indicated by the former measurements. I produce small specimens of the Roman bricks obtained there, and observe that, from this spot, we found the wall tend to the exact line of the front wall of the parish church a little to the eastward,



whence I have been able to get a true base line for a southern wall of the City, above the "hills", and excluding all their slopes, and Thames Street, as might have been expected in the laying out and circumvallation of the primitive city.

Despite the references to measurements, none survive in the archaeological record. As a result, the precise locations of both Observations 13 and 14 are open to some debate, being entirely dependent on the above descriptions. In the RCHM report the description of Observation 13 has been attached to an east-west wall found in Peter's Hill, and indicated on the 1844 City Sewer Plan (1928, 141, Plan A 168).⁹ However, there is some doubt as to whether the association of these records is correct. The sewer plan was probably amended soon after 1844 when the work was conducted, and Observation 15, also shown on the plan, was reported in 1846 (see below). However, other walls shown on the plan (notably Observation 22, below and Observation 6, p72) have no surviving description. Thus the wall marked on the sewer plan was probably observed some two decades before the account of the discovery of Observation 13. In addition, in 1961 two walls were observed crossing the line of Peter's Hill (Observations 12 and 21); these indicate that the sewer plan cannot be regarded as a complete record, since a sewer running up Peter's Hill would have exposed both structures, not just the one indicated - the absence of a more northerly wall on the plan does not mean one did not exist.

The descriptions of Observations 13 and 14 also contain a number of clues as to their location. The account of their discovery seems to suggest that they were part of the same wall, and lay in a direct east-west

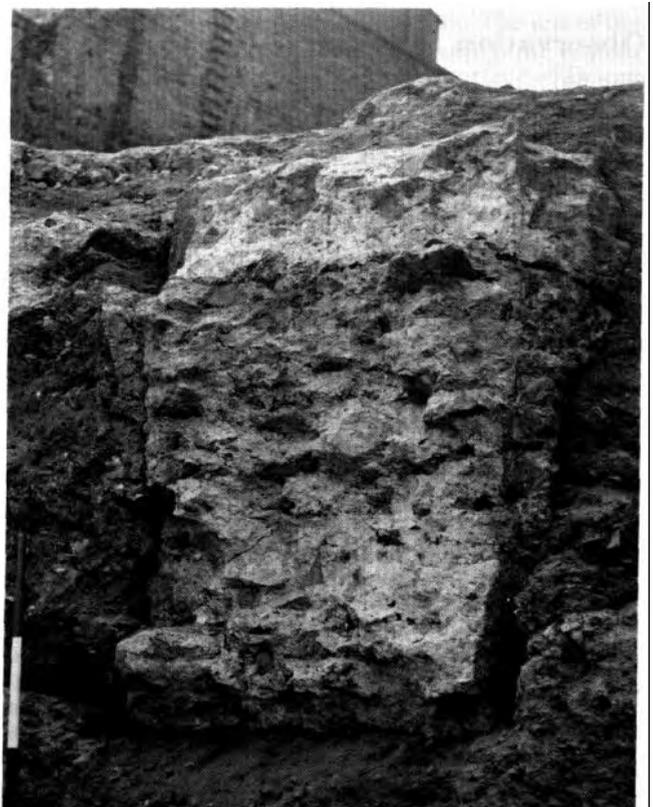


Fig 58 Cross-section of the northernmost of the Knightrider Street walls (Observation 12). (Scale 6 x 1')

line. The careful measurement of Observation 13, 'so that its direction might be traced eastward, or westward', suggests that there might have been some expectation of doing so; this was realised when 'a further portion was discovered' - Observation 14. Thus the course of the wall in Peter's Hill must have been approximately where it is indicated on Figure 57, for it to have been possible to follow a continuation of it into Knightrider Street. The lack of descriptive detail for Observation 14, compared with that for Observation 13, might also suggest that it was not necessary, as the walls were thought to be part of the same structure. It was also stated that Observation 13 was found at 'the upper [northern] extremity of Peter's Hill', which would seem to confirm this. In addition, the wall did not run parallel with Knightrider Street because it 'bends somewhat northward at that place', suggesting that the observation was close to the junction of the streets (Fig 57).

The line of Observation 14 is also suggested by the comment that it tended 'to the exact line of the front wall of the parish church a little to the eastward'; the church of St Mary Magdalen, which lay at the south-western corner of Old Change (Fig 57 - also Wild's map of 1842), is the most likely candidate for the church.

In conclusion, Merrifield's suggestion that Observation 13 was associated with Observation 12 (correlated as site 93 in his 1965 gazetteer), would seem to be most likely. The locations of these observations are far from precise and they are represented as such on Figure 57.

Observation 15 (observed in 1844)

(Fig 59)

Price 1846
City Sewer Plan 373

The sketch [Fig 59] represents a relic of Roman London, somewhat similar to the one you have recorded in the *Journal* of April [Observation 9, p76], and I think from your description, at no very great distance either in locality or time of discovery. But as some of its details present a little variety, I have ventured to trouble you with the present communication. This arch, which of the kind is perhaps the most perfect yet discovered in the city, was found in front of No 15, Little Knightrider Street, in August last [1845], during the progress of operations for a new sewer. The wall, (Kentish rag) in which it occurred, presented itself on the south side of the excavation. It appeared to take a circular or slanting direction from south to north-east. The arch, which was formed of tiles about twelve inches long, measured (inside) three feet by two at widest; its base was about fourteen feet from the level of the street. The interior was filled up with loose earth for more than a spade's length. The opening at the side represents a portion of the wall (four feet six inches thick) which was then in process of tunnelling. (Price 1846).

It is probable that this wall was an earlier, and more complete, sighting of Observation 14. The latter lay in

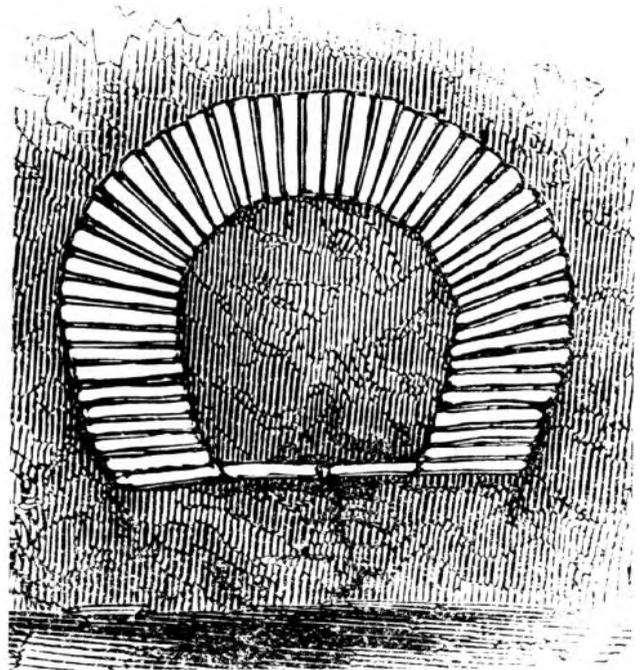


Fig 59 Cross-section of the culvert in Observation 15; drawn in 1928.

the vicinity, but clearly did not expose any feature as noteworthy as the culvert. This correlation was also made by Merrifield in his gazetteer (descriptions conflated under site 94).

The location of Observation 15 is given by the City Sewer Plan 373, but the drawing is not precisely accurate (see discussion of Observation 6, p72). The description of the wall as being in front of No 15 Little Knightrider Street, however, does accord with the general position indicated on the sewer plan. Nevertheless, the precise position is not known, and most importantly, it is quite possible that the north-south position of the wall is open to minor adjustment (*ibid*).

Observation 16 (observed in 1955)

(Fig 60)

E R Book III, 38-40, 46

Attention was first drawn to the above site [Old Change House] by a member of the public who noticed a brick arch that has been exposed in the southern face of the builders' excavation. Close examination found this arch to be Roman while revealing that nearly the full E-W stretch of the southern face exposed the northern edge of a massive Roman foundation wall. The structure stood to a height of six feet and had been used in places as a foundation for the 18th and 19th century walls. Recent brickwork rested at one point on the only remaining original tile bonding

course. The wall was traced for a distance of 68 feet west of the W internal corner of the arch or culvert as it proved to be.

Owing to the nature of the builders' excavation it was not possible to expose a complete section along the face, but it was noticed that the ground directly beneath the Roman wall changed from brickearth at the eastern extremity to clean ballast at the west. At a point 15ft west of the culvert the brickearth dipped away leaving a gulley filled with layers of approx 1" thickness of sand and ballast alternately. These overlay a thicker layer of sand (approx 8 ins) that rested on ballast. This strata extended for a distance of 9 ft and appeared to have been deposited by running water.

Mr Merrifield made the following calculations on the 26th July. (E R Book III, 38-40)

There follows a series of measurements which quite accurately locate the culvert in relation to a nearby church. A sketch of the culvert indicates that it was 3ft 0½ in high by 2ft wide (internally). The tiles used in its construction were 1 ft 1½ in x 10½ in and 11 in x 8½ in (E R Book III, 46).

An additional comment, made a few days later, stated that 'the builders' underpinning excavations along the southern boundary exposed a further section of the massive Roman wall extending to the west. This then provided a stretch of wall extending from east to west of the site, a distance of 125 ft.' (E R Book III, 46).

The re-use of the 'long wall' by 18th and 19th century buildings, and presumably by earlier medieval properties, is reflected by the correspondence between the wall and the property frontages at this point (Fig 57 - note the street lines illustrated are street edges, and do

not include pavement lines). Although the wall was intermittently observed, this relationship suggests that it originally extended the full width of the site. It is this stretch of wall which has always been convincingly advanced in support of the idea of a single east-west long wall, and as evidence for the absence of crosswalls adjoining it. It is clear that while the former is probably correct, the absence of crosswalls only applies to the northern face of the structures as this observation did not expose the width of the wall, let alone its southern face.

The description of the waterlain deposits probably indicates one of the watercourses flowing down the hillside in this area (p8, Fig 4). Its juxtaposition with the culvert suggests that the latter was intended to carry water through the major obstruction of the 'long wall', thus preventing waterlogged conditions developing to the north.

Observation 17 (observed in 1961)

E R Book VIII, 22-4, 62

During the present excavations, a length of 24ft dins of the S face of what is undoubtedly the same wall [Observation 16] has been exposed. Most of what remains is the foundation and slightly set back from it is one course of neatly squared rag stones (similar to the face of the Cripplegate fort wall). And lying on the stones and set back 1½ inches is a course of Roman bricks. The rest of the wall has been destroyed. The course of Roman bricks is roughly level with the surface of Queen Victoria Street to the south of the site. The rag is set in a yellow cement and the wall is of very solid and tough construction. (E R Book VIII, 23-24)

The records also state that 'the contractors first uncovered the wall a few days ago but unfortunately the Museum Assistant was not on the spot. The large fragments of wall were moved to another part of the site'. The records suggest that these fragments came from the area immediately to the west of the observed wall, implying a continuation in that direction. A wall, probably this stretch, was recorded as lying 32' 4" to the north of Observation 23 (E R Book VIII, 62). No further details appear to have been recorded at that time.

The plotting of this wall has proved problematic. According to a sketch in the E R Book (VIII, 22), the wall appeared to lie to the west of Old Change Hill (Fig 57). However, a more detailed sketch (on the same page), included detailed measurements from Old Change House; when plotted these indicated that the wall in fact lay immediately to the east of Old Change Hill. It has been decided to plot the wall in this latter position, partly because the second sketch appears to be more accurate, including as it does detailed measurements, and also because the re-development of the area involved the removal of many of the streets, which may have lead to some disorientation during the construction of the much more general first sketch. Nevertheless, the possibility remains that this observation lay somewhat further east (where it was placed by Merrifield 1965 - site 95).



Fig 60 Culvert piercing the long wall at Knightrider Street (Observation 16). (Scale 6 x 1')

The new location given for this wall introduces the interesting possibility that it was an observation of the south face, which was all that was seen here, of the same wall whose northern face had been observed in 1955 (Observation 16). The plotted position of Observation 17 conforms exactly with the projected line of Observation 16.

Observation 18 (observed in 1956)

E R Book IV, 31-3 (*E R 365*)

Stone wall was composed of limestone - extremely well bonded. Only the core remained - there were no facing stones at all - nor any signs of buttresses.

[sketch]

Part of the wall was removed by the contractors.

[sketch]

On the north face which was the only one visible during the excavation, there were no signs of the inlets for wooden posts which were noted on the portion of wall found in Friday Street (cf RCHM 1928, 120) [Observation 19]. But only about 6ft of the north face was visible, the rest being unexcavated.

The stone wall appears to have been destroyed when the brick wall was built. The latter was joined to the eastern end of the stone wall.

This wall appears to form an easterly continuation of Observation 16, which had been observed the year before.

Observation 19 (observed in 1905)

Norman & Reader 1906, 219-222

An interesting discovery of a massive wall was made in August, 1905, at the western corner of the junction of Knightrider Street with Friday Street. We were told of this by Mr Allan B Walters, the architect of the new buildings which have been erected on the site of Nos 81, 83, and 85, and he kindly gave us every opportunity of making an inspection.

This wall was particularly interesting on account of its construction between a framework of half poles and planks, a well-known Roman method, but one which does not appear to have been recorded in London. It ran throughout the width of the ground for a length of 51 feet 6 inches, crossing diagonally from Knightrider Street to Friday Street, beneath the roadways of which it appeared to continue. It was 4 feet in thickness and 9 feet high, and had its foundations resting on the ballast at a depth of 21 feet from the present street level. It was solidly built of Kentish rag, the stone being of irregular size and shape laid at random, but forming a flat face particularly on the south side; on the north it was somewhat less regular. The spaces between the stones were well filled with mortar. The stones varied in size from 8 inches to quite small fragments, being closely packed so that the joints were not very wide. At distances of 4 feet were the semicircular grooves

formed by half-poles, which were 6 inches in diameter; these ran vertically up both sides of the wall and opposite to each other. The mortar had been poured freely into the wooden framework, forming smooth and regular grooves, and bearing on the face the impress of the planks and the division between them, which showed that the planks had measured from 9 to 10 inches in width. The original upper portion of the wall appeared to have been destroyed, but resting loosely on the top of what remained were two Roman tiles. There were, however, so far as we could see no tiles in the construction of the wall either as bonds or built in singly.

We were told that not long ago, in constructing a sewer in Friday Street, the continuation of this wall crossing the roadway was met with. It will be seen by plan that this wall does not run in a straight line, but about two-thirds of its length from Knightrider Street it deflects somewhat towards the east. Apparently it formed an enclosure wall of some sort, and from the great depth at which its base rests it may be presumed to belong to an early period of the Roman occupation.

The unusual angle of this wall is discussed below (p85).

The southern walls

Observation 20 (observed in 1844-5)

City Sewer Plan 373

An east-west wall was marked at this point on City Sewer Plan 373, but no recorded description of this feature is available. In the RCHM report the description of Observation 13 was associated with this observation, but this seems unlikely (see Observation 13, p78).

Observation 21 (observed in 1961)

E R Book VIII, 40

E R Book VIII, 67

On the east side of St. Peter's Hill and at a point 37 7 [sic] south of the long east-west wall described above [Observation 12] was seen a ragstone foundation 4' 4½" wide the base of which lay 2-3 feet above the base of the foundation of the great E-W wall. The deep modern basement had removed all but the bottom one foot of this second wall. (E R Book VIII, 40)

In cleaning up the southern long wall where it is exposed under Peter's Hill, a pit was found on the N side of the wall and dug through the undisturbed brick-earth beside the wall. One tile course (Roman) was exposed at the top of the wall and below that one course of rag blocks which may have formed the N face of the wall. The rest of the wall was foundation only and the vertical side of the foundation in the sand, gravel and brick-earth strongly suggests that the foundation had been

built between horizontal planking as with the northern long wall. The pit was almost certainly later than the wall. *E.R.786*. Pottery of the 4th century from the pit on the N side of the wall. (E R Book VIII, 67)

The reference to the wall lying 37ft 7 in to the south of the north wall (Observation 12) may have been a mistake; the accompanying sketch indicates that the distance between the two walls was 30ft 7 in. This measurement seems to accord more closely with the position of Observation 12, and would place this observation in line with Observation 20, which lay immediately to the west, beneath Peter's Hill (Observation 20's position is reasonably well secured from the City Sewer Plan - above). Unfortunately Observation 20 has no description, but it is probable that Observation 21 formed an easterly continuation of the structure, given their proximity and general alignment.

The second reference was not clearly equated in the E R Book with this observation, although the description implies this. It is clear that no vertical posts, or the impression of horizontal shuttering, were actually identified at this point; only that the vertical sides of the foundation have been taken to imply them. Although the foundation was probably trench-built, neither shuttering, nor in particular vertical retaining posts were necessarily employed. Trench-built foundations were common throughout the Roman period, and many were shuttered without the use of posts; thus the mere fact that the foundation had vertical sides does not demonstrate the presence of the post and shutter technique.

Observation 22 (observed in 1844-5)

City Sewer Plan 373

The position of an east-west wall is indicated on the City Sewer Plan 373. No further details appear to have been recorded.

Observation 23 (observed in 1961)

E R Book VIII, 62

Excavations have just been completed and in the section across the long Roman wall, another wall of exactly the same construction 32'4 south of the long wall, has been uncovered south of the main wall.

[sketch]

Both walls are constructed of ragstone and a hard cement, all mixed, not in layers as in the Roman City wall.

The sketch indicates that the wall was seen in section 80ft west of St Nicholas Church, and 32ft 4in south of the northern wall (probably Observation 17). Its surviving thickness was 4ft, but its northern face had been destroyed by a modern foundation.

Observation 24 (observed in 1961)

E R Book VIII, 24

In 1961 an observation was made of another east-west wall, near the eastern limit of Peter's Hill. This observation was not accurately located, but was sketched in the approximate position indicated on Figure 57; it appears to have lain close to, and possibly south of, the line of the northern 'long wall'.

In the section was seen a N-S section across the base of the foundations of a wall. The cement was brown and contained mostly Roman brick and chalk, but a few lumps of rag did exist. The foundation at this point was found to be 6 feet wide. The wall here was so different from the rest that has been uncovered that there is some doubt about it being part of the "long wall". (E R Book VIII, 24).

This wall has often been omitted from accounts of the area, as it does not seem to fit into the accepted pattern of development. However, it is an important observation as it suggests that at least one substantial structure lay very close to the line of the long north wall. Its construction, although not extensively documented, is sufficient to indicate that it was different in both technique and size from the features associated with the long north wall. Indeed, the width of the foundation, some 1.82m (6ft), indicates the largest structure so far discovered in the Knightrider Street area.

Dating discussion

The dating of the walls rests on a single observation (Observation 12) made in 1961. This stated that the foundation overlay the backfilled Pits 'A' and 'B' (p77), which contained pottery of the late 1st or early 2nd century (Merrifield 1965, 216), providing a very general *terminus post quem* for this part of the northern wall. On the northern side of the wall, layers in Pit 'C' were deposited against the upper part of the wall (above the offset course), post-dating its construction (*ibid*); these deposits contained pottery of the late 3rd and 4th centuries (Merrifield *op cit*), indicating that this feature at least was still extant at that time. However, there is some argument as to whether the upper levels of the wall here were part of its original construction, or a later rebuild (p78).

The suggestion that the form of construction was likely to be of a late 1st or early 2nd century date (Marsden 1980, 105) would seem to have little substance, as ragstone, tile and good quality bonding material are present in structures of a wide date range (see p84).

In conclusion, the dating evidence is insufficient to isolate the periods either of construction or of use of the northern wall. A broad 2nd to 4th century date is possible for its construction, with at least some parts still standing in the 4th century. No dating evidence was conclusively associated with the southern walls, although it was noted at Observation 21 that a pit, thought to be later than the wall, contained pottery of the 4th century.

It has always been assumed that the walls observed in this area were contemporary, and while this has clearly never been established, the character of the development might argue that most, if not all, were part of the same development of the area. Nevertheless, the possibility that some features were later additions, modifications, or redevelopments should not be excluded.

General discussion

The descriptions of many of the observations are vague. The actual details recorded, such as type of stone, character and colour of mortar, etc, also vary from observation to observation. Similarly, the recording of the dimensions of the walls lacks consistency; in particular, the widths of the walls were not always noted, despite apparently being observed. The observations also took place at different times, which hampered correlations in the field. These limitations hinder a re-assessment of the claim that these portions of wall are parts of a single structure. The fact that most published accounts have adopted this interpretation, however, makes it appropriate to test the validity of that association here.

The similarity of the walls' construction has been much vaunted in the past. A superficial examination of the material suggests a basic similarity, if only because the finer details of construction are obscured by the lack of data. However, the descriptions of many fragments of Roman masonry fall into such broad descriptive categories: ragstone rubble, tile courses and possibly squared blocks for facing (*petit appareil*). These were all common elements of masonry foundations for a period in excess of three hundred years (Shepherd forthcoming; Milne 1985, 127-41; Ward-Perkins 1981, 223). Given the very small variations that appear to have existed within the Roman masonry wall tradition, one might expect the walls observed here to have shown at least this degree of cohesion, regardless of their functional or structural associations.

The long northern wall

The fact that there was some form of northern long wall seems indisputable, the c 40m stretch between Observations 16 and 18 leaving little doubt of its overall consistency. The walls to the west (Observations 12 to 15) were probably also part of this structure although some problems still remain. In the main these result from the somewhat suspect plotting of the observations. Their positions are reasonably securely located in the east-west axis, but are more questionable in the north-south. Observation 15 is located from a sketch on the City Sewer Plan, and a rough estimate of the position of Observation 12 has been made from a photograph. The descriptions of the walls suggest that they were aligned, hence the positioning of Observations 13 and 14. Thus they appear on Figure 57 to be slightly further north than Observations 16 to 18; if they were part of a long wall, it must have kinked slightly between Observations 15 and 16. Interestingly, it is at this point that an

indentation in the slope of the hillside occurs (Fig 4). It is probably more likely, however, that Observations 12 to 15 lay slightly further south than their plotted position on Figure 57. This may be supported by the description of Observation 14 which states that 'we found the wall tend to the exact line of the front wall of the parish church a little to the eastward'; the church, St Mary Magdalen's (p78), lay at the corner of Old Change and was, in turn, directly in line with the properties on the eastern side of that street. These can be shown to have used the long wall as a foundation, the property line being dictated by the wall (Observation 16, p81). Thus a common alignment between Observation 14 and the front wall of the church may not be coincidental; rather, it may indicate that Observation 14 lay in a direct line with the long wall to the east. However, there is still sufficient ambiguity in the location of these features to plot them 'as found', so as not to obscure the issue.

The correspondence of the long wall with the position of medieval and later properties in the east introduces the possibility that the course of the wall could be conjectured on that basis. Early maps of the area (for example, Wild's map of 1842) indicate that the line of the Knightrider Street properties east of St Mary Magdalen's church was maintained until the junction with Bread Street, some 60m beyond Observation 18 (Fig 57). After that, although the line is roughly maintained, it becomes markedly more erratic. No reliable observations have been made on the projected line to Bread Street, although at that point 'a mass of masonry' was observed in 1844-5 (Observation 25; Merrifield 1965,219). Observation 19 lay to the north of this line, and it is quite possible that an easterly continuation of the long wall passed to the south of this site. Thus the later property development might be taken to suggest an eastern continuation of the long wall.¹⁰

The construction of the wall is also somewhat unclear. Courses of neatly squared ragstone blocks, presumably for facing the above-ground element (see below), were only noted in Observation 17. Tile courses were more common, being recorded in Observations 13, ?14, 16, 17 and ?18.¹¹ The foundation was probably trench-built, as it was recorded as cutting both through earlier features and through the natural hillside. However, the use of vertical posts and horizontal shuttering as part of the trench construction in Observations 12 and 19 is interesting, as many of the other observations of the northern long wall, which were otherwise carefully recorded, make no mention of this technique. In addition, the posts are carefully described as squared (Observation 12) and semi-circular (Observation 19), suggesting that the construction was not identical even in these cases. This, however, does not necessarily compromise the structural unity of the northern wall, as the technique may have been a response to changes in either geological or topographic conditions, in particular the increased steepness of the slope in these areas (Fig 4). The variety in the timbers used would not be improbable if the works were only carried out where required: the availability of timber might have been the most significant criterion for its selection, and its role within the shuttering would not have demanded any particular need for standardisation.

The wall was recorded as 1.21m (4ft) wide at Observations 12 and 19, which as we have just seen were of a somewhat different construction from the rest of the northern wall. Elsewhere widths of 1.11m (3ft 8in - Observation 13) and 1.37m (4ft 6in - Observation 15) were noted. The rather imprecise nature of these last two observations, and the lack of an observed width from others, leaves some doubt as to whether they indicate changes in build, or, possibly more likely, minor differences exaggerated by the poor archaeological record. However, other changes can be noted along the length of the wall. Two culverts were recorded in the northern wall line, at Observations 15 and 16. Both were tile built, but Observation 15 was drawn and described as a 'horseshoe form' (Fig 59), whereas the Observation 16 culvert was vertically sided with an arched roof (Fig 60). If the wall was of a single build, one might not expect such changes in construction along its course. Two possibilities occur: that the wall was constructed by different gangs, which led to minor changes over its length, or that it was not in fact a single construction at all, but something that was added to, possibly over an extended period of time. In the latter case the possible change in alignment between Observations 12 to 15 and 16 to 18 (above) might be significant, as might the relationship of the wall to the putative late 1st/2nd century town boundary. The eastern part of the wall lies within this boundary (Fig 27b), whereas the western part lies beyond it. This might suggest that the western stretch was an extension of the former, although it is equally possible that the whole wall was constructed after the town boundary had been extended. In conclusion, the present state of knowledge seems insufficient either to conclude that the wall had a straight course, or that it was definitely of a single build.

The easternmost observation, Observation 19, is the only feature to deviate from the general east-west alignment common to the other observations. It has already been noted (p84) that the long wall might have passed to the south of this observation, possibly continuing as far east as Bread Street. Observation 19, however, appears to have followed the local topography, turning north-eastwards as the general north-south slope of the hillside shifted to a north-west to south-east slope (Fig 4), and thus continuing to run directly across the angle of the slope. This relationship with the natural slope reinforces the suggestion that the wall functioned, at least in part, as a terrace wall; the description of the wall here (Norman & Reader 1906, 220) states that although the southern face was flat, the northern was irregular, possibly the result of the southern face being exposed at a level below that of the northern. If the long wall did pass by to the south, what then was the relationship of Observation 19 to that boundary? It is most likely that it actually argues against the continuation of the long wall to the south, suggesting rather that it was deflected upon this course in response to the changing topography. However, it is possible that two walls might have existed in this area, one continuing on an east-west course to the south, and the second terracing the changing slope to the north, possibly for some additional building works outside the original boundary. Possibilities are rife, and it is important not to

allow a single theory, or particularly a single chronology, to hamper further consideration of the area.

Whatever its constructional history, the long northern wall does not seem to have formed part of a simple building, or buildings, as no cross-walls joined the structure, despite the considerable lengths observed (40m of the northern face and 7.45m of the southern). As such, the wall almost certainly formed a boundary between the relatively flat ground immediately to the north, and the more steeply sloping hillside which fell away to the south (Fig 4). The solidity of the wall's construction suggests that it supported an above-ground element; a suggestion supported by the surviving height of 2.74m (9ft) of Observation 19, and by the offset at Observation 12. It is probable, therefore, that the northern wall served a dual function; retaining the ground to the north, and forming an above-ground 'long wall' that provided a very tangible boundary to the development to the south (see below). The culverts were probably designed to carry the small streams running down the hillside through the obstruction of the long wall (Fig 4), and it is reasonable to suppose that they would have been constructed where required.

The southern walls

There is some doubt as to whether the southern walls formed a single 'long wall', similar to that postulated to the north. In the first instance it seems unlikely that the walls were indeed parallel. On only two occasions were both a northern and southern wall exposed at the same time; Observation 21 was recorded as lying 9.32m (30ft 7in) south of Observation 12, whereas Observation 23 was said to lie 9.85m (32ft 4in) south of Observation 17. This tends to suggest that the southern walls were not a consistent distance from, or therefore parallel with, the northern long wall (Fig 57), although an inaccuracy within the archaeological record cannot be excluded.

The absence of cross-walls in these southern observations does not carry the same weight as with the northern wall. In the case of the latter, sufficient of the face was exposed to make their absence conspicuous (p84). In contrast, the southern walls were only observed in section, or at best over very restricted distances; hardly sufficient to preclude the existence of cross-walls.

The descriptions of the southern walls are particularly poor, and it is not possible to argue conclusively either for or against constructional similarities. The only recorded wall widths, excepting for the moment Observation 24, were 1.31m (4ft 4½in) for Observation 21, and 1.21m (4ft) for Observation 23; these are certainly no more erratic than those of the north wall (above).

The most intriguing observation is that of Observation 24, which was different from the northern 'long wall', but lay very close to its line (Fig 57). Although the structure of which it was a part is not at present understood, it implies that substantial building activity took place close to the line of the northern wall, and between it and the supposed southern wall. Two possibilities seem to present themselves: that a long southern wall existed (Observations 20-23 inclusive), possibly on a slightly divergent alignment from the

northern wall, with at least some structural activity between the two (observation 24), or alternatively, that the idea of second long wall to the south has obscured the more simple interpretation, that the walls were part of independent structures whose position may have been in part dictated, or influenced, by their proximity to the boundary wall. In the second option two building areas might be suggested at present: Observations 20 and 21, possibly including Observation 24, and Observations 22 and 23. This hypothesis would account for the slight divergence of alignment noted between these walls; separate structures, in such close proximity, are likely to have shared the same basic alignment but not necessarily an identical one.

The size of the foundations once again suggest that they might have performed more than a simple retaining role, and numerous possibilities ensue, including features such as enclosed colonnades, which could have provided a dramatic architectural feature within the public development of the area (see p37). The alternative suggestion of independent structures is even more difficult to reconstruct in view of the limited nature of the observations, but the hillside setting would have provided an ideal location for many decorative or visual structures, such as shrines or temples, which would have complemented the public area which they overlooked.

Conclusions

The walls appear to be closely related to the exploitation of the hillside. Although dating evidence is scanty, the walls lay on a noticeably different alignment from that of the Period I complex (Fig 6), whereas they seem to conform to that of the late 3rd century Period II complex' (Fig 24). It seems probable that they were in use with the Period II complex, and most likely they formed part of that development.

It has been suggested elsewhere that the walls were part of a circus, and this might offer an attractive interpretation in light of the suggested function of the Period II complex as a administrative centre/palace (see p31 for the relationship between these structures and circuses in the late Roman world). However, there are a number of problems with this interpretation and although it cannot be discounted, it remains in the author's view somewhat doubtful (see discussion below). More plausibly, the northern long wall provided a northern boundary to this area of public land, delimiting, possibly even screening it, from the quarries and open ground to the north (the suggestion that the walls enclosed a compound has already been put forward by Morris 1982, 302 - referring to a possible location for the late Roman treasury). Immediately to the south of this boundary wall, the southern walls probably represent further 'public' structures. These were of a substantial nature, but unknown function, and could have encompassed anything from individual buildings to terraced colonnades.

These structures, and possibly the boundary wall itself, need not have been part a single phase construction. Any expansion, or rebuilding, might have been a mirror of the expansion of public building to the south, where, in the late 3rd century, the Period II

complex was extended into the area enclosed by the c AD 200 town wall (p37).

Thus it is possible to suggest a very different account of the development of the area from the one offered by the 'two parallel walls' theory. Individual elements of this interpretation may prove to be too simplistic, or indeed incorrect; we should beware of allowing a single long wall, and some walls of a broadly similar alignment, to condition our perceptions of what is clearly a complicated structural sequence. Nevertheless, although not comprehensive, being limited by the vicissitudes of the primary archaeological records, a model of public development would seem highly probable. This, in turn, can be set within the context of the more closely dated public building development to the south (see Chapter 2, p28-32).

As a footnote to this discussion it is necessary to examine the most recent interpretation of the walls in this area, the suggestion that they formed part of a circus. Fuentes first suggested in 1986 that the 'parallel' walls observed in the area of Knightrider Street were part of the southern range of a circus, aligned east-west across the slope of the hillside (Fuentes 1986, fig 3). He conjectured that 'the greater thickness' of the southern wall (a fact which is not demonstrable, p84-5) was because it retained a 'higher structure' or 'had to resist a greater thrust', suggesting that 'these early parallel walls served as supports for a north-facing seating stand for a circus' (1986, 146). It is implicit in his discussion that he accepts that all the walls observed were part of a single structure, an assumption which has already been contested.

Humphrey, also writing in 1986, was somewhat more circumspect in associating these walls with a circus. He points to the favourable location that the area afforded, and notes that the distance between the two walls, some 9.3m, compares with examples in other circuses, such as Arles (8.65m) and Vienne (8.5m) (Humphrey 1986, 431). The only important objection Humphrey sees to the walls forming part of a circus came from the easternmost wall, Observation 19, which 'is not aligned with the sections to the west and which, because of its bend, does not match the plan of any known circus substructures' (*op cit*, 432). He accepts that this makes the entire hypothesis less convincing and concludes, that 'a circus in London must remain only an intriguing possibility, not yet proven by the walls that have been found' (*ibid*).

It can be argued that there are a number of points which detract from the interpretation of the walls as part of a circus, of which the alignment of Observation 19 is only one. The problems are, in fact, manifold:

- i) The construction of the walls varies between the north and south elements (p83). Such variety would seem not to fit the hypothesis that the walls were part of a single structure.
- ii) There is no evidence that the southern walls were of a greater width than the northern element, and the suggestion that the southern walls were larger so as to retain the structure cannot be demonstrated.
- iii) The possibly divergent alignment of the northern wall from those to the south indicates that these structures may not have actually been parallel at all (p85).

iv) The area to the north of the walls contained an extensive area of quarrying (p86), which would have fallen in the middle of the reconstructed circus. Fuentes quotes Observations 28 and 29 (Merrifield 1965, 213) and Marsden (1980, 201), when stating that the quarries had been infilled by the late 1st century and, therefore, present no impediment to the circus hypothesis. Observations 28 and 29, however, make no mention of dating evidence and Grimes's original records, from which those gazetteer entries were drawn, suggest that the quarrying extended into the 3rd and 4th centuries (Grimes 1968, 145-6). Although the dating of these activities is by no means conclusive, it is difficult to demonstrate that a hiatus occurred corresponding to the use of the area within a circus. Indeed, the presence of 4th century wares within the quarry pits' latest backfills (Grimes *op cit*) might argue that no such break took place.

v) An undated north-south wall in Sermon Lane (Observation 26; Merrifield 1965, 213) forms a rather sudden western limit for the circus. Fuentes (1986, 146) argues that it may have formed the western end of the structure, despite the fact that an eastern return in the wall is supposed to have been observed in a position too far north for the reconstruction. This anomaly is explained as resulting from the kink, westward, in Sermon Lane: 'at the point where its [the Sermon Lane wall] southern end terminated, the turn here may have been more imagined than real' (1986, 146). This would seem to be a rather simple way of removing evidence that is otherwise inconsistent. Even if this is accepted as the

western end of the circus, it would make the London circus 54m shorter than that at Jerash (Fuentes' own example; 1986, 146), which was one of the shortest circuses in the Empire. Although this is not impossible, it would seem unlikely.

Alternatively, the putative circus could have been of a different date from the Sermon Lane wall (and another wall at Observation 27; Merrifield *op cit*), thus enabling the reconstruction to be extended further to the west. However, a westward extension seems to take little account of the problems of the natural topography; Humphrey stated that 'it is striking that no other Roman building remains of this period have been found in this area or farther west up to the city wall, so that theoretically the structure could have extended that far, a little more than 400m in length. The terrain was suitably flat.' (*op cit*, 431-2). An examination of the contours on Figure 4, however, shows that the ground fell away steeply towards the Fleet River, some 100m to the west of Observation 12, and even in that distance a sizable kink within the contours, possibly caused by one of the many streams flowing down the hillside (Fig 4), would probably have made the ground immediately to the west of Observation 12 very uneven.

Although the suggestion of a circus cannot, and perhaps should not, be dismissed, there appears to be a considerable number of obstacles to such an interpretation. Given these problems, the reconstruction of the walls as part of a circus is questioned.

8. OTHER EVIDENCE FOR PUBLIC MONUMENTS IN THE AREA

In addition to the direct evidence presented for substantial public structures in Chapters 4 to 7, a number of other monuments, mostly of a public nature, can be inferred from building material re-used in later structures. The material discussed in Chapters 8.1 and 8.2 was re-used during the construction of the Period II complex; the Period I complex can be explored, therefore, as a possible source of the material. The stonework retrieved from the riverside wall (Chapter 8.3), however, was not associated with the construction of the late 3rd century Period II complex. It lay in a stretch of riverside wall which is not closely dated (sometime after c AD 275, p13), and, as such, both the Period I and IX complexes offer potential settings for the demolished monuments.

8.1 Building material redeposited during the construction of the Period II complex at Peter's Hill

Evidence

The discussion here centres on inferences drawn from re-used building material at Peter's Hill; in particular, the large assemblage from the Group 2.11 compacted dumps. The building material from all the excavations is discussed in Appendix 2, but in this context Ian Betts has kindly provided some comments which are included below.

The majority of the ceramic building material from the late 3rd century public building complex at Peter's Hill was dated to the late 1st/early 2nd century (Appendix 2, p100). PPBRLON stamped tiles, from Groups 2.6, 2.10, 2.11, and 2.13, are also thought to date from this period. In addition, there are relief-patterned box flue tiles of late 1st-2nd century date in Groups 2.3, 2.10, 2.11 and 2.13. This material was associated with residual pottery of a similar date (Davies 1987) and was probably derived from earlier strata re-deposited here as part of the terracing action for the Period II complex (p41). As such, the material does not appear to be sufficiently diagnostic, either in terms of form, date range or source, to draw any direct inferences about the structures from which it may have derived,* except that the PPBRLON stamps may indicate the presence of a public building within the area (but see p10).

The material from the compacted Period II make-up dumps, in the eastern area of the site, and that used in the construction of the Period II northern terrace wall (all Group 2.11) warrant further attention. This material was noticeably different from that found elsewhere within the Period II construction; it contained large quantities both of ceramic building materials and marbles. Although this assemblage contained some of the late 1st/early 2nd century pottery found in the other make-up dumps, the pottery forms were primarily confined to those of late 2nd and 3rd century date (Fig 47), and small quantities of *tegulae* and

imbrices in a fabric dated to the late 2nd/3rd century, or later, were also found (type 2456; 300 grams or 0.5^o.of the flue tiles within the 2.11 assemblage).

The Group 2.11 assemblage was made up of a number of different materials:

(a) A large group of ceramic building material. The assemblage also included three relief-patterned tiles.

(b) Twenty white limestone *tesserae*; *tesserae* were not found elsewhere on the site.

(c) Painted plaster. This included a number of examples of splash decoration, in various styles; a technique which was intended 'to give an impression of the fine marble wall-veneers' (Liversidge 1968, 87).

(d) A large quantity of ornamental stone, mainly in the form of marble veneers, but also including one moulding and several thicker slabs (Appendix 2; see also Pritchard 1984; 1986). The assemblage consisted of a variety of white marble and limestones (of various grain sizes), along with a number of imported marbles. Many of the fragments had traces of mortar adhering to broken edges, suggesting that some had been re-used before their redeposition within the Group 2.11 dumps. Some of the marble was not earlier than the 3rd century, although others are thought to have been 1st or 2nd century (p 100). It is possible that the latter were stockpiled prior to their use in the same structure as the 3rd century material (Pritchard 1986, 187), but the degree of re-use, noted above, would possibly provide a more logical explanation for their presence within this assemblage.

Implications for the demolished structures

Ian Betts writes:

The material from the Group 2.11 dumps appears to have derived from a building, or buildings, constructed, or refurbished, no earlier than the late 2nd or 3rd century. Presumably, this structure was stone and tile built, judging from the presence of large amounts of bonding brick. Bonding bricks were commonly used as levelling courses in stone built structures. It may also be suggested that the structures had some areas roofed with tile.

The diversity of decorative stone types indicates that the building in which they had been used must have been of considerable importance. The occurrence of box flue tile suggests that they were installed in a bath-house or heated room. It is just possible that this was an official government building judging from the presence of the PPBRLON stamps. (See Chapter 1.6 for implications for Period I structures.)

The marbles are worthy of emphasis, as they comprise the most varied assemblage of imported stone so far found in Britain. It is evident that the structure from which they came was of considerable decorative grandeur. Marble has been noted within a wide range of buildings, for example at Colchester, where a quantity of imported stone was used at the Temple of Claudius, in the southern range of the enclosure (Drury 1984,

34-5). It is probable, given the range of material, that it came from a public building programme; the black and white diorite, for example, 'featured extensively in Imperial architecture of the 2nd and 3rd centuries' (Pritchard 1986, 188 after Gnoli 1971, 124).

The cohesion of the ceramic building materials, the imported decorative stone and the associated pottery (p56) from the Group 2.11 dumps suggests that the material probably came from the demolition of a single building, or group of closely related buildings, rather than accumulated as part of the general re-deposition of building material through terracing actions (as has been suggested for the rest of the building debris found in the construction levels at Peter's Hill, p88). Therefore, it is possible to speculate on the original location of the demolished structure(s), which, considering the cohesion of the assemblage, might have been located in the general vicinity of the Peter's Hill site.

The only known monument of a suitable character - ie substantial, well-appointed and probably public - within the area was the extensive bath-house found at Huggin Hill (Fig 9). The bath-house, constructed in two phases beginning c AD 70, was demolished not earlier than the late 2nd century (Marsden 1975, 22-3). However, a comparison of the building material from Group 2.11 and demolition debris from Huggin Hill (detailed in Betts 1987a) has led Ian Betts to write:

'the material from Group 2.11 at Peter's Hill almost certainly does not come from the Huggin Hill baths. There is a far greater variety of imported decorative stone types at Peter's Hill. The two relief-patterned box flue tiles present, dies 12 and 101 (see Betts *et al* forthcoming), are not found at the Huggin Hill baths. Distinctive, thin (9-15mm), combed box flue tiles in fabric 2451, found at Peter's Hill, are totally absent from the Huggin Hill baths; nor are there any later Roman ceramic brick and tile fabric types from the latter. The surviving painted wall plaster also shows marked differences. The distinctive plain pale purple wall plaster found at Huggin Hill was totally absent from the Peter's Hill assemblage. In contrast, wall plaster with splash decoration, in various styles, was found at Peter's Hill but no wall plaster with this decorative technique was found at Huggin Hill. Peter's Hill also produced a small quantity of slate, possibly used for roofing; none is known from Huggin Hill. In conclusion, it can be said that the building material in Group 2.11 is very unlikely to have come from Huggin Hill.'

As the baths complex at Huggin Hill does not appear to have been the source of the Group 2.11 building material, another possibility can be considered: that the material was derived from the demolition of the Period I complex. Certainly the status of the material and the implied public character would seem to be compatible, and the Period I complex was levelled as part of the Period II construction (p71). The date of the material might also be considered comparable, with the late 1st/early 2nd century tiles and some of the marbles deriving from the original construction of the complex, and the later marbles (and the re-used marbles) representing repairs to its fabric. The implications of any possible association are explored in greater depth in the Period I discussion (Chapter 1.6).

8.2 Re-used masonry in the Period II complex foundations

The excavations of the Period II complex at Peter's Hill, Sunlight Wharf, and the Salvation Army Headquarters produced evidence for the re-use of large stone blocks within the basal course of the massive foundations. In all cases the blocks were not elaborately worked pieces, but rather were roughly dressed stones, their re-use indicated by the presence of their dressed faces within the body of the foundation. In no case were any decorated stones observed, and nothing comparable with the material found in the later riverside wall (Chapter 8.3) was encountered.

None of the stones gave any direct indication of the structure, or structures, from which they originally derived, other than that the size of the blocks suggests that they came from a structure of some solidity and status. The source of the material is unknown, but it is interesting to compare it with the stones found in the later riverside wall. It is suggested that the latter were of some architectural status in their own right, and may have belonged to structures that survived the refurbishment of the complex in which they were originally situated (p91). The same cannot be said about the blocks from the foundations within the Period II complex, which were of an altogether more basic form. It is tempting to suggest, therefore, that the undecorated stones might have derived from elements of the Period I complex which were cleared away as part of the Period II redevelopment of the area. An example of a similar pattern of re-use comes from Sabratha, where plain sandstone blocks from the Period I East Forum Temple were used within the base of the Period II foundations, whilst the more decorative or elaborate elements of the Period I structure, such as the columns, appear to have been used in an above-ground structural role within the Period II temple (Kendrick 1986, 58).

The only exception among the undecorated bulk of the re-used stonework came from Observation 7, a foundation observed by Roach Smith beneath Upper Thames Street in 1840 (Chapter 7.2). Here decorated stonework was uncovered, but it is not clear exactly how much originally existed; some stones merely exhibited signs of re-use, such as dressed surfaces or cramp holes, not unlike those found at Peter's Hill and Sunlight Wharf (see above). However, a few more elaborate pieces were present, Roach Smith notes in his diary that he 'wrote to Mr Kelsey to have the sculptured stones found at Thames Street preserved. It is very annoying that while I am regarding with jealousy, no means are adopted to save any of these interesting remains from destruction. Already one of the best has been sent to Canard's Wharf to be used again for building!!!' (1841 b, 117-8). Unfortunately there is no means of quantifying the amount of decorated stonework that was present. The description of the finds indicates that there were fragments of marble pilaster, and at least one carved stone with a trellis decoration; the latter was saved and is now at the British Museum (Fig 61; BM Acc No 185b 7/14).

The original structural role of the stones is not clear. Roach Smith suggested that the carved stone came from an altar (1841a, 151), and it is possible that the

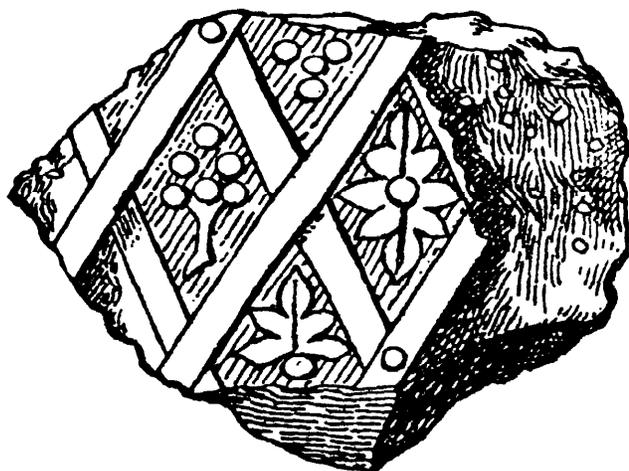


Fig 61 Fragment of trellis-ornament, re-used in the foundation at Observation 7. Found in 1840. (Illustration from VCH London 1909, fig 23.)

decorated stones came from portable features, such as altars, or decorative details, such as the pilasters. There was no suggestion that major architectural stonework, such as column drums or architraves, was present. The majority of the stonework appears to have been massive undecorated blocks, and can be seen in the same context as the re-used stonework at Peter's Hill and Sunlight Wharf, discussed above.

8.3 Re-used masonry in the 4th century riverside wall at Baynard's Castle

The westernmost stretch of the riverside wall exposed at Baynard's Castle (Site 4, Fig 2) contained a large quantity of re-used masonry. This material has been presented and extensively discussed elsewhere (Blagg 1977 and 1980a; Dimes 1980; Hassall 1980; Merrifield 1980). It is pertinent, however, to remind ourselves of the evidence presented in those works, which will allow us to draw some detailed inferences concerning structures that may have originally stood in the south-western quarter of the town.

It is clear that the dating of many of these fragments is of a broader range than has been presented in recent surveys; the Severan date advanced for some of the monuments owed much to the desire to see Julia Domna's personal influence as the inspiration for the structure's construction (Merrifield 1980, 203-4). The present study suggests that a wider range of possibilities are available, and these are examined below.

Altars

Two altars were recovered from this stretch of the riverside wall. In both cases the inscriptions are incomplete, and this has led to some speculation over their original form, but Hassall (1980) has carefully and

skilfully discussed the main alternatives and advanced the most plausible reconstructions.

Altar 1 (Fig 8a): 'Aquilinus the emperor's freedman and Mercator and Audax and Graecus restored this temple which had fallen down through old age for (or to) Jupiter best and greatest'

Hassall prefers Jupiter, although there are other possibilities (Hassall 1980, 196).

Altar 2 (Fig 8b): 'In honour of the divine (*ie* imperial) house, Marcus Martiannus Pulcher, deputy (2) imperial propraetorian legate of two emperors ordered the temple of Isis . . . which had fallen down through old age, to be restored'

The incomplete fragment of the dedication read C[. . .]/TIS, which Hassall states could be reconstructed as 'c[um xys]/tis', meaning 'with its porticoes'. The uncertainty of the letters led Hassall to leave this option out of his final reconstruction (Hassall 1980, 197).

The inscriptions suggest a degree of provincial governmental involvement in temple re-building, especially if the reading of the first, mentioning the Imperial freedman Aquilinus, is correct.

The dates of the altars are problematic. Hassall points to the fact that Altar 2 was set up at a period when there were two Emperors, The list of Governors is well known from the 1st and 2nd centuries, and Pulcher does not appear, whilst the title of the office was altered in the 4th century, suggesting that the altar must have dated from the joint rulerships of AD 251-3 or AD 253-9 (*op cit*, 198).¹³

Altar 1 was not datable.

Screen of Gods

Some of the re-used material has been reconstructed as a free-standing Screen of Gods (Fig 7b) (for a detailed description see Blagg 1980a, 126, 175-82). Blagg found it difficult to assign a firm date to this monument as 'its ornament lacks diagnostic detail, and while the sculpture does not show the characteristic features of Late Antique art in the Mediterranean, this could just as well be accounted for by provincial conservatism. It would seem rash to say anything more exact than that it probably belongs to the 2nd or 3rd centuries' (*op cit*, 182).

Monumental arch

The second monument reconstructed from the re-used stones at Blackfriars was a monumental Arch (Fig 7a) (for a detailed description, see Blagg 1980a, 125-6, 175-82). Blagg was more confident about advancing a stylistic date for this work, suggesting 'that the London Arch is not earlier in date than late Antonine, or, more probably, Severan in date' (*op cit*, 180). He offers the context of Severus' visit to Britain in AD 208-11 as a background for the monument's construction (*loc cit*), although he is at pains to point out that 'it must be observed that the Arch could be considerably later, and only *the terminus ante quem* provided by the re-use of the stones in the riverside wall, with an allowance for a

reasonable time during which the Arch was standing, can set a lower limit for its construction' (*loc cit*). Indeed, the parallel which he cites for the Arch is that of the Arch of Galerius, from Thessaloniki, which is dated AD 305- 11 (*op cit*, 177). It would seem, therefore, that although a Severan date has usually been attached to this monument in published commentaries, a later date is not unlikely.¹⁴

'Mother Goddesses'

The rather unusual depiction of four 'mother goddesses' also found re-used in the riverside wall adds little to this discussion, other than possibly to reinforce the suggested religious character of many of the features.

Discussion

The construction date of the stretch of riverside wall containing these monuments is open to some debate, but it can probably be broadly placed within the 4th century (Williams in prep). The stones were all in very good condition, suggesting that the structures from which they derived had been demolished just before their incorporation into the river wall. In addition, all sides of the Arch were represented in the assemblage recovered, which Blagg (1980a, 183) suggests was a result of the stones being derived from a stockpile, rather than after a long period of dereliction, or re-use elsewhere.

It can be suggested that the monuments from which these large fragments of stonework derived were probably located in the general vicinity of this stretch of the riverside wall, partly on the grounds of the cohesion of the group, which consisted of a large number of blocks from the same structures, and partly due to the size of the individual stones, which are unlikely to have been moved farther than was necessary. The stockpiling of stones might suggest, however, that their original location was not immediately adjacent to this stretch of walling, as it was not possible to quarry the stones directly from their original location (Blagg 1980a, 193).

That all of the above monuments probably derived from public building programmes seems beyond dispute. The altars would appear to reinforce this public aspect, as they specifically referred to temples restored by agents of the imperial government (Hassall 1980, 198).

The altars derived from temple structures. The Screen of Gods might also have been used in such a context, placed within a *temenos* to provide a free-standing embellishment to the precinct, such as at Volubilis (Ksar Pharaoun, Morocco) where a free-standing decorated altar, some 4m in length, stood in the precinct of the Capitol (Brooke 1976, 65), or at the Temple of Lenus-Mars, Trier (Ward-Perkins 1981,

229). Nevertheless, the possibility that the Screen stood within other forms of monumental complex, such as baths, which also utilised a variety of open spaces, precincts and courtyards, cannot be discounted.

The surviving fragments of the Monumental Arch were restricted to the upper elements of the monument, and it is not possible, therefore, to be certain whether the structure was free-standing, as it is usually reconstructed (Fig 7a), or set upon walls, forming the entrance to a precinct. The Arch was clearly religious in inspiration, rather than triumphal, but its context could as easily have been secular; the use of monumental archways as entrances to religious precincts was widespread in the Empire - notable examples include the Arch of Antoninus at Sbeitla, Tunisia (Duval & Baratte 1973), and the Temple of Isis (Haynes 1956, 127) and the Antonine Temple (Haynes 1956, 110), both from Sabratha, Libya - but they were also employed as monumental entrances to secular building complexes, for example, to the palatial Kaiserthermen complex at Trier, where 'the main entrance . . . had a monumental plan not unlike that of a city gate or triumphal arch' (Wightman 1970, 101). Neither is the Arch necessarily indicative of a single role, as the association of baths and temples is also well attested within the Roman world, for example the complex of Champlieu in France (Ward-Perkins 1981, 230), or the establishment at Bath (Cunliffe & Davenport 1985). The marked religious content of the decorative motifs used on the London Arch may, however, coupled with its association with other religious monuments in the riverside wall, tend to favour the interpretation that its original context was as the entrance to a religious enclosure.

The fact that the Arch, Screen and altars are thought to have survived into the 4th century, to be 'quarried' for the extension to the riverside wall, is not incompatible with their original construction as part of the Period I complex. Given the levelling of that phase by the greatly enlarged Period II development, towards the end of the 3rd century, it is possible that these monuments, being largely free-standing or peripheral structures with a high degree of intrinsic architectural and decorative value, would have been preserved within the rebuilt complex. Indeed, it would seem unlikely that such monuments would have been destroyed, unlike the dilapidated temple/bath buildings themselves. The retention of such monuments is a practice demonstrated elsewhere, for example at *Verulamium*, where during the rebuilding of the *temenos* and the addition of annexes to Temple I, in c AD 300, the entrance structure was maintained despite major replanning (Lewis 1966, 134). Furthermore, porticoes were often employed within a late Roman context to link differing elements into a cohesive whole (Todd 1985, 58) and the amalgamation of Period I monuments into the second period of the complex, would not, on these grounds at least, present any major interpretative problems.

9. CORRELATION OF EARLIER OBSERVATIONS WITH THE PERIOD II COMPLEX

The correlation of evidence for the Period II complex, from so many disparate observations, is naturally problematic. However, there are a number of factors which allow most of the observations to be compared, and their association to be demonstrated or rejected. The most obvious correlations have already been made during the presentation of the evidence in Chapters 4 to 7.

The strength of the correlations lies in the similarity of structural technique of the masonry foundations and the nature of their preparation. In addition, where dendrochronological dating is available, strong chronological ties can be demonstrated. Furthermore, similarities in alignment can also be used, although in many cases this last criterion is deceptive;

many of the early observations were recorded with only the most general east-west or north-south alignment and their apparent uniformity of alignment is, in reality, a result of their appearance on the same overall plan, Figure 62. They are, however, clearly indicated on that illustration.

The majority of the observations incorporated into Period II are considered to be reasonably secure. There are, however, a number of observations whose correlation with the complex needs to be more circumspect. In some cases this arises from the original records, particularly those features observed earlier this century; in other cases confusion could result from the differing structural functions the foundations were to perform.

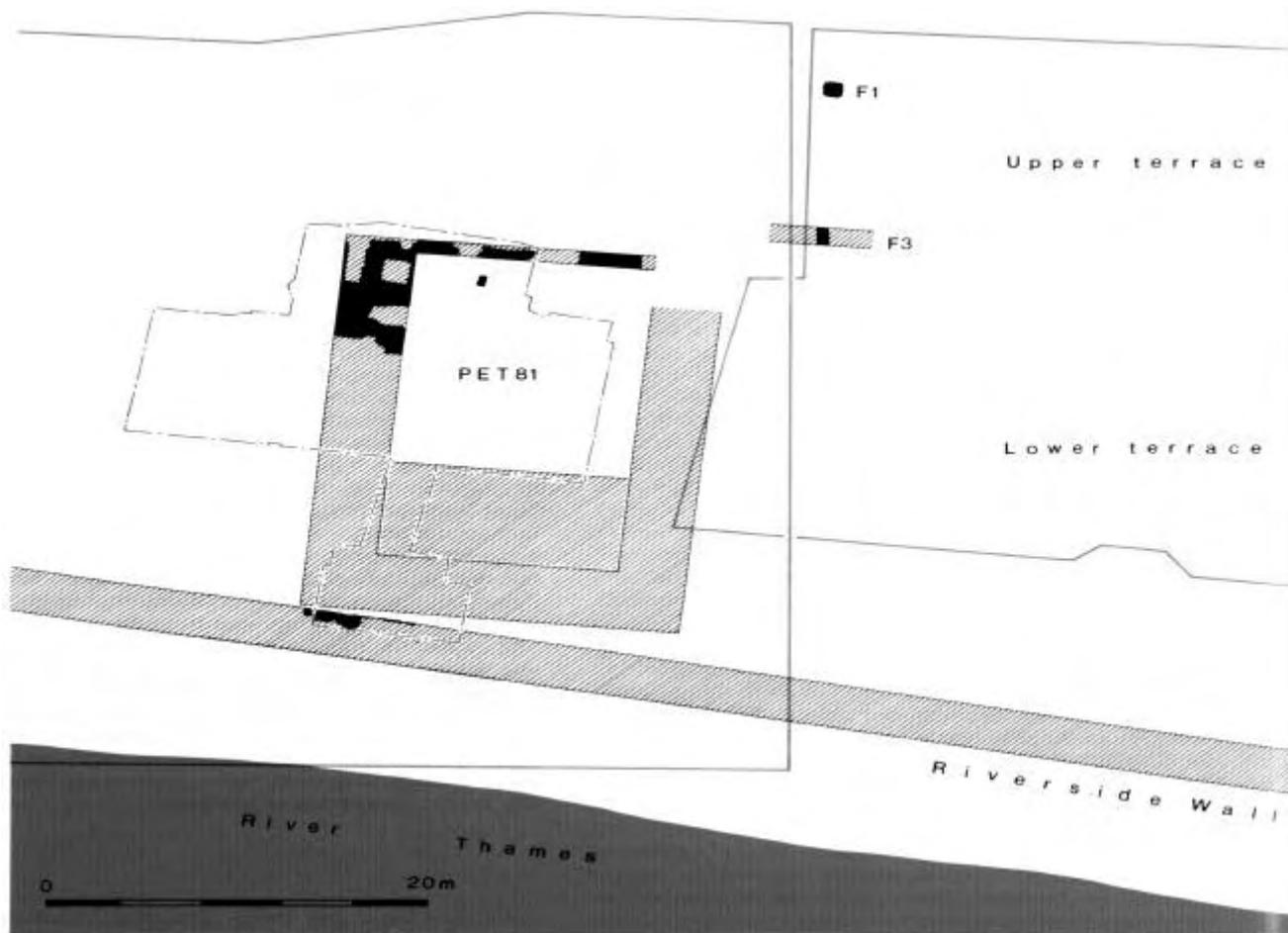


Fig 62 Period II complex; numbered observations for correlation. Numbers 6-8 refer to Observations (cf Fig 2); numbers prefaced by F refer to features recorded on the Salvation Army site (cf Fig 54) (1 :400)

9.1 Peter's Hill and Sunlight Wharf

The association between the monumental foundations on these sites seems clear; in addition to their constructional similarity, the piles beneath the chalk raft on both sites have been dated by dendrochronology to the same year, AD 294 (Hillam, Appendix 1).

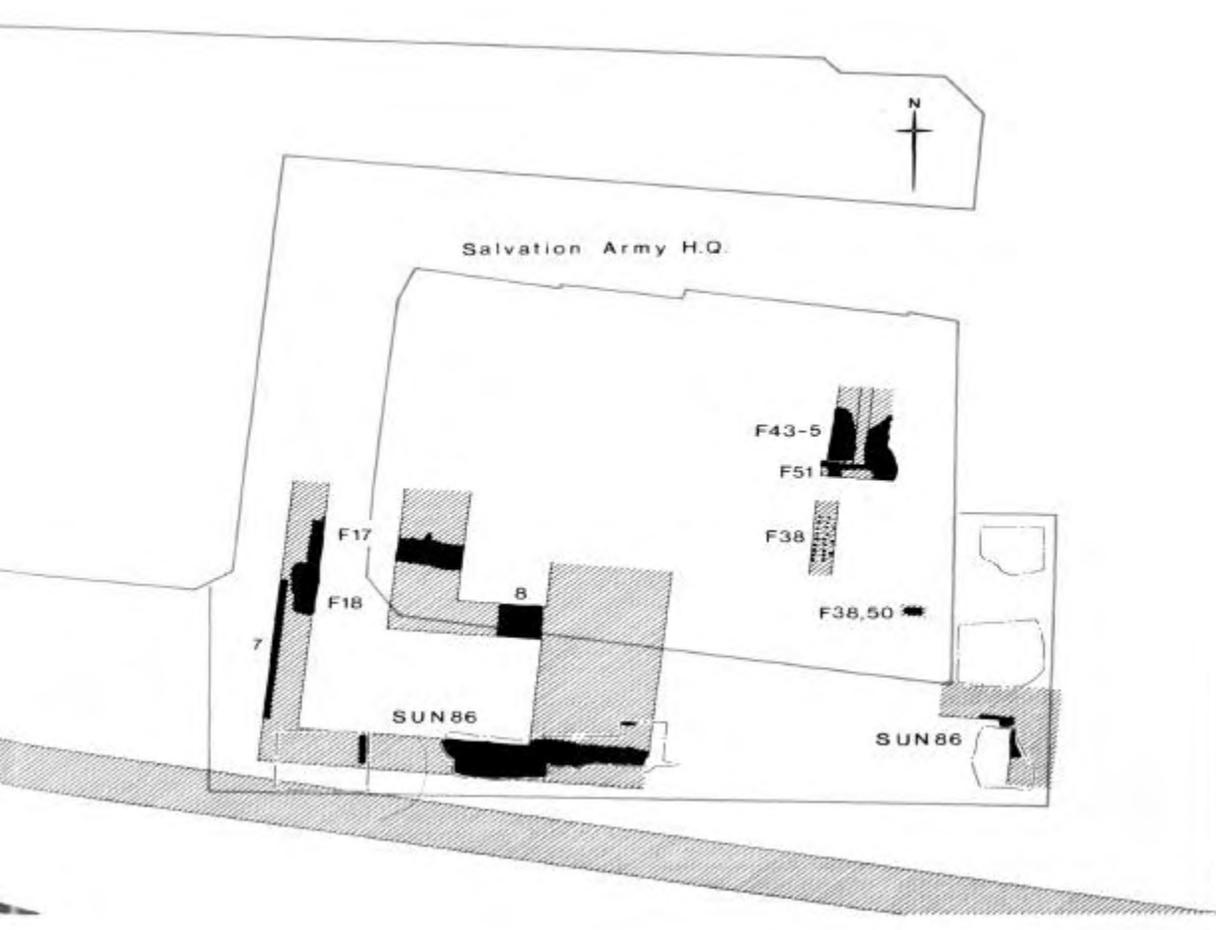
9.2 Salvation Army Headquarters (Phase 2)

In the absence of any dating framework, comparisons rely heavily upon construction technique and alignment. In the case of the former, the chalk raft supported by circular timbers, apparently complete boles, forms a good basis for the association. In addition,

where the construction of the foundation above the raft was recorded in detail (in particular Features 17 and 18) it consisted of a basal course of re-used, undecorated, large stone blocks supporting a concrete rubble core faced with ragstone. The similarity of the features described with those at Peter's Hill and Sunlight Wharf strongly suggests that the features were part of the same phase of construction. In addition, the alignment of those features accurately plotted on the Salvation Army Headquarters site seems to match exactly those of Sunlight Wharf, to the south (Fig 62).

9.3 Observation 7

The relationship of this observation with the main east-west foundation at Sunlight Wharf and Features 17 and 18 on the Salvation Army Headquarters site is less certain.



It is probable that Features 17 and 18 on the Salvation Army Headquarters site (p67), which lay beneath the line of the original Lambeth Hill (Fig 54), and the north-south element of the foundation observed by Roach Smith in a sewer beneath the same street (Observation 7, p724), were two parts of the same foundation. Their descriptions are similar, and they appear to have a close correspondence of alignment (Fig 62). The foundations are plotted on Figure 62, which suggests that the north-south foundation observed was relatively narrow, only some 1.8m wide. However, the plotting of these observations is fraught with difficulties. In the first case, there are some doubts about the accuracy of the plotting of Features 17 and 18 (p67). Secondly, it is by no means clear what the line Roach Smith marked on the sewer plan (Fig 55) actually indicates; was it the west face, the alignment of the structure, or its eastern face? In this case, the line has been taken to be the western face of the wall, as first encountered by Roach Smith. The issue is further complicated by Roach Smith's description of the find (p72-3), which suggests that the wall was 8 to 10 feet thick (2.44 - 3.04m). Thus, although plotted according to the available evidence, it is felt likely that the foundation illustrated is too narrow, and that the original structure was slightly wider, and probably similar to the 2.3m of its suggested eastern continuation at Sunlight Wharf (below).

The eastern continuation of the Observation 7 wall, recorded during the Victorian sewer construction, almost certainly formed a western continuation of the

east-west foundation observed immediately to the east on Sunlight Wharf (Fig 62). Indeed, at the latter, the sewer was actually observed (p59). (See also p73-4 for problems with Roach Smith's account of the eastern continuation.)

9.4 Observation 9

Observation 9 lay just to the east of the Salvation Army Headquarters site (Figs 2 and 9). Its construction, including timber piles and massive re-used blocks (p76), coupled with the close proximity to the rest of the Period II complex, strongly suggests that the features recorded in this observation were part of that development.

9.5 Observation 11

This is possibly the most difficult observation to integrate within either the Period I or Period II scheme. The description of the features is poor (Chapter 7, p76), indeed, even their exact alignment cannot be demonstrated. The substantial width of the foundations, in excess of 1.50m, has been taken to suggest a public development (p77), but this is hardly sufficient to be confident about any correlation with either the Period I or Period II complex. As the features lay some distance to the east, it is as likely that they were part of a separate development in the area.

¹ The timbers from the consolidation of the 2.1 dumps produced too few rings for dendrochronological analysis. The dendrochronological analysis of the horizontal timbers used within the 2.3 dumps produced dates centred in the 1st century, reinforcing the suggestion (p000) that they were re-used from an earlier structure.

² A more detailed discussion of this date is made in Part 4.6, where the precision of the date is argued, and in Appendix 1, where the evidence is presented.

³ The framing was very incompletely observed; the area was not excavated and the framing beneath the foundation was not examined. As most of the trench was occupied by extant foundations, the framing was only observed in the restricted areas of robbing, and where it projected from beneath the foundations.

⁴ Passages have only been omitted where they were duplicated in the various reports. In particular the 1859 report of ten repeats verbatim the 1841a account.

⁵ Cited as six feet in Roach Smith's 1859 report (1859, 18).

⁶ He was also well aware of the unreliability of Information during his absences. Commenting on the works in Lower Thames Street he stated 'that contractors for public works are not the persons to be expected to understand and report upon such matters, or that it is not at all improbable substantial mural foundations might have been rooted up and carted away, as those in Upper Thames Street were, in perfect silence on the part of the contractors and their employers.' (Roach Smith 1859, 19)

⁷ The street was extensively widened below London bridge (Bell 1923, 248), but it was probably also widened in the Queenhithe area, where it appears noticeably broader, on early maps, than the stretch to the west.

⁸ Knightrider Street is divided into Little and Great Knightrider Street. The latter actually lay some distance to the west, but it is clear that Black made a mistake in using the term 'Great' in this context; he already had confused the distinction, stating that he turned out of Great Knightrider Street into Peter's Hill (p000), when Peter's Hill joins Little Knightrider Street to both east and west. In addition, the alignment and proximity of Observation 14 to St Mary Magdalen's church, which lay at the south-western corner of Old Change (p000 - Fig 57), indicates it must have lain in Little Knightrider Street. If it had lain some distance away to the west, in Great Knightrider Street, it would have been too far north to have aligned with any church, and could hardly have been described as being 'a little distance' from the church.

⁹ The RCHM report, despite mentioning Observation 14 in the description on page 141, only marks the position of Observation 15 m Knightrider Street (observed in 1844 and also on the City Sewer Plan).

¹⁰ This introduces an interesting problem of survival and early medieval property development; why, if St Mary Magdalen's church and the properties to the east were laid out on the long wall, and the course of Knightrider Street was determined by it, did the street curve to the north once it had passed to the west of the church? (Fig 57). The survival of the wall beneath Peter's Hill and elsewhere suggests that it was still extant beyond that point, so that some other reason is needed to explain this early medieval deflection.

¹¹ The absence of any mention in Observation 18 might be an oversight, considering the close association it was supposed to have had with Observation 16.

¹² Ian Betts writes, 'there is a superficial similarity between the residual material in groups 2.1 to 2.10 (inclusive) and that found in the demolition of the Huggin Hill baths (Fig 2): for example, the presence of Purbeck and Carrara Marble at both sites, and two common relief-patterned box flue tile patterns (dies 42 and 85). However, there are some significant differences. Relief-patterned dies 5A and 27 were found at Huggin Hill, but not Peter's Hill, whereas dies 3, 8, 12 and 91 were found at Peter's Hill but not Huggin Hill. At Huggin Hill, considerable quantities of pale purple wall plaster were found on parts of the site, but no plaster of this colour was found at Peter's Hill. It is possible that the Peter's Hill material could have derived from the western part of the bath-house, which also lacked wall plaster of this colour, but it is more likely that the material, clearly residual and associated with 1st and 2nd century pottery (p000), derived from general debris imported with the dumped deposits.'

¹³ A further period of joint emperors occurred at the end of the 3rd century, with the rule of Diocletian and Maximian (AD 286-305). It is not known exactly when the reorganisation of the provincial government structure took place, other than that it had taken place by AD 314 (Mann 1961, 316-7). It is possible, therefore, that a period of joint emperors in the late 3rd/early 4th century could have existed before the new titles were introduced; indeed, there is evidence to suggest that a provincial governor in the north was present between AD 296-305 (Salway 1981, 317 - referring to an inscription from Birdoswald). It is possible, therefore, that the altar dates from the late, rather than mid, 3rd century, although the latter still seems more probable.

¹⁴ Within this context it is vital that the 'accepted' dates of the riverside wall monuments are perceived for what they are, suggestions based upon historical models.

Appendices

Appendix 1: tree-ring dating of oak timbers from Peter's Hill and Sunlight Wharf

by Jennifer Hillam (Sheffield University)

Introduction and methods

Seventeen tree-ring samples from Peter's Hill were examined in 1983. The excavation was at the west end of Thames Street, near Baynard's Castle, a site which already had produced timbers from the Roman riverside wall for analysis (Morgan 1980; Sheldon & Tyers 1983). The Peter's Hill samples were mostly from foundation piles, but two were taken from timbers which formed a lattice structure. During excavation there was no evidence that any of the timbers were re-used. The tree-ring analysis was undertaken to determine the dates of the piles and the lattice timbers, and hence their relationship to other Roman structures in the vicinity, such as the riverside wall.

The oak piles at Sunlight Wharf were excavated in 1986 from a structure close to, and on a similar alignment to, the pile structure at Peter's Hill. It was hoped that tree-ring analysis, carried out in 1987, would determine whether or not the samples from the two sites were from the same structure.

The samples were prepared, measured and crossmatched following the method given by Hillam (1985). During the Peter's Hill study, the ring widths along only one radius were measured but, because the ring patterns were often short and crossmatching

between them sometimes proved difficult, two radii per sample were occasionally measured, and the two sets of measurements averaged. Since then, it has become general policy at Sheffield to measure two radii on all roundwood samples with less than about 80 rings in order to improve the quality of the crossmatching. Therefore when the Sunlight Wharf samples were measured in 1987, two radii were measured on all the samples.

The ring sequences were crossmatched visually by comparing graphs plotted by hand, and by computer using the CROS program (Baillie & Pilcher 1973). The latter gives results as *t* values; values over 3.5 indicate a match, provided that the visual match between the graphs is acceptable (Baillie 1982, 82-5).

The relating of the tree-ring dates to the felling dates of the timbers was simplified by the presence of bark on the majority of the samples. If bark edge was not present, felling dates were estimated using the sapwood estimate of 10-55 rings (Hillam *et al* 1987). In the complete absence of sapwood, the addition of 10 rings to the date of the outer ring gives the probable *terminus post quem* for felling.

Results

1. Peter's Hill

The samples from the lattice structure (1535, 1536) had 102 and 107 + rings respectively. Both timbers had been split from larger trees, and had only heartwood rings (Fig 65b). With the exception of 1307, which had 103 rings, the piles had 50 to 74 annual growth rings. All but

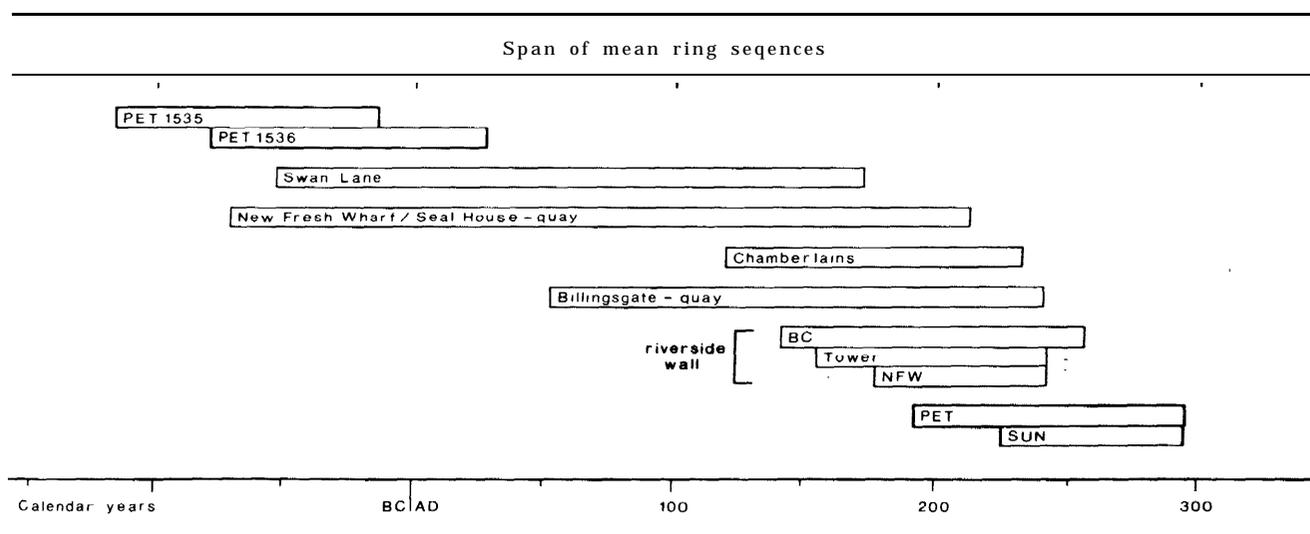


Fig 63 Temporal relationship of the Sunlight Wharf (SUN) and Peter's Hill (PET) ring sequences to those from other sites in London. Each bar represents a site chronology, except PET 1535 and 1536 which are individual ring sequences. BC - Baynard's Castle; Tower - Tower of London; NFW - New Fresh Wharf. The Chamberlains Wharf data were supplied by Ian Tyers; references to other chronologies are given in Figs 66 and 67.

two of the piles had complete sapwood, and often bark was present. Generally the outer rings were not complete, indicating that the timbers had been felled in late spring or early summer. (The widths of the incomplete rings were not measured so that in Figure 65 the number of rings for summer-felled samples is an underestimate by one year.) One of the timbers, 1307, was definitely felled in winter or early spring, whilst the season of felling of 1297 was indeterminable. The samples without bark edge, 1361 and 1365, were trimmed roundwood samples with 4 and 5 sapwood rings respectively.

The inner rings of samples 1551, 1558 and 1569 were not measured because of a band of very narrow rings. In addition, 1551 had an injury mark on the ring prior to the start of measurement.

Visual comparison showed that many of the ring sequences crossmatched, and that the narrow rings mentioned above were contemporary. A site master curve was made from ten sequences but was abandoned because it seemed too complacent (that is, showed little variation in width from year to year). At this stage, second radii were measured for three of the samples (1297, 1307, 1369). A master of 104 years was then made from four sequences (PETMEAN2: 1297M, 1307M, 1365, 1369M). When unmatched sequences were tested against the master, an additional three samples were found to match (1304, 1477, 1551). A new site master (PETMEAN3) was made and the process repeated. This time another five samples (1350, 1367, 1467, 1558, 1569) were added to produce a final site master curve of 104 years (PETMEAN4).

The Peter's Hill ring sequences and the master curves were compared with dated reference chronologies. Although matching with the individual ring sequences was poor, the masters gave consistently good results, particularly with other London chronologies, when they spanned the period AD 191-294 (Fig 66). The two worked timbers from the lattice structure were earlier in date with 1535 ending in 18 BC, and 1536 in AD 25 (Figs 63 and 67). No dating was obtained for the roundwood sample 1361.

Examination of the tree-ring dates (Figs 64 and 65) indicates that most of the pile sequences end in AD 293, but that the spring vessels of AD 294 were also present. The winter-felled timber, 1307, was felled AD 293/4, whilst 1297 ended in 294, and was felled in 294 or possibly 295. The pile timbers were therefore not felled at exactly the same time, but they could have been felled within a few weeks of each other. Oak trees produce spring wood in about April, and this production of large vessels is completed by the end of May (Baillie 1982, fig 2.1), but the start of spring wood formation can vary from tree to tree. It can even vary around the circumference of the same tree, so that a sample might appear 'winter-felled' in one section and 'summer-felled' in another. It is therefore not necessary to postulate a long period of storage or stockpiling for the Peter's Hill piles.

Estimation of precise felling dates for the two lattice timbers is impossible because of the absence of sapwood, but 1535 was probably felled some time after 8 BC and 1536 after AD 35.

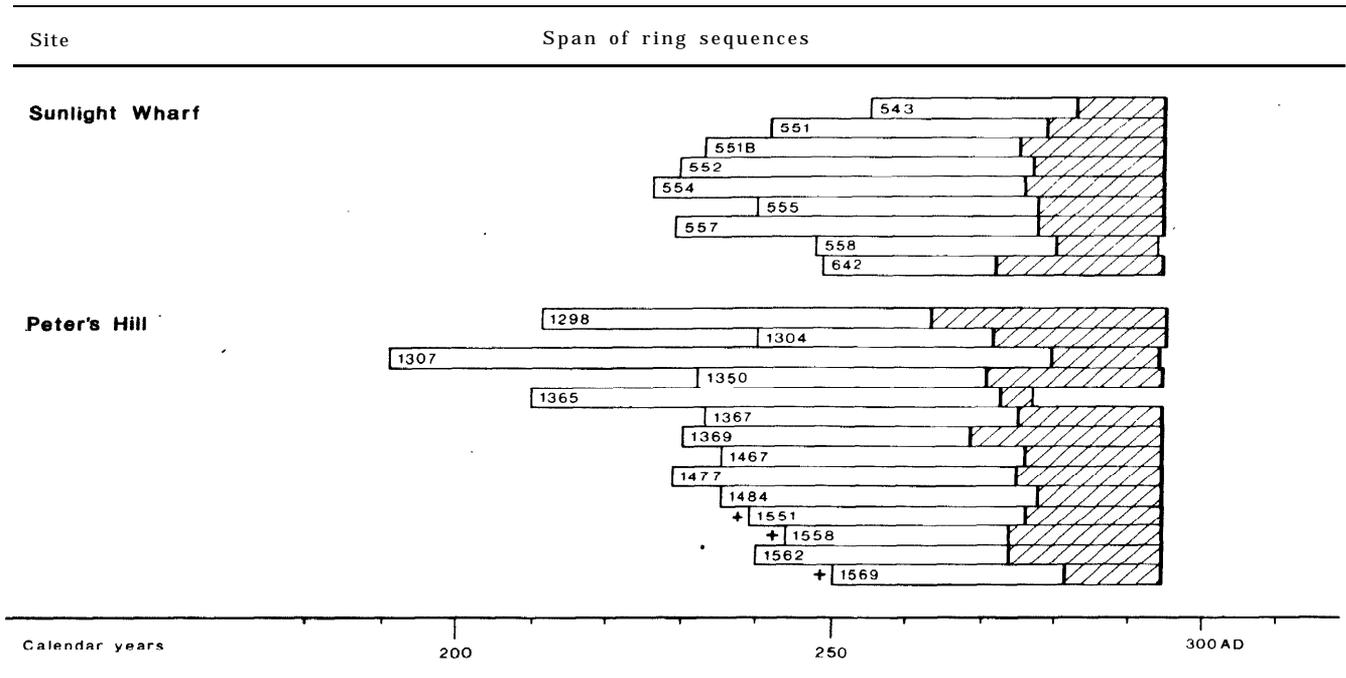


Fig 64 Bar diagram showing the relative positions of the matching ring sequences from Sunlight Wharf and Peter's Hill. White bar - heartwood rings; hatching - sapwood; + - unmeasured rings present on sample.

Context number	Total rings	Sapwood rings	Average ring width (mm)	Dimensions (mm)	Comments	Sketched cross-section	Date span	Felling date
(a) Sunlight Wharf								
543		13	2.31	230 x 185			254-93	w 293/4
551		13-17	1.80	225 x 220			241-93	w 293/4
551B		16-21	1.52	220 x 215			232-93	w 293/4
552		17-19	1.19	170 x 160			229-93	w 293/4?
554		10	1.27	200 x 180			225-93	w 293/4?
555		17-18	1.90	230 x 220			239-93	w 293/4?
556		-	1.79	270 x 215	worked timber		-	-
557		16-18	1.48	215 x 200			228-93	w 293/4
558		9-14	2.23	195 x 190			247-92	-
640		16	1.41	180 x 170			-	-
641		yes	-	160 x 140	rejected		-	-
642		18-23	1.55	170 x 160			248-93	w 293/4
644		18	1.49	190 x 170	trimmed on parts of sample		-	-
(b) Peter's Hill								
1297	74	31-33	1.14				221-94	294/5 season unknown
1304	54	23	1.66				240-93	s 294
1307	103	14-15	1.16		trimmed		191-293	w 293/4
1350	62	24	1.88				232-93	s 294
1361	55	4	1.54		trimmed or damaged		-	-
1365	67	5	1.90		halved and trimmed		210-76	-
1367	61	20	1.62				233-93	s 294
1369	64	19-26	1.69				230-93	s 294
1467	59	19	1.71		halved		235-93	s 294
1477	65	20	1.70		trimmed		229-93	s 294
1484	59	17	1.68		halved		235-93	s 294
1551	+55	19	1.07		halved and trimmed injured AD238		+239-93	s 294
1558	+50	21	1.64				+244-93	s 294
1562	64	21	1.47				230-93	s 294
1569	+54	13	1.08		halved		+240-93	s 294
(c) Peter's Hill lattice structure								
1535	102	-	1.41	140 x 110	worked timber from lattice		119-18BC	after 8 BC
1536	+107	-	1.13	140 x 120	As 1535		82BC-AD25	after AD 35

Fig 65 Details of the samples: a. Sunlight Wharf; b. Peter's Hill, Sketches not to scale; + - unmeasured rings present on sample. Where the amount of sapwood varies around the circumference, the maximum and minimum numbers of rings are given. (Note that incomplete outer rings are not included in the ring totals or sapwood totals.) Unless otherwise stated, dates are AD. w - felled winter/early spring; s - felled late spring/summer.

2. Sunlight Wharf

Of the 13 samples from this site, 641 was rejected because its rings were too narrow to count accurately, and 556 was a worked timber with 106 heartwood rings. The remainder were roundwood samples with 40 to 69 rings (Fig 65a). These samples either had bark or appeared to have bark edge. (The outer one or two rings had occasionally been damaged during excavation or sampling). The timbers had been felled in winter or early spring. None of the roundwood timbers had been trimmed with the exception of 644, which had been dressed but retained bark edge at some points on the circumference.

Several of the sequences crassmatched (Fig 64). A site master of 69 years (SUN1) was constructed using data from 551, 551B, 552, 554, 555, 557, and 558. When the unmatched sequences were tested against the master, another two sequences, 543 and 642, were found to match.

Comparison of the Sunlight Wharf and Peter's Hill masters showed that the ring patterns from the two sites were very similar. The comparison between SUN1 and PETMEAN4, for example, gave a *t* value of 8.2. This match dates SUN1 to AD 225-293. SUN1 also gives a weak agreement with the two German chronologies at this date, but the sequence is too late in date to match the other London chronologies by which Peter's Hill was dated (Fig 63 and 66). No reliable dating was found for the worked timber, 556.

The two site masters were combined to give a single chronology which contains 19 sequences and dates to AD 191-294. (All the tree-ring data from Peter's Hill and Sunlight Wharf are stored at the Sheffield Dendrochronology Laboratory, where they can be consulted.)

The outer ring of all the matched Sunlight Wharf timbers except 558 is AD 293, so that the timbers were felled in the winter/early spring of AD 293/4. 558 ends in AD 292, but bark edge was queried for this sample so it too is probably contemporary,

Relationship between the two sites and the dating of the roundwood structures

In physical appearance the roundwood samples from the two sites are similar. They mostly belong to the same age range of 50-70 years, and many have similar dimensions. When their cross-sections are compared by eye, diagnostic ring patterns can be detected. Computer comparison of the ring patterns confirms this similarity since some of the highest *t* values were obtained between sites rather than within the same site. PET1477 against SUN551B, for example, gives a *t* value of 7.6. It seems likely therefore that the roundwood timbers are foundation piles from the same structure, and that the timbers came from the same area of woodland.

A closer examination of the felling dates (Fig 67) shows that all the dated timbers from Sunlight Wharf were felled in the winter or early spring of 293/4. One of the Peter's Hill timbers, 1307, was also felled at this time, but the majority were felled in the late spring-early summer of 294. The only possible exception is 1297, which was felled in the spring/summer of 294 or the winter of 295. It seems likely therefore that all the timbers were felled in 294, but that the Sunlight Wharf timbers could have been felled a few weeks earlier than those at Peter's Hill.

It is unlikely that the timbers would have been seasoned. Hollstein (1980) lists several examples where Roman timbers of known historical date have been dated dendrochronologically, and there is no difference between the felling and construction dates. Apart from the fact that there would be no need to season the oak foundation piles, two other factors must be considered. First, if the timbers had been cut and stored for seasoning, it is probable that the bark would have been removed for tanning, or that it would have been knocked off during piling. Second, the timbers sampled for tree-ring analysis represent a small percentage of those found during the two excavations, which suggest that a very large number of piles would have been required for

Chronology	t values				
	PET2	PET3	PET4	SUN	SUN/PET
London:					
Baynards Castle (Morgan 1980)	3.9	4.2	4.1	*	4.3
Billingsgate (Hillam 1987)	5.4	5.3	5.1	*	4.5
Chamberlains Wharf (Tyers pers comm)	3.8	3.8	3.8	*	3.3
City/Southwark (SDL/Tyers)	4.8	5.2	5.0	3.1	5.1
New Fresh Wharf (SDL)	5.3	5.4	5.3	*	3.4
Tower of London (SDL)	4.3	4.3	3.8	*	3.4
Sunlight Wharf, SUN1	5.0	6.9	8.2	—	—
Germany:					
south (Becker 1981)	2.9	3.2	3.4	3.4	3.7
west (Hollstein 1980)	3.7	4.2	3.9	3.2	4.2
Ireland:					
Teeorry (Baillie & Pilcher pers comm)	4.3	4.1	3.8	1.9	3.2

Fig 66 Dating the piles from Peter's Hill (PET) and Sunlight Wharf (SUN) : *t* values for comparisons between these sites and dated reference chronologies. * - overlap of 30 years or less; SDL - Sheffield Dendrochronology Laboratory, unpublished data.

Chronology	t values	
	1535	1536
City/Southwark (SDL/Tyers)	5.0	5.0
New Fresh Wharf/Seal House (SDL)	2.6	3.5
Peninsular House (Hillam 1986)	5.3	4.5
Pudding Lane (Hillam 1986)	4.1	3.2
Roman London (SOL)	4.3	5.1

Fig 67 Dating 1535 (119-18 BC) and 1536 (82 BC - AD 25) from the Peter's Hill lattice structure. SDL - Sheffield Dendrochronology Laboratory, unpublished data.

the structure. If they had come from a timber yard where they had been seasoning, it is more likely that a variety of felling dates would have been obtained. Instead, the single felling date of 294, plus the likelihood that the timbers came from the same woodland, suggests that the timbers were cut and used almost immediately, first at the Sunlight Wharf end of the structure then at Peter's Hill.

Relationship with other Roman structures

The relationship between Peter's Hill/ Sunlight Wharf and other ring sequences from 2nd and 3rd century London sites is shown in Figure 63. The two worked timbers from Peter's Hill were felled after 8 BC and after AD 35 but, because the number of missing heartwood rings is unknown, felling could have been much later. However their early date suggest that, unlike the piles, the lattice timbers were re-used,

The piles, felled in 294, represent the latest structure from London dated by dendrochronology. The timbers from the riverside wall, sampled at Baynard's Castle, New Fresh Wharf and the Tower of London, were probably felled in the period AD 255-70 (Hillam & Morgan 1986; Sheldon & Tyers 1983), so that this structure is earlier than the foundation piles at Peter's Hill and Sunlight Wharf. The 3rd century quay at New Fresh Wharf and Billingsgate Lorry Park (Hillam 1987b) and the structure at Chamberlains Wharf in Southwark (Tyers pers comm) are also earlier in date.

The apparent absence of Roman timbers from London or elsewhere in Britain, which are later in date than those at Peter's Hill and Sunlight Wharf, may be explained by the following factors. One, the 2nd/3rd centuries saw the change in building material from timber to stone; and two, timber supplies must have diminished dramatically because of the large quantities of wood used in the 1st and 2nd centuries, such as in the massive 1st century quays at Pudding Lane (Milne 1985).

Dendrochronological implications of the study

The study involved samples with relatively short ring sequences. It became apparent during the analysis of the

Peter's Hill samples that the quality of the crossmatching could be improved if two sets of measurements were made along different radii. This has now become general policy at Sheffield when shorter ring sequences are examined, and was certainly successful with the Sunlight Wharf samples.

Examination of the quality of agreement between the master curves from Peter's Hill shows that it is PETMEAN3, the master containing seven sequences, which is most suitable for absolute dating (Fig 66). However PETMEAN4, with 12 sequences, is better when compared with Sunlight Wharf. This indicates that for dating samples from the same site or structure, it is better to have a master curve containing as many ring sequences as possible. But for absolute dating using reference chronologies from different areas or even countries, such a master may not be ideal since it incorporates a growth signal with too much local information.

Conclusions

Tree-ring analysis of samples from Peter's Hill and Sunlight Wharf shows that both groups of roundwood piles were felled between AD 293 and 295, and probably in the late spring of 294, but the Sunlight Wharf timbers were felled a few weeks earlier. All aspects of the two groups of timbers are otherwise similar, and it is therefore suggested that the foundation piles belong to the same structure. Since seasoning is unlikely, the structure was probably built in mid 294, starting with the Sunlight Wharf end of the structure.

The two timbers from the lattice structure at Peter's Hill were felled some time after 8 BC and after AD 35. Even allowing for missing heartwood rings, these timbers are likely to be re-used.

Appendix 2: The building material

by Ian Betts

This section primarily deals with the building material from Peter's Hill, which provided most of the building material associated with the construction of the late 3rd century Period II complex. Some additional information was obtained from Sunlight Wharf. These sites have a detailed Building Materials Archive Report (Betts 1987b; see Appendix 4 for availability); for details of the relief-patterned flue tiles, see Betts *et al* in preparation.

For comments regarding the potential significance of this material in reconstructing earlier buildings, see Chapter 8.1 and 8.2.

Ceramic building material

A vast quantity of Roman building material was recovered from Peter's Hill, some 2005 kilograms from the Roman levels alone, together with substantial amounts from residual contexts. Unfortunately, the

majority of ceramic building material was recorded and discarded when the fabric type collection was still in its infancy; however, all the keyed flue tiles were retained, along with bricks and tiles with various kinds of marks. Thus it has been possible to check through the remaining material for rare fabric types.

The majority of the ceramic building material from Peter's Hill consisted of brick (656 kilos; 46.4%), and roofing tiles (435 kilos; 30.8%). In addition, a relatively small quantity of flue tiles were found (88 kilos; 6.2%). There were two major concentrations of building debris, the Group 2.11 compacted dumps and the Group 2.10 gravel dumps, which lay to the east and west of the main 2.7 foundation respectively.

Group 2.11 produced the largest quantity of ceramic building material on the site, a total of 580 kilos (41% of the total assemblage). Brick was the most common ceramic building material (292 kilos, 50.3% of the 2.11 assemblage and 44.5% of the total brick assemblage), but there were also substantial amounts of roofing tiles (134 kilos; 30.9% total site assemblage) and flue tiles (58 kilos, 67% of the total site assemblage). These flue tiles had scored, combed or relief-patterned keying (dies 12 and 101).

The Group 2.10 dumps contained 522 kilos of ceramic building materials (36.9% of the total assemblage). Here there were roughly equal quantities of roofing tiles (214 kilos; 41% of the 2.10 assemblage, 49.2% of the total site assemblage) and bricks (196 kilos; 37.5% of the 2.10 assemblage, 29.8% of the total site assemblage). Only 24 kilos (4.6% of the 2.10 assemblage) of flue tiles were retrieved. Again these had scored, combed or relief-patterned keying (dies 3, 8, 12, 85 and 91). One pattern, die 91, is unique to Peter's Hill.

The rest of the site assemblage (22%) was fairly evenly distributed over the other sub-Groups. The most notable find was a single *tegula* fragment in a rare fabric (type 3019), of AD 100-120 date, found in the masonry foundation (Group 2.7).

Dating

The majority of the ceramic brick and tile was of 1st-early 2nd century date. This would explain the presence of late 1st/early 2nd century PPBRLON stamped tiles from Groups 2.6, 2.10, 2.11, and 2.13. In addition, there are relief-patterned box flue tiles of late 1st-2nd century date in Groups 2.3, 2.10, 2.11 and 2.13. In the Group 2.11 assemblage, however, small quantities of *tegula* and *imbrex* in a fabric dated to the late 2nd/3rd century, or later, were found (type 2456; 300 grams or 0.5% of the flue tiles within the 2.11 assemblage).

Relief-patterned flue tile

A total of 13 relief-patterned tiles were found in Period 2 contexts at Peter's Hill:

Die	Period
3	2.10, 2.13
8	2.10
12	2.10, 2.11, 2.13
42	2.3
85	2.10, 2.13
91	2.10
93	2.13
101	2.11 (two)

Die 91, together with Die 90, which came from a post-Roman context, is unique in Britain.

Decorative stone

A large group of decorative stone work was found at Peter's Hill, most of which derived from the Group 2.11 dumps (69 out of 72 examples). The stones are listed below, together with their provenance, where known:

- (i) *Igneous rocks*
Diorite. Probably Eastern desert, Egypt.
Gabbro or Dolerite.
- (ii) *Metamorphic rocks*
Coarse white marble. Various quarries in the Aegean, or Turkey.
Carrara type marble. Luni, Tuscany in Northern Italy.
Cipollino. Island of Euboea off the eastern coast of Greece.
'Aquitaine' marble. Quarried near St. Giron, southern France.
Pavonzzetto. Quarried near Docimium in Phrygia, Turkey.
Portasanta? Island of Chios, in the Aegean.
Misc. Marble. Source uncertain.
- (iii) *Sedimentary Rocks*
Dark Carboniferous Limestone. Found in various regions of Europe, similar to 'Tournai' marble.
Fine buff limestone. Possibly Somerset.
'Wealden' shale. Probably the Weald.
Purbeck marble. Isle of Purbeck, Dorset

Dating

The date of the original use of this stonework is not easily established, but the black and white 'Aquitaine' marble (*marmon celticurn*) suggests a date no earlier than the 3rd century, as this material is not thought to have been exported from Rome until that date (Pritchard 1986, 187). The Carrara-type marbles are, in contrast, thought to have been in marked decline during the 2nd century (*lot cit*).

Re-used stone blocks within the Period II masonry foundations

Although a number of samples were taken from the Group 2.7 foundation at Peter's Hill, only one fragment appears to have survived for study. However, from a visual identification on site recorded in the site archive, it was thought that all the stones were of the same material. The sampled fragment was a coarse shelly oolitic Lincolnshire limestone (from context 1938), comparable with Barnack Stone in the Geological Museum's reference collection (identification by Dr R W Sanderson).

More stone samples were obtained from the Period II complex foundations at Sunlight Wharf (samples were taken from Groups 1.6, 1.9, 1.14 and 1.17). A number of different stone types were recognised in the field, and each was sampled. The most numerous was identified by Dr Sanderson as a coarse shelly oolitic limestone, of Barnack type. Other relatively frequent types were Lower Greensand limestone (Kentish Rag), and sandstone (Hassock). Infrequent types were tufa, and a single fragment of Upper Greensand, possibly Gatton Stone. At present there are no reliable date ranges for the use of stone types in London during the Roman period, although it is interesting to note that Upper Greensand has not previously been found in a Roman context in London.

Slate roofing?

A number of fragments of grey-coloured slate occur in Group 2.11. Although no nail holes are present, these are possibly parts of roofing slates. Roofing slates, assumed to be of Roman date, were found in late Saxon deposits at St Magnus House (Rhodes 1986, 245), but this is the first occurrence of slate in sealed contexts from Roman London. The presence of slates here, together with decorative stonework, would suggest that they originated from a building of particular importance.

Appendix 3: timber supplies

Two groups of timbers were found in the Period II complex; first, the piles which supported the chalk raft foundation, and secondly, the horizontal timber beams used to lace the foundation courses (evidence from both Peter's Hill and Sunlight Wharf for these assemblages).

Piles

(For dendrochronological and species information see Appendix 1.)

Statistically, the Sunlight Wharf material provides a somewhat biased sample, as pressures of time during the collection of the samples meant that unusual timbers were nearly always investigated, whereas the rest of the timbers, an overwhelming majority, could only be analysed from a few representative samples. The Peter's Hill assemblage provides a rather more balanced picture as all of the piles observed were accorded the same treatment,

The Peter's Hill assemblage

Total assemblage comprised 231 piles.

Shape	Number	%
circular	63	27.3
sub-circular	107	46.3
quarter-round	1	0.4
oval	43	18.6
square	5	2.2
unknown	12	5.2

Diameter	Number	%
< 100mm	2	0.9
100 < 150mm	15	6.5
150 < 200	168	72.7
200 < 250	42	18.2
unknown	4	1.7

All the piles were identified as oak. A few (2.6%) showed signs of re-use, being squared down from larger originals. Most, however, appear to have been complete boles (92.2%), with the bark still present in most cases. The size of the piles was also broadly similar, some 90.9% falling in the range 150-250mm. All of the piles were very straight (Fig 14) and varied in length between c 2.0-3.6m (evidence from Sunlight Wharf). The timbers were also of a consistent age when felled (Appendix 1).

It is difficult to estimate the quantity of piles required for the whole of the Period II complex, but just the area examined at Peter's Hill required some 650 linear metres of timber. By connecting the observed foundations a figure in excess of 4,000 linear metres would have been required. This in turn may only represent a relatively small proportion of the complex's overall needs, possibly as little as 20%.

There can be little doubt that the construction of the Period II complex would have produced a substantial demand for new timber of a very consistent type, *ie* oak, with straight boles in excess of 2m, and with a diameter of 150-250mm. Could this material have been obtained, in such quantities, from the selective felling of natural woodland, or was it derived from managed, estate, woodland? The similarity of the timbers, especially their ages, certainly seems to suggest the latter.

Horizontal timber beams

Although none of the actual timbers survived, clear impressions in the second chalk raft enable us to reconstruct some aspects of their original appearance. (The slots are considered an accurate reflection of the original timbers as they were formed by chalk packed against the *in situ* timbers, which, when removed, left sharp vertical impressions - in a few instances the slots had been disturbed, and these have been ignored for the purposes of this discussion.)

The impressions indicated that the timber baulks had been 0.29-0.30m square. This dimension is directly comparable with the timbers used to lace the foundations of other structures of this date; in particular the Saxon Shore forts and town walls in Gaul (compared

with the Period II complex p21-4 and Fig 23). The fact that all the known examples closely respect the dimension 0.29-0.30m suggests that it may be of some significance. The similarity of this dimension with the *pes monetalis* (0.296m) would also seem too striking to be ignored. It is possible that this indicates that a standard pre-cut size was used for such baulks. This would, in turn, suggest an organised and standardised supply industry. However, it is also possible that this is a reflection of the same workforce/craftsmen travelling from one project to the next (see p37).

The quantity of timber required for the Period II complex was, once again, considerable. In this case it is not clear, if the baulks were being removed, exactly how many would have been required at any one time. However, the comer foundation at Peter's Hill required some 150 linear metres of 0.30m square timbers, and this could easily represent as little as 5% of the total requirement.

Appendix 4: Archive Reports - availability

The following Department of Urban Archaeology Level III Archive Reports, detailing the structural sequences, have been cited in the text. They are identified by their alphanumeric site code;

BC75	Baynard House/Queen Victoria Street
MM74	Baynard House/Queen Victoria Street
PCH85	1-3 St Paul's Churchyard/15 Creed Lane
PET81	Peter's Hill/Castle Baynard Street/Upper Thames Street
QUN85	61 Queen Street
SKI83	3 Skinner's Lane/36-9 Queen Street
SLO82	Beaver House/ Sugar Loaf Court
SUN86	Sunlight wharf/Upper Thames Street
TST78	Tunnel Upper Thames Street
WAT78	Watling Court

In addition, for each site, a Finds Appraisal and a Building Materials Report are also available. These can be obtained by citing the site code.

Copies of these reports are available on request. Details concerning both the field and finds department archives can be obtained by writing to;
The Archive Officer,
The Department of Urban Archaeology,
The Museum of London,
London Wall,
LONDON EC2Y 5HN.

Appendix 5: Site numbering (Fig 2)

Three excavations, Peter's Hill (Site 1), Sunlight Wharf (Site 2), and the Salvation Army Headquarters (Site 3), form the basis of this report. These sites are normally referred to by name. Other sites referred to by name are the riverside wall excavation at Baynard's Castle (Site 4), and the Huggin Hill bath house (Site 5).

A considerable body of evidence for this report also comes from earlier observations, many of which have no easily identified site names. Most were allocated numbers by Merrifield in his gazetteer (Merrifield 1965), but some observations, particularly in the Knightrider Street area, are not satisfactorily served due to conflated descriptions. In addition, some observations noted in Guildhall Museum records were not transposed into the Merrifield system. It has been necessary, therefore, to re-number the observations and a single numbering system has been adopted throughout (Observations 6-29). The only exception to this is the recent excavations mentioned in passing during the general discussion of the area (Chapter 3); these are simply referred to by site name and DUA site code (see Appendix 4).

Abbreviations:

Merri = Merrifield gazetteer (Merrifield 1965)

Grimes = Grimes (1968)

RCHM = Royal Commission (RCHM 1928)

DUA = site code allocated by the Department of Urban
Archaeology

Site	Name	Merri	Grimes	RCHM	DUA
Principal sites					
1	Peter's Hill	—	—	—	PET81
2	Sunlight Wharf	—	—	—	SUN86
3	Salvation Army HQ	110-113 & 116	—	—	—
Major excavations in the vicinity					
4	Baynard's Castle	—	—	—	BC75
5	Huggin Hill	119-121	—	—	DMT88
Principal observations					
6	Peter's Hill sewer	109	—	169	—
7	Lambeth Hill	114	—	W41	—
8	Brook's Yard	115	—	W41	—
9	Old Fish St Hill	117	—	170	—
10	Lambeth Hill east	—	32	—	—
11	Fye Foot Lane	118	—	—	—
Observations in the Knightrider Street area					
12	Peter's Hill	93	—	—	—
13	Peter's Hill	93	—	?168	—
14	Knightrider St	94	—	167	—
15	Knightrider St	94	—	167	—
16	Knightrider St	97	—	—	—
17	Knightrider St	95/96	—	—	—
18	Knightrider St	98	—	—	—
19	Friday St	99	—	165	—
20	Peter's Hill	100	—	?168	—
21	Peter's Hill	100	—	—	—
22	Old Change Hill	101	—	166	—
23	—	102	—	—	—
24	—	—	—	—	—
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28	Carter Lane	83	—	—	—
29	Cannon St	84	—	—	—

Other sites referred to in the text (not on Fig 2)

Gateway House (Merrifield site 85)

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Abbreviations

- City Sewer Plans - Records Office, Guildhall, Corporation of London
 E R Book - Guildhall Museum Excavation Record Day Book Unpublished, Museum of London
 JBAA - Journal of the British Archaeological Association
 Not Dig Occ - Notitia Dignitatum Occidentalis, edited by Seock (1896)
 Pan Lat - Panegyrici Latini, edited by R A B Mynors (1964) Oxford

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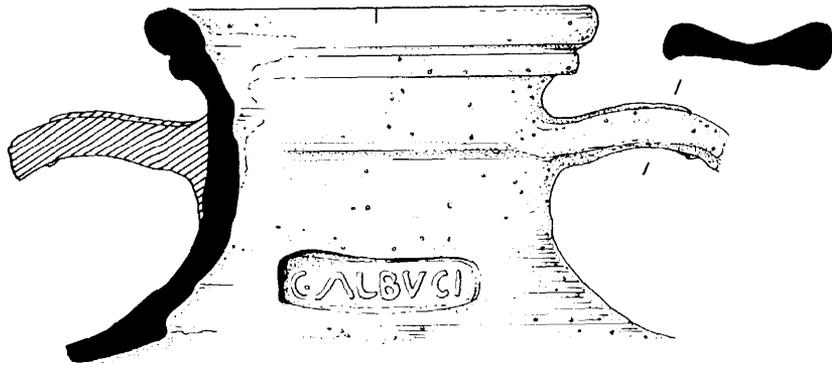
The archaeology of Roman London Volume 5

CBA Research Report 98

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Barbara Davies, Beth Richardson,
and Roberta Tomber





Frontispiece. Sugar Loaf Court flagon stamped by Caius Albucius (Scale 1:2)

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B J Davies, B Richardson
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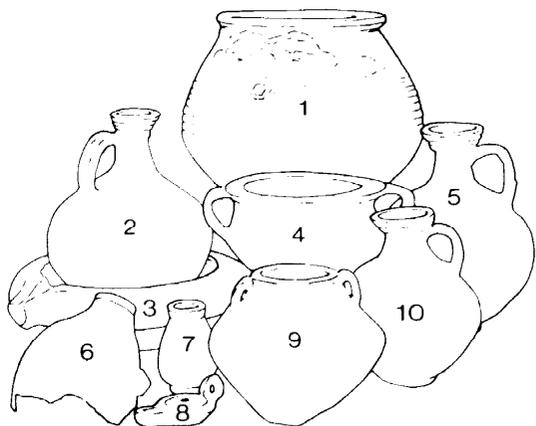
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Front cover: Oxidized wares from the Verulamium Region.
1. Verulamium Region White ware IIFACE; 2. Verulamium Region White ware IB2; 3. Verulamium Region White ware mortarium (MORT-HOF) stamped by Albinus; 4. Verulamium Region White ware handled IVA; 5. Verulamium Region Coarse White-slipped ware IB7; 6. Verulamium Region White ware IIIA; 7. Verulamium Region White ware IIJ; 8. Verulamium Region Mica-dusted ware lamp; 9. Verulamium Region White ware IIK; 10. Brockley Hill White-slipped ware IA

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a) L555	u) HWC	ao) LOMA
b) NACA	v) HWC+	ap) RBGW
c) SLOW-2566	w) HWC-1403	aq) CGHW
d) SLOW-2565	x) CCGW	ar) KOLN
e) LOXI-2599	y) CCGW	as) LOMI-371
f) LOXI-2600	z) ERMS	at) LOMI-1247
g) ECCW	aa) ERSI	au) LOMI-1244
h) HOO	ab) ERSA	av) MICA-376
i) VRW	ac) ERSB	aw) RDBK-1606
j) VRW	ad) ERSS	ax) RDBK-1606
k) VCWS	ae) AHSU	ay) LOEG
l) BHWS	af) NKSH	az) LONW
m) NFSE-2667	ag) SESH	ba) NKFW
n) NFSE-1298	ah) BB1	bb) FMIC-1659
o) G238	ai) BBS-1547	bc) FMIC-1746
p) AOMO	aj) BB2-1462	bd), FMIC-2488
q) RVMO	ak) BB2-2238	be) FMIC-2559
r) RHMO-2554	al) BB2-2768	bf) FINE-492
s) HWB	am) BB2-2759	
t) HWB/C	an) COLC	

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Summary

This volume presents the early Roman pottery from the City of London, both typologically and as chronological groups, for the period 50-160. The text is divided into seven chapters and five appendices.

The introduction (Chapter 1) provides a short history of Roman pottery studies in London, and outlines the main data base used here. One site, Newgate Street (GP075), provides a framework for the early Roman sequence, due to its well-defined stratigraphy in conjunction with nearly one tonne of pottery. Although some intrusive pottery was identified from the sequence, detailed analysis indicated that this did not distort the overall ceramic conclusions. The problems of the site and its sequence are set-out both in this chapter and in Appendix 1.

The evidence from GPO75 was supplemented by quantified data from nine other sites throughout London (Fig 182). By amalgamating the data from these ten sites it was possible to construct five ceramic horizons or ceramic phases for this period. These will provide an important basis for testing future ideas about the variability of ceramic distribution within London, as well addressing other questions of a social and economic nature.

In addition to this quantified data, incidence records noting presence were interrogated for over 250 London sites in order to test the conclusions presented here. Finally, the typology was enhanced by the illustration of complete vessels present in the Museum of London Reserve Collection.

Chapter 2 provides a summary of the methods of classification, the presentation of the remainder of the text and abbreviations used. The pottery is classified by both fabric and form type. Fabric is described in detail and in most cases referred to by common name - codes which are given to those types which occur with regularity, form a stylistic group or for which a source is known. Abbreviations for common names are expanded in Appendix 2. Forms are divided into seven main categories: flagons (I), jars (II), beakers (III), bowls/dishes (IV), plates (V), cups (VI) and mortaria (VII) which are further subdivided in the text. Pottery is quantified by weight and estimated vessel equivalents (Eves), measuring rim sherds. The raw data can be found in Appendix 5.

The core of the text (Chapters 3-6) is devoted to a description of the different ceramic industries present in London. The date, fabric, forms and, where possible, source are discussed for each industry or fabric. In the case of amphorae, contents is also discussed. Supporting illustrations and graphs accompany the text where appropriate.

As one of the major towns of early Roman *Britannia*, London boasts a diverse range of imported pottery, although not necessarily in large quantities. This is clearly seen through the amphorae, presented in Chapter 3. Large quantities of the common Baetican

Dressel 20 and Gaulish amphorae dominate during this period, together with other Spanish types from both Baetica and Cadiz (Haltem 70, Dressel 28, Camulodunum 186). In addition, a number of imports from further afield can also be identified. The latter include the Cretan Dressel 43, Rhodian-style (Camulodunum 184) vessels from the Aegean and elsewhere, North African Cylindrical amphorae (a rare find for this early period), Dressel 2-4 wine amphorae from a variety of sources, as well as possible imports from elsewhere in the Mediterranean (Camulodunum 189 and Kingsholm 117).

The chapter also includes an important discussion, arguing a Gaulish source for the 'London 555' (*contra* Sealy & Tyers 1989). Finally although not common, the Italian Richborough 527, presented here, is perhaps more frequent in London than elsewhere in Britain.

Chapter 4 turns to the oxidized wares, including mortaria. Of great interest here is a local type, Sugar Loaf Court ware (SLOW), produced during the pre-Flavian period. The forms indicate a variety of continental influences, the most distinctive of which is the 'Schultertopfe' jar. In balance, the material indicates a potter originating from western Switzerland, between the valleys of the Saane and the Aare. One vessel is stamped by C ALBVCI, a name most common in northern Italy.

A second oxidized ware - Local Oxidized wares (LOXI) - diagnostic during the Hadrianic/Antonine period, may be local in origin, although a possible relationship with the Verulamium Region potteries is also discussed. Verulamium remains the most abundant oxidized ware throughout the sequence. Seven fabrics are presented in addition to the classic white ware, with two of these (Verulamium Region Coarse White-slipped ware and Brockley Hill White-slipped ware), tentatively assigned to the Verulamium region based on fabric comparisons between London material and the kiln sites, VCWS is of special interest, seemingly representing the end of the Verulamium production sequence, mainly during the early Antonine period. Other British sources represented by oxidized wares include Eccles and Hoo in Kent, as well as ?Gloucester.

Imported oxidized wares are mostly mortaria, from Aoste (Isire), Italy, the Rhone Valley and the Rhineland. One group, described here as North French/Southeast English can now almost certainly be attributed to France (K Hartley, pers comm). This group, including both flagons and mortaria, comprises a series of closely related fabrics associated with particular forms and occurs from the Neronian to early Antonine period. The most common of these groups is represented by the Gillam 238 or Hartley Group II mortarium.

Reduced wares are discussed in Chapter 5. Some-

what specialised categories of reduced wares are defined by technological characteristics (eg black-burnished) and where appropriate fabrics are discussed within these parameters. The most common and important reduced ware industry is the local one at Highgate Wood. The production site has been systematically excavated and a chronological sequence of three fabrics identified, of which the latter two are frequently present in the City: the first, a handmade grog-tempered ware (HWB), occasionally with red slip (HWBR) generally producing native forms is most common during the 1st century; the second, a wheel-made quartz-tempered fabric (HWC) producing Romanized forms dominates from 100-40, although production may continue to 160/80. Other wares thought to be local are not confined by production sites, but include Cophall Close Grey ware, Early Roman Micaceous Sandy ware, Early Roman Sandy wares and Early Roman Sandy Iron-rich ware. ERMS is of special interest, as a stamp on this vessel indicates contact of some sort with sites in Sussex.

Non-local Romano-British reduced wares come from a variety of sources and the common ones include wares from Alice Holt (Surrey), and black-burnished wares from Dorset (BB1), Kent and Essex (BB2). Of the shelly wares, only those from north Kent are common, although sources in south Essex can also be identified by lesser amounts of pottery. East Sussex is represented by a rare grog-tempered ware. The only reduced ware imported from the Continent is represented by the North Gaulish Grey wares, a type more diagnostic of the later periods and only rarely found here.

Finally, Chapter 6 presents the non-samian fine wares. These, again, are discussed within technological categories (eg colour-coated wares). As for the amphorae, the variety of wares imported from the Continent is notable, with sources in Spain, south, central and northern Gaul, the Rhineland, Italy and possibly the Mediterranean present. None are common, but of these the Central Gaulish Colour-coated wares are best represented. South Gaulish Colour-coated ware is rare in Britain and as such the presence of four vessels from a single pit in London is significant.

Generally, the dating and typology of these wares is in keeping with the evidence from the Continent, although the Pompeian Red wares may be somewhat unusual. Firstly, the Campanian fabric (PRW1) which appears to be the most common fabric elsewhere in Britain is greatly out-numbered here by PRW3, with a possible source at Lezoux. The dating of this latter type may also be unusual, for the quantity of vessels in Hadrianic and Antonine deposits in London, if not residual, indicate a life extending beyond their normally accepted late 1st century date.

Many of the fine wares remain unsourced, particularly the reduced ones, but those interpreted as local include Marbled (LOMA), Mica-dusted (LOMI), Eggshell (LOEG) and some reduced fine wares including London (LONW) and three micaceous Fine Micaceous fabrics (FMIC-1659, ?FMIC-1746,

?MICA-383).

Non-local Romano-British wares from known sources are rare, but comprise Colchester, other sources in Essex and Kent. The Ring-and-dot Beaker fabric, common during the late Neronian and Flavian periods, may originate in the Verulamium region, where the production of Mica-dusted (VRMI) and Marbled (VRMA) wares is known.

The final section, Chapter 7, provides an overview of the main ceramic trends through time, presented as five ceramic phases, with accompanying illustrations and graphs. London is compared with other sites in the area for which quantified data was available. General trends which are identified include the decrease of imported Continental and Mediterranean pottery through time, the decline in oxidized wares and the gradual change in the ratio of bowls to jars, with bowls increasing in importance. A chronological discussion of the ceramic supply also shows a gradual consolidation in the number of source areas represented. The Boudiccan destruction serves as a critical breaking point for many of the ceramic trends. The five ceramic phases (with samian ware included here) are described in detail in the main text.

London's prime position, at the junction of major road and water systems, is reflected in the large number of Continental and Mediterranean imports present. In addition to receiving pottery, London undoubtedly served as a major, though not the sole, redistribution centre for a hinterland within the southeast. Not only imports, but many of the Romano-British wares present in London, were also supplied via waterways.

The importance of local industries to London's pottery supply is witnessed by a variety of grey ware producers during the 1st century, and a growing number of tie ware industries during the later 1st and 2nd centuries. In contrast, white wares were exclusively supplied by industries outside the immediate vicinity of London and the history of the potteries at Verulamium was largely influenced by the needs of London.

The period between 50 and 160, which coincides with London's maximum growth and size, falls into five main ceramic phases of development, each of which is related to distinct changes in supply. The pre-Boudiccan (RCP 1A) settlement largely clustered around the area east of the Walbrook, and in a ribbon development along the main east-west road. The original settlement dates from c 50 in Southwark, although in the City development later in the 50s is attested by the predominance of Neronian samian. New ceramic evidence - the earliest Highgate products in conjunction with early shelly wares - may, however, require revision of our current understanding of the City. This first phase of Roman London was destroyed by a fire in 60/1.

Most pre-Boudiccan assemblages are small in comparison with those from the later 1st century, indicating a relatively smaller population. Despite this, the pre-Boudiccan period was the time of greatest ceramic importation from outside Britain. The local

potteries at Highgate Wood were able to meet the demands of cooking pots through native grog-tempered wares, while more Romanized forms were predominantly supplied by producers outside London. Building techniques used during this period suggest that at least part of the population may have been Gallic or Italian in origin; the establishment of a local ceramic industry in London by a continental potter(s), probably from western Switzerland, also argues for an immigrant population.

After the Boudiccan uprising, the provincial capital was transferred from Colchester to London. Assemblages of late Neronian pottery indicate some activity in the town between 60/1 and 70 (RCP 1B). Pottery differs subtly from that seen in the pre-Boudiccan period, with non-sigillata fine ware imports reduced or absent; in most respects the same trends are present and these groups can be seen as intermediary, incorporating traits of both pre-Boudiccan and Flavian assemblages.

Between 70 and 80 London acquired the attributes of a major town, as witnessed by the scale and official character of the waterfront, the earliest phase of the first forum and various bath houses. Occupation spread west of the Walbrook, and further expansion continued during the Flavian period as witnessed by the second forum and enlarged waterfront. This expansion is reflected by the growing number of contexts and the larger size of ceramic assemblages assigned to the Flavian period (RCP 2). During this time there was a greater dependence on larger industries such as Alice Holt and the urban potteries at Verulamium.

Expansion and town planning continued throughout the Trajanic period (RCP 3) with completion and development of existing public buildings and the waterfront, and more intensive occupation both east

and west of the Walbrook. The Upper Walbrook area was now developed for the first time. By this time Britain had achieved a certain degree of economic independence in terms of ceramic production, and this is evident from the diversification in fine wares, many of which are local. Native traditions of pottery manufacture were replaced by Romanized fabrics and vessel types.

A second wide-scale conflagration in London has been proposed as marking the beginning of the Hadrianic period (RCP 4). The waterfront was reorganized in the mid to late 2nd century, while building activity established northern limits of the city. The pottery of this period shows a marked change that continues into the early Antonine period (RCP 5). In common with the rest of Britain, London was now receiving regional wares, such as BB1 and BB2. Rare imports such as fine wares from Cologne herald the importance of ceramic patterns realized in the later Roman period.

The Hadrianic period was the last main phase of construction in the western part of the City; in the middle Walbrook bath houses were dismantled in the late 2nd/early 3rd century, but may have been abandoned earlier; while in the Upper Walbrook Valley occupation continued into the 3rd century. The comparative rarity of assemblages dating to the later 2nd century suggests a real decline in the population during this period. A change in ceramic patterns are witnessed by the cumulative decrease in material from Highgate Wood and to a lesser extent Verulamium. The continuation of this trend, during the period 160-80, is more fully understood and complemented by the study of London's development and pottery supply during the late Roman period (Symonds & Tomber 1991).

Résumé

Ce volume traite de la céramique romaine du Haut-Empire trouvée dans la Cité de Londres, à la fois au plan typologique et en tant que groupes chronologiques, ceci pour la période allant de 50 à 160 après J.C. Le texte est divisé en sept chapitres et cinq appendices.

L'introduction (chapitre 1) nous fournit un bref aperçu des études relatives à la céramique romaine de Londres, et expose à grands traits le fichier central de données utilisé ici. Un site comme Newgate Street (GPO 75) par exemple, présente un canevas idéal pour la séquence concernant la période romaine précoce, grâce à sa stratigraphie bien définie concurremment à presque une tonne de poteries trouvées. Bien que l'on ait identifié dans cette séquence certains exemples de céramiques intrusives, une analyse détaillée indiqua que ceci ne faussait pas les conclusions générales concernant la céramique. Les problèmes relatifs à ce

site et à sa séquence sont exposés à la fois dans ce chapitre et dans l'appendice 1.

L'évidence fournie par le site GPO 75 fut complétée grâce à une information quantifiée émanant de neuf autres sites à travers Londres (Fig 182). En amalgamant les données issues de ces derniers on a pu établir cinq horizons de céramiques ou phases céramiques concernant cette période. Ceux-ci nous fourniront une base importante pour tester toute idée future relative à la variabilité de la distribution des céramiques au sein de Londres, de même que pour soulever d'autres questions d'une nature économique et sociale.

Outre cette information quantifiée, nos banques de données furent consultées pour plus de 250 sites londoniens dans le but de tester les conclusions présentées ici. Pour finir, la typologie fut mise en

valeur grâce à l'illustration de vases complets appartenant à la collection des réserves du Musée de Londres.

Le chapitre 2 comprend un résumé des méthodes de classification, la présentation du reste du texte et les abréviations utilisées. La céramique est classifiée à la fois par type de pâte et par forme. La pâte est décrite en détail et dans la plupart des cas mentionnée sous son nom commun - ces codes sont donnés à des types qui apparaissent régulièrement, formant un groupe stylistique ou pour lesquels la source en est connue. Les abréviations des noms communs sont exposées dans l'appendice 2. Les formes sont divisées en 7 catégories principales: cruches (I), jarres (II), gobelets (III), jattes/plats (IV), assiettes (V), coupes (VI) et mortiers (VII) - ces catégories sont subdivisées plus amplement dans le texte. La céramique est quantifiée par son poids et par le nombre d'équivalents-vases (N.E.V.) en mesurant les fragments des rebords. Les données brutes sont classifiées dans l'appendice 5.

La partie centrale du texte (chapitres 3-6) est dévouée à la description des différentes productions de céramiques présentes à Londres. La datation, les pâtes, les formes et, si possible, les sources sont passées en revue pour chaque production ou pour chaque type de céramique. Dans le cas des amphores, le contenu est aussi pris en considération. Des illustrations et des graphiques accompagnent le texte si nécessaire.

En tant que ville majeure de Britannia au début de l'époque romaine, Londres pouvait se vanter de recevoir une gamme variée de céramiques importées, pas nécessairement en grande quantité. Ceci est nettement mis en évidence par les amphores présentées dans le chapitre 3. Des quantités importantes de Dressel 20 de Baetica et d'amphores gauloises indiquent la prépondérance de celles-ci durant cette période, de même que d'autres types espagnols provenant à la fois de Baetica et de Cadix (Haltem 70, Dressel 28, Camulodunum 186). On peut même identifier un certain nombre d'importations émanant de pays plus lointains. Ce dernier groupe comprend les Dressel 43 crétoises, les récipients de style rhodien (Camulodunum 184) provenant de la Mer Égée et d'ailleurs, les amphores cylindriques d'Afrique du Nord (une découverte rare pour cette période précoce), les amphores à vin Dressel 2-4 ayant plusieurs origines, de même que des importations émanant probablement d'autres endroits de la Méditerranée (Camulodunum 189 et Kingsholm 117).

Ce chapitre comprend, de même, une discussion importante quant à l'origine gauloise de l'amphore «London 555» (*contra* Sealey & Tyers 1989). Enfin, bien que peu répandue, l'amphore italienne Richborough 527, présentée ici, se rencontre sans doute plus fréquemment à Londres que partout ailleurs en Grande-Bretagne.

Le chapitre 4 est consacré aux céramiques à cuisson oxydante, y compris les mortiers. Un type local de grand intérêt ici est celui dénommé «Sugar Loaf Court» (SLOW), produit durant l'époque pré-

flavienne. Les formes trahissent une variété d'influences continentales, dont la plus significative est la jarre «Schultertopfe». Tout bien considéré le matériel pointe dans la direction d'un potier originaire de la Suisse de l'ouest, entre les vallées de la Saane et de l'Aare. Un récipient est estampillé au nom de C ALBVCI, un nom des plus communs dans le nord de l'Italie.

Une seconde production à cuisson oxydante - céramiques locales à cuisson oxydante (LOXI) - symptomatique de la période hadrienne/antonine, semble être d'origine locale, bien qu'une relation possible avec les ateliers de la région de Verulamium soit aussi matière à discussion. Les céramiques à cuisson oxydante de Verulamium sont les plus abondantes tout au long de la séquence. Sept types de céramiques sont présentées parallèlement aux productions classiques à pâte blanche, avec deux d'entre elles (VCWS ou pâte granuleuse à engobe blanc de Verulamium et celle à engobe blanc de Brockley Hill), attribuées provisoirement à la région de Verulamium à partir de la comparaison des pâtes entre le matériel de Londres et celui des sites où ont été trouvés les fours. VCWS est d'un intérêt tout spécial, en ce qu'elle représente apparemment la fin de la séquence de production de Verulamium, principalement pendant les premiers temps de la période antonine. Les origines d'autres céramiques à cuisson oxydante incluent Eccles et Hoo dans le Kent, de même que peut-être Gloucester.

Les céramiques à cuisson oxydante importées sont essentiellement des mortiers, provenant de l'Aoste (Isère), d'Italie, de la vallée du Rhône et de la Rhénanie. Un groupe décrit ici comme étant «de la France du nord/du sud-est de l'Angleterre» peut maintenant être attribué presque sans aucun doute à la France (K Hartley, *comm pers*). Cet ensemble, comprenant à la fois des cruches et des mortiers, présente une série de pâtes étroitement apparentées entre elles tout en étant associées à des formes particulières, qui apparaissent de la période de Néron jusqu'au début de l'ère antonine. Le groupe le plus commun est représenté par les mortiers Gillam 23 ou Hartley groupe II.

Les céramiques à cuisson réductrice sont passées en revue dans le chapitre 5. Des catégories un tant soit peu spécialisées de cette céramique se définissent grâce à leurs caractéristiques technologiques (par exemple, la ((black-burnished ware))) et lorsque cela est nécessaire les pâtes sont examinées à l'intérieur de ces paramètres. La production la plus courante et la plus importante de céramiques à cuisson réductrice est celle de Highgate Wood. Le site a été systématiquement fouillé et une séquence chronologique de trois pâtes a pu être identifiée. Les deux dernières sont présentes dans la cite de Londres; la première de celles-ci, une céramique modelée «a dégraissant de chamotte» (HWB), parfois avec engobe rouge (HWBR) produisant généralement des formes indigènes se rencontre couramment au I^{er} siècle; la deuxième, tournée à pâte à «inclusions quartzueuses» (HWC) produisant des formes romanisées domine à

partir des années 100-140 après JC, bien que la production se soit poursuivie jusque dans les années 160 à 180. L'origine locale d'autres céramiques ne peut être confirmée par les sites de production, parmi celles-ci figurent la céramique «Cophthall Close à pâte g-rise» (CCGW), la «céramique précoce romaine à pâte sableuse micacée» (ERMS), la «céramique précoce romaine à pâte sableuse» (ERSA, ERSA/B et ERSAB) et la «céramique précoce romaine à pâte sableuse et à riche teneur en fer» (ERSI). ERMS est d'un intérêt tout spécial car une estampille sur un des récipients indique la présence d'une certaine forme de contact avec des sites du Sussex.

Les céramiques romano-britanniques non locales à cuisson réductrice proviennent d'une variété de sources, parmi les plus courantes figurent celles de Alice Holt, Surrey (AHSU) et les «black-burnished wares» du Dorset (BBI), du Kent (BB2) et de l'Essex (BB2). Parmi les céramiques à «inclusions de coquillages», seulement celles du nord du Kent (NKSH) sont abondantes, bien que de moindres quantités trahissent aussi la présence de productions dans le sud de l'Essex. L'est du Sussex se signale par la présence d'une céramique rare. La seule production à cuisson réductrice importée du Continent est celle des céramiques grises du nord de la Gaule, un type plus typique des périodes postérieures et trouvé seulement rarement ici.

Finalement, le chapitre 6 présente les céramiques fines non-sigillées. Celles-ci sont aussi considérées en fonction de leur appartenance à des catégories technologiques (par exemple, celles couvertes d'un engobe de couleur). Quant aux amphores, la variété des poteries importées du Continent est remarquable, provenant d'Espagne, du sud, du centre et du nord de la Gaule, de la région du Rhin, d'Italie et probablement de la Méditerranée. Aucune n'est courante, mais parmi celles-ci les céramiques engobées du centre de la Gaule sont les mieux représentées. Celles du sud de la Gaule sont rares en Grande-Bretagne et par conséquent la présence de quatre de ces récipients trouvés dans une même fosse à Londres est significatif.

En général, la datation et la typologie de ces vases sont corroborées par les exemples émanant du Continent, bien que les céramiques à «vernis rouge-pompéien» soient quelque peu inhabituelles. Tout d'abord, la pâte campanienne (PRW1) qui semble être la pâte la plus courante dans d'autres régions de Grande-Bretagne est nettement moins présente ici que PRW3, avec une origine probable à Lezoux. La datation de ce type de céramique semble être de mime, inhabituelle, car la quantité de vases trouvés dans des dépôts de la période hadrienne et antonine à Londres, s'ils ne sont pas résiduels, indique une durée de vie bien supérieure à celle qui leur est normalement attribuée - c'est-à-dire jusqu'à la fin du 1er siècle.

L'origine d'un grand nombre de ces céramiques fines reste méconnue, particulièrement celles à cuisson réductrice, tandis que celles reconnues comme étant locales incluent les «marbrées» (LOMA), les «mica-

dorées» (LOMI), les «coquilles d'oeuf» (LOEG), et certaines céramiques fines à cuisson réductrice comme la «London» (LONW) et trois pâtes fines micacées (FMIC-1659, ?FMIC-1746, ?MICA-383).

Des vases romano-britanniques non-locaux de source sûre sont assez rares, mais on en trouve néanmoins provenant de Colchester, et d'autres endroits de l'Essex et du Kent. La pâte des gobelets dits à «anneaux et points», courante vers la fin de l'époque de Néron et à la période flavienne, semble trouver son origine dans la région de Verulamium, où la production de céramiques «mica-dorées» (VRMI) et «marbrées» (VRMA) est connue.

La section finale, le chapitre 7, nous fournit une vue d'ensemble des tendances céramiques principales durant le Haut Empire, présentée sous forme de cinq phases céramiques, accompagnées d'illustrations et de graphiques. Londres est comparé à d'autres sites de la région pour lesquels des informations quantifiées sont disponibles. Parmi les tendances générales identifiées figurent la diminution des importations de céramiques provenant du Continent et de la Méditerranée à travers les décennies, le déclin en céramiques oxydées et le changement graduel dans le ratio jattes/jarres, avec les jattes prenant de plus en plus d'importance. Une discussion au plan chronologique de l'approvisionnement en céramiques nous montre de même une consolidation progressive dans le nombre de régions d'origine représentées. La destruction causée par Boudicca sert de limite critique pour de nombreuses tendances concernant les poteries. Les cinq phases céramiques (la sigillée étant incluse ici) sont décrites en détail dans le texte principal.

La position privilégiée de Londres, au carrefour d'importantes voies de communication terrestres et fluviales est reflétée par le nombre important d'importations continentales et méditerranéennes. A part le fait d'avoir été le port de destination de ces céramiques, Londres sans aucun doute sert de centre majeur de redistribution, parmi d'autres, du sud-est vers l'arrière-pays. Outre les importations, beaucoup de céramiques romano-britanniques présentes à Londres furent aussi acheminées par voies fluviales.

L'importance des centres de fabrication locaux pour l'approvisionnement de Londres en céramiques est mise en évidence par bon nombre de productions de céramiques grises au 1er siècle, et un nombre croissant de productions fines vers la fin du 1er siècle et au 2ème siècle. Par contre, les céramiques à pâte blanche étaient fournies exclusivement par des ateliers situés en dehors de la périphérie immédiate de Londres et l'histoire des centres de production de Verulamium était largement influencée par les besoins de la capitale.

La période située entre 50 et 160, qui coïncide avec les années durant lesquelles Londres connut une croissance et une taille maximales, correspond à cinq phases céramiques principales de développement, chacune d'entre elles étant liée à des changements distincts quant à l'approvisionnement. L'agglomération précédant Boudicca (RCP 1A) s'étendait à

travers la région située à l'est du Walbrook, formant un «*ruban*» de développement le long de la route principale est-ouest. Le peuplement d'origine date d'environ 50 à Southwark, bien que dans la Cité un développement postérieur aux années 50 soit attesté par la prédominance de la sigillée de l'époque de Néron. De nouvelles évidences concernant la céramique - les premières productions de Highgate en conjonction avec des céramiques précoces à ((inclusions de coquillages)) - peuvent, néanmoins, nécessiter une révision de notre compréhension actuelle de la Cité de Londres. Cette première phase du Londres romain fut détruite par l'incendie de 60/1.

La plupart des «*assemblages*» précédant la révolte de Boudicca sont de moindre importance comparés à ceux de la fin du I^{er} siècle, trahissant une population relativement moins nombreuse. Malgré cela, la période précédant Boudicca est l'époque la plus importante pour l'importation de céramiques provenant ailleurs que de la Grande-Bretagne. Les ateliers locaux de Highgate Wood étaient en mesure de pourvoir aux besoins en pots utilisés pour la cuisine grâce aux vases à «*dégraissant de chamotte*» indigènes (GROG), tandis que la plupart des formes romanisées étaient principalement produites par des fabricants en dehors de Londres. Les techniques de construction de l'époque laissent à penser qu'au moins une partie de la population était d'origine gauloise ou italienne; l'implantation d'une production de céramiques locales à Londres par un ou plusieurs potiers provenant du continent, probablement de la Suisse de l'ouest, témoigne aussi de la présence d'une population immigrée.

Après l'insurrection de Boudicca, la capitale provinciale fut transférée de Colchester à Londres. Des «*assemblages*» de céramiques de la fin de l'époque de Néron indiquent un semblant d'activité dans la ville entre 61 et 70 (RCP 1B). Les céramiques sont légèrement différentes de celles de l'époque précédant Boudicca, et les importations en céramiques fines non-sigillées sont réduites ou même absentes; à bien des égards, les mêmes tendances sont présentes et ces groupes peuvent être considérés comme étant intermédiaires, incorporant des traits appartenant à la fois à la période précédant Boudicca et aux «*assemblages*» flaviens.

Entre 70 et 80 Londres acquit les attributs d'une ville importante, comme en témoignent l'échelle et le caractère officiel des quais, les phases initiales de construction du premier forum et divers établissements de bains. L'occupation s'étendit à l'ouest du Walbrook, et une nouvelle expansion se poursuivit pendant la période flavienne comme en témoignent le second forum et l'élargissement des quais.

Cette expansion se reflète dans le nombre croissant de contextes et l'augmentation des «*assemblages*» céramiques appartenant à la période flavienne (RCP 2). Il y avait à cette époque une dépendance plus grande des ateliers tels que Alice Holt et les centres de production urbains de Verulamium.

L'expansion et l'aménagement de la ville se prolongèrent tout au long de la période de Trajan (RCP 3) durant laquelle furent achevés et développés les bâtiments publics déjà existants et les quais, parallèlement à une occupation plus intense à la fois à l'est et à l'ouest du Walbrook. La région du Haut-Walbrook fut alors développée pour la première fois. La Grande-Bretagne avait atteint à cette époque un certain degré d'indépendance économique au plan de la production de céramiques, ceci étant évident par la diversification des céramiques fines, dont la plupart sont locales. Les traditions indigènes dans les ateliers de fabrication furent remplacées par des pâtes et des types de récipients romanisés.

Il a été suggéré que le deuxième embrasement de grande envergure touchant Londres marqua le début de l'époque d'Hadrien (RCP 4). Les quais furent réorganisés du milieu jusqu'à la fin du 2^{ème} siècle, tandis que de nouvelles constructions établissaient les limites septentrionales de la ville. La production de cette période est marquée d'un changement notable qui se poursuit jusque dans les premiers temps de la période antonine (RCP 5). En commun avec le reste de la Grande-Bretagne, Londres recevait alors des céramiques régionales, telles que la BB1 et la BB2. Des importations rares comme les vases fins de Cologne annoncent l'importance des modèles de céramiques réalisés vers la fin de l'époque romaine.

La période d'Hadrien representa la dernière des phases principales de construction dans la partie ouest de la Cité. Au niveau du cours moyen du Walbrook des établissements de bains furent démantelés soit vers la fin du 2^{ème} siècle soit au début du 3^{ème}, ou encore ont pu être abandonnés avant cela, tandis que la vallée du cours supérieur du Walbrook continua à être occupée jusqu'au 3^{ème} siècle. La rareté comparative des «*assemblages*» datant de la fin du 2^{ème} siècle suggère un déclin réel de la population à cette époque. Un changement dans les modèles de céramiques accompagne une diminution cumulative du matériel provenant de Highgate Wood et à un moindre degré de Verulamium. La continuation de cette tendance, durant les années 160-80, est plus amplement appréhendée et complétée par l'étude du développement et de l'approvisionnement en céramiques de Londres dans le Bas-Empire (Symonds et Tomber 1991).

Zusammenfassung

Dieser Band stellt frühromische Tonwaren der Londoner City aus den Jahren 50-160 AD vor und gruppiert sie typologisch und zeitlich in sieben Kapiteln und fünf Anhängen.

Das erste Kapitel, die Einleitung, gibt einen kurzen, geschichtlichen Überblick über die Tonwarenforschung in London und einen Abriß der hier verwendeten Datenbank. Die Ausgrabung in Newgate Street (GP075) mit ihrer gut definierten Stratigrafie und fast einer Tonne Scherben liefert den Rahmen für die frühromische Sequenz. Obwohl sich dabei auch einige intrusive Stücke befanden, zeigt doch detaillierte Analyse, daß diese die allgemeinen keramischen Schlußfolgerungen nicht beeinträchtigen. Die Problematik der Ausgrabung und ihrer Sequenz werden in diesem Kapitel und im Anhang 1 dargelegt.

Gewichtmäßig erfaßte Daten von neun anderen, über London verstreuten Ausgrabungen ergänzen das GP075 Material (Abb 182). Die Vereinigung der Daten von diesen zehn Ausgrabungen ermöglichte es, fünf keramische Horizonte oder Phasen für den besagten Zeitraum herauszuarbeiten. Letztere liefern auch die Grundlage dafür, künftige Ideen über die Variationsbreite keramischer Verteilungen in London zu testen und Fragen sozialer und wirtschaftlicher Natur anzugehen.

Zusätzlich zu den gewichtmäßig erfaßten Daten wurden auch noch Aufzeichnungen über vorläufig datierte Keramikvorkommen in über 250 weiteren Londoner Ausgrabungen einbezogen, um die hier getroffenen Schlußfolgerungen zu testen. Schließlich wurden zur Verbesserung der Typologie noch Illustrationen vollständiger Gefäße hinzugefügt, die sich in der Reserve-Sammlung des Museum of London befinden.

Kapitel 2 faßt die Methoden der Klassifizierung zusammen und stellt den restlichen Text und die verwendeten Abkürzungen dar. Die Gegenstände werden nach Tonart und Formtypus klassifiziert. Der Ton wird im einzelnen beschrieben und in den meisten Fällen unter seinem volkstümlichen Namen geführt. Typen, die regelmäßig vorkommen erhalten eine Kode und werden einer stilistischen oder - wenn bekannt - einer Herkunftsgruppe zugeordnet. Die Abkürzungen volkstümlicher Namen werden ausführlich in Anhang 2 behandelt. Alle Formen fallen in eine der sieben Hauptgruppen: Krüge (I), Töpfe (II), Becher (III), Schüsseln/Schalen (IV), Teller (V), Tassen (VI) und Mörserarten (VII), die dann jeweils weiter unterteilt werden. Die Tonwaren werden durch Vermessung der Randscherben nach Gewicht bestimmt und die Anzahl der Gefäße geschätzt (Eves). Anhang 5 enthält die unaufbereiteten Daten.

Kapitel 3-6, das Kernstück des Textes, befassen sich mit den verschiedenen keramischen Werkstätten, die es damals in London gab. Datierung, Ton, Form und wo immer möglich Herkunft werden für jede

Werkstatt und Ton erörtern. Bei Amphoren wird auch der Verwendungszweck behandelt. Wo es angemessen ist, begleiten Illustrationen und Grafiken den Text.

Als eine der bedeutenderen Städte des frühromischen Britanniens kann sich London einer besonderen Vielfalt importierter Tonwaren rühmen, wengleich auch nicht immer in großer Menge. Dieses kann man deutlich an den in Kapitel 3 beschriebenen Amphoren sehen. Große Mengen der gewöhnlichen Baetica Dressel 20 und gallische Amphoren herrschen ebenso wie andere spanische Arten aus Baetica und Cadiz (Haltem 70, Dressel 28, Camulodunum 186) in diesem Zeitraum vor. Auch Importe von weiter entfernten Orten kann man identifizieren. Dazu gehören kretische Dressel 43, Gefäße im rhodischen Stil (Camulodunum 184) aus der Ägäis und von anderen Orten, sowie zylindrische, nordafrikanische Amphoren - was in dieser frühen Zeit selten ist - aber auch Dressel 2-4 Weinamphoren verschiedenster Herkunft und Importe aus möglicherweise anderen Mittelmeergegenden (Camulodunum 189 und Kingsholm 117).

In demselben Kapitel werden auch noch andere bedeutende Themen erörtert wie z.B. die gallische Herkunft des 'London 555' (im Gegensatz zu Sealy & Tyers 1989). Schließlich ist auch der italienische Richborough 527 in London vertreten, wenn auch nicht weit verbreitet so doch vielleicht häufiger als sonst in Britannien.

Kapitel 4 behandelt die oxydierten Tonwaren einschließlich der verschiedenen Mörserarten. Besonderes Interesse verdient hier ein lokaler Typus, die Sugar Loaf Court Ware (SLOW) aus präflavianischer Zeit. Die Formen weisen auf eine Reihe kontinentaler Einflüsse, insbesondere des 'Schultertöpfes'. Im ganzen gesehen weisen die Formen auf einen Töpfer aus der Westschweiz irgendwo zwischen dem Saane- und Aaretal. Eines der Gefäße ist mit C ALBVCI gestempelt, einem in Norditalien weitverbreiteten Namen.

Eine zweite Art oxydierter Ware (Local Oxidized Ware: LOXI), kennzeichnend für die hadrianischen antonianische Periode, mag lokalen Ursprungs sein, obwohl auch eine mögliche Beziehung mit Ware aus der Gegend von Verulamium diskutiert wird. Verulamium Ware ist die meist vertretene durch die ganze Sequenz. Außer der klassischen weißen Ware werden weitere sieben Tonarten vorgestellt, von denen zwei mit weiß geschlämtem Überzug (Verulamium Region Coarse (VCWS und Brockley Hill) vorläufig und basierend auf Tonvergleichen mit London der Gegend um Verulamium zugeordnet werden. Besonderes Interesse verdient VCWS, weil es scheinbar das Ende der verulamischen Produktionsfolge kennzeichnet, die im wesentlichen in der frühen antonianischen Periode lag. Oxydierte Ware anderer britischer Herkunft kommen aus Eccles, Hoo (Kent) und ?Gloucester.

Die importierte oxydierte Ware besteht in den meisten Fällen aus Mörserarten, die aus Aoste (Isère), Italien, dem Rhonetal und dem Rheinland stammen. Eine Gruppe, die man bisher als 'nordfranzösisch/südostenglisch' klassifiziert hat, kann jetzt fast mit Sicherheit Frankreich zugeordnet werden (gestützt auf unveröffentlichte Information von K Hartley). Diese Gruppe von Krügen und Mörsern aus nahe verwandtem Material und ähnlichen Formen gibt es von der neronischen bis zur frühen antonianischen Periode. Die meist verbreiteten Beispiele dieser Gruppen sind Gillam 238 und Hartley Group II Mörser.

Kapitel 5 behandelt reduzierte Tonwaren. Einige, in gewisser Weise Sonderarten, der reduzierten Ware werden entsprechend ihren technologischen Besonderheiten definiert (z.B. schwarz glatt). Wo es angebracht erscheint, wird in diesem Zusammenhang auch deren Material erörtert. Die meist verbreitete und bedeutendste reduzierte Ware wurde lokal in Highgate Wood hergestellt. Bei der systematischen Ausgrabung der Produktionsstätte konnte eine Sequenz von drei Tonarten identifiziert werden, von denen die letzten beiden auch in der City vorkommen. Die erste, eine von Hand gemachte, grob-gemagerte Ware (HWB), gelegentlich auch mit einem roten Überzug (HWBR) zu finden, wurde im allgemeinen zur Herstellung 'eingeborener' Formen verwendet und ist am weitesten im 1. Jh. verbreitet. Die zweite, eine auf der Scheibe gedrehte, quarz-gemagerte Ware (HWC), wurde meist zur Herstellung romanisierter Formen verwendet und herrschte in den Jahren 100-140 AD vor, obwohl ihre Produktion bis 160-180 AD weitergegangen sein mag. Andere Waren, vermutlich auch lokaler Art, können nicht durch Produktionsstätten bestätigt werden. Zu ihnen gehören Cophall Close Grey und frühromische, glimmerhaltige Ware (ERMS) sowie frühromische Sand- und eisenreiche Sandware. Die ERMS ist von besonderem Interesse, da der Stempel auf einem Gefäß auf Kontakte mit anderen Stätten in Sussex hinweist.

Nicht lokale, romano-britische reduzierte Ware stammt aus einer Reihe von Quellen. Verbreitet ist Ware aus Alice Holt (Surrey), 'schwarz-glatte' aus Dorset (BB1), Kent und Essex (BB2). Von der demuschel-gemagerten Ware ist nur die aus Nordkent verbreitet, obwohl auch Quellen in Südessex, wenn auch an Hand nur weniger Stücke, identifiziert werden konnten. Aus Ostsussex kommt eine seltene grob-gemagerte Ware. Die einzige vom Kontinent importierte reduzierte Ware ist nordgallische Grauware, die jedoch mehr in späteren Perioden und dann auch nur selten vorkommt.

Kapitel 6 schließlich behandelt die nicht-sigillata, feine Ware, die wiederum entsprechend technologischen Kategorien erörtert wird (z.B. 'farbüberzogene Ware'). Bemerkenswert ist die Vielfalt der vom Kontinent importierten Amphoren. Sie kommen aus Spanien, Nord-, Süd- und Zentralgallien, dem Rheinland, Italien und möglicherweise aus dem weiteren Mittelmeerraum. Wenn auch keine von ihnen weite Verbreitung genießt doch die zentralgallische Ware

mit Farbüberzug noch am besten vertreten. Da südgalische Ware mit Farbüberzug in Britannien selten ist, kommen den vier in einem Grube gefundenen Exemplaren besondere Bedeutung zu.

Obwohl im allgemeinen Datierung und Typologie mit denen auf dem Kontinent übereinstimmen, ist die pompeji-rote Ware etwas ungewöhnlich. Während Ton aus Kampanien (PRW1) anderswo in Britannien der verbreitetste zu sein scheint, überwiegt in London PRW3, möglicherweise aus Lezoux. Auch die Datierung dieser Art mag ungewöhnlich sein, da die Anzahl der Gefäße in hadrianischen und antonianischen Lagen, falls sie nicht residual sind, auf ihr Fortleben über das normalerweise akzeptierte 1. Jh. hinaus hinweist. Viel dieser feinen, besonders der reduzierten Ware, bleibt der Herkunft nach unbestimmt. Zu denen, die als lokal interpretiert werden, gehören marmotierte (LOMA), glimmerbestäubte (LOMI), Eierschale (LOEG), einige Stücke reduzierter feiner Ware einschließlich London (LONW) und drei glimmerhaltige Tone (FMIC-1659, ?FMIC-1746, ?MICA-383).

Nicht-lokale, romano-britische Ware bekannter Herkunft ist selten. Zu den bekannten gehören z.B. Colchester sowie einige Orte in Essex und Kent. Das Kreis-mit-Punkt Becher Material, verbreitet in spätoneronischer und flavianischer Zeit, mag seinen Ursprung in der Umgebung von Verulamium haben, wo die Produktion glimmerbestäubter (VRMI) und marmorierter (VRMA) Ware bekannt ist.

Kapitel 7, der letzte Teil, gibt einen Überblick über keramische Tendenzen während dieser Jahre, dargestellt in fünf keramischen Phasen und begleitet von Illustrationen und Grafiken. London wird mit anderen Ausgrabungsstätten in der Gegend, die über gewichtmäßig bestimmte Daten verfügen, verglichen. Allgemeine Tendenzen, die über einen Zeitraum identifiziert werden können, sind z.B. das Schrumpfen der Importe kontinentaler und mittelmeerischer Töpferei, der Rückgang oxydierter Ware und die allmähliche Veränderungen im Verhältnis zwischen Töpfen und Schüsseln, wobei letztere an Bedeutung gewinnen. Auch eine Betrachtung unter zeitlichem Aspekt zeigt, daß allmählich eine Konsolidierung der Herkunftsgegenden stattfindet. Mit der Budicca Zerstörung kommen viele der Trends zum Erliegen. Die fünf keramischen Phasen, die in diesem Fall auch die terra sigillata einschließen, werden hier im Detail beschrieben.

Londons Sonderstellung am Kreuzpunkt größerer Straßen- und Wassersysteme zeigt sich an der großen Zahl kontinentaler und mittelmeerischer Importe. Dazu kommt auch, daß London unzweifelhaft wesentlich, wenn auch nicht einziger Umschlagplatz für das südöstliche Hinterland war. Nicht nur die importierte sondern auch die romano-britische Ware benutzte den Wasserweg.

Die Anzahl der Grauwarenhersteller im London des 1. Jhs. und die wachsende Zahl der Hersteller feiner Keramik im späten 1. und während des 2. Jhs. zeugen von der Bedeutung der lokalen Tonwarenindustrie. Im Gegensatz dazu stammt die weiße Ware ausschließlich

von außerhalb Londons und seiner Umgebung. In dieser Hinsicht bestimmten die Bedürfnisse Londons weitgehend die Entwicklung der Töpferwerkstätten in Verulamium.

Die fünf Hauptphasen der keramische Entwicklung fallen in den Zeitraum von 50-160 AD, eine Zeit in der London am stärksten wuchs und sein größtes Ausmaß erreichte. Jede dieser Phasen zeigt einen deutlichen Wandel im Angebot. Die prä-Budicca Siedlung (RCP 1 A) konzentrierte sich hauptsächlich auf die Gegend östlich der Walbrook und als Reihensiedlung entlang der von Ost nach West führenden Hauptstraße. Die ursprüngliche Siedlung entstand in Southwark um ungefähr 50 AD, während die Entwicklung der City in den späten 50er Jahren durch die vorherrschende terra sigillata bezeugt ist. Neue keramische Anhaltspunkte - die frühesten Highgate Produkte zusammen mit früher Muschelware - mögen jedoch eine Revision unseres gegenwärtigen Bildes von der City notwendig machen. Diese erste Phase des römischen Londons zerstörte das Feuer in 60/61 AD.

Die meisten prä-Budicca Fundgruppen sind klein im Vergleich zu denen des späten 1. Jhs. und weisen auf eine relativ geringe Bevölkerung. Dennoch weist die prä-Budicca Periode die größten Importe von außerhalb Britanniens auf. Die lokalen Töpfereien in Highgate Wood deckten den Bedarf an Kochtöpfen mit Hilfe der eingeborenen, grob-gemagerten Ware, während die mehr romanisierten Formen von außerhalb Londons kamen. Bautechniken dieser Zeit lassen den Schluß zu, daß zumindest ein Teil der Bevölkerung aus Galliern und Italienern bestand. Auch die Tatsache, daß die lokale Keramikherstellung von einem oder mehreren kontinentalen Töpfern - vermutlich aus der Westschweiz - begründet wurde, spricht für eine eingewanderte Bevölkerung.

Nach den Budicca Aufständen wurde die Provinzhauptstadt von Colchester nach London verlegt. Anhäufungen spätneronischer Tonwaren weisen auf einige Aktivität in der Stadt zwischen 61-70 AD (RCP 1B). Die Tonwaren unterscheiden sich nur geringfügig von der prä-Budicca Periode. Auch sind die Importe von nicht-sigillata feiner Ware geringer oder fehlen überhaupt. In meiste Hinsicht herrschen die gleichen Trends vor, so daß man sie als eine Zwischengruppe ansehen kann, die sowohl prä-Budicca als auch flavianische Züge trägt.

Zwischen 70-80 AD erwarb London die Merkmale einer bedeutenden Stadt, gekennzeichnet durch das Ausmaß und den offiziellen Charakter der Bautätigkeit im Hafenviertel, die früheste Phase des ersten Forums und die zahlreichen Badehäuser. Die Besiedlung greift

über die Walbrook nach Westen, der eine weitere Ausdehnung in flavianischer Zeit folgt, wie der Bau des zweiten Forums und die Erweiterung des Hafenviertels bezeugen. Diese Wachstum spiegelt sich auch in der zunehmenden Anzahl von Grabungskontexten wider und in den größeren keramischen Funden der flavianischen Periode (RCP 2). Während dieser Zeit wuchs auch die Abhängigkeit von größeren Fertigungsstätten wie Alice Holt und den städtischen Töpfereien in Verulamium.

Ausdehnung und Stadtplanung setzten sich über die gesamte trajanische Zeit fort (RCP 3). Bestehende öffentliche Bauten und das Hafenviertel wurden vollendet und weiter entwickelt. Die Besiedlung östlich und westlich der Walbrook wurde dichter. Zum ersten Mal erreicht die Entwicklung auch die obere Walbrook. Zu dieser Zeit erlangte Britannien mit seiner keramischen Produktion einen gewissen Grad der Unabhängigkeit. Dieses zeigt sich auch in der Diversifikation der feinen Ware, von der schon viel lokal hergestellt wird. Romanisierte Tone und Gefäßformen ersetzen die lokalen Traditionen der Tonwarenherstellung.

Eine zweite großflächige Feuersbrunst kennzeichnet nach allgemeiner Annahme den Beginn der hadrianischen Zeit (RCP 4). Das Hafenviertel wurde von der Mitte bis ins späte 2. Jh. reorganisiert und die Bautätigkeit erreichte die nördliche Citygrenze. Die Töpferei dieser Zeit unterliegt einem deutlichen Wandel, der sich bis in die frühantonianische Periode fortsetzt (RCP 5). Wie im restlichen Britannien kommt jetzt auch regionale Ware wie BBI und BB2 nach London. Seltene Importe, wie feine Ware aus Köln, kündigen die Bedeutung keramischer Verbreitungsmuster an, wie sie in spätrömischer Zeit anzutreffen sein werden.

Die hadrianische Periode sieht die letzte Bautätigkeitsphase im westlichen Teil der City. Im späten 2. und frühen 3. Jh. werden die Walbrook Badehäuser abgebrochen, aber sie mögen auch schon früher leer gestanden haben. Die Besiedlung der oberen Walbrook setzt sich bis ins 3. Jh. fort. Die im späten 2. Jh. vergleichsweise seltenen Keramikfunde lassen auf einen fühlbaren Bevölkerungsschwund schließen. Der Rückgang der Ware aus Highgate Wood und in geringerem Maß aus Verulamium zeugen von einem Wandel in der keramischen Verbreitungsstruktur. Die Fortsetzung dieses Trends in den Jahren 160-180 AD ist Gegenstand einer Studie über Londons Entwicklung und Versorgung mit Tonwaren in spätrömischer Zeit (Symonds & Tomber 1991).

1. Introduction

1.1 Background

The publication of London's Roman pottery began in the late 18th and early 19th century. Its recent study dates from the formation of the Department of Urban Archaeology (DUA) in 1973, concerned with sites in the City of London (hereafter City); and outside the City since the early 1970s (various regional groups amalgamated into the Department of Greater London Archaeology - DGLA - in 1983). In December 1991 the two departments were amalgamated as the Museum of London Archaeology Service (MoLAS). Within the two pre-existing departments, pottery studies had developed somewhat differently. While form analysis had played an important role in most pottery reports, work at the DUA emphasized the examination of fabrics and presentation of quantified data, with Orton's (1977) report on Angel Court being the first publication to employ the new system of analysis for pottery recording, now used extensively throughout the country (Chapter 2). The development of this approach is exemplified by Green's (1980b) publication of Billingsgate Buildings and Richardson's (1986) of New Fresh Wharf. Within the DGLA, the major contribution was the compilation of a formalized typology, arranged in fabric groupings, for early Roman pottery (Marsh & Tyers 1978) and the presentation of well-dated groups by Hammerson (Bird *et al* 1978; Hinton 1988).

For the first time, the present corpus brings together the two approaches, providing detailed fabric analysis within the DGLA's structured typology, together with accompanying quantified data. This method of presentation was selected as conventional site-based reports could neither keep pace with the numerous excavations being undertaken, nor provide the necessary synthesis. Its aims are to present a dated typology of the main pottery types found in the City from the early Roman period and at the same time to synthesize the overall ceramic trends within the broad chronological or ceramic phases that have been identified.

Green's (1980b) work laid the foundation for the study of early Roman pottery in London, outlining the major imports and coarse wares to be found, and including excellent fabric descriptions. The major advance here is the extension of the chronological framework and the collection of additional quantified data, as well as the identification of additional non-local imports and the definition of numerous new coarse ware fabrics, both local and non-local. Much of the information in this corpus was first generated for unpublished DUA archive reports, instigated by Dr P Tyers (Chadburn & Tyers 1984; Davies 1983, 1984;

Davies & Tyers 1983a, 1983b; Tyers 1983), and additional detail can be found in them. They have proved invaluable in the compilation of this corpus, and most of their conclusions remain unaltered.

The obvious basis for this corpus was the pottery from the 1975-9 excavations at Newgate Street, a site which had produced the largest group of stratified Roman pottery (nearly one tonne) then recovered in the City. This came from a complex sequence dating from 50-160, with parallel coin evidence and two fire horizons, spanning the most intensive period of pottery use in Roman London. The site was therefore used as a fixed point against which other sequences and deposits could be compared. In this way, it has been possible to build up a chronological model of the changing trends of pottery supply in Roman London, which can be expanded or revised by new evidence.

Despite its well-stratified sequence, Newgate Street suffered from some slumping which resulted in the presence of intrusive material in the northern area of the site. It was possible to identify much of the intrusive pottery with ease (eg medieval types, late Oxfordshire mortaria, black-burnished ware), but it was not certain to what extent pottery types which could **not** be easily identified as intrusive might be distorting the overall patterns. The pottery distributions were compared with and without the intrusive contexts and were shown to be virtually identical. On this basis, contexts with intrusive pottery have been included in the analysis and only those sherds which were positively identified as intrusive were excluded.

There is still some question as to whether and how far the proportions of pottery might be distorted at Newgate Street, but this has been clarified by current work on Leadenhall Court which refines ceramic trends for 70-100 and indicates that proportions differ substantially only for London ware and particular Highgate C forms (Davies & Groves forthcoming). Relevant developments are noted here in the industry sections in Chapters 5 and 6.

The proportion of residual pottery from quantified deposits was also assessed, using both the samian stamps and samian assemblages as a whole, based on conventional samian dates (eg Webster 1983). The former showed a high proportion of residuality from the Trajanic period onwards, as seen in Appendix 1. However, the bulk of the samian, displayed on Fig 153, incorporates what is seen as a very low proportion of residual pottery. Notable exceptions are surprisingly large quantities of Drag 15/17 and Rt 12 in the Flavian period and small upsurges in Drag 18 and Drag 29 in the Trajanic; Drag 18 continues to be present in fairly large quantities in the Hadrianic and

early Antonine periods.

Fig 153 also informs about intrusive pottery. The small amounts of Drag 33 from Newgate Street and 25-6 Lime Street in the pre-Boudiccan period are unusual, but not necessarily intrusive.

This corpus is concerned with pottery up until 160, but the end of the sequence is somewhat ill-defined due to the lack of material dated 160-80, the main comparative assemblage from New Fresh Wharf only beginning c 180 (Richardson 1986). Work at the DUA on late Roman pottery addresses this problematic interim period (Symonds & Tomber 1991).

Three main sources of evidence were drawn upon for the compilation of this corpus: presence data, quantified data, and the Museum of London Reserve Collection. Presence data was obtained from the primary or 'spot dating' record. Here each fabric and form type was recorded for over 250 sites, many of which have long sequences represented by large amounts of pottery. The earliest and latest date and relevant information on the condition of the pottery (eg abraded) are also given. Spot date records were systematically consulted for a number of sites both east and west of the Walbrook (Fig 182), in conjunction with their stratigraphic phasing, in order to evaluate the date range for individual fabrics suggested by quantified deposits from Newgate Street and elsewhere. The entire spot dating records from the City were examined to provide a relative estimate of the quantity of each fabric type.

Though the pottery from Newgate Street forms the main quantified data, the evidence from any single deposit may exhibit variability determined by, for example, site function, location and status, or assemblage size. In order to compensate for variability peculiar to a single site or deposit, the Newgate Street findings were supplemented by deposits from nine other sites. The data are amalgamated for presentation and in this way provide a generalized picture or mean of ceramic trends. The discussion of individual sites, and of variability due to topography or function, is reserved for later publications, when more data can be compiled. Short summaries for each site contributing quantified data can be found in Appendix 1. These supplementary data fall into three categories: assemblages from large pit or well groups which are homogeneous and result from single depositions; dated assemblages with stratigraphic sequences that parallel those at Newgate Street; and other groups which are independently well dated to a specific period.

The analysis of these assemblages, together with the examination of the unquantified pottery from topographically diverse locations within the City, shows consistent distribution patterns for fabrics and forms in groups of a similar date. This has enabled a sequence of five main Roman Ceramic Phases (hereafter RCP) to be identified, and they are discussed and illustrated in Chapter 7. The interpretation is not

definitive, and subsequent excavations will no doubt amplify the conclusions drawn here. However, it is hoped that the ceramic phases will provide a standard measure against which other groups can be dated and from which those of special character (either functionally or socially) will stand out significantly.

Since the quantified assemblages do not include the full range of 1st and 2nd century pottery types found in the City, unusual examples from both DUA sites and sites excavated by the Guildhall Museum prior to 1973 are included. In addition, the Museum of London's Reserve Collection contains a large number of complete vessels which have aided the compilation of the type series, particularly when the same forms are represented only by fragmentary sherds from excavated assemblages. The Reserve Collection was also useful in extending the range of form types that could be identified within particular industries. All major forms produced by every industry are discussed, but the corpus does not necessarily include each individual form type occurring in the City.

All the major fabric types occurring in the City during the period 50-160 are presented here. Two types, Moselkeramik and Nene Valley Colour-coated ware, which occur in contaminated deposits at Newgate Street but apparently not elsewhere in the City at such an early date, are excluded. Lamps and samian are also treated differently. Within the limits of current resources it was only possible to provide a specialist report on the samian stamps. The remainder of the samian has been catalogued and fully quantified by form type, distinguishing between fabrics representative of Montans and the micaceous fabric from Lezoux; all other sherds are recored as 'samian'. For this reason samian is not catalogued in the corpus, but contributes to the conclusions in Chapter 7 and proportions illustrated on Fig 153. Because of their functional difference, lamps were also excluded from the corpus, although when linked to other ceramic industries their presence is recorded. This was a regrettable omission due to restricted time; a complete reference collection is available for consultation at MoLAS. It was not practicable to continue expanding the corpus indefinitely for this particular publication and the material illustrated here represents data gathered until approximately 1987, although exceptional vessels are included after this date.

The corpus presented here represents our current understanding of Roman pottery-in London, and it is hoped that it will provide a firm basis for future work. Because of the wide range of pottery types found in London, this corpus will be of value far beyond London. The detailed knowledge of typology, fabrics and dating readily encourages thematic studies, such as the distribution of ware types throughout London and its environs. These topics are critical to our understanding of the development of London as a whole and should form our future priorities for research.

1.2 Table 1: Summary of fabrics by

source area		Page
<i>Local</i>		
Oxidized	Page	
SLOW	29	
LOX1	34	
Reduced		
HWB	74	
HWBR	75	
HWB/C	82	
HWC	82	
HWC+	82	
CCGW	88	
ERMS	89	
?ERSI	89	
ERSA	91	
ERSA/B	91	
ERSB	91	
ERSS	91	
Fine		
LOMA	122	
LOMI	136	
?MICA-383	140	
LOEG	146	
LONW	151	
FMIC-1659	155	
?FMIC-1746	159	
<i>Kent</i>		
Oxidized		
ECCW	36	
HOO	38	
NKWS	40	
Reduced		
NKSH	101	
BB2-2238	114	
BB2-2768	115	
?BB2-2759	115	
Fine		
NKFW	152	
?FMIC-2559	161	
<i>Essex</i>		
Oxidized		
?OXID-2486	61	
Reduced		
SESH	102	
SHEL-2826	105	
		SHEL-2810 105
		BB2-1462 111
		Fine
		COLC 122
		?MICA- 1245 139
		<i>Hertsfordshire</i>
		Oxidized
		VRW 41
		VRR 54
		?VCWS 54
		?BHWS 59
		Reduced
		VRG 52
		Fine
		VRMI 52
		VRMA 54
		?RDBK- 1606 142
		<i>Surrey/Hampshire</i>
		Oxidized
		?OXID-1861 61
		Reduced
		AHSU 97
		<i>Gloucestershire</i>
		Oxidized
		GLMO 67
		<i>Dorset</i>
		Reduced
		BB1 107
		<i>Sussex</i>
		Reduced
		SUG 117
		<i>Unsources Romano-British</i>
		Reduced
		SHEL-2809 105
		SHEL-2825 105
		BBS- 1547 111
		BBS-2764 117
		BBS-7 18 117
		RUST 119
		SAND-2862 119

	Page		Page
Fine		C G O F	130
RBM4A	123	CGBL-1658	130
RBGW	123	PRW3	134
MICA-2577	139	MICA-1242	142
MICA-376	140	GBWW	146
RDBK-2635	145	BLEG	147
LONW-STD	151	TN-1712	147
FMIC-2488	159	TNIM-2181	150
FINE-492	161		
FINE-2859	162	<i>Rhineland</i>	
FINE-2866	162	Oxidized	
FINE-1 546	162	RHMO-2554	71
		RHMO-2738	71
<i>North French or Southeast English</i>		RHMO-2835	73
Oxidized		?MORT-2625	73
NFSE-2667	62		
NFSE-1298	63	Fine	
G236	63	KOLN	130
G238	65		
NFSE-2838	67	<i>Italy</i>	
NFSE-2844	67	Amphorae	
?MORT-2669	73	KOAN-2385	21
		KOAN-844	21
<i>Spain</i>		KOAN-3786	21
Amphorae		R527	23
DR20	9		
H70	11	Oxidized	
DR28	13	ITMO	70
C186-1176	14		
C186-2848	14	Fine	
		PRW 1	131
Fine			
SPAN	126	<i>North Africa</i>	
		Amphorae	
<i>Gaul</i>		NACA	28
Amphorae			
L555	14	<i>Rhodes</i>	
PE47	18	Amphorae	
KOAN-4 127	23	RHOD-1894	26
		RHOD-1522	26
Oxidized			
AOMO	70	<i>Unsourcesd Mediterranean/Aegean</i>	
RVMO	70	Amphorae	
		KOAN-3488	23
Reduced		RHOD-3745	26
NGGW	119	RHOD-2592	26
		C189	27
Fine		K117	28
SGCC	125		
LYON	126	Fine	
CGGW-1039	128	PRW2	134
CGGW-3967	129		
CGWH	129		

2. Method

2.1 Classification

Pottery classification followed standard DUA procedure (Orton 1979a; Tyers 1984b; Tyers & Vince 1983) based on identification of forms within fabric types.

Fabric

Fabric types are defined on the basis of inclusions, surface treatment and method of manufacture. They were isolated using a binocular microscope (x20) and fabric descriptions are essentially from this level of analysis; where supplementary information was necessary, fabrics were also investigated in thin section by I Freestone, R Tomber and A Vince. Fabrics examined in thin section are indicated by an asterisk.

Each fabric is assigned a number within a sequence; often a fabric will be represented by many variations, each with its own numerical code. In these cases the fabric group as a whole may frequently be assigned a single number which is referred to as the 'group' code. Fabrics can also be denoted by 'common name' codes which are given to those types which occur with regularity, form a stylistic group, or for which a source is known (Appendix 2). In most cases these common name codes are distinct from those used by the Department of Greater London Archaeology (Hinton 1988, 193–7).

During spot dating, many fabrics which can be subdivided into fabric variants, eg Fine Micaceous wares (FMIC), are recorded only by their common name, and detailed trends within these groups can be determined only from the quantified data. Some common name groups refer to known kilns or kiln groups (eg Verulamium region kilns) for which some, but not necessarily all, kilns have been identified. In these cases, although vessels found in the City have been assigned to the main group, they are not necessarily a product of one of the known kilns.

Some common names are used as catch-all categories for unknown fabric types which do not recur, and these are not included in the corpus. Those which may, in aggregate, be numerically significant include unclassified fabrics of sandy grey (SAND), shelly (SHEL), oxidized (OXID), and grog-tempered wares (GROG), as well as mortaria (MORT) and amphorae (AMPH). Individual fabric types within these groups are not informative and are therefore not catalogued. More significant fabrics within catch-all groups are isolated by use of their common name and numerical code (eg OXID-1861).

Fabric descriptions follow the guidelines suggested by Peacock (1977a, 29). Both free descriptive terms

and Munsell soil values (Munsell 1969) have been employed for colour reference. Textural description is used where appropriate and is based on the following parameters (Orton 1977, 28; Orton 1979b, 13):

smooth: flat or slightly curved, no visible irregularities
finely irregular: small, closely spaced irregularities
irregular: larger, more widely spaced irregularities
hackly: large and generally angular irregularities
laminated: stepped effect
sub-concoidal breaks somewhat like flint or glass.

Many of the fabric descriptions refer to silt-sized inclusions and this is defined as 0.06mm or less. Other abbreviations include:

A:	Angular
R:	Rounded
SA:	Sub-angular or sub-rounded
I:	Irregular (concave or convex)
F:	Flat.

The majority of fabrics are composed of quartz and other common inclusions which fall within a limited size range permitted by technological considerations. For this reason they are difficult to distinguish from each other by description and some are supplemented by colour photographs of fresh sherd breaks (Plates 5a-bf). The photographs emphasize local coarse wares and imported types which may not have a wide distribution throughout Britain. Apart from amphorae which comprise distinct fabrics, frequently with complex inclusions, most fabrics have a brief description followed by a more detailed one. Iron-rich compounds are difficult to identify in the hand specimen. When examined in thin section they normally comprise both opaques and naturally occurring iron-rich clay pellets. These are only described fully if significant to the fabric definition; otherwise they have been termed 'iron-rich inclusions'.

Form

Coarse ware vessel forms are referenced to Marsh and Tyers' (1978) series, established for the early Roman coarse pottery from Southwark. This is a hierarchical system, where Roman numerals refer to the major class (eg flagons = I, jars = II) with subdivisions into form types denoted by letters. Further division is indicated by arabic numerals. This allows vessels to be classified to varying degrees of precision, and those not belonging to specific sub-types can be classified as, for example, II. In this scheme, decoration is an

important criterion in defining form types. Unless specified, all wares are wheelmade.

Since the publication of the Southwark form series in 1978, a large number of excavations have resulted in the processing of literally tonnes of pottery from the City. The detailed information obtained from this material may warrant some change in the typological referencing system in use at MoLAS in the future. However, it does not hinder our understanding of the main trends and dating of the types.

The main Southwark types used within the volume are defined below. Definitions follow Marsh and Tyers (1978), although they have been modified occasionally. Their system has been somewhat simplified, and in most cases sub-divisions by arabic numerals have not been used.

There is a degree of overlap in definition between bowls (IV) and plates (V), for some bowls (particularly IVJ) are consistently as shallow as plates. For this reason, the IVJs have been combined with the Vs when compiling statistics. To minimise any discrepancies, bowls, dishes and plates are all discussed under the same heading.

Form descriptions

I Flagons

IA Collared or Hofheim flagon.

IB Ring-neck flagons. Subdivided on the basis of ring typology. **IB2** Trumpet mouth with well-moulded rings, sometimes very angularly cut. **IB3** Characterized by upright mouth and rings, and flat rim. **IB5** Flagon of approximately the same general size as IB2, but distinguished by a very prominent rounded upper ring. **IB7** Short expanding ring-neck flagon with a very short flaring rim.

IC Pinched-mouth flagon. The distinguishing characteristic of this class is that the rim is pinched together, so that the two sides meet to form either a distinct spout or a minor constriction for ease of pouring.

ID Disc-mouth flagon. One-handed flagon with a distinctive rim which is triangular in section.

IE Two-handed flagon with a squat, bulbous body, cylindrical neck and a small moulding on the rim

IF A series of flagons characterized by two concentric mouldings (or lid seating) on the inner lip. The external profile shows a flaring rim, a slightly tapering neck and a distinct division between neck and body. The body is ovoid or globular in shape. The vessels vary considerably in minor detail and may have a spout, knob on the rim, or other detail.

IG Flagon similar to class IF, but the rim lacks the strong moulding and instead has a slight groove on the inner lip. The external profile also lacks any distinct division between body, neck and rim, and forms a continuous curve. There is a slight groove or cordon

where the handle joins the body.

IH Wide-mouth flagon or jug characterized by the body, neck and rim forming a continuous curve. The rim lacks the moulding or lid seat seen on the IF and IG classes.

IJ Large, two-handed vessels, some of which are referred to as amphora-types. There is a great variety of rim form, although all are thick and heavy. Most have some internal seating on the rim.

II Jars

IIA Bead-rim jars. Neckless bead-rim jars; the rim is usually a simple rounded swelling. **IIA15** Bead-rim jar with grooves on the shoulder. **IIA16** Variant of bead-rim jar with a ledge on the rim.

IIB Necked jar with rounded body and a thickened or out-turned rim. There is no groove or cordon to mark any neck/shoulder junction.

IIC Necked jar with a sharply carinated shoulder and a cordon or groove defining the base of the neck. The rim is either sharply turned out in a 'figure-7' or simply beaded and thickened.

IID Necked, round-shouldered jar distinguished by a 'figure-7' rim, with burnished decoration on a shoulder zone delineated by cordons and grooves.

IIE Round-bodied jar with a zone of burnished line decoration on the shoulder. The rim varies considerably in form, but is usually thickened or beaded. None of the examples exhibit the 'figure-7' rim of form IIC and IID.

IIF Jars with everted rims, sometimes with a beading on the lip. The body is decorated, usually with a burnished lattice. **IIF1-2** Distinguished by an almost upright rim with a distinct bead on the lip and burnished wavy line on the rim. **IIF6** Characterized by slightly curved, everted rim, and always with grouped lattice decoration, distinct from the later jars with cavetto rims referred to as IIF9. **IIF11** A miniature everted-rim jar.

IIH Large neckless jar; the rim is either horizontal or pointing slightly upward, and there is usually some moulding on its upper surface.

IIJ Simple neckless jar (sometimes called unguent or incense pots - UJ) in which the rim springs directly from the body. The rim is usually an upright, slightly elongated bead. Such jars occur in a wide range of sizes.

IIK Two-handed vessel generally referred to as a honey pot. Vessels of this class sometimes have applied or barbotine decoration.

IIM Storage jar with squat, sharply turned-out rim and stabbed or incised decoration on the shoulder.

IIR Narrow-necked jar or flask.

III Beakers

IIIA Butt beaker. Relatively tall, narrow vessel with a rounded decorated body and short everted rim.

IIIB Ovoid beaker with high rounded shoulders and a short, sharply everted rim.

IIIC Beaker with a short, frequently sharply everted rim; lacks the high shoulder of the IIIB

IIIE Beaker with a short, ever-tered rim and no neck or shoulder. There is always a groove below the rim, defining a zone of decoration. **IIIE2** Similar vessels with handles.

IIIF Beaker with a taller rim than the previous classes: the rim is not sharply everted but is usually slightly curved, and delineated by a groove or a slight cordon. The class consists mainly of poppy beakers, decorated with rows of barbotine dots.

IIIG Carinated beaker with tall, slightly tapering rim.

IIIH Bulbous beaker with a tall, slightly tapering rim and a high rounded shoulder,

IV Bowls and dishes

IVA Bowl with a distinctive moulded flange on the rim and usually with a carinated body, although some round-bodied examples do occur. This class includes reeded-rim bowls, although it is inaccurate to use this term for all the varieties.

IVB Bowl with a deep, hooked flange.

IVC Deep cylindrical bowl imitating samian form Drag 30.

IVD Wide bowl with a sharp carination and a series of moulding on the rim and body, including imitations of samian form Drag 29.

IVE Hemispherical bowl with a bead rim, imitating samian form Drag 37.

IVF Bowls with slightly curved upper walls and rounded bottoms, or simple rounded bodies, having flat, hooked or folded-over rims. They can be difficult to distinguish from IVAs if part of the profile is absent.

IVG Bowls/dishes with straight, usually vertical, upper wall and a flat base; the rim is usually flat or slightly hooked. **IVG3** Variants with triangular rims.

IVH Bowls/dishes with a straight or slightly curving

wall and a triangular or rounded rim. **IVH1-4** Examples with triangular rims and burnished decoration, normally lattice. **IVH5-7** Undecorated examples with rounded rims.

IVJ Dish with plain rim, frequently in-turned.

IVK Dish with a groove on the rim and distinctive moulding midway down the wall. The exact shape varies and, while the wall is usually upright, flaring examples are known.

V Plates

VA Plate with a smooth external profile; the interior is moulded.

VB Plate with a moulding on the exterior.

VC Plate with a wide, flat rim.

VI cups

VIA Campanulate cup imitating samian form Drag 27.

VIB Conical cup with a short vertical upper wall, similar to Cam 56.

VIC Wide-mouth cup with a narrow foot, sharply carinated body and slightly concave upper wall.

Some additional form categories and codes have been added to the Southwark series. These include:

VII Mortaria

VIII Lamps and lamp holders

IX Other vessel forms (including lids, tazze, tettina, triple vases)

Additional abbreviations:

NJ Necked jars. Used for all necked jars which do not conform to the very specific parameters of the IIB-E.

SJ Storage jars. Used for all storage jars which do not conform to the IIM.

FACE Face pots.

CRUC Crucibles.

G Gauloise amphorae, followed by the specific form number.

Mortarium rim forms are recorded as follows:

WAL Wall-sided mortarium.

HOF Hooked-flange mortarium.

BEF Bead-and-flange mortarium.

HAM Hammer-head mortarium.

The Southwark system was intended specifically for coarse wares. In this volume, fine ware forms which could be easily assimilated into the Southwark system are cross-referenced to it but other systems are also

used. Many of the imported colour-coated wares are classified according to Greene (1979) and Romano-British Glazed wares to Arthur (1978). London, mica-dusted, Romano-British eggshell and marbled wares studied by Marsh (1978) refer to his typology. Other specialized wares (ie mortaria and amphorae) refer to well-established corpora where appropriate.

Quantification

Forms, within fabric types, are recorded both by weight and estimated vessel equivalents - 'Eves' (Orton 1975) measured for rims.

2.2 Presentation

The main body of the text is devoted to a discussion of the known industries, or industries postulated on the basis of fabric affinities (Chapters 3-6). These are ordered according to technological consideration (amphorae, oxidized, reduced and fine wares). In this way attention is drawn to classes of pottery which generally serve the same function and therefore compete with each other for the same market; this helps to clarify their chronological trends. Within these categories, fabrics are divided into Romano-British (local followed by other source areas) and Imported wares. A breakdown of fabric types by source area is given in Table 1. Industries producing a wide range of ware types, such as Verulamium, are discussed under their principal ware group.

The treatment of each industry or fabric type comprises a fabric description (with photograph where appropriate), catalogue of form types (with accompanying drawings) and a general discussion including dating. Although in some cases the dating may seem to rely on small quantities of material, it represents consistent patterns which have emerged from both the quantified and unquantified data. It distinguishes dates derived from ceramics alone from those where site phasing and additional finds evidence was available (see also Appendix 3). Vessel illustrations are ordered according to the numeration of the Southwark typology, from closed to open forms. Types represented by only fragmentary sherds are not always illustrated. Where quantity permits, bar graphs show the chronological distribution of the fabric type (by weight) and forms (by Eves). Chronological groups follow the Roman Ceramic Phases, fully described in Chapter 7, and based on the following parameters:

RCP IA	Pre-Boudiccan	50/5-60/1
RCP 1B	Late Neronian-early Flavian	60/1-75

RCP 2	Flavian	75-100
RCP 3	Trajanic	100-20
RCP 4	Hadrianic	120-40
RCP 5	Early Antonine	140-60

An indication of the incidence of fabrics, derived from all spot dating records, is recorded as follows:

Rare	< 10 entries
Sparse	>10
Moderate	>100
Common	>500
Abundant	>1000

For fabrics which continue into the late Roman period, their frequency during the early period is estimated.

Industry sections are followed by an overall discussion of the five main ceramic phases identified from City excavations for early Roman London, accompanied by the graphical display of data, and by maps and form illustrations, which are explained in more detail in the introduction to Chapter 7.

Appendix 1 gives a summary for all sites which are included in the quantified data. All common name codes with their expansions appear in Appendix 2. Appendix 3 provides contextual and dating information for all illustrated sherds, while Appendix 4 is a concordance between drawings from Chapter 7 (in most cases duplicated from Chapters 3-6) and the more detailed information in Appendix 3. Raw data from quantified assemblages are given in Appendix 5.

2.3 Abbreviations

The following abbreviations have been used throughout:

A T	Arthur type. Arthur 1978
Cam	Hawkes & Hull 1947
Cu	Curle 1911
Dr	Dressel 1891
Drag	Dragendorff 1895
Gillam	Gillam 1970
G T	Greene type. Greene 1979
Kn	Knorr 1919, 1952
M T	Marsh type. Marsh 1978
Rt	Ritterling 1913
RCP	Roman Ceramic Phase
Wa	Walters 1908

3. Amphorae

The corpus presented here is based primarily on material from Newgate Street, and the large quantities of amphorae from Pudding Lane; material from the other quantified sites was included in the graphs but receives less emphasis in the study as a whole. A much larger body of reliable, petrologically identified and quantified data is needed before a definitive statement can be made on the quantities, provenance and date of amphorae coming into London throughout the early Roman period. However, the major trends can be observed from the deposits and supplementary sources used here.

The general sparsity of amphorae at Newgate Street is worth mentioning. At the most, perhaps 10–15 vessels are represented on a site whose occupation spanned the period of most intensive amphora usage in the City. This compares unfavourably with quantities of amphorae from the generally richer and more intensively occupied 1st and 2nd century domestic sites in the eastern half of the City, and with waterfront sites where amphorae are particularly common, sometimes constituting as much as 70–80% of the total pottery by weight.

Amphora studies have advanced considerably in the last ten to fifteen years, and it is becoming increasingly clear that comparatively few amphorae conform absolutely to type, that there is a multiplicity of form/fabric combinations, and that it is often unwise to attempt to classify even quite large and featured body sherds without the presence of a rim, and ideally a handle and base from the same vessel, unless the type is so well known and so consistent (Dr 20 for example, or Cam 189) as to make identification a near certainty. There is an inevitable quantitative bias towards the well known amphorae such as Dr 20 with its readily identifiable heavy, curved body sherds and distinctive fabric, and it may be that other amphorae, Dr 2–4 and Rhodian in particular, are under represented.

Amphora terminology can be difficult. The names commonly used in this country, especially the Camulodunum series and relatively newly classified types, such as Richborough 527 and Kingsholm 117, are not always recognized on the Continent or in America. Some synonyms are given in the text, and identities should be clear from descriptions and illustrations. Certain works, most notably by Peacock, on southern Spanish (1971, 1974), Rhodian (1971, 1977e) and Italian (1977d) amphorae, by Laubenheimer on French amphorae (1989), and, more generally, works by Sealey (1985) and Peacock and Williams (1986) have proved invaluable but, to make the text more readable and to avoid repetition, are cited only on specific points. Drs I Freestone of the British Museum

and A Vince formerly of the Museum of London examined the thin sections, and their comments are incorporated within the text. Amphorae are recorded by their common name only for spot dating; additional fabric divisions are included for quantification.

3.1 Dressel 20 (DR20)

Source and content

There is no doubt that Dr 20 was made in the Guadalquivir Valley of southern Spain (in the Roman province of Baetica), and that it was a container for olive oil.

Dating

Fig 1

This is consistently the commonest amphora type in the City, occurring abundantly, although instances of complete or even semi-complete excavated examples are surprisingly rare. It was most common throughout the 1st and 2nd centuries, but high instances of residuality for all amphora sherds make dating increasingly unreliable from the late 1st century onwards. However, the chronological distribution accords with general patterns for Britain as a whole (Williams & Peacock 1983). The quantified data (Fig 1) show a decrease during the Hadrianic and early Antonine periods.

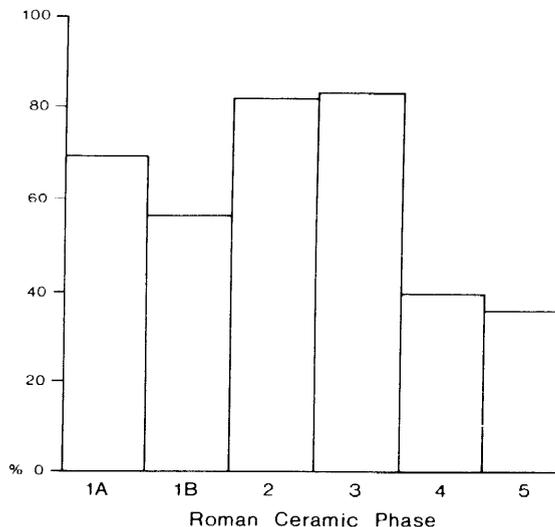


Fig 1 Bar graph Of Dressel 20 as a percentage of all amphorae by weight

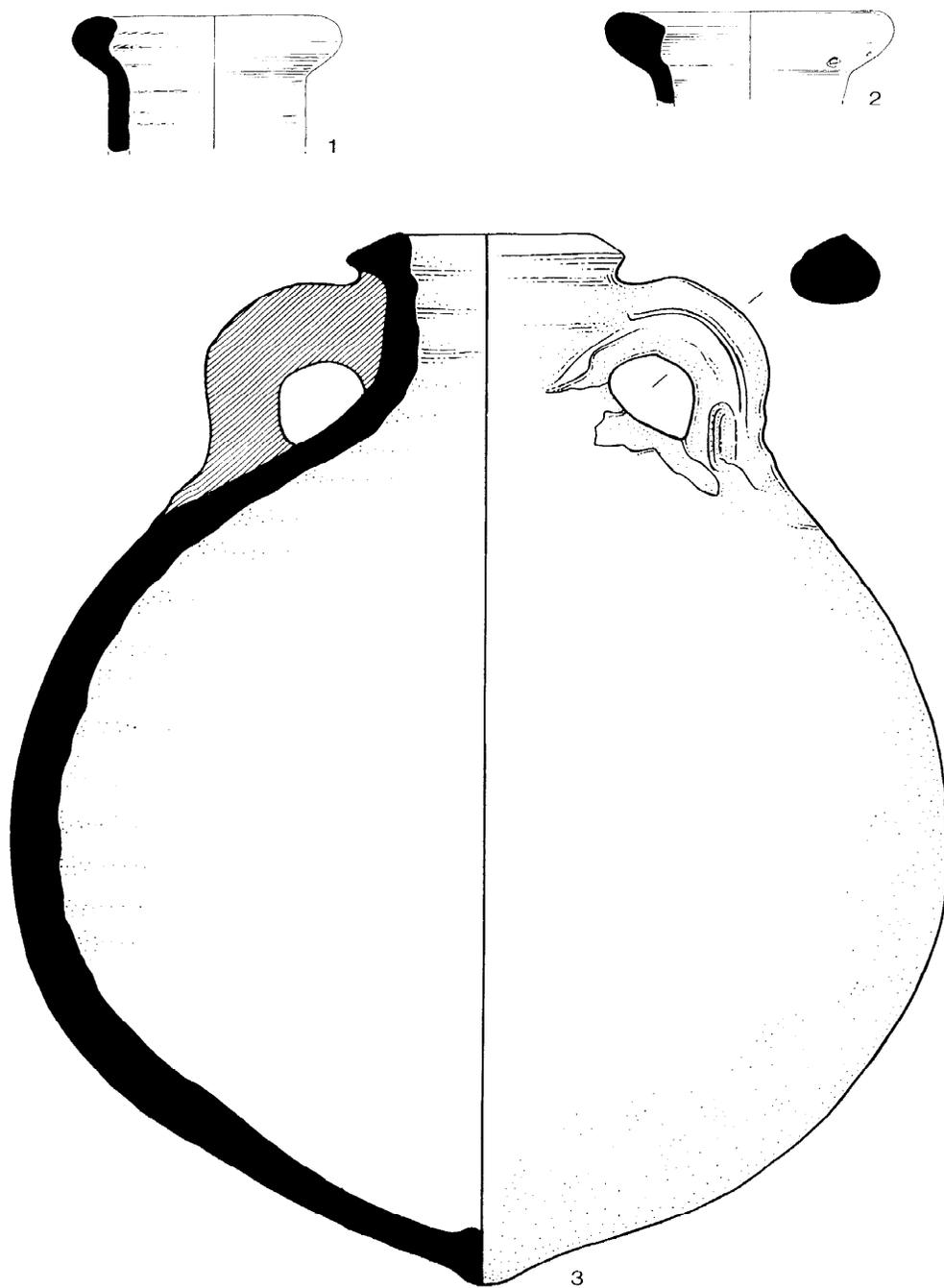


Fig 2 Dressel 20 amphorae, nos 1-3 (Scale 1:4)

Form

Fig 2, Nos 1-3

The Dr 20 is globular with round-sectioned handles and a short plugged basal spike. It is easy to identify from its distinctive form and fabric, although small body sherds may occasionally be confused with those of Haltern 70. Except for a tendency towards a more flattened angular rim profile in the 2nd and 3rd centuries, there is no obvious typological development, but it should be stressed that while rounded rims (1) are consistently Neronian or early Flavian in the City, there are also some very early angular rims from deposits of the same date (eg 2). Very angular rims have also been noted from pre-Roman levels, for example at Skeleton Green (Peacock 1981, 201-2, fig 81, 1). The handles are sometimes stamped. Surprisingly few (45) of the many handles from City sites are stamped, but those that are have been read by Dr P P A Funari, whose catalogue is in the Archive.

*Fabric

The body colour is usually yellowish-buff (10YR 8/4) or grey (2.5Y 8/8)-occasionally with reddish-brown (5YR 7/8-6/8) margins. Surfaces are yellow (2.5YR 8/4) or off-white (2.5Y 9/2) and are sometimes slipped. The fabric is hard with an irregular or laminar fracture, and contains abundant inclusions of quartz, feldspar and metamorphic rock fragments (A, SA c <0.1-1.0mm) with generally sparser limestone (sometimes fossiliferous), red iron-rich inclusions and gold and white mica in a calcareous matrix.

3.2 Haltern 70/Camulodunum 185 (H70)

Source and content

Like Dr 20, this type has a southern Spanish (Baetican) source. Haltern 70 amphorae from the Port Vendres II shipwreck bear inscriptions naming the contents as *defrutum*, a concentrated grape syrup used as a sweetener and preservative (Colls *et al* 1977, 71, 87; Parker & Price 1981, 223). The inscription on one admittedly unusual example from the City (Fig 5, 9), reads *mur(ia)* or *matr met* (Hassall & Tomlin 1982, 417, 61). Joining sherds from this vessel were recovered from different contexts and pieced together over a protracted period, the vessel's identity being changed from Haltern 70 to Dr 2-4 (Sealey 1985, 64), and back, on discovery of the rim, to 'Haltern 70 variant'. If the inscription is read as *muria* (fish sauce), the most likely interpretation, and the vessel is accepted as a type of Haltern 70, it provides evidence for the occasional carriage of salazon products in these amphorae.

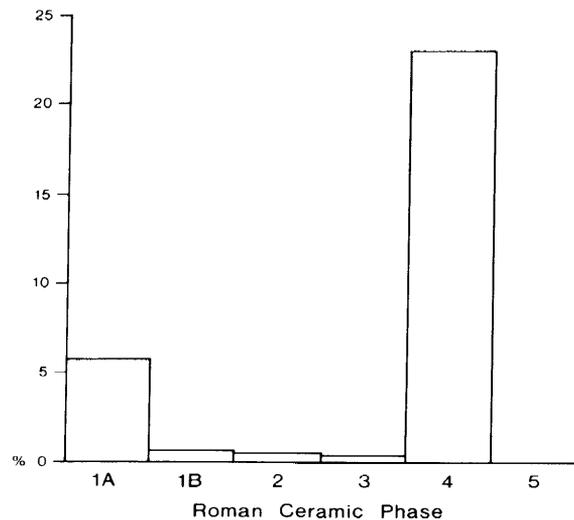


Fig 3 Bar graph of Haltern 70 as a percentage of all amphorae by weight

Dating

Fig 3

This type is consistently present, occurring in moderate quantities, in 1st and early 2nd century deposits in the City (not apparent on Fig 3). It was particularly common during the pre-Flavian and Flavian periods. A later form, of which there are two near-complete examples, accounts for the increase in quantity during the Hadrianic period.

Form

Figs 4-5, Nos 4-9

The form is found to change significantly throughout the 1st and early 2nd centuries. The heavily collared and fairly compact type vessels from Camulodunum and Haltern (both pre 50) show marked stylistic differences from later 1st and early 2nd century vessels which are uncollared, or vestigially collared, and elongated, with funnel necks and flaring rims.

The classic Haltern 70 form is cylindrical, with a collar rim, deeply grooved handles and a solid spike. Numbers 4 and 5 are rare examples of this type. The vast majority of our 'Haltern 70' amphorae, however, are uncollared (eg 7), or vestigially collared (6), and although their bodies and base spikes are approximately the same size and shape as those of Haltern 70, their necks and flaring trumpet-shaped rims are much longer. These amphorae must be a development of the Haltern 70 form, although it may be that the differences are so marked that another name should be coined for this later variety.

There are marked similarities between the vestigially collared examples (eg 6) and Cam 185b. It might be suggested, especially now that the only example of a Cam 186b from the City (Green 1980b, fig 19, 12) is found to be in a Haltern 70 (Baetican) fabric, that the Cam 185b is in fact a development (perhaps mid-late

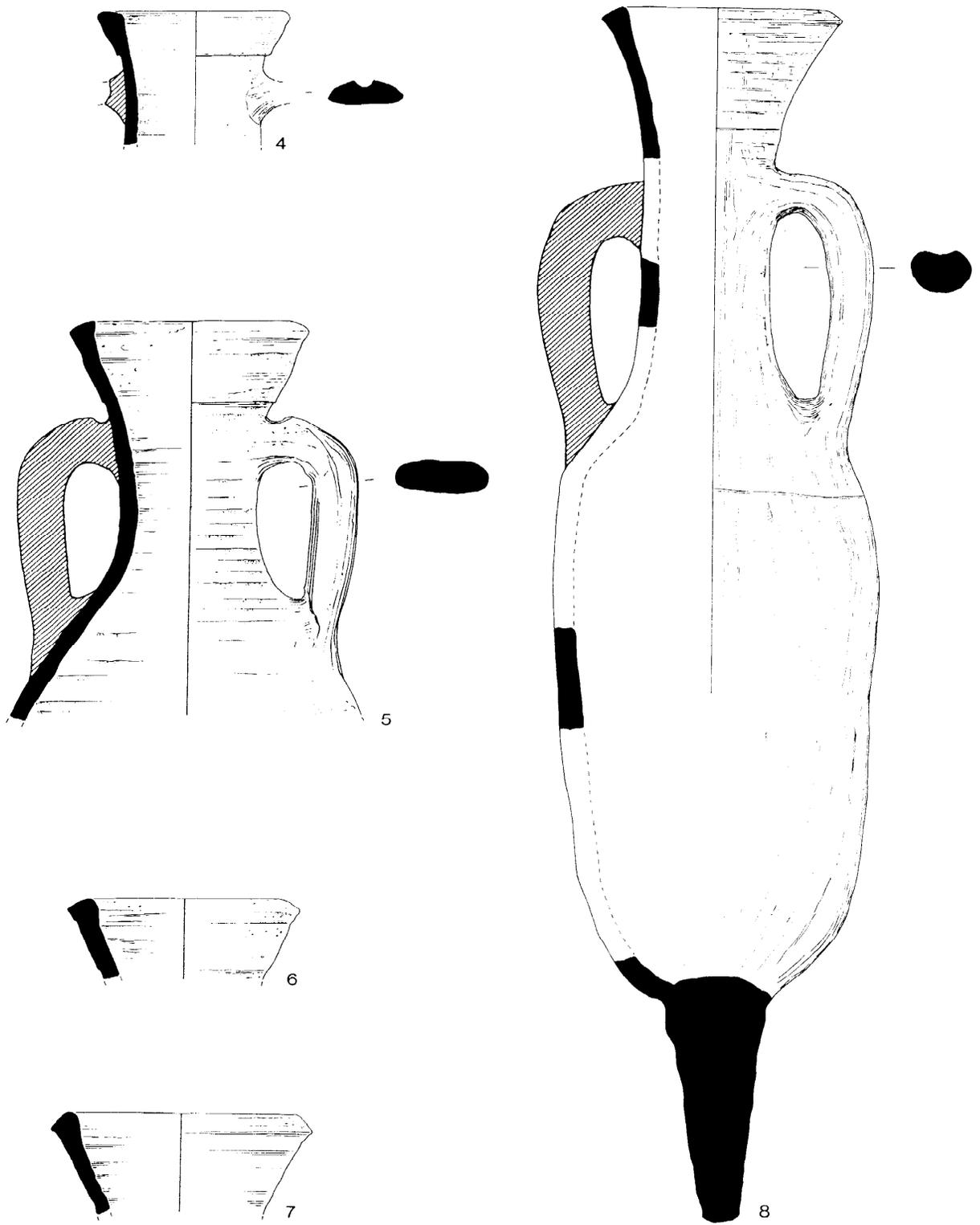


Fig 4 Haltem 70 amphorae, nos 4-8 (Scale 1:4)

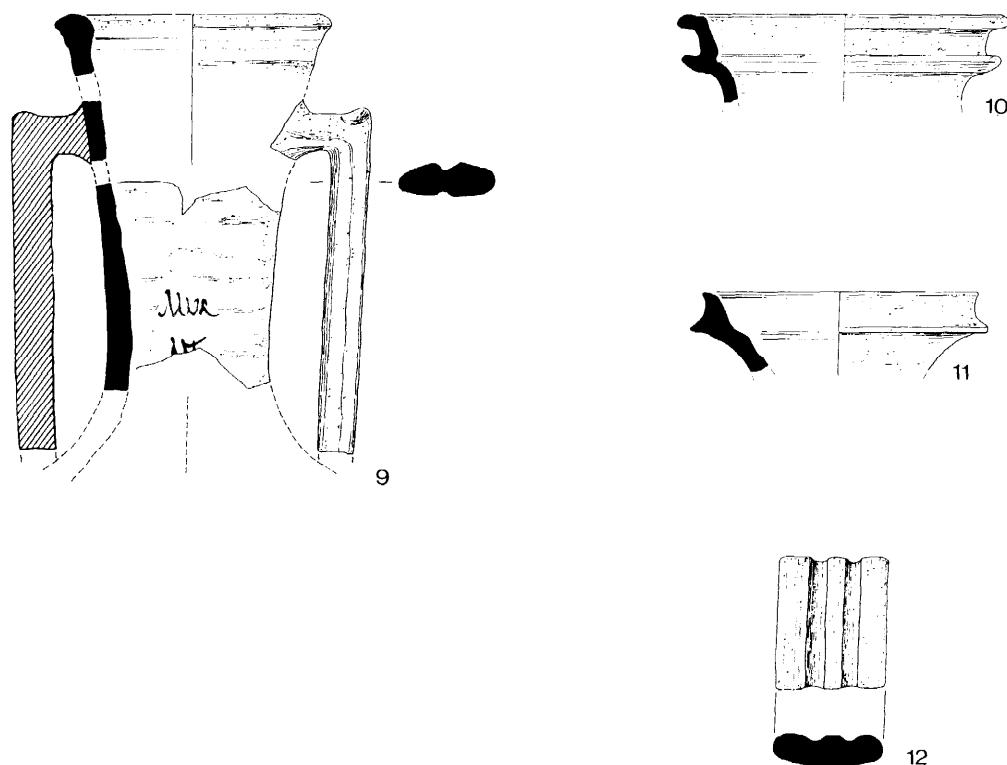


Fig 5 Haltern 70 amphorae, no 9; Dressel 28 amphorae, nos 10-12 (Scale 1:4)

1st century) of the Haltern 70/Cam 185a, and that the mid-late 2nd century form, typified by 8, is the latest variant in the range.

*Fabric

The fabric is similar or identical to that of Dr 20. It seems certain that the two types come from the same source, the Guadalquivir Valley.

3.3 Dressel 28 (DRB)

Source and content

The type was made in several production areas throughout the Roman Empire. Virtually all the City examples are thought to be of typical Baetican fabric and form. Colls (*et al* 1977, 45) draws on painted inscriptions to show that this variety of Dr 28 originated in Baetica (see Parker & Price 1981, 222, for an alternative viewpoint). Although it is thought that these pitch-lined amphorae probably contained wine, there is, as yet, no conclusive evidence for their contents.

Dating

This type is comparatively rare in the City, generally occurring as single sherds in 1st century contexts. Our pre-to early Flavian dating evidence corresponds well with the Claudian date from the Port Vendres II wreck, the reported date of *c* 100 from the Tiboulén St Maire wreck (Colls *et al* 1977, 47), and with dated British examples (eg Timby 1985, fig 28, 122). All the quantified sherds are from Flavian deposits (<1% of all amphorae by weight). The most complete example from the City and the only example with a painted inscription (Green 1980b, fig 21, 37) is dated to at least the early 2nd century.

Form

Fig 5, Nos 10-12

Dr 28 is a fairly loose, generic name for a double-lipped flagon-like amphora which was made, with small stylistic variations, throughout the Roman Empire. The Baetican Dr 28 is flat-based and double-lipped with ribbed handles like all Dr 28 amphorae, but the pincer-like double lip is particularly pronounced, the body walls noticeably thin (but tough

because of the roughness of the inclusions), and the base high-kicked with a small footing.

*Fabric

The Baetican Dr 28 has a particularly distinctive fabric which makes it easy to identify. It is hard, with an irregular fracture, and light grey (5Y 2.5/1) with off-white to yellowish-grey or cream (5Y 9/1-9/2) surfaces, which are rather blotchy from the dark colour of the mineral inclusions. It contains moderate amounts of angular quartz, limestone, feldspar, gold mica and flat, elongated black/brown fine-grained rock fragments (0.3-1.0mm). Thin sections show consistently large quantities of plagioclase and orthoclase feldspar and occasional crystals of fresh pyroxene (suggesting some volcanic input) as well as metamorphic rock fragments such as slates, schists and phyllite. The inclusions are consistent with the suggested south Spanish source.

3.4 Camulodunum 186 (C186)

Source and content

An Iberian amphora used to carry seafoods, particularly *garum* and *muria*, the fermented fish sauces which formed a liquid medium for many Roman recipes. The main area of supply for London and the rest of the western Empire was southern Spain, particularly the Cadiz region of Baetica. In the City the majority of sherds conform to Peacock's description of the Cadiz fabric (Peacock 1971, 168-9) and occur in forms Cam 186a and c.

Dating

Fig 6

This type occurred throughout the 1st and 2nd

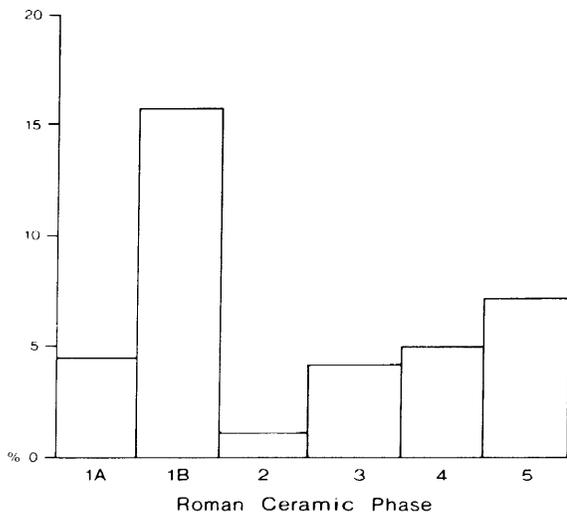


Fig 6 Bar graph of Camulodunum 186 as a percentage of all amphorae by weight

centuries; among the quantified data it peaks during the pre-Flavian.

Form

Fig 7, Nos 13-17

Cam 186a-c are distinguished by typological details of neck and rim (Peacock 1971, 168; Peacock & Williams 1986, 120-2). Cam 186b is either rare in City deposits, or difficult to distinguish from Cam 186a and c, which are present in some quantity. The two varieties are contemporary from c 50 onwards. Cam 186a seems to be a predominantly 1st century type, but Cam 186c persists well into the 2nd century.

Fabric

*C186+1176

Fig 7, Nos 13-15

The Cadiz fabric is characterized by bright colours: pink (2.5YR 7/6), yellowish-buff (10YR 9/4-8/4), light orange (2.5YR 6/8), often with an off-white (5Y 9/2) exterior. The fabric is hard and slightly rough, with varying quantities of quartz (SA, R 0.3-0.5mm, but occasionally <2.0mm), fossiliferous limestone (<0.5mm, often sub-visible) and, most conspicuously, rounded, hard red iron ore (<6.0mm). Mica is rare or absent in all examples, except for a variant which contains medium quantities of gold and white mica; another variant contains large quantities of quartz and black iron ore with a more open vesicular matrix.

*C186-2848

Fig 7, Nos 16-17

A small group has been identified in a fabric very similar to that of Dr 20/Haltem 70. It is slightly softer and siltier than the classic Baetican fabric and has an irregular fracture. It is light beige (10YR 9/2-9/4) and contains large quantities of quartz (R), iron-rich inclusions and metamorphic rock fragments (gneiss, quartz-mica-schist), gold mica, feldspar and large rounded pieces of fossiliferous limestone (0.5-1.5mm). Gold mica is visible on the surfaces.

3.5 'London 555' (L555)

Source and contents

Recent work in France (eg Dangreaux & Desbat 1988; Desbat 1987) has shown that the London 555 form and other forms such as Dr 2-4 and a version of Cam 186 (Dr 9), were made in and around Lyons in the Rhone Valley. These amphorae are in the characteristic Lyons fabric, a buff-beige, calcareous clay containing sand, quartz-mica-schist and granite/gneiss-derived agglomerates. Some variations in the fabrics are more micaceous than others, and Desbat (1987, 160) notes that the London 555 ('Haltem 70 similis') in particular has at least two fabric variants, one resembling Gauloise 4, the other much coarser.

The carbonate-rich clays and abundance of metamorphics in London 555 amphorae could be

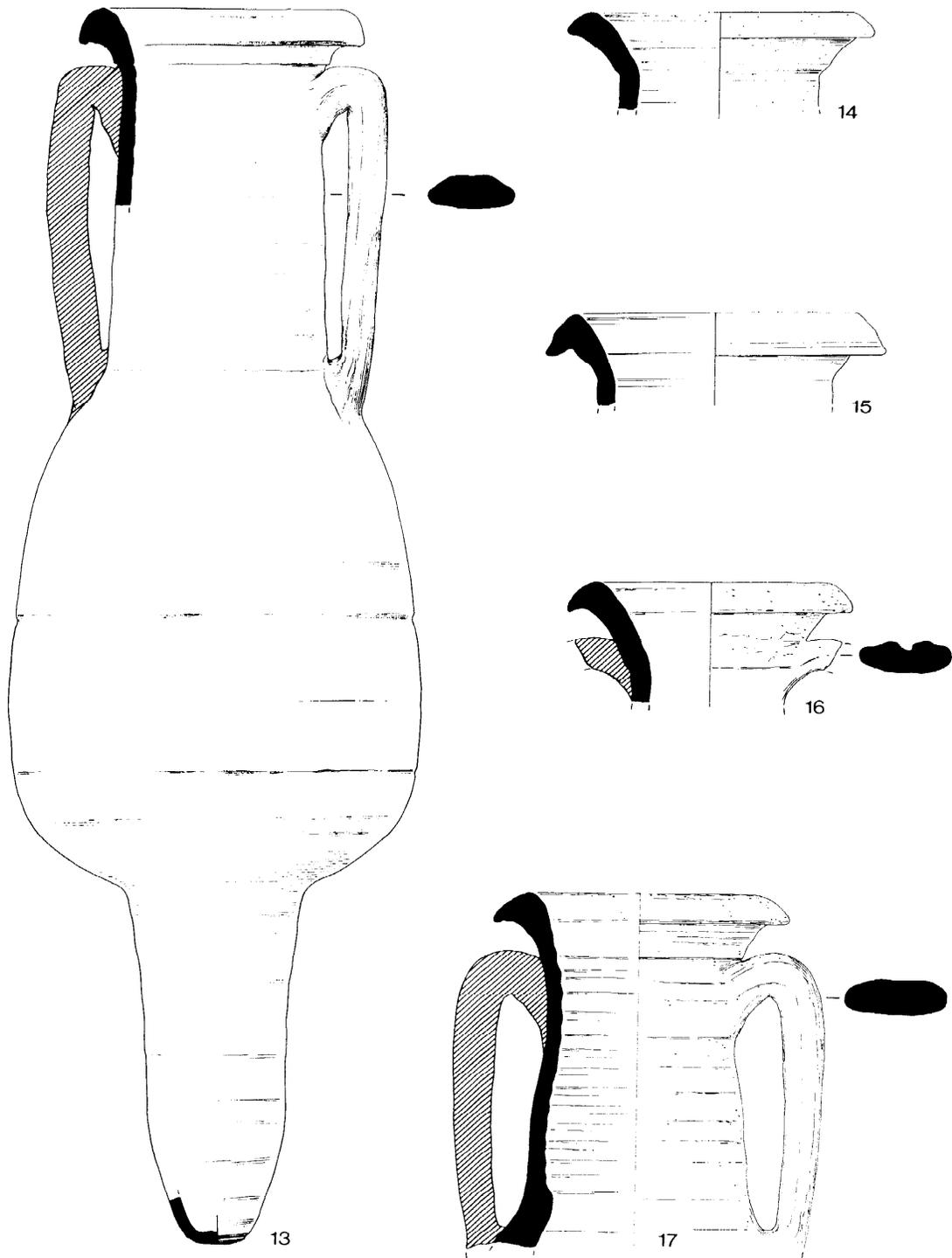


Fig 7 Camulodunum 186 amphorae, nos 13-17 (Scale 1:4)

matched in most areas of Spain, France and other parts of Europe. However, given the similarities between many London 555s and the southern French Gauloise fabrics, a south Gaulish source is indicated here. This view is not universally held. Sealey and Tyers (1989, 63-5) consider that the typological, petrological, epigraphic and content evidence indicate a Baetican source, and that the new French evidence is not sufficient to suggest mass-production and exportation. They also note two examples of London 555 rims in the coarse Baetican fabric. One of these is from Colchester; the other, from the City (Fig 9, 22), is much larger than the typical London 555 rim, and is interpreted here as a Haltem 70 variant, although it is illustrated with the L555s. In the absence of agreement, it is suggested that there appear to be obvious similarities between the south French and London 555 fabrics, that the majority of London 555s in the City may originate from the Lyons area and other kilns and production areas in Gallia Narbonensis and Gallia Lugdunensis, but that a Baetican or, indeed, a more general south Spanish source should not be discounted at this stage.

London 555 amphorae are known to have carried olives, and the Pan Sand amphora contained over 6000 olive stones (Sealey & Tyers 1989, 56). A recent City find has an inscription which reads 'OL, AL, CCL, C.L.A. Averni', translated as '250 . . . of green (lit 'white' olives) (transported) by Gaius L... A... (under the control?) of Avernus' (Hassall & Tomlin 1990, 369-70, no 24).

Dating

Fig 8

This was a sparse 1st and early 2nd century amphora

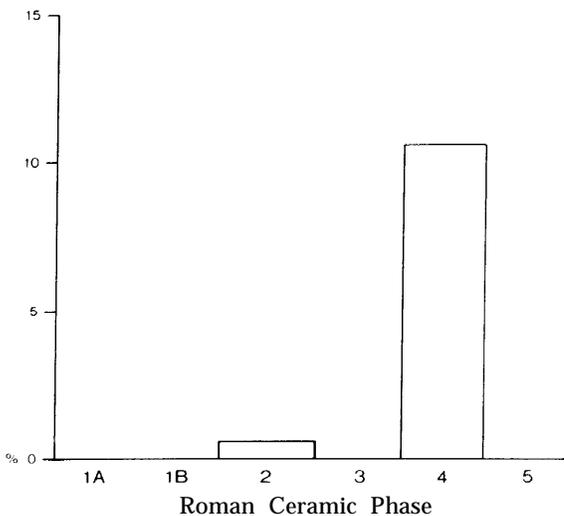


Fig 8 Bar graph 'London 555' as a percentage of all amphorae by weight

type in the City. Its normal distribution is not represented by the quantified data on Fig 8, for it is known from pre-Boudiccan assemblages in the City. The peak in the Hadrianic period results from a single nearly complete vessel found at 5-12 Fenchurch Street.

Form

Fig 9, Nos 18-22

Rims of this amphora type have been illustrated in many British publications, but it has only recently been assigned to a named category. The amphora has been variously called 'Neuss type' after a complete example from Novaesium (C M Green, pers comm) and, since 1983, 'London 555' (Sealey 1985, 167-8) after the complete example illustrated in Wheeler's *London in Roman Times* (1930, pl 55, 5). Peacock and Williams (1986, 214) also use Wheeler's example as a type specimen, and list the type as number 59 Wheeler Group E. Recent City finds of complete amphorae and substantially complete rims/necks of this type display general homogeneity of form and fabric with the sort of minor stylistic and petrological variations displayed by Cam 186a-c and Haltern 70 and its variants. In the case of London 555 it is not yet possible to determine whether these variations have chronological or typological significance.

The general form is spindle shaped with slightly sloping shoulders, weakly grooved oval-sectioned handles and a solid spike. The neck, which is continuous with the shoulder, bulges outwards above the handle to a substantial rounded-bead lip. The majority of examples are deeply grooved below the rim, but this feature is not necessarily diagnostic. At least two examples are ungrooved with flat-topped rather triangular-shaped rims. Number 19, from a Hadrianic fire deposit - the same context as Haltern 70 (8) - is unusually slender, with a correspondingly small capacity. The different shape may reflect its date.

*Fabric

P1 5a

The London 555 fabric is consistently pale buff-cream (10YR 8/2; 7.5YR 8/2) or light orange-red (2.5YR 7/6-6/6) in colour, fairly hard and fine textured with numerous calcareous and micaceous inclusions. In the hand, though harder and coarser, it is not dissimilar to the fabrics from Gallia Narbonensis (Section 3.6). Surfaces are fairly rough, and sometimes further roughened on the neck and body with scatters of coarse quartz, rock fragments and gold mica. All samples are characterized by abundant, very fine specks of fossiliferous limestone (R <0.3mm) and flecks of white and gold mica (<0.2mm, occasionally 0.5-1.0mm). Quartz (SA <0.4mm) is notably sparse, although some examples are coarser with abundant quartz inclusions. Red iron-rich inclusions, feldspar, and metamorphic rocks such as quartzite, quartz-micaschist and phyllite are present but not abundant (<0.5mm). At least three fabric groups are distinguishable under magnification (x20), but their general

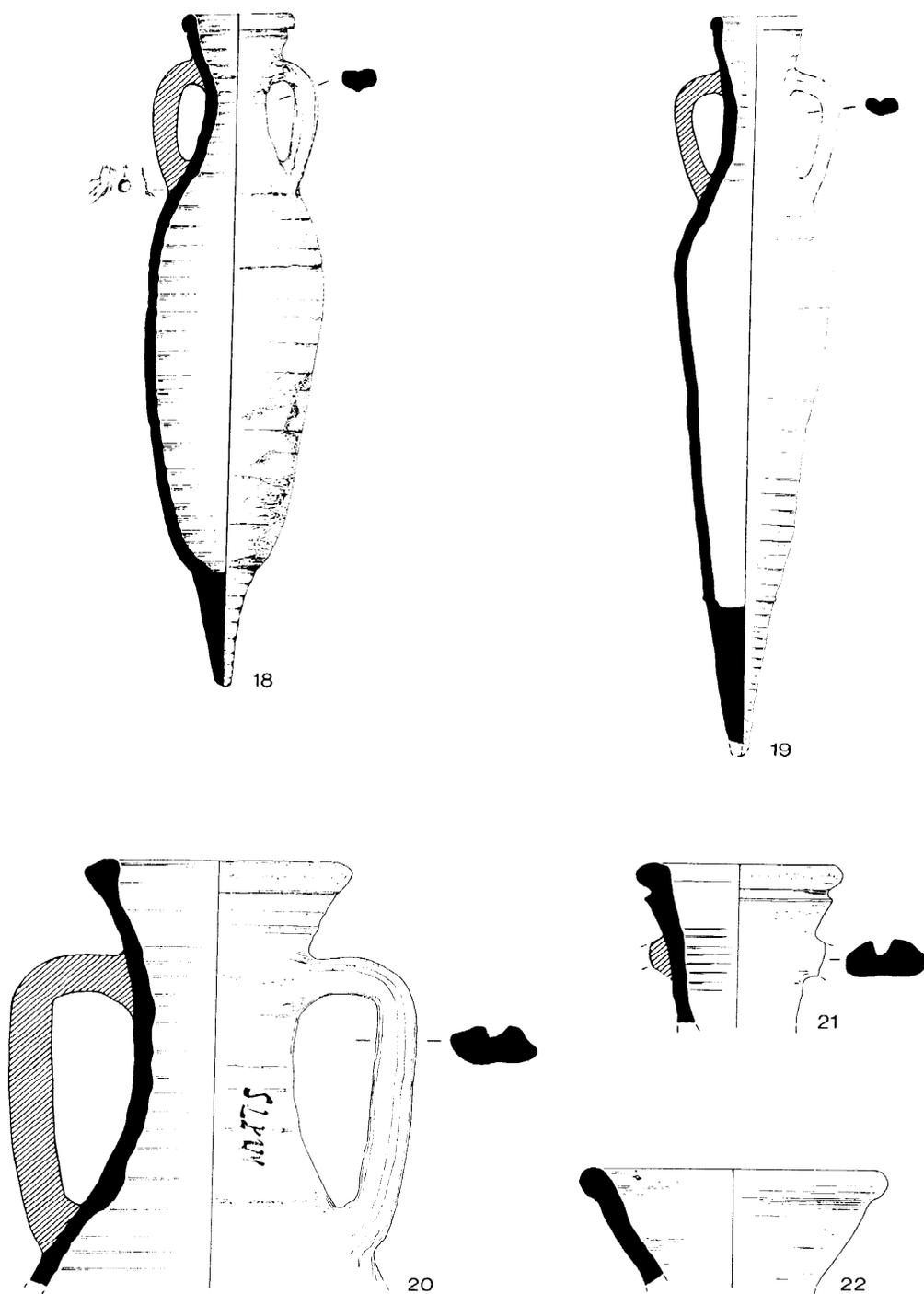


Fig 9 'London 555' amphorae, nos 18-22 (Scale 1:4; nos 18-19 1:8)

similarity is such that a single production area is indicated.

3.6 Gauloise amphorae (PE47)

This amphora type derives its common name from the identification by Pelichet (1946). Although the series is now seen to be much more complex and is divided into a number of different forms by Laubenheimer, the code PE47 is maintained in spot dating.

Source and content

It is clear from the work of Pelichet (*ibid*), and more recently Panella (1973, 538-51) and Laubenheimer (1985, 1990), that a wide range of amphora forms were made in the south French province of Gallia Narbonensis, and that kilns were scattered from Narbonne in the west to Nice in the east with apparent concentrations in the Rhone Valley and the Narbonne-Beziers region.

It is thought that all these amphorae were principally used as wine containers, although painted inscriptions show that the form was also used for fish sauce (Panella 1973, 547), and probably other products as well.

Dating

Fig 10

These types are primarily 1st century amphorae, with the exception of Gauloise 4 which persisted well into the 3rd century and accounts for the later data on Fig 10. In aggregate they are abundant.

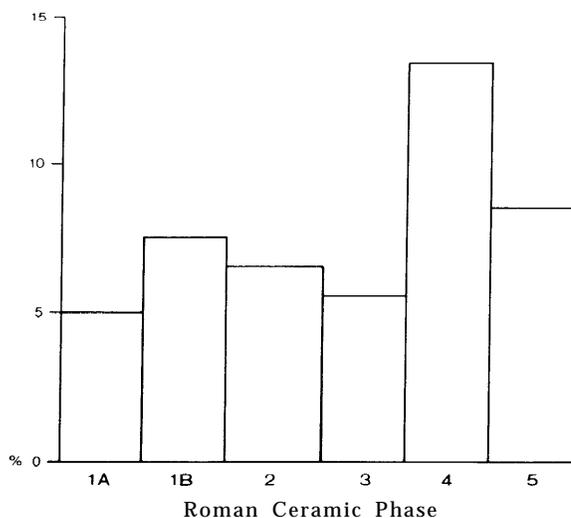


Fig 10 Bar graph of Gauloise (PE47) as a percentage of all amphorae by weight

Form

Figs 11-12, Nos 23-34

Laubenheimer (1990, 166-7) has categorized several distinct flat-bottomed types, occurring within Gauloise 1-12, in a new typology which distinguishes the common Pélichet 47 (Gauloise 4) as one among many similarly shaped amphora types varying chiefly in rim detail but also in size, shape and base diameter. The different types were often made in the same small kilns or groups of kilns.

Four Gauloise amphora forms have been found in City excavations. By far the most common, Gauloise 4 (23-4), is also the most common indigenous form of the group in southern France and in the rest of the Roman Empire; it occurs frequently in Italy (at Ostia for example, Panella 1973, 538, tabella 11), and in the northwest provinces (Peacock 1978). It is characterized mainly by its round lip, narrow neck and narrow, flat base. In the City it was present from the 1st to the early 3rd centuries (Green 1980b, 42) and is probably the second most common amphora type, although body, base and handle sherds in south French fabrics have been grouped and quantified as 'Pélichet 47' when they may have come from other Gauloise forms. Despite being made in a number of widely dispersed kilns, the form almost invariably occurs in a fine micaceous fabric (Laubenheimer 1985, 267).

Gauloise 5 (25-6), a 1st to early 2nd century form, also appears to have been fairly common. It is characterized principally by its thick, flat rim and long, narrow neck. The handles, body shape and base are broadly similar to those of Gauloise 4. It occurs in a range of fabric variations and, like most of the Gauloise forms, was made in at least two sizes.

Gauloise 1 (27-9) is a 1st century form which is characterized by its flared collar rim and double-grooved handle. It has an almost spherical bag-shaped body and fairly wide base. Present in a range of fabric variations, it occurs as a few isolated examples in 1st century contexts, and residually at Billingsgate Buildings in unpublished, disturbed 2nd-3rd century contexts. Number 30 is an unusual variant, Laubenheimer's 'Forme 1 de Atelier de Gueugnon' (Laubenheimer 1989, 128-9).

Gauloise 3 (31-4), sometimes categorized as Hofheim 77, has a flared double moulded lip/neck, and a body shape and base broadly similar to those of Gauloise 1. It occurs in a range of fabric variations and is present as a few single examples in 1st century contexts.

*Fabric

Laubenheimer (1985, 211, 349) distinguishes two main fabric variants. One is soft and fine, cream buff-beige (10YR 9/4) in colour, and contains sparse or moderately abundant inclusions of limestone (often sub-visible), sparse fine quartz and metamorphic rock fragments (generally <0.1mm), and abundant fine white and gold mica. The other is coarser (though still finer than most amphora fabrics), sometimes a darker

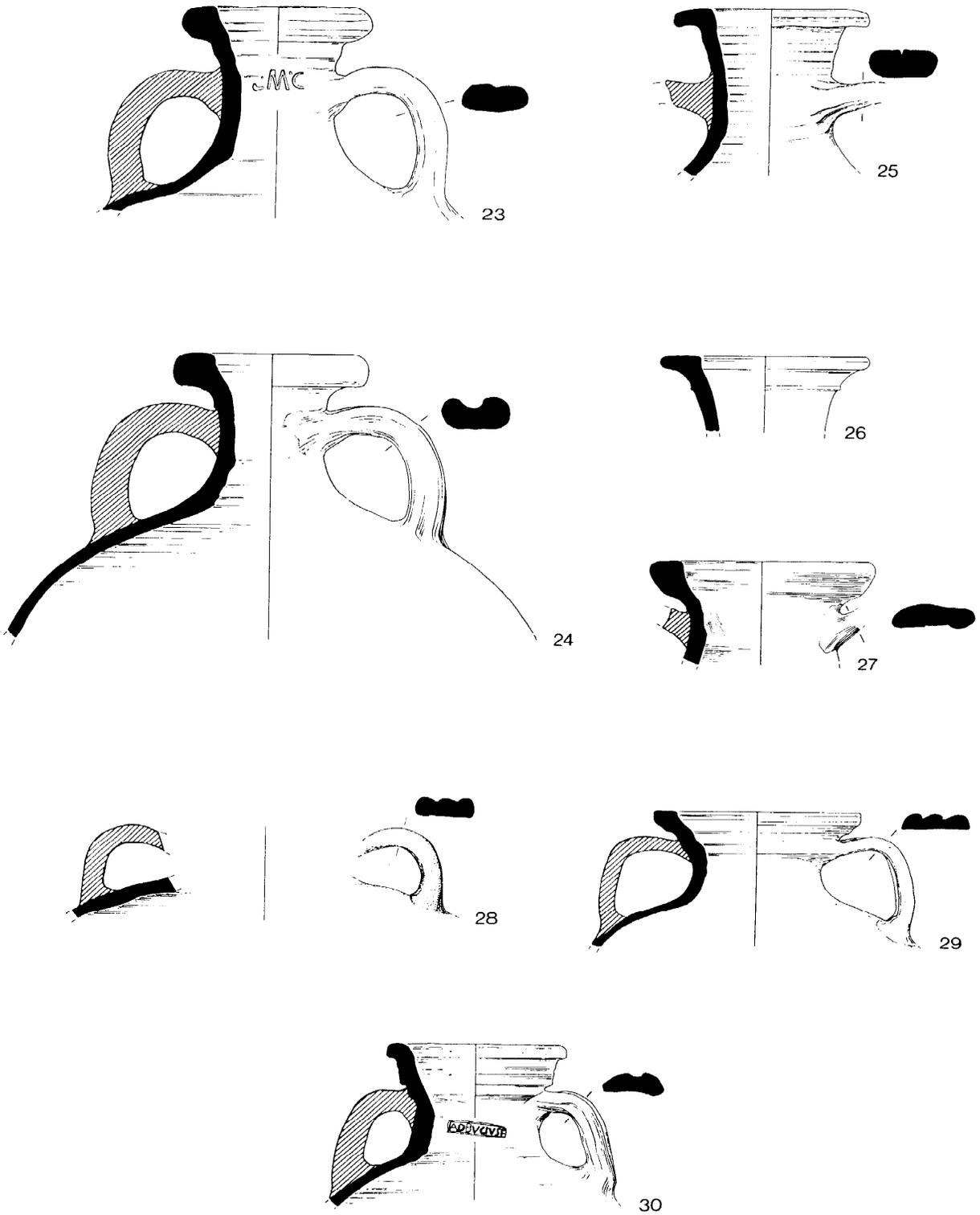


Fig 11 Gauloise (PE47) amphorae, nos 23-30 (Gauloise 1, 4 and 5) (Scale 1:4)

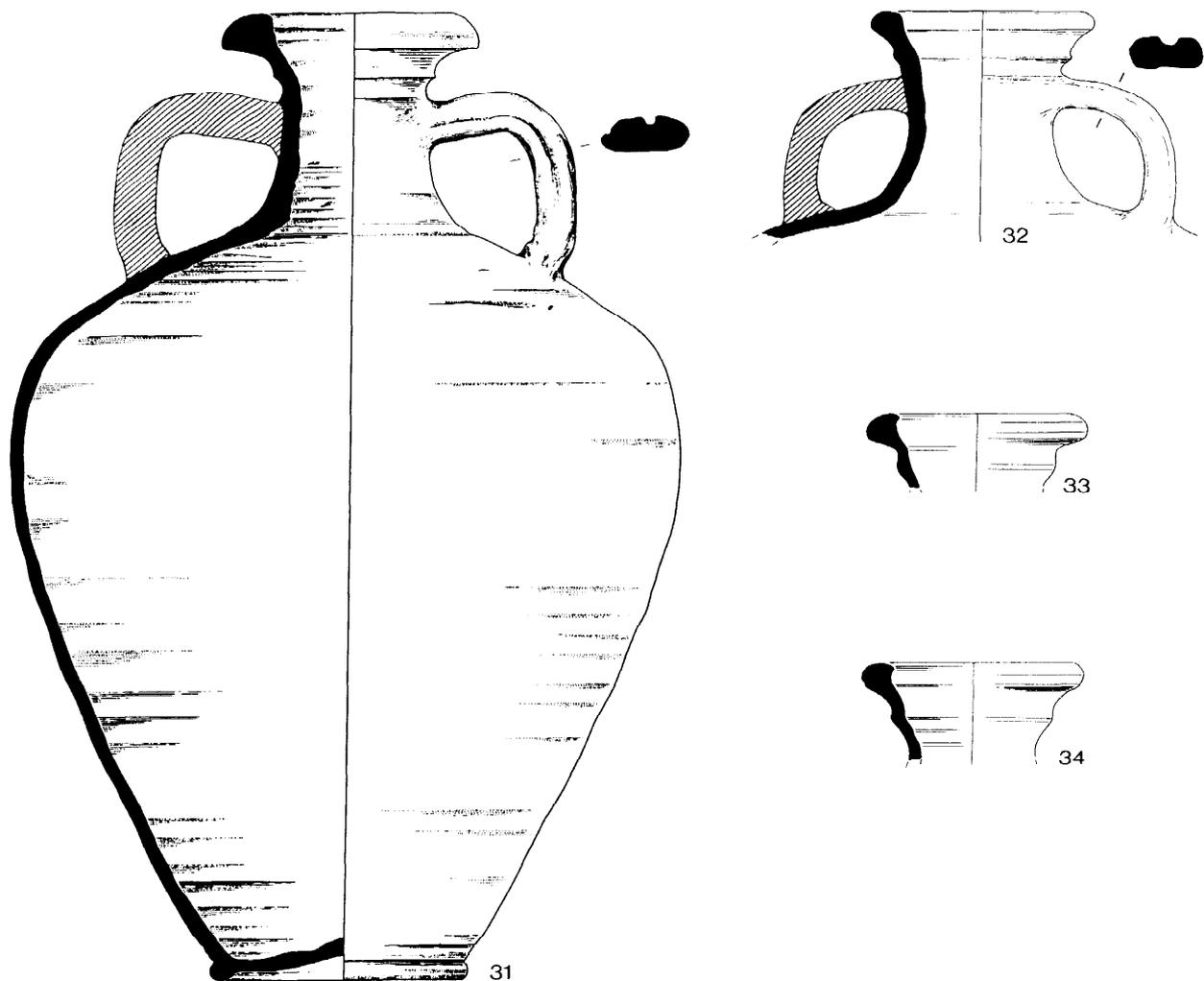


Fig 12 Gauloise (PE47) amphorae, nos 31-4 (Gauloise 3) (Scale 1:4)

beige-pink or orange (7.5YR 8/4; 5YR 8/4; 5YR 7/6), and contains larger quantities of the same range of inclusions. Both fabrics have clean or sub-conchoidal and fine fractures, slightly rough surfaces and a wiped appearance reminiscent of dough.

Thin sections of City examples match Laubenheimer's descriptions but show quite a wide range of fabric variations which appear to be associated with form. Gauloise 4 fabrics are notably fine grained and micaceous with a scatter of limestone, feldspar and granite, while Gauloise 1, 3 and 5 are coarser and more varied. This apparent grouping of fabrics by form is probably coincidental as there is evidence from France of a variety of forms being made in the same kilns and presumably the same clays. However, as stated, the Gauloise 4s from the City are very often in a notably fine micaceous fabric.

3.7 Dressel 2-4 ('Koan')

Source and content

These amphorae were widely made throughout the Roman Empire and the diversity of fabrics and variability of forms reflects both the large number of production sites and the common use of the form as a wine container in the 1st and 2nd centuries. Particularly diverse examples in late 1st century contexts may, as Sealey (1985, 127-32) suggests, demonstrate a sudden expansion of viticulture in Italy, Spain and southern France, although there is some evidence, as for other wine amphorae including Dr 1 and Gauloise 4, that the form was also used as a primary container for products such as fish sauce and fruit (Hassall & Tomlin 1984, 344, 37; Sealey 1985, 47).

The Dr 2-4 form is known to have been made in Italy (Peacock 1977d), central and southern France (Dangreaux & Desbat 1988; Desbat 1987; Laubentheimer 1986), Catalonia (Keay & Jones 1982), Baetica (Peacock 1974) and, on a very small scale, at Brockley Hill near London (Castle 1978). Apart from the possible exception of a few rim sherds which may come from large flagons, Brockley Hill/Verulamium region Dr 2-4 amphorae have not been recorded from City excavations. Two almost complete examples from Lion Walk, Colchester (Symonds & Wade forthcoming) demonstrate that they are occasionally found outside the immediate area of the kilns.

Some of the more characteristic and common fabrics found are described below. They derive generally from small rim, handle and spike sherds, and are not always illustrated.

Dating

Fig 13

In the City the type is generally 1st and 2nd century. Where possible, more detailed dating evidence is given for individual fabrics. As a group they occur in moderate quantities.

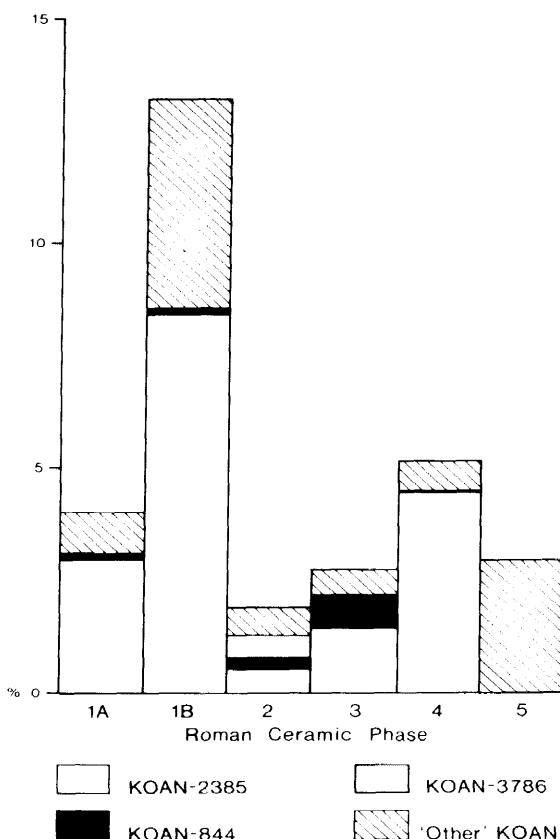


Fig 13 Stacked bar graph of Dressel 2-4 (KOAN) amphora fabrics as a percentage of all amphorae by weight

Form

The most obvious characteristics of the form are the double-rod handles, simple rounded rim, sharply carinated shoulder and peg base.

Fabric

*Koan-2385

Fig 13; Fig 14, Nos 35-6

The most easily identifiable, though not necessarily the most common, fabric is the Italian Campanian with its characteristic brick-red (1 OR 6/8) colour, white (5Y 9/1-9/2) slipped surfaces and granular texture with generally abundant well-sorted inclusions of black sand (mainly augite, garnet and volcanic glass), volcanic rock fragments, feldspar and quartz (SA 0.5-0.7mm). Quantities of volcanic inclusions vary considerably. Campanian amphorae are generally found in the City in contexts of the mid 1st century (c 50-70) and do not appear to have been imported much later than the late 1st century; later occurrences are probably residual.

*Koan-844

Fig 13

Contemporary with the Campanian fabrics and continuing into the late 1st or early 2nd century is a variety of fine micaceous fabrics. Frequently light pinkish-orange (2.5YR 7/8-6/8) and sometimes with a white (5YR 9/1) slip, they contain very large quantities of white and gold mica and varying but generally abundant quantities of limestone and sparse quartz (SA <0.3mm). It is thought that they are also Italian (Green 1980b, 42), although they are difficult to assign to a particular area.

*Koan-3786

Fig 13; Fig 14, Nos 37, 39

Another distinctive and fairly common Dr 2-4 fabric is characterized by its light pinkish-orange (2.5YR 7/6) or buff-red (5YR 8/4) colour, cream (10YR 9/2) slip, and particularly by its very large (A, SA 1.5-3.5mm) inclusions of volcanic origin, such as light-coloured feldspars, and pyroxenes, and a conspicuous lack of sand. In thin section these amphorae form a very well-defined group. They contain a large range of volcanic inclusions, typically altered volcanic glass, green pyroxenes, very large, clear, fresh alkaline feldspars and medium to large quantities of reddish-yellow mica. Dr I Freestone comments that a south Italian source is probable, and certainly the fabric is very similar to the south Italian mortaria which were imported in the 1st and 2nd centuries (ITMO, Section 4.11). Among the quantified data they are restricted to the Flavian period.

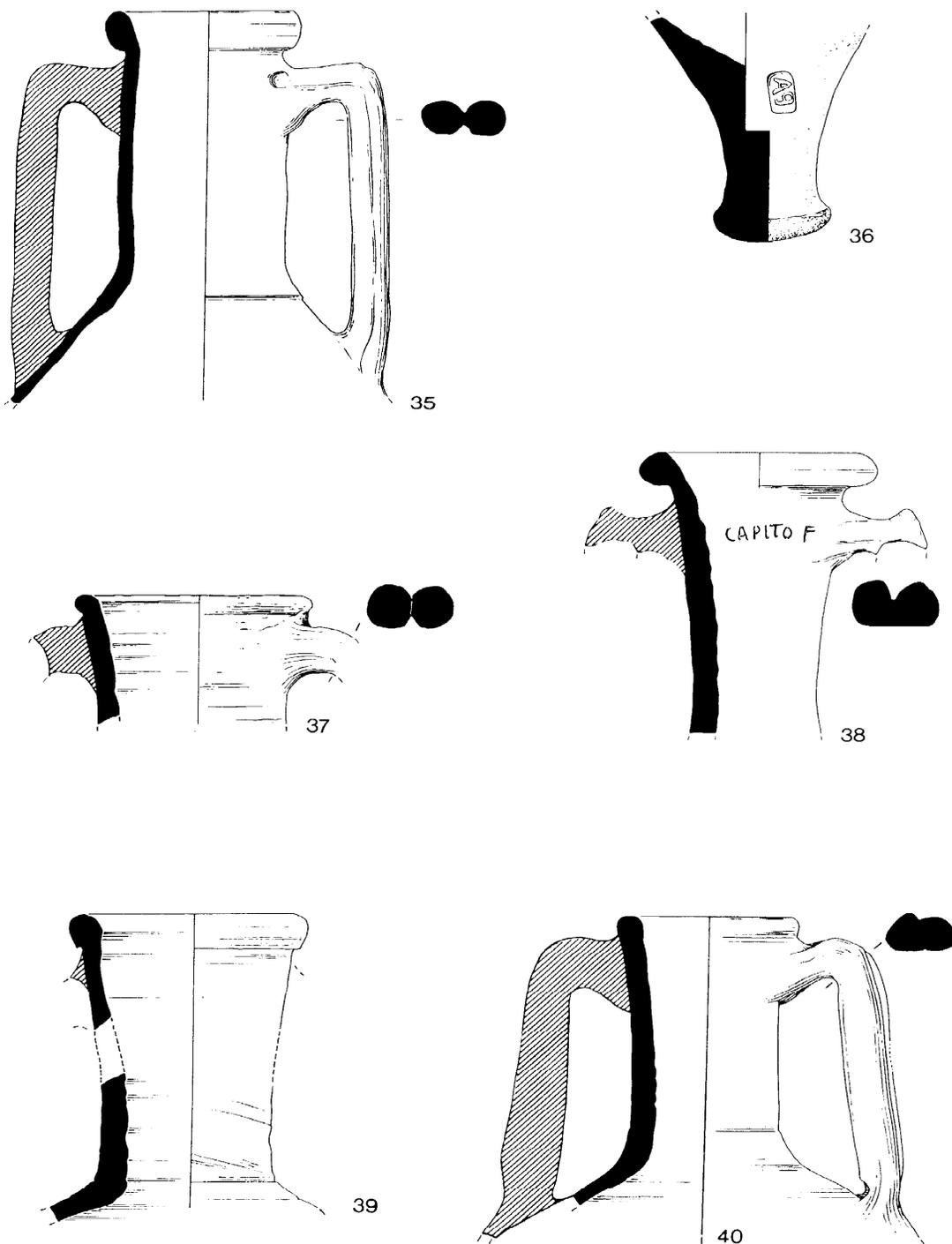


Fig 14 Dressel 2-4 (KOAN) amphorae, nos 35-40 (Scale 1:4)

Koan-3488**Fig 14, No 38**

This vessel is in a hard, finely irregular light orange-buff (5YR 8/4) fabric with white (10YR 9/1) surfaces and with abundant fine quartz (SA <0.3mm) and red iron-rich inclusions, as well as some rounded limestone, white mica and feldspar. The graffiti, CAPITO F ('Capito made this', Hassall & Tomlin 1984, 344, no 36), on an unstratified vessel, was incised before firing.

Koan-4127*Fig 14, No 40**

This type has a pale cream or buff fabric (2.5Y 9/2), is hard with an irregular fracture, and comprises a micaceous (white and gold) clay containing abundant poorly sorted quartz, quartzite (SA <1.0mm), metamorphic rock fragments (<2.0mm) and abundant foraminifera (<0.5mm). In thin section rock fragments can be identified as quartz-mica-schist, phyllite, feldspar and amphiboles. A source in the Lyon/Rhone Valley area is suggested. The type vessel comes from an unquantified Flavian context.

3.8 Richborough 527 (R527)**Source and content**

It now seems certain that these amphorae were made in the area of the Bay of Naples in southern Italy. Their contents are unknown, but dried fruits have been suggested (Arthur 1989, 251-4; Williams & Arthur 1991, 396).

Dating**Fig 15**

Sherds of Richborough 527 come from several City

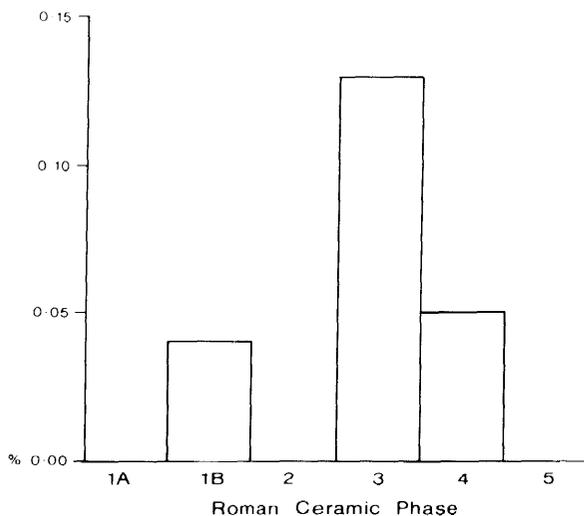


Fig 15 Bar graph of Richborough 527 as a percentage of all amphorae by weight

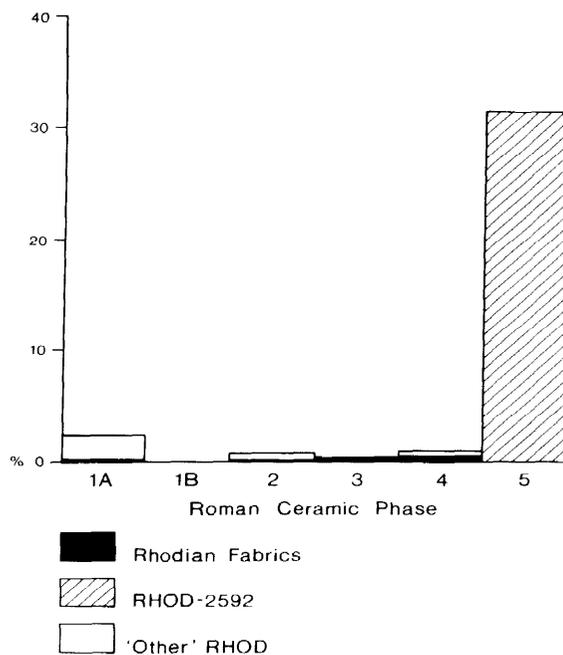


Fig 16 Stacked bar graph of 'Rhodian' amphora fabrics as a percentage of all amphorae by weight

sites, more complete vessels from redeposited dumps and waterfront infills at Billingsgate Buildings (Green 1980b, 44) and New Fresh Wharf (Green 1986, 101, 1.4). The type occurred from the Neronian period onwards (late Neronian-early Flavian among the quantified data), and although normally the majority of City examples are from 1st century contexts, there is strong evidence for small-scale importation throughout the Roman period (Arthur 1989; Williams & Arthur 1991). Certainly the most complete City examples are from 3rd century contexts, and it may be that 4th century examples which were previously thought to be residual are also in primary contexts. In absolute quantities the type is sparse.

Form**Fig 17, No 41**

The form appears to be fairly consistent. It is a rilled cylindrical amphora with a large open mouth and rounded or bead rim. The base is a stub and the handles are short, curved and ridged. Arthur (1989) has shown that a later development of the form has a smaller and less beaded rim.

***Fabric**

The hard, rough fabric is distinctive and characterized by its coarse manufacture and the volcanic inclusions. It is greenish or white-grey (10Y 9/2-8/2) in colour and contains abundant inclusions of clear volcanic glass (0.5-0.6mm) which have remelted in firing and

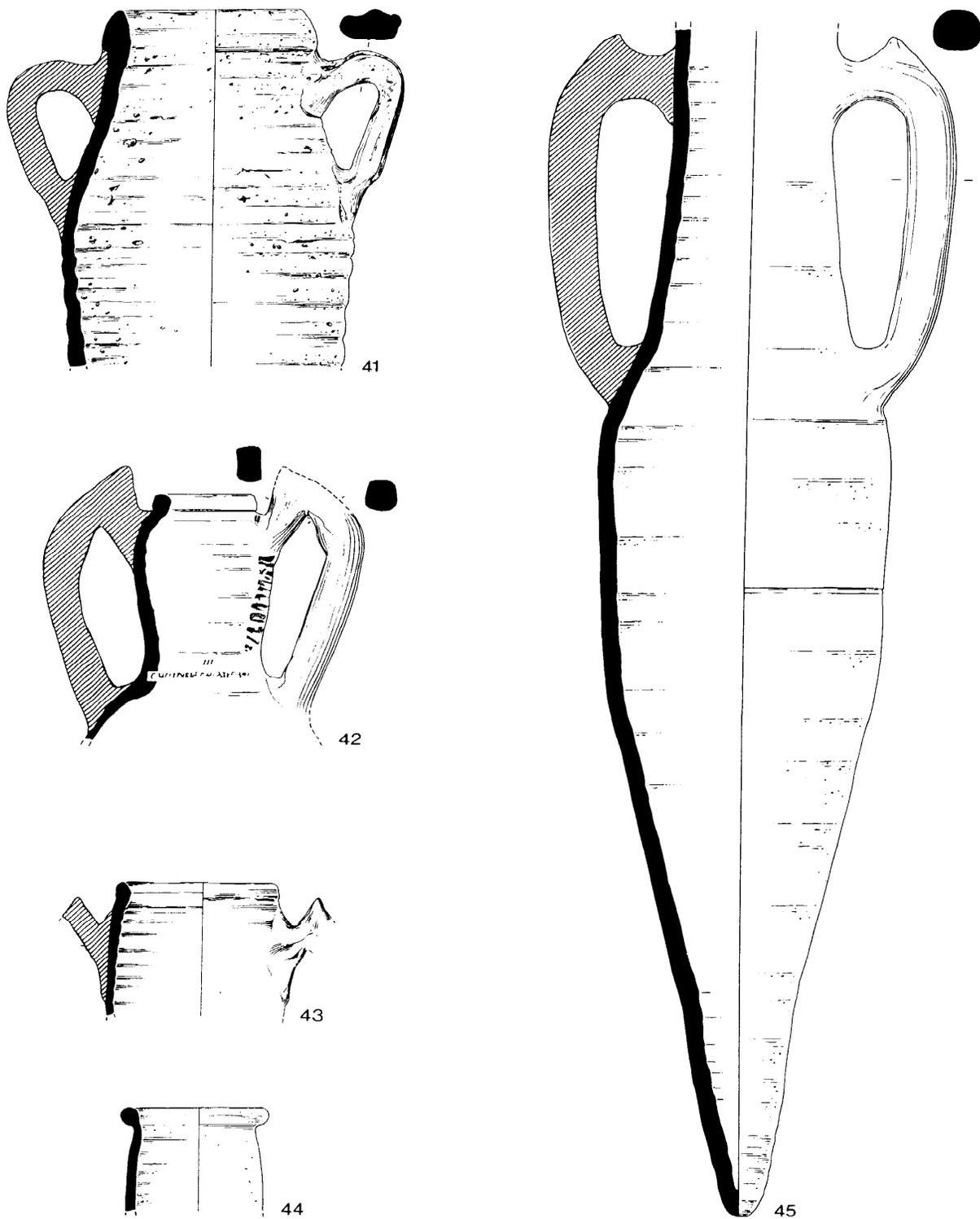


Fig 17 Richborough 527 amphorae, no 41; 'Rhodian' amphorae, nos 42-5 (Scale 1:4)

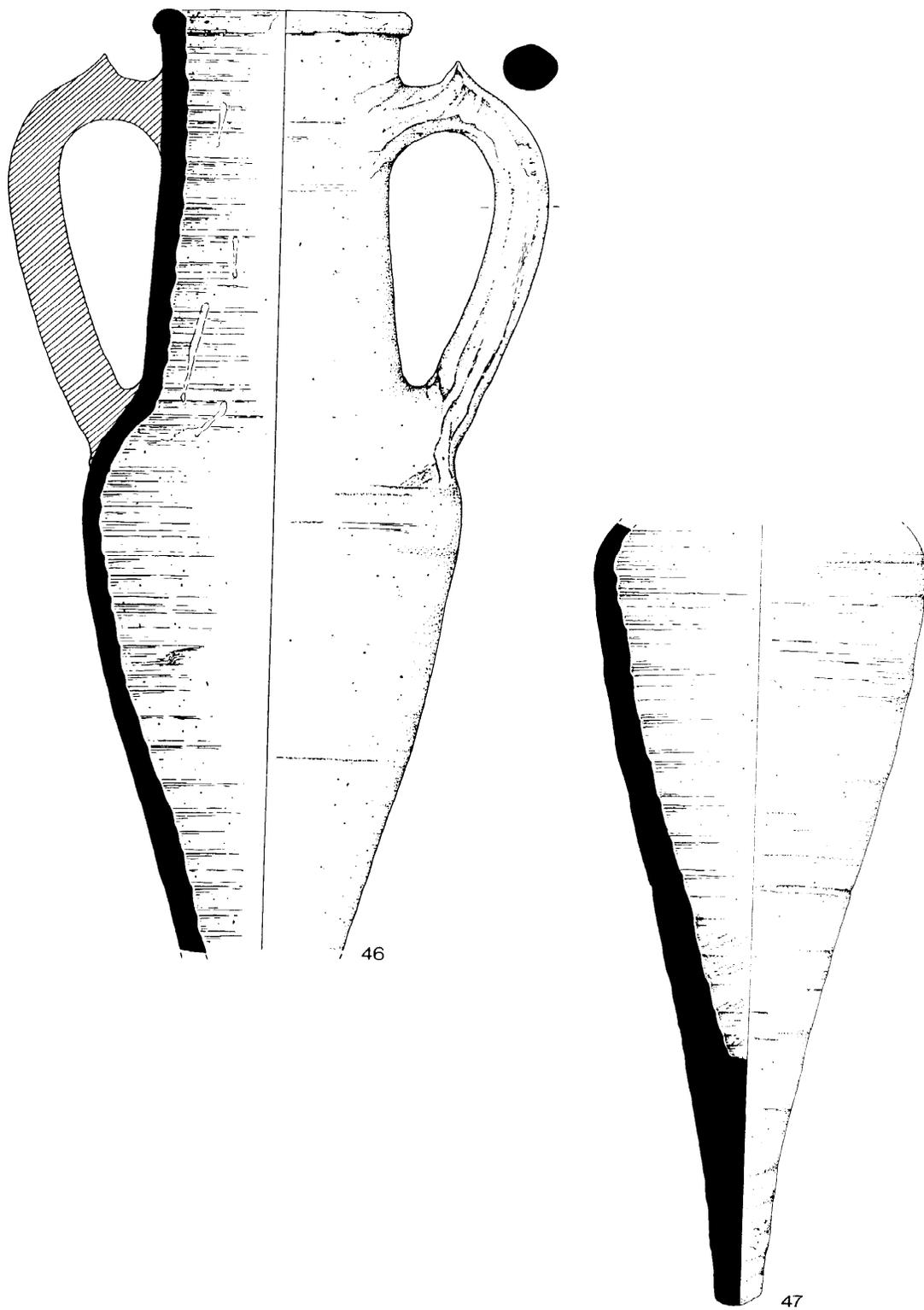


Fig 18 *'Rhodian amphorae, nos 46-7 (Scale 1:4)*

erupted through the surfaces, lava and rock fragments, abundant rounded limestone (0.4-0.7mm), and varying quantities of quartz, feldspar and gold mica.

3.9 Rhodian and Rhodian-type amphorae (RHOD)

Source and content

Dr 43 was made on Crete (Empereur *et al* 1991) while Cam 184 occurs in a far wider variety of fabrics (including a Rhodian one) and, like Dr 2-4, was obviously made in a number of production centres. Both types are known to have contained wine and, occasionally, figs (Sealey 1985, 56-7).

Dating

Fig 16

These amphorae are generally 1st to mid 2nd century, and where possible more detailed dating evidence is given with separate fabrics below. As a group they occur in moderate quantities.

Form

Two related amphora forms are known as 'Rhodian': Dressel 43, and the 'Rhodian-type' or 'style' Cam 184. Dr 43 is very small and thin walled with a collared rim, and high peaked single-rod handles which flare above rim level. Cam 184 is a very similar shape but its handles peak below rim level. Both amphorae have sloping shoulders and tapering bodies, but the Cam 184 is much larger and more comparable in size to a Dr 2-4. Body sherds of Cam 184 and Dr 2-4 can be confused, although generally the Cam 184 tends to have thinner walls.

Fabric

The main fabrics found in the City are described below. Fabrics from unfeatured body sherds, and rim sherds which might be Rhodian or Dr 2-4, are not included here.

RHOD-1522

Fig 17, No 42

Dr 43 is present but rare in the City. There are two virtually identical examples in the Reserve Collection, one of which is illustrated. Both vessels are in a hard, fine, pink (7.5YR 8/4) fabric with lighter (2.5Y 9/2) slipped surfaces. Under magnification (x20) the only visible inclusions are very sparse fine quartz and limestone. The matrix is a mass of sub-visible red flecks. There are no stratified examples of this form.

RHOD-1894 (Cam 184 fabric 1894)

Fig 16; Fig 17, Nos 43-4

Cam 184 Rhodian-style amphorae are fairly common, and occur in the City from the mid 1st to the mid-late

2nd century. An early and distinctive type is very small and similar to the Dr 43, the main difference being that its handles peak below the rim. It consistently occurs in a hard yellow-buff (10YR 8/6) fabric with abundant limestone inclusions (sometimes altered with bleached or dark reaction rims), some fine quartz and moderate to abundant dull red sub-angular splinters of serpentine. All inclusions average 0.1-0.3mm, but are generally less than 0.2mm. This is the classic Rhodian fabric, corresponding to Peacock's fabrics 1 and 2 (1977e, 266-8; Peacock & Williams 1986, 103-4) and it was present from the pre-Boudiccan period (coded 'Rhodian Fabrics' on Fig 16).

RHOD-3745 (Cam 184 fabric 3745)

Fig 17, No 45

The fabric belongs to Peacock's (1977e, 268-9, fig 3, 8) fabric 6, and his type vessel from the Reserve Collection is illustrated here. It is hard, distinctively pink or light red (5YR 7/6-7/8), and contains very large, angular inclusions (0.8-3.0mm) mainly of quartz, but also feldspar, rock fragments and gold mica in a very fine matrix, suggestive of a granitic source. A few body sherds in this fabric have been observed from unquantified groups, but are too rare to indicate when the type was current.

*RHOD-2592 (Cam 184 fabric 2592)

Fig 16; Fig 18, Nos 46-7

This incorporates RHOD-2591-3, a very hard fabric; some sherds are notably calcitic, with an irregular fracture. In the hand specimen, it is brick red (2.5YR 6/6) in colour with moderate to abundant rounded and sub-angular limestone, sub-angular quartz and white and gold mica. Most inclusions are less than 0.3mm. In thin section a basic fine-grained igneous rock,

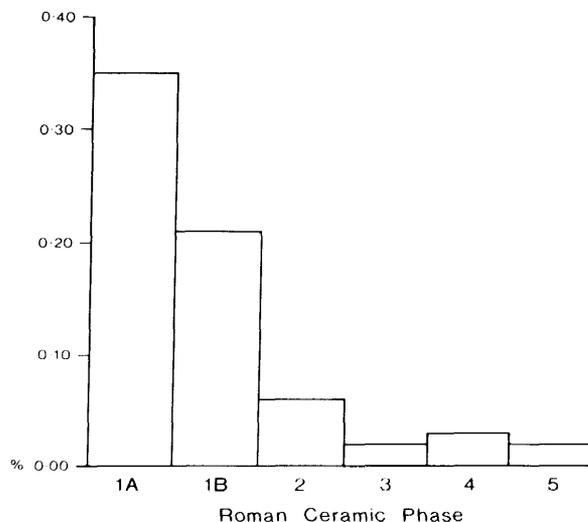


Fig 19 Bar graph of Camulodunum 189 as a percentage of all amphorae by weight

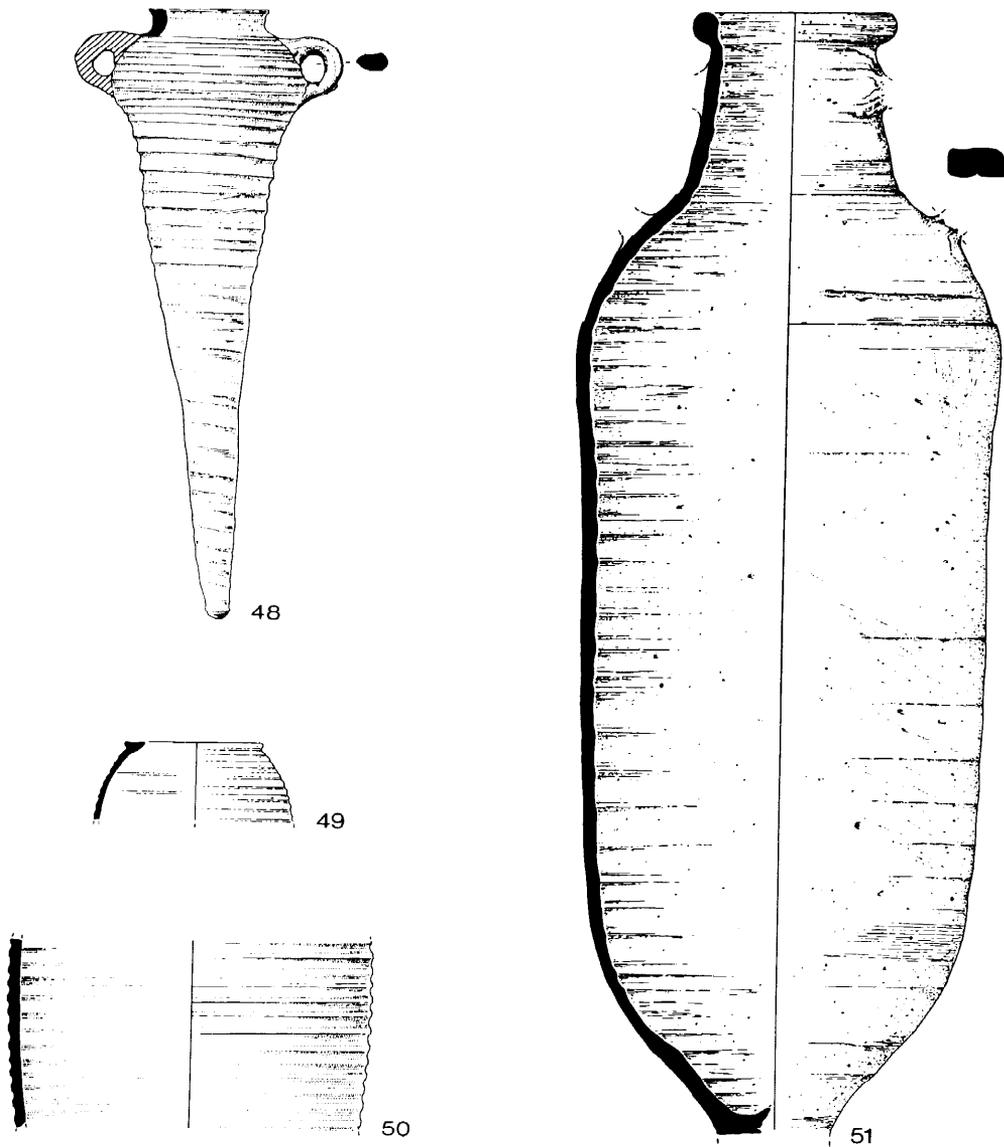


Fig 20 Camulodunum 189 amphorae, nos 48-9; Kingsholm 117 amphorae, no 50; North African Cylindrical amphorae, no 51 (Scale 1:4)

plagioclase feldspar, and altered rhyolite can also be identified (Tyers 1984a, 371). The illustrated examples are two of perhaps four vessels from 28-32 Bishopsgate (*ibid*) and account for the large quantities during the early Antonine period on Fig 16. A recent find from Leadenhall Court comes from a 1st century context.

3.10 Camulodunum 189 (C189) Source and content

The source and content of this distinctive amphora are still unknown. Its fabric, but not its distribution, suggests a Mediterranean source (Peacock & Williams 1986, 109).

Dating**Fig 19**

This primarily 1st century type occurs in moderate quantities from pre-Boudiccan deposits in the City,

Form**Fig 20, Nos 48-9**

A carrot-shaped amphora which is small with a heavily ribbed body and distinctive small looped handles. The two illustrated examples demonstrate the variable shape of the rim. It has the virtue of being immediately recognisable, although it might be confused with the related and larger but rare Kingsholm 117.

***Fabric**

Generally orange-red (2.5YR 7/10) or reddish-grey (2.5YR 5/6), the fabric is hard with an irregular fracture and abundant or moderately abundant inclusions of well-rounded quartz and limestone, and smaller quantities of red iron-rich inclusions (0.2-0.5mm). Mica is very sparse or, more usually, absent.

3.11 Kingsholm 117 (K117)**Source and content**

This type appears to be related by both fabric and typology to Cam 189, and it too remains unsourced. However, Sealey (1985, 90) notes a vessel containing dates from a wreck at La Tradehere.

Dating

Only one example of this type, a body sherd, has so far been noted from the City in an unquantified, pre-Flavian context.

Form**Fig 20, No 50**

The Kingsholm 117 takes its name from this site (Timby 1985, fig 28, 117) and appears to be a larger, more cylindrical version of the Cam 189.

Fabric

The fabric is the same as that described for Cam 189.

3.12 North African Cylindrical amphorae (NACA)**Source and content**

This central Tunisian amphora probably contained fish products, although it may also have carried olive oil (Peacock & Williams 1986, 154).

Dating

The type is typically of the mid 3rd century in London and elsewhere in Britain, but rare examples occurred in the City from the early Antonine period. In particular, a nearly complete vessel occurs in a context at 28-32 Bishopsgate dated c 140-60. This accounts for all the quantified NACA, 7% of all amphorae by weight in the early Antonine period. Early examples can be found on other sites, for example at Ostia from the early 2nd century (*ibid*).

Form**Fig 20, No 51**

Only one example of a rim comes from the early deposits and this belongs to an Africana I or 'Piccolo' (*ibid*, fig 79). The type in general is tall and cylindrical with a short, hollow spike. The Piccolo is exemplified by a thickened ever-ted rim which is concave on the inside and convex on the outside. Small round handles are joined to the neck.

Fabric**PI 5b**

Two main North African amphora fabrics can be identified. Both are typically brick-red (10R 5/8), sometimes with a black or grey (2.5R 5/0) margin, and frequently with a white (5YR 9/1) self slip. They are hard, slightly rough to the touch, with a fine fracture and contain abundant quartz and variable amounts of limestone (SA, R <0.4mm). Examples from early contexts, including the illustrated vessel, tend to have a lime-rich fabric (cf Peacock & Tomber 1991, 294, 301).

4. Oxidized wares

The term oxidized is used here to represent all pale or light-coloured wares fired under oxidizing conditions. In London the majority of these are from pure clays containing little iron, thus firing a white or off-white colour. Some of the more iron-rich fabrics, which fire red or orange, are covered with slip to imitate the white clays.

4.1 Sugar Loaf Court ware (SLOW)

SLOW derives its name from the Sugar Loaf Court site where it was first recognized; it has been discussed in detail by Chadburn and Tyers (1984, 15-20). The presence of both seconds and wasters, including some very heavily distorted examples (Fig 22, 59; Fig 24, 95), indicated local manufacture, while the lack of kiln structures on site suggested that the area may have served as a dumping ground for nearby production including burnt debris, rather than being the production site itself. Some fragments of fired clay in a fabric similar to SLOW were collected and these may represent kiln fragments or lining.

The range of forms produced in SLOW places it firmly within a Continental tradition and suggests that a migrant potter using local clays was involved (*ibid.*, 18-20). Nearly all the forms identified in SLOW can be paralleled in Gaul or the Rhineland, and within its British context close parallels can be drawn between SLOW and the products of Usk (Greene 1973) and Wroxeter (Darling 1977, 59-64) potters. Western Switzerland would seem to have been the primary influence on these potters, although the lack of publications from the French side of the France-Swiss border may unduly bias the evidence towards Switzerland. However, angle-shouldered and moulded-rim jars have a restricted distribution on the Continent, and parallels, particularly at Augst, point towards an origin for the potter in western Switzerland in the region between the valleys of the Saane and the Aare.

An amphora in this fabric from a Neronian context at Ironmonger Lane imitates the Gauloise 3 form and is stamped C ALBVCI on the neck by Caius Albucius (see frontispiece). The name - which is likely to identify the SLOW potter - is associated with Celtic regions; the largest number of known examples come from northern Italy (M Hassall, pers comm).

Dating

Fig 21

The material from Sugar Loaf Court was found in association with imported fine wares and samian that indicated a pre-Flavian date. It occurs, albeit in small

quantities, in most Neronian assemblages and is rarely present later than the early Flavian period. The relatively large quantity of SLOW at the type-site (and reflected on Fig 21) is not often seen in other pre-Flavian sites from the City, and overall it can be described as moderate. This may be due, in part, to the rather small assemblages generally obtained from sites of this date. The excavations at 5-12 Fenchurch Street are the exception, where it forms 15% by weight of all pottery from the Neronian levels (Chadburn & Tyers 1984, 23).

Relatively large amounts of SLOW are frequently found in deposits where Verulamium Region White ware (VRW) is either absent or present in small quantities. This evidence, together with that from Southwark, where VRW is absent from earliest pre-Flavian deposits at 201-11 Borough High Street (Bird *et al* 1978, figs 33-7, 14-59), suggests that SLOW may be a useful marker to the earliest occupation in the City, prior to c 55/60. Additional evidence comes from the SLOW mortaria which are, without exception, ungritted. Hartley notes that the use of trituration grit was not a regular practice in Britain until c 55 (Detsicas 1977, 26) and the implication here is that the SLOW mortaria were produced before this date. In view of the absence of Claudian material from the City, it is suggested that SLOW production occurred within the pre-Boudiccan period, perhaps as early as c 50/5.

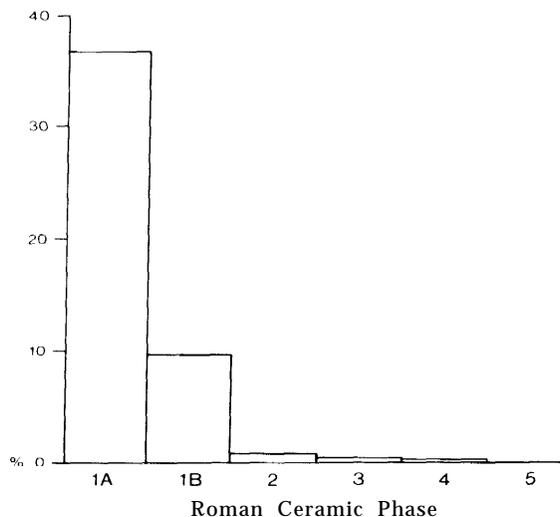


Fig 21 Bar graph of Sugar Loaf Court ware as a percentage of all oxidized wares by weight

*Fabric and technology

Pls 5c-d

The SLOW fabric comprises four variants, both oxidized and reduced, which are distinguished by texture. The most characteristic feature of this sandy fabric is its surface appearance, which is extremely hard fired, producing a crystalline effect where quartz and white mica protrude through the surface. Bands of alternating oxidation and reduction are characteristic of the external surface.

Experimental firings of City brickearth mixed with local sands compare well with this fabric (N Tobert, pers comm) and provide additional evidence for local manufacture. The brickearth extends over a wide area and inevitably there are other Roman oxidized wares using similar tempering. However, the distinctive typology of SLOW, together with its narrow date range, enables it to be distinguished from other local oxidized wares.

In general, this fabric has clay with white mica and a fine silty matrix, containing moderate well-sorted quartz (SA), lesser iron-rich inclusions (SA) and rare white clay pellets and flint. The fracture is generally hard and irregular. SLOW-2565 (PI 5d) the most common variant, has orange (2.5YR 6/8) surfaces and margins and a greyish-brown (2.5YR 4/6) core. Inclusions are frequently to c 0.6mm and always less than 1.0mm. A coarser variant (2566, PI 5c) is similar in colour, while a rare reduced one (2626) has burnished surfaces ranging from dark grey (7.5YR 3/0) to pinkish-grey (7.5YR 6/2) and pale brown (10YR 6/3) with a greyish-brown (10YR 31 2-6/2) core. Finally, 2563 is the finest textured with rare inclusions (< 0.4mm). The orange-brown (2.5YR 6/6) surface is smoothed, and the core is orange (2.5YR 618).

Forms

Apart from the obvious wasters, the majority of SLOW vessels are very well made and frequently thin walled. The rims, in particular, are often delicate and finely tooled. Forms include all major vessel types, with jars the most common. Lampholders or open lamps, also in this fabric, are distinguished from the rest of the industry by being handmade, but they are not presented below. Plate 2 illustrates a selection of the form types produced in SLOW.

Flagons Fig 22, Nos 52-9 Although flagons form a high proportion of the SLOW products they are thin walled and therefore normally survive only as fragments. For this reason it has not been possible to reconstruct any complete profiles, but rare neck and shoulder sherds indicate that they were made in two pieces and luted together. The majority of SLOW flagons are collared types (IA, 52-6), some having simple (55) and others more pronounced (53) ever-ted rims. Number 56 is an unusual variant, featuring a slight groove on the upper lip; 54 has a small bead.

Larger vessels with two handles, sometimes classed as jugs, are much rarer. One example of an IE variant (57) was probably double handled but only one handle survives. It has a short, ever-ted and grooved rim, with a groove beneath the handle. A similar form is paralleled among the Eccles kiln material (Detsicas 1977, fig 3.4, 82), and includes double handles which

rise sharply above the rim. The example of a large two-handled flagon or amphora (IJ, 58) is similar to a Gauloise 3 (see also frontispiece). The pronounced ever-ted rim is rather distorted and the handles show three fine ribs. The stamped vessel described above is in a similar form and is lined with pitch. A heavily wasted flagon base with small foot is also illustrated (59).

Jars Figs 22-3, Nos 60-9 Like the flagons, most of the jars are thin walled, with the exception of 60 and 69. The majority of the SLOW jars are of the necked variety (NJ). Most have simple, ever-ted rims of various shapes, with short necks and high rounded shoulders (62-5). The rims are finely executed and the simple knife-trimmed base is raised towards the centre. Typically there is a groove at the junction of the neck and shoulder (eg 62), but 64 has a group of small moulded cordons. Number 63 is almost completely reduced and the orange lower body suggests that it was placed inside another pot during firing. Number 66 has a rim and groove similar to those just described, but the neck is virtually absent and the shoulder slopes.

The most distinctive of the jars are 67-8 with sharply angular shoulders, referred to as 'Schulter-töpfe' in the Continental literature. These are paralleled at many Swiss sites including Vindonissa (Ettlinger & Simonett 1952, taf 5), Augst (Ettlinger 1949, taf 15, 2), Solothum (Roth-Rubi 1975, taf 8, 93) and Neu Allschwil (Ettlinger 1977, abb 6, 57).

Less frequently represented are bead-rim jars (IIA, 60), honey pots (IIK, 61), and a jar with a moulded rim (69). Numerous bubbles from over-firing, on the exterior surface and in section, suggest that 69 is a second. This vessel displays affinities with central Gaulish products, which in turn influenced potters in western Switzerland, as seen by examples from Augst (Ettlinger 1949, taf 12, 8-10 in Chadburn & Tyers 1984, 19).

Beakers Fig 23, Nos 70-7 Most beakers are ovoid, with high shoulders (IIIB, 70-2, 74), including rim variants with a concave internal depression (7 1-2). Decoration is usually limited to horizontal incised lines, but 74 has unusual roller-stamped decoration. Sherds decorated in this way were present at Sugar Loaf Court, although the illustrated vessel is an unprovenanced example from the Reserve Collection. The base, 73, is one type probably associated with the IIIB.

Other beaker forms include vessels with small upright rims (75) and flattened bead rims with no neck and low, sloping shoulders (76). Number 77, a thin walled vessel with a long, slightly evened rim, has a flat shoulder which carinates sharply at the maximum girth, and may be a beaker or a small jar.

Bowls and dishes Figs 23-4, Nos 78-84 Bowls fall into two categories: carinated IVAs with grooved walls (78-9), which are the most common, and those with straight walls and flat or clubbed rims (80- 1). In other fabrics, particularly Verulamium Region White ware, IVAs do not occur until the Flavian period. However,

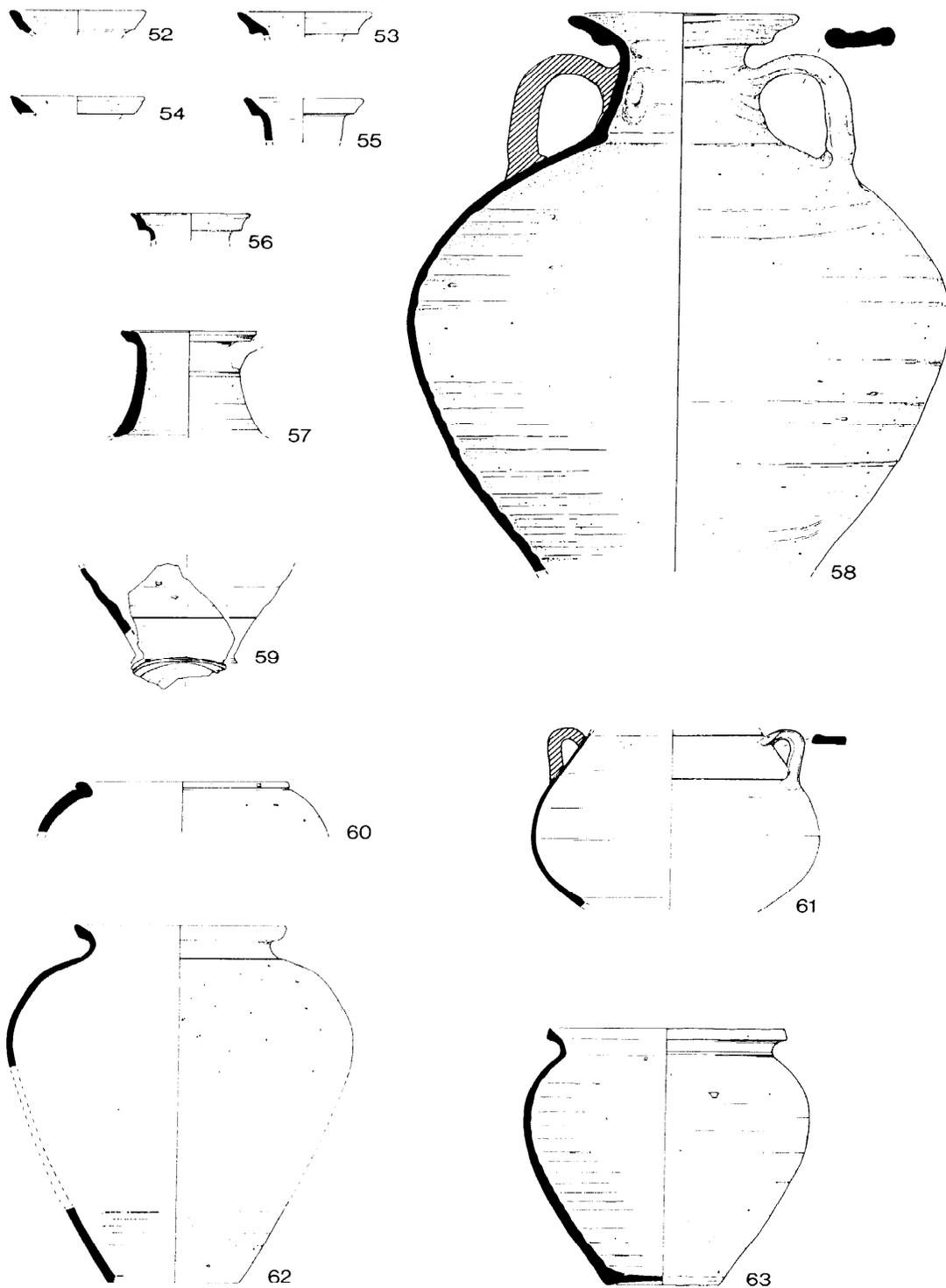


Fig 22 Sugar Loaf Court ware, flacons, nos 52-9; jars, nos 60-3 (Scale 1:4)

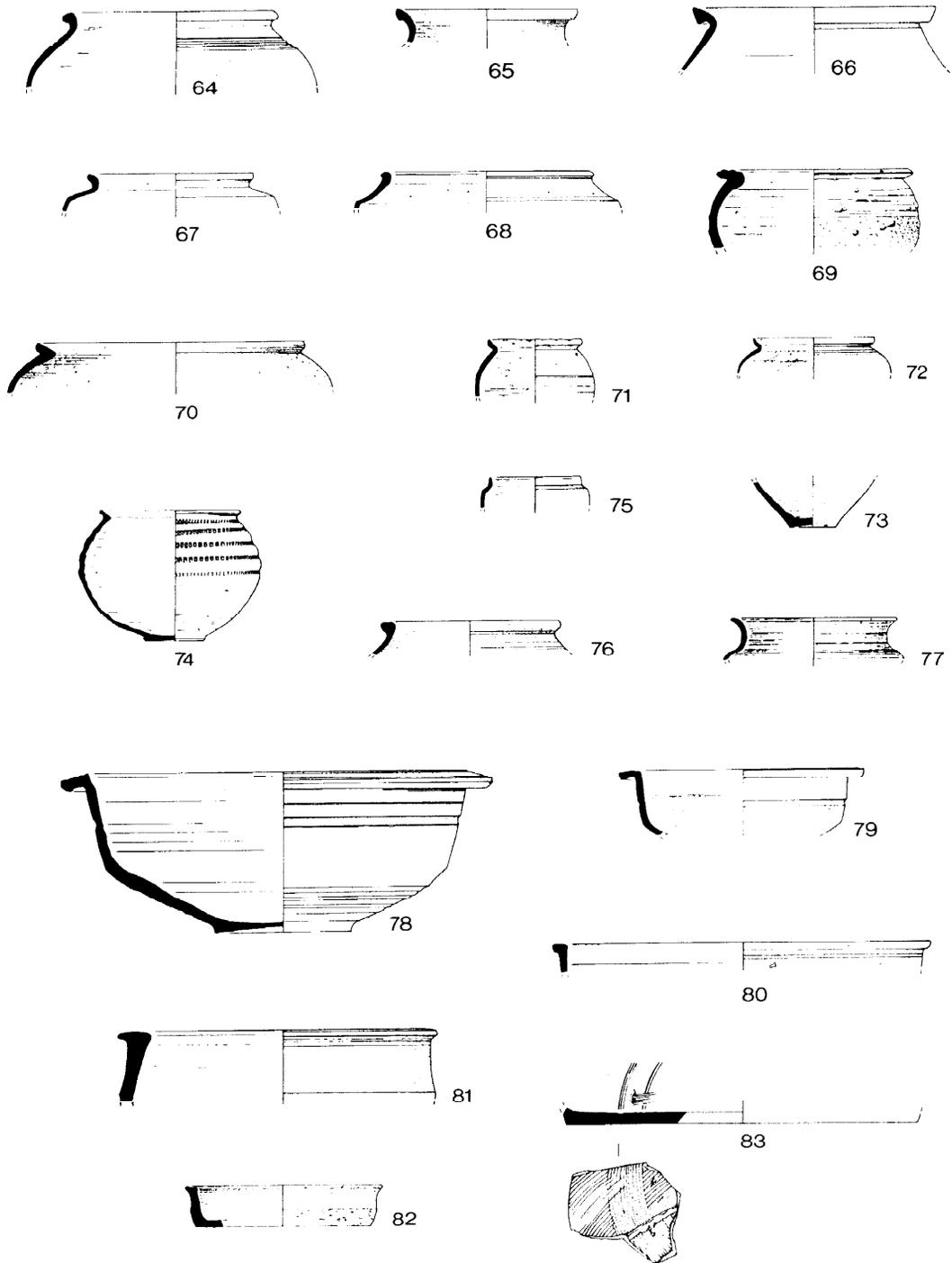


Fig 23 Sugar Loaf Court ware, jars, nos 64-9; beakers, nos 70-7; bowls/dishes, nos 78-83 (Scale 1:4)

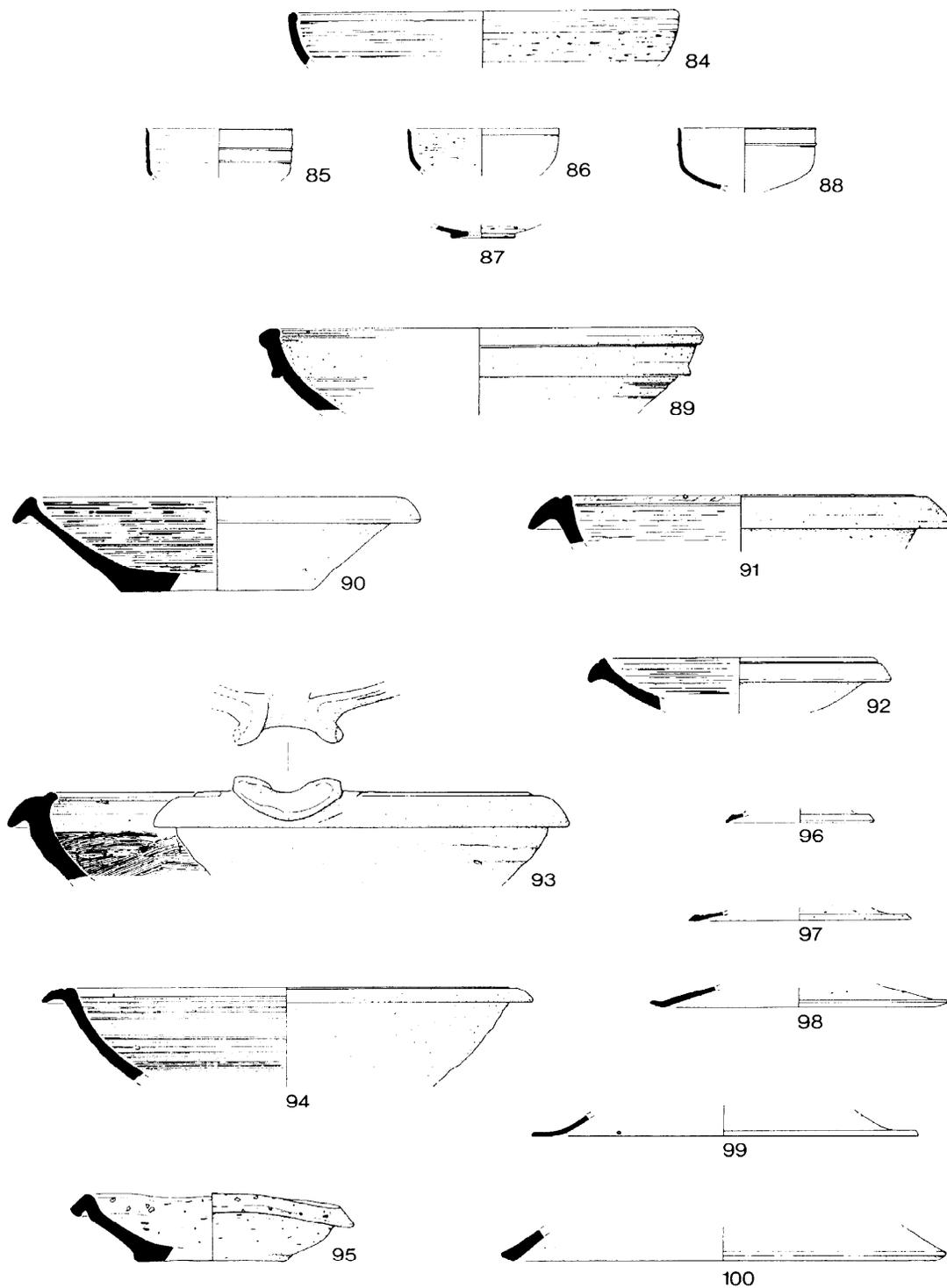


Fig 24 Sugar Loaf Court ware, bowls/dishes, no 84; cups, nos 85-8; mortaria, nos 89-95; other forms, nos 96-100 (Scale 1:4)

it is clear from 5-12 Fenchurch Street that in SLOW these bowls are pre-Flavian.

Shallow bowls or dishes are extremely rare, but three examples are included here. These comprise an internally moulded-rim dish (VA, 84) with burnishing over the lower part of the body; 82, a dish with a lid seating on a slightly out-turned rim, similar to a grooved-rim bowl (IVK); and 83, a flat base with two concentric grooves incised on the upper side and combed on the underside. The decoration on 83 is reminiscent of Pompeian Red ware.

Cups Fig 24, Nos 85-8 Cups illustrated here are all from the early Neronian assemblage at 5-12 Fenchurch Street, but sherds are known from other pre-Boudiccan groups. All these finely tooled and delicate vessels are hemispherical in shape and based on an Italian tradition; they feature cordons and grooves as decoration (85-6, 88). The low footring (87) is one of the possible base forms associated with this type.

Mortaria Fig 24, Nos 89-95 Both wall-sided (WAL, 89) and hooked-flange (HOF, 90-4) mortaria are found, with flanged ones more common at the type site. None of the mortaria are gritted and the flanged vessels feature pronounced scoring on the internal surface. This scoring can be paralleled by other early mortaria, for example at Longthorpe (Chadburn & Tyers 1984, 19). Although the shapes can also be paralleled at Eccles (Detsicas 1977, fig 3.4, 98; fig 3.5, 6), they lack the striations typical of SLOW. Number 95 is ungritted, but the extremely coarse fabric contains large crushed flint inclusions. These flanged mortaria belong to a different tradition from those of the early Verulamium region potters. No clear origin can be proposed, although eastern or central Gaul could be a source of influence (Chadburn & Tyers 1984, 19).

Other forms Fig 24, Nos 96-100 Lids are also represented. Most are thin walled with a straight profile and slightly flaring, plain or grooved rim (97-9) and are probably intended to fit the bowls. Number 100 is a thicker variant; 96 is an exceptionally small example (105mm), with an upright rim, and may have been used with the cups.

4.2 Local Oxidized wares (LOXI)

This group consists of a number of broadly inter-related fabrics that are grouped together here because of their proposed local origin and similarities in form. Four sub-groups, which vary in quantity of quartz tempering and firing techniques, can be identified. Apart from 2599, the fabric sub-groups are consistent with the local brickearth. LOXI-2599 is composed of a variegated clay similar to material from the Reading clay beds (A Vince, pers comm), which occur within and around London. A single vessel in LOXI-2604 contains a large pellet apparently similar to VRW clay, suggesting that manufacture took place within the area of VRW distribution, and therefore in keeping with

localized production. Macroscopically, some of the fabrics resemble a group of Local Mica-dusted wares (LOMI Section 6.3), in particular their distinctive grey core, which are thought to be locally made. Comparison of the fabrics in thin section shows textural differences, but this does not exclude a common source. There is also a marked relationship between some of the vessel types in LOXI and LOMI, particularly flagons (IF, IJ), bowls (IVA) and dishes (IVJ). Chronologically, their distribution differs, for the mica-dusted wares peaked in the early 2nd century, whereas LOXI predominated during the Hadrianic and early Antonine periods. Equally, the fabric may represent unknown kilns within the Verulamium region, and it is sometimes difficult to distinguish from the later Verulamium products (VCWS, Section 4.6). The assumption of local production cannot be confirmed, but further analysis of the fabrics and the distribution of the material in and around London and Verulamium may elucidate the source of these wares.

Dating

Fig 25

There are slight chronological differences between the fabric variants classified as LOXI, but it first occurred in sparse quantities during the Flavian period and flourished from the Hadrianic to Antonine. The Flavian examples may result from slumped stratigraphy at Newgate Street. LOXI-2599 is again an exception and was very rare until the early 2nd century. LOXI-2600 is the most common fabric within the group and follows the overall trend described here. As a group it is moderately common.

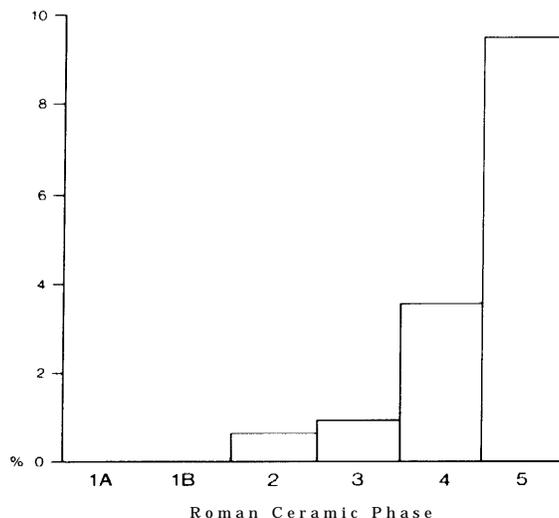


Fig 25 Bar graph of Local Oxidized wares as a percentage of all oxidized wares by weight

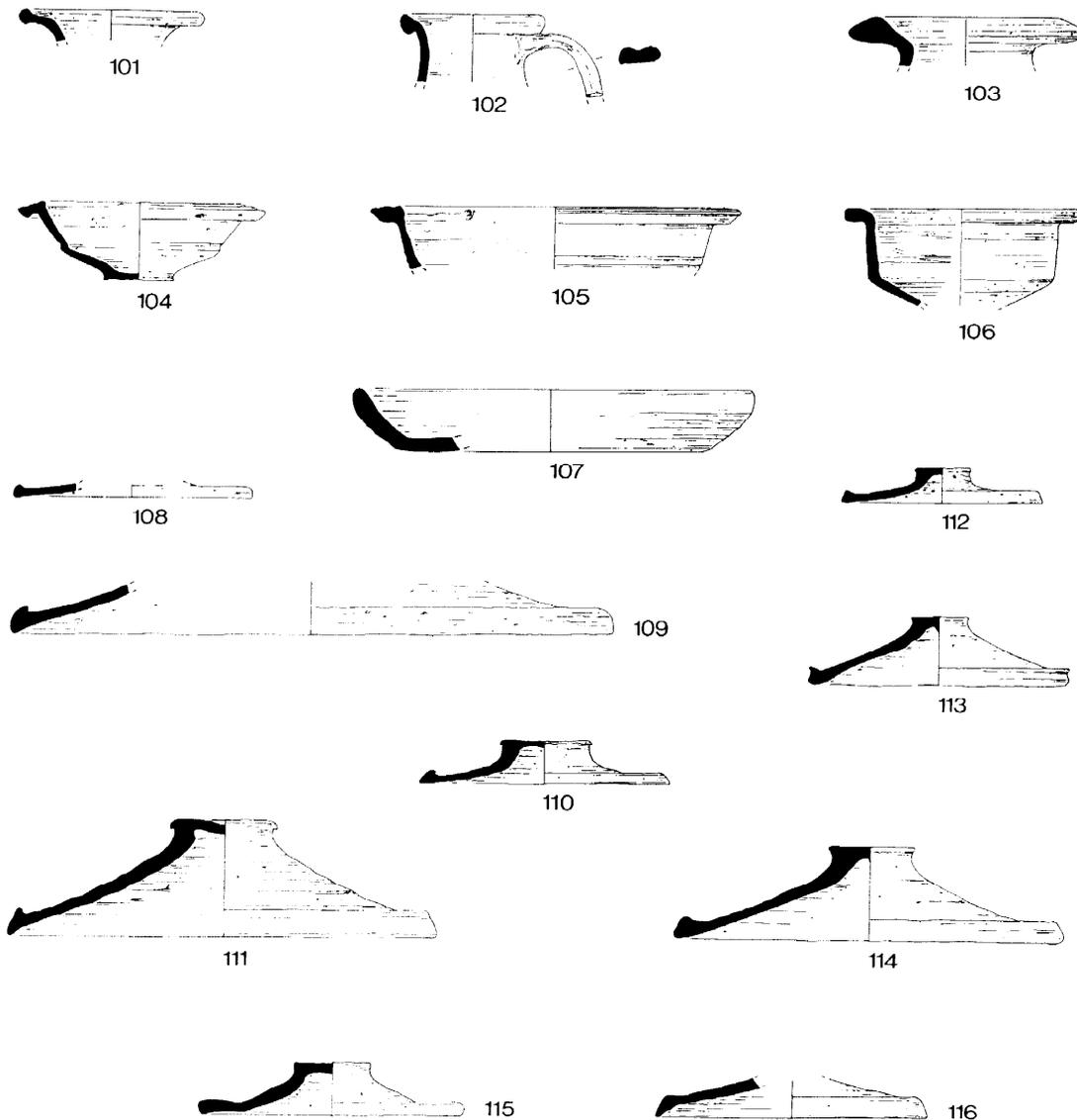


Fig 26 Local Oxidized wares, flagns, nos 101-3; bowls/dishes, nos 104-7; other forms, nos 108-16 (Scale 1:4)

*Fabric and technology

Pls 5e-f

This group of fabrics is distinctively hard fired to orange with a thick grey core, and contains abundant well-sorted quartz and some white mica. Occasionally, large limestone inclusions erupt on the surface.

A common technological feature of the lids, and more rarely of the flagns and bowls, are distinctive concentric striations on the handle or base formed by removing the vessel from the wheel by wire, rope or similar tool.

Variant 2599 (Pl 5e) is the most distinctive of this group. A hard rough fabric, with irregular fracture, it is generally reddish-yellow or orange (7.5YR 7/6; 5YR 7/6) with slightly lighter surfaces and a distinct light grey core (2.5YR 7/0). Abundant, moderately well-sorted and densely packed quartz (SA <0.50mm, but occasionally (1.0mm), with sparser amounts of limestone (SA <0.5-1.0mm) and red iron-rich inclusions (R 0.3-1.3mm), are set in a calcareous, micaceous silty matrix. Prominent pellets of limestone (R <5.0mm) occasionally protrude through the surface and large clay pellets (<1.0mm) can also be identified. Rare flint inclusions, in the size range of the quartz, are present. Distinctive white streaks may give the paste a variegated appearance similar to material from the Reading clay beds.

The remaining fabric variants are similar in range and size of inclusions, differing primarily in density. However, they all lack the

variegated clay and large limestone inclusions characteristic of 2599 and instead have sparse small ones in the same size range as the quartz. Both 2603 and 2604 are similar, but contain slightly less quartz. LOXI-2604 is high fired and in thin section shows an isotropic clay matrix, while 2600 (P1 5f) is a low-fired variant and tends to range in colour from light brown to reddish-yellow (5YR 6/3-7/6), often with a grey (10YR 6/1) core.

Forms

Lids are by far the most common vessel type for each of the LOXI fabric variants, with smaller numbers of bowls, followed by flagons.

Flagons Fig 26, Nos 101-3 Flagons occasionally occur and include vessels with lid-seat rims (IF, IF/G, 101-2), and larger flagons or amphorae (IJ, 103).

Bowls and dishes Fig 26, Nos 104-7 Carinated bowls with moulded rims (IVA, 104-6) are the most common bowl form; an example of a plain-rim dish (IVJ, 107) is also present. Rare examples of the IVA occur from the Trajanic period.

Other forms Fig 26, Nos 108-16 Lids are the most common form and their dating mirrors the industry as a whole. Most of them have concave profiles, typically fairly flat, with a variety of rim forms. Rims can be broadly divided into rounded ones, sometimes undercut (108-9), more flattened and undercut examples (110-1 1) and those with a ridged or double lip (112-1 4). Two unusual lids have more convex profiles. Number 115 has a plain rim, somewhat square in profile, while 116 has an upright, pointed profile. Within LOXI-2599 the lids vary in diameter from 120-360mm, the smaller examples being generally earlier in date than the larger ones.

4.3 Eccles ware (ECCW)

This fabric is perhaps the most distinctive of the early oxidized fabrics and can tentatively be assigned to the Eccles kiln in Kent, where production is associated with a villa on the same site (Detsicas 1977). Both the fabric and the form types of the City examples are paralleled at the kiln site. Neronian products have not been previously recorded away from Eccles itself (Pollard 1988, 42, 189). However, its presence in the City verifies non-local distribution, which is complemented by brick, roofing tile and flue tiles ascribed to an Eccles source (in a comparable fabric) and identified in London from c 50-75/80 (Betts forthcoming).

Dating

Fig 27

The distribution of Eccles ware in moderate quantities was largely confined to the pre-Flavian period in the City. This supports the evidence from Eccles, where the industry had apparently ceased by 65 (Detsicas 1977, 29), indicating that the small amounts of later material from the City are residual.

*Fabric and technology

P1 5g

This is a fine, slightly sandy, buff fabric with occasional large limestone inclusions. It compares well, both macroscopically and in thin section, with kiln samples.

This fabric group varies slightly in its details, but typically has a pale buff (10YR 7/4) or occasionally yellow (10YR 9/4) or pink (2.5YR 8/4) core with buff (10YR 7/4), light grey (10YR 8/4) or orange-brown (2.5YR 6/6) surfaces. It is hard and has a smooth or slightly conchoidal fracture. Moderate quartz (R 0.1-0.5mm), rarer iron-rich inclusions (I <0.2-0.3mm) and a scatter of limestone, often grey in colour (I, R <0.5mm, but rarely 1.0mm-), are set in a very fine textured, slightly micaceous matrix. In an uncommon, finer version of the fabric (2560) the inclusions, particularly the quartz, are less frequent. Rare sherds have a pale wash (1 OYR 9/2) or a dark reddish-brown (2.5YR 5/8) slip.

Forms

The Eccles kilns produced a wide range of vessels. Mortaria, jugs and flagons are the commonest forms among published wasters (Detsicas 1977), and this is reflected in the City material. With the possible exception of a honey pot (IIK), all the forms found in the City can be paralleled at Eccles.

Flagons Fig 28, Nos 117-21 Flagons are the most common type. Typical forms include collared ones (IA, 117-18) and a disc-mouth vessel (ID, 120). Also present in late Neronian-early Flavian levels is a finely made, ring-neck flagon (IB, 119). A flagon base with square footing (12 1) is illustrated.

Jars Fig 28, Nos 122-3 The most unusual vessel among the ECCW jar repertoire is a variant of a bead-rim jar with triangular holes cut in the lower wall (IIA,

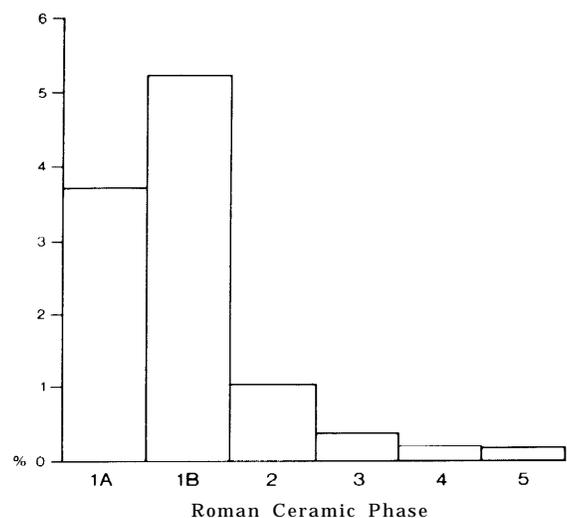


Fig 27 Bar graph of Eccles ware as a percentage of all oxidized wares by weight

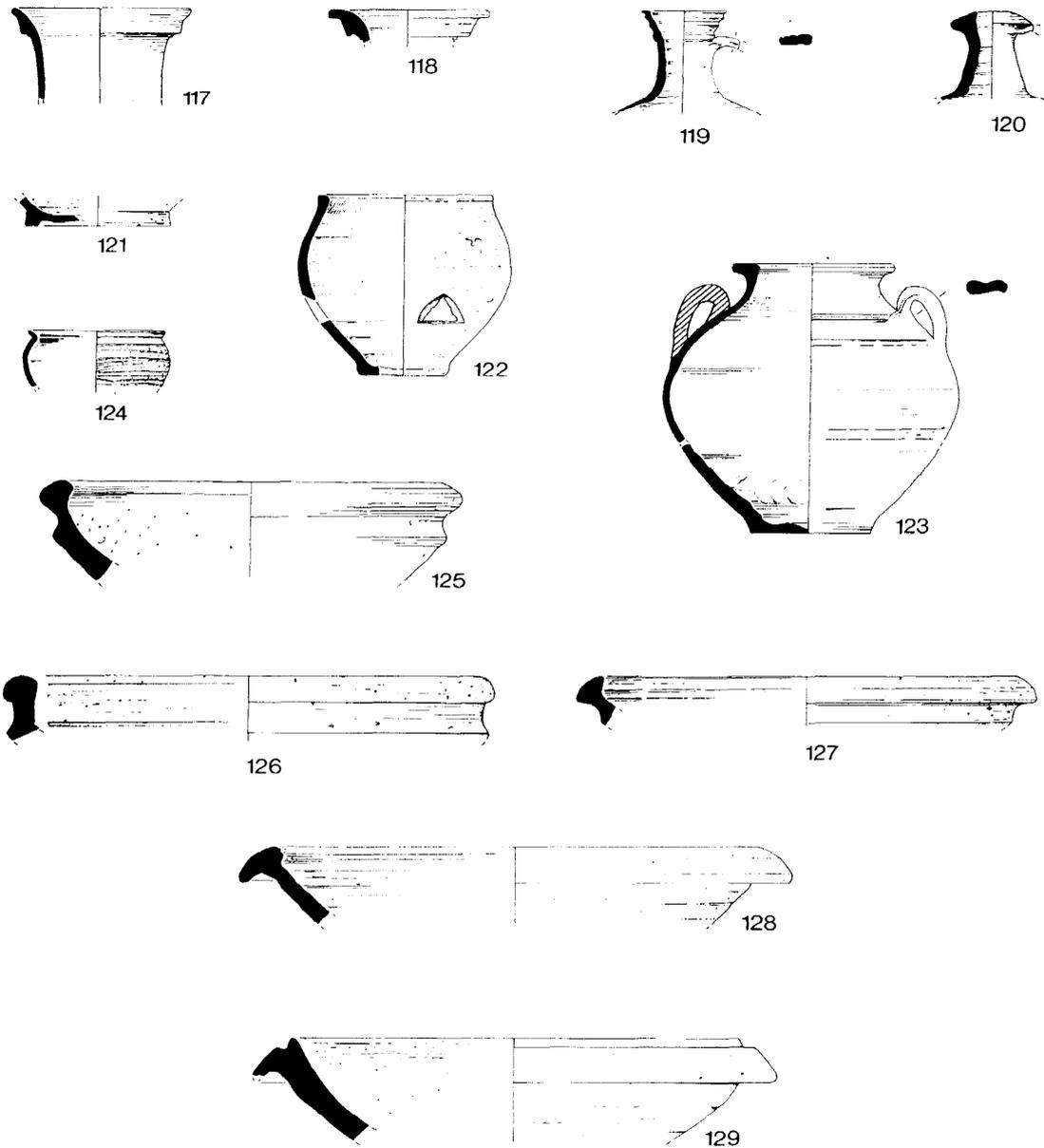


Fig 28 Eccles ware, flagons, nos 117-21; jars, nos 122-3; beakers, no 124; monaria, nos 125-9 (Scale 1:4)

122). The form appears to be unique to Eccles and corroborates the source of this material. Detsicas (1981, 443-5) has discussed their possible function as lampshades or plant propagators, favouring the latter. The City evidence supports his views, for the complete vessels are unsooted. Although none have been found

from excavated assemblages, two complete examples are in the Reserve Collection. Undiagnostic sherds could easily be confused with flagons and this may account for their absence from stratified deposits. A honey pot (IIK, 123) is the only standard jar form present in ECCW.

Beakers Fig 28, No 124 As yet only one example of a colour-coated, roughcast beaker with ever-ted rim has been identified.

Cups A body sherd from a cup with a raspberry applique has been identified from an early Flavian deposit at Pudding Lane (cf Detsicas 1977, fig 3.1, 17).

Mortaria Fig 28, Nos 125-9 Two main types of mortaria have been identified. Most common are wall-sided vessels (WAL, 125-7), although flanged ones (HOF) are also present, including examples with undercut (128) and upright (129) rims.

4.4 Hoo ware (HOO)

Pottery manufacture at Hoo St Werburgh, off the north Kent coast, was first suggested by Blumstein (1956). Despite the absence of kilns, the standardized repertoire of flagons, including some wasters and kiln debris, indicated production. Re-examination of the material by Monaghan (1987, 27) supports this interpretation and places the oxidized Hoo products within the general reduced Upchurch manufacturing tradition. Although there is little evidence to show that production was confined to the Hoo Island, the pottery is sufficiently distinct both typologically and chronologically to merit individual discussion.

The reduced Upchurch fabric found in the City (North Kent Fine ware - NKFw, Section 6.8) is discussed with fine wares.

Dating

Fig 29

Although present from the earliest phases, HOO was most common in the late Neronian and Flavian periods, continuing in small amounts into the Trajanic. It was virtually absent by the Hadrianic, and North Kent White-slipped ware (NKWS) may be a 2nd century continuation of this tradition. As a group, it is common.

*Fabric and technology

P1 5h

This is an extremely fine-textured, white-slipped fabric with abundant, naturally occurring iron-rich clay pellets; some sherds also have abundant microfossils.

Almost one-third of the bases investigated by Blumstein (1956, 274) featured a distinctive series of three swirls on the basal interior. This feature is seen on a similar proportion of our examples (Fig 30, 136), although the swirls are less uniform. Their shape and incised nature suggest that the marks were made by a tool, probably a stick or a stick tied with a rag. This would have been used either to remove excess clay (often in the form of a dimple on the basal interior) or to soak up the slurry which frequently remains in the

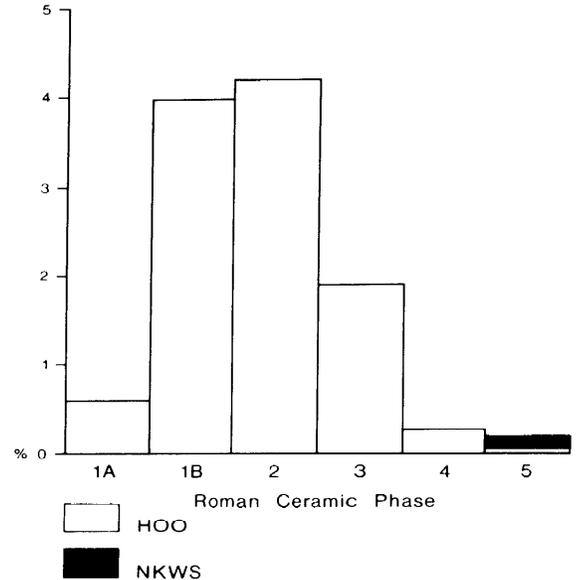


Fig 29 Stacked bar graph of Hoo and North Kent White-slipped wares as a percentage of all oxidized wares by weight

bottom after a pot has been completed. A heavy or thick base is more likely to crack in the kiln and removal of the slurry would also speed drying time.

Like other flagons, these vessels were formed in separate segments and later joined at the neck. Generally, when a vessel is thrown on the wheel, the base is completed before the sides are drawn up. The swirls on these bases suggest that the potter hurriedly completed the sides first, then later used a tool to remove the excess material from the base, perhaps because the body was very tall or narrow. Although the vessels are generally well executed (particularly the rims, necks and footrings), the handles are often poorly applied, causing the body wall beneath the handle to sink. This may suggest 'assembly-line' production, with tasks divided between various workers rather than a single potter producing individual vessels (S Lang, pers comm).

A light red (2.5YR 6/6 -6/7) fabric with a paler core that is often reduced to pale grey (2.5YR 6/0), it is fairly hard in texture and finely irregular in fracture with a slightly soapy feel. The inclusions are fine, consisting mainly of silt-sized quartz and sparse, fine white mica, which is more visible on the surface. The fabric is characterized by red iron-rich clay pellets (<0.5 mm, occasionally <1.0mm). It is remarkably consistent, with few variants apart from the occasional sherd containing abundant calcareous particles (I, R 0.05-0.1mm), some with hollow centres, which are microfossils (A Vince, pers comm).

The slip is thin white or yellowish-white (5Y 9/2) in colour and in general it survives patchily, often weather or stained. Strong wiping marks beneath it may have helped the slip to adhere to the leather-hard clay.

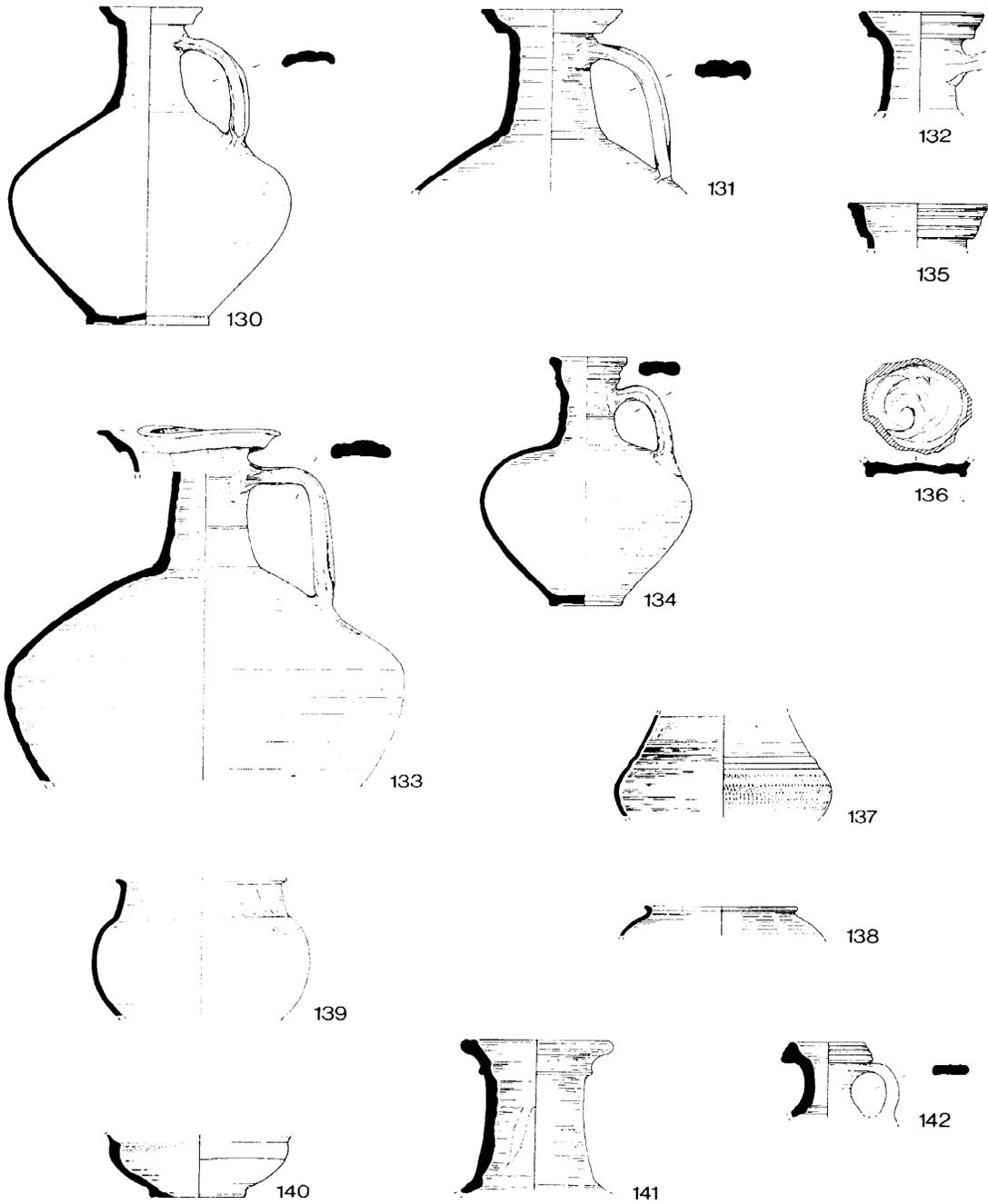


Fig 30 Hoo ware, flagons, nos 130-6; beakers, nos 137-9; cups, no 140. North Kent White-slipped ware, flagons, nos 141-2 (Scale 1:4)

Forms

Flagons are the predominant vessel form produced in HOO, although rare beakers and cups have also been identified. All major form types are represented among the kiln material, and the collared flagons can be identically paralleled (cf Blumstein 1956, fig 7, 1-6).

Flagons Fig 30, Nos 130-6 Collared flagons (IA, 130-3) are the most common vessel type and have a distinctive flat rim top. In the City the form is found in late Neronian and Flavian contexts. Number 133 is a poorly made example, probably a kiln second, with a twisted rim and marked indentations where the narrow three-ribbed handle has been attached to the body wall. A variant, 132, has a more intricate rim.

Variants of ring-neck flagons (IB, 134-5) are much rarer, and generally appear in Flavian and Trajanic phases. Number 135, from a pre-Boudiccan context, is an exception. A flagon base is represented by 136.

Beakers Fig 30, Nos 137-9 Beakers are rare, but several different variants have been identified. Rouletted sherds, probably belonging to a butt beaker (IIIA, 137), occur in a pre-Boudiccan level; an ovoid beaker with everted rim (IIIC, 138) and a beaker with small, sharply everted rim and rounded body (139) are also present.

Cups Fig -30, No 140 The most unusual vessel is the base and walls of a finely executed cup, imitating Drag 27 (VIA).

4.5 North Kent White-slipped ware (NKWS)

This rare fabric is virtually identical to Hoo ware (Section 4.4), but since the forms cannot be paralleled among the 1st century material from the supposed kiln site (cf Blumstein 1956) they have been separated here. It is possible that these flagons represent later white-slipped production in the north Kent area and were exploiting a clay source similar to that used in the production of Hoo. Equally, the two identified vessels may be residual in 2nd century contexts.

Dating

Fig 29

The type is rare but is first associated with early Antonine deposits.

*Fabric and technology

The fabric is the same as HOO, but is higher fired with a thicker off-white (10YR 8/3) slip. Like the HOO flagons, vessels were constructed by joining two segments at the neck and body wall.

Forms

Flagons Fig 30, Nos 141-2 Two vessels have been identified in the fabric. Number 141 is a variant of a

collared flagon (IA) with a flaring rim and prominent rounded upper lip. There is a slight lid seating and external moulding on the collar, as well as a cordon at the shoulder junction. While there is no evidence of a handle scar, the vessel is only partially complete. A second vessel (142) has a triangular-ringed rim, with a slight lid seating or internal bevel. It can be paralleled in Kent, where Pollard (1988, 87) suggests a possible source at Grays Thurrock Palmers School in Essex.

4.6 Verulamium Region wares

The potteries situated near Verulamium (modern St Albans) and alongside Watling Street to the south were major suppliers of coarse pottery to southeast England in the 1st and 2nd centuries. Comprising at least five kiln centres, they are grouped together here as the Verulamium region industry. The white wares, principally flagons and mortaria, dominated London's pottery assemblages from the mid 1st to the early-mid 2nd centuries. The cover of this report depicts a range of Verulamium wares discussed here.

The history of the industry has been summarized by Marsh and Tyers (1978, 534-5), Tyers (1983, 1-2) and more recently Swan (1984, 97). Swan (*ibid*) considers that the industry had begun by c 50, with the early phases well represented by the kiln at Bricket Wood/Little Munden (Saunders & Havercroft 1977). This includes material interpreted as debris from a kiln used by Oastrius, a potter of the Lugdunum group dated c 55-70. A small pit group from Brockley Hill can probably be assigned to the same period. However, the bulk of the excavated material from Brockley Hill most likely dates to the Flavian-Trajanic period, the peak of mortarium production, while Hadrianic-Antonine activity is found both here and at Verulam Hills Field.

These chronological trends seen at the kiln sites are also represented on occupation sites. Verulamium Insula XIV, dated c 49-60, yielded a number of vessels from the Verulamium region (Wilson 1972, fig 101, 53, 54, 57-60). Coarse wares (as opposed to mortaria) were clearly widely distributed locally and held a large part of the local market for oxidized wares by 60/1.

The industry is best known for its production of white wares (VRW), but other fabrics can be tentatively assigned to a Verulamium region source by fabric analogy. Grey (VRG), Mica-dusted (VRMI), Marbled (VRMA), and White-slipped (VRR) wares all share the fabric distinctive to VRW. Verulamium Region Coarse White-slipped ware (VCWS) has been found at the Verulam Hills Field kiln (B Davies, pers inspect), although there is no firm evidence for its actual production there. Fabrics similar to Brockley Hill White-slipped ware (BHWS) have been seen at Brockley Hill (1972 Site C, Kiln 2, D Devereux, pers comm), although there may be other sources as well. The body of one City flagon (Fig 46, 258) is in VCWS, while the handle is in the typical VRW fabric, suggesting that the two clay types could be obtained within the same locality. Both VCWS and BHWS are

typologically similar to the standard Verulamium products, providing additional support for a source within the region.

X-ray fluorescence of kiln material indicates that individual Verulamium region kilns can be distinguished from each other, and that more than one fabric was produced at each kiln site (Devereux *et al* 1982). However, these differences are not necessarily reflected in macroscopic appearance and therefore chemical analysis can only supplement methods of visual analysis.

Most of the major form types attributed to the Verulamium region can be paralleled among the published kiln material (eg Anthony 1968; Castle 1972a, 1972b, 1973a, 1973b, 1974). Exceptions to this, which occur with some frequency in the Verulamium fabric, include *tettina* (present at Brockley Hill but not from kiln groups, Castle & Warbis 1973, fig 5, 7), spiked 'amphora stoppers' and face pots. Other unusual examples include a flask (IIR), rouletted butt beaker (IIIA), dishes (IVJ), crucibles (IX) and lamps (VIII). Numerous rim variants can also be observed but, given the wide range of the Verulamium products and the sparsity of published kiln material, they are not itemized.

Because there is little or no variation in forms between the fabric types, VRW is comprehensively illustrated and, where appropriate, vessels in the other fabrics are paralleled; exceptions are unusual variants or complete profiles.

Verulamium Region white ware (VRW)

Dating

Fig 31

The developments noted at the kiln sites are mirrored in the London assemblages, where VRW is abundant. It is present from the earliest contexts on City sites, including sealed pre-Boudiccan groups. Substantial pre-Flavian assemblages where VRW is absent may indicate earlier activity in the London area. It seems certain that the industry was closely tied to demand and the prosperity of London, as usage peaked in the Flavian-Trajanic period and declined sharply c 140-60. At this date, its place in London's pottery supply was partly taken by a coarse white-slipped fabric which is interpreted as another product of the Verulamium region (VCWS).

*Fabric and technology

Pls 5i-j

A rough and granular fabric, generally off-white, with a very clean clay matrix containing abundant well-sorted quartz. The variety of clays available to the VRW potters is demonstrated by the range of naturally occurring clay pellets that can be identified within a single vessel, including both the typical VRW fabric and siltier clays similar to VCWS.

The fabric is white (2.5YR 9/0-5/0) or off-white (10YR 9/1), occasionally pink (5YR 9/2) or orange (2.5YR 6/8) in whole or part. It is hard, granular and rough to the touch, with a somewhat laminar

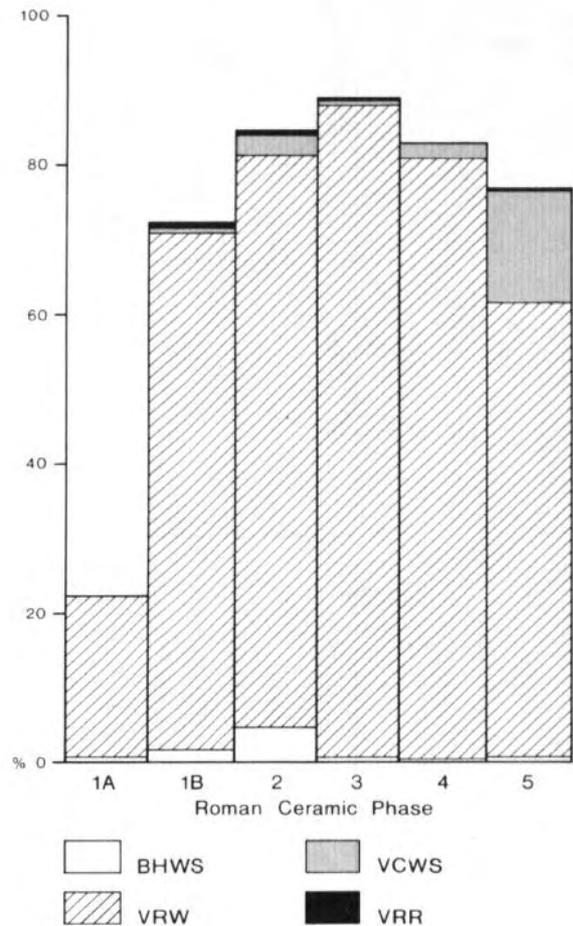


Fig 31 Stacked bar graph of Verulamium Region oxidized fabrics as a percentage of all oxidized wares by weight

fracture. It contains abundant well-sorted multi-coloured quartz (SA 0.1-0.8mm) and sparse red iron-rich inclusions, occasionally occurring up to 6.0mm (R, SA), set in a clean clay matrix. Rare ferruginous sandstone can also be identified. Minor variations in quartz size are not correlated to individual kilns, and slightly finer variations of the typical fabric have been found for all periods at many of the kiln sites. However, many pre-Flavian examples belong to a finer variant (1294) with greater amounts of iron-rich inclusions which is associated with the Bricket Wood kiln.

Forms

London received nearly the total range of Verulamium products, with the exception of Dr 2-4 amphorae produced at Brockley Hill (Castle 1978). Although absent from the City, they occur at Lion Walk, Colchester, in deposits c 50-5 (Symonds & Wade forthcoming). Lampholders or open lamps are also frequently present in this fabric, but are not included here.

Flagons Figs 32-3; Figs 34-6, Nos 143-72 Flagons (Fig 32) are the commonest Verulamium region form found in the City. The earliest types, pulley (171-2) and collared (IA, 143-6) rims are present in pre-Boudiccan and Neronian/early Flavian contexts. They

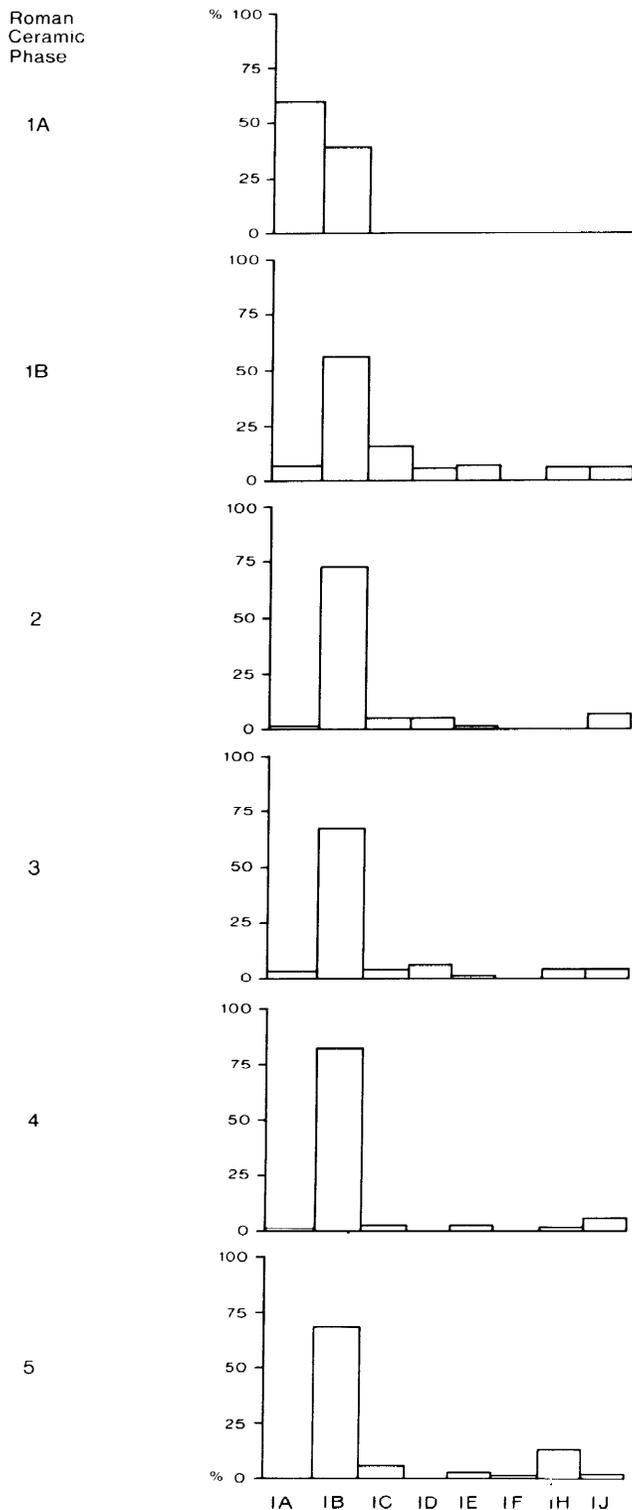


Fig 32 Bar graph of Verulamium Region White ware flagons as a percentage of all VRW flagons by Eves

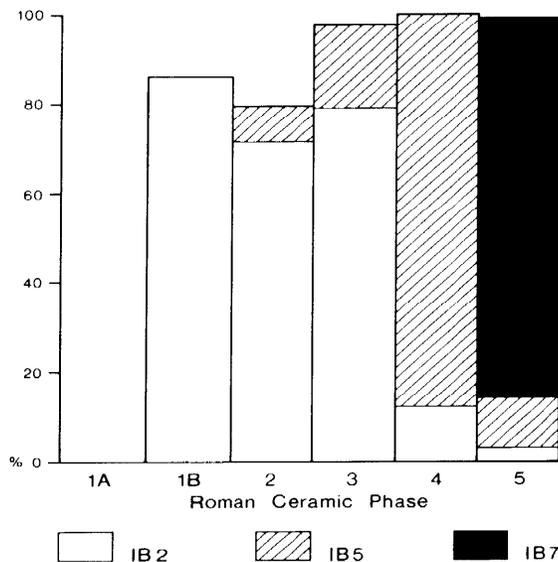


Fig 33 Stacked bar graph of all Verulamium Region White ware ring-neck flagons (IB2, IB5, IB7) as a percentage of all VRW IBs by Eves

are superseded in the Flavian period by the extremely common ring-neck flagon (Fig 33) which developed from a flared trumpet mouth (IB2, typically 148-9) most common c 60-120, and then by a variant with a prominent, rounded upper rim (IB5, 151-5) first appearing in the Flavian, but most frequently found in Hadrianic fire destruction levels. This developed into a type with an expanding ring-neck rim (IB7, 156-8) which was common from the early Antonine period. Some variants such as the IB1 (147), IB3 (150) and 159 are also found. It is notable that all ring-neck flagons have footrings, while most other varieties tend to have flat or slightly domed bases. These ring-neck flagons provide an important dating framework and the trends seen here are mirrored by those at both Southwark and Verulamium (Bird *et al* 1978; Wilson 1972, 1984).

Other flagons are far less common (Fig 32), but generally they began and were most numerous in the late Neronian-early Flavian period. Small two-handled flagons (IE, 164-5) are most notably clustered in the late Neronian-early Flavian, while disc-mouth (ID, 162-3) ones had a fairly clear use life from the late Neronian to the Trajanic period. The distribution of other types is uncertain, with sporadic occurrences to the end of the sequence. This includes pinched-mouth (IC, 160-1) flagons, wide-mouth flagons or pitchers/jugs (IH, 166-7) and large double-handled amphora (IJ, 168-70) types. The latter are similar to south Gaulish amphora forms Gauloise 3 and 4 (Section 3.6) and there is some evidence for them having been lined with pitch.

Jars Figs 36-7, Nos 173-83; Fig 41, No 230 This vessel

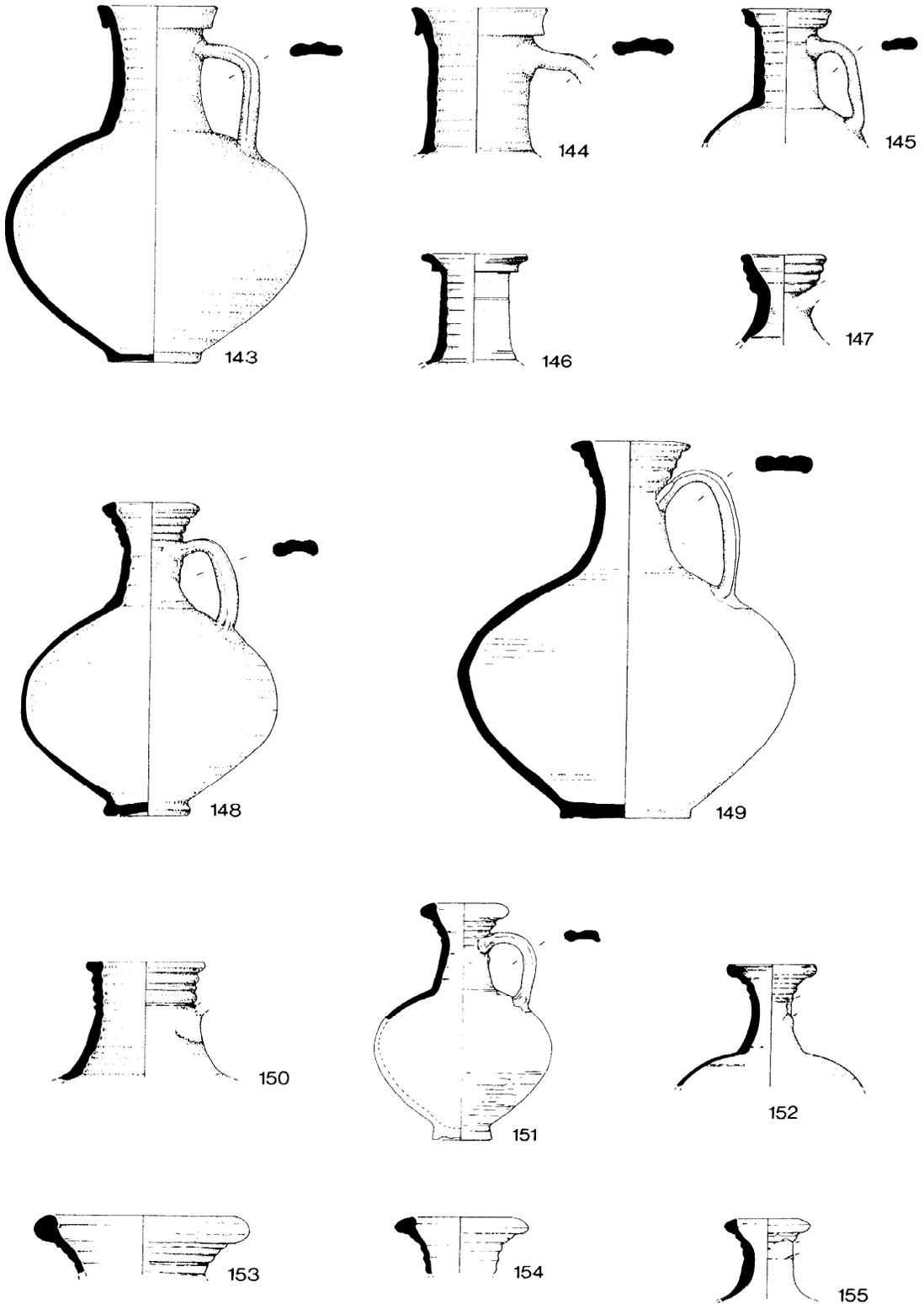


Fig 34 Verulamium Region White ware, flagons, nos 143-55 (Scale 1:4)

together with pronounced turning marks at the girth. These were caused by the body being inverted and trimmed on the wheel in order to form the footring base before the neck was applied.

One consistent feature which occurs in all VCWS fabric variants is straw or reed impressions on the bases of many forms, of which 253 (Fig 46) is a typical example. Apparently, as over half the flagons in the Reserve Collection illustrate, the vessels were placed on a stand of straw or reed to absorb the excess slip.

VCWS is a hard, coarse-textured, orange (2.5YR 6/8) or greyish-brown (2.5YR 6/6) fabric with an irregular fracture. It has densely packed, abundant, multi-coloured quartz (SA 0.2-0.5mm, occasionally <1.0mm) in a micaceous, silty clay matrix. Moderate, rounded red and black iron-rich inclusions (0.1-0.5mm), sparse, irregularly shaped limestone (<1.5mm), and large flint inclusions (<1.0mm) can also be identified. The fabric is generally consistent, although both finer (0.1-0.3mm) and coarser (<1.0mm) variants sometimes occur.

Forms

Most of the forms parallel those produced in VRW. Of particular interest are types generally restricted to or diagnostic of the Verulamium region such as mortaria, the unusual IE flagon, honey pots (IIK), moulded-rim bowls (IVA), and the rare types such as tazze, tettina, face pots, triple vases and amphora stoppers.

Flagons Figs 46-7, Nos 250-61 Flagons far exceed the other vessel types. Collared examples (IA) are rare, but first appear in late Neronian-early Flavian contexts. An unusual variant, decorated on the rim and cordon with rouletting, is illustrated here (250). Like many rouletted forms, it is associated with the early Antonine period.

A small number of ring-neck flagons with a trumpet mouth (IB2, not illustrated) first occurred in the Flavian period at Newgate Street. Ring-neck flagons with a prominent upper ring (IB5, not illustrated) in VRW often appear in Hadrianic fire destruction layers; in VCWS these do not occur at Newgate Street before post-fire deposits dated to c 120-60. Short-expanding, ring-neck flagons (IB7, 251-5) are the commonest form in VCWS and were first found in the Hadrianic, but date largely to the Antonine period. An unusual variant of this type, 256, has a vestigial spout produced by pulling the rim slightly at one edge.

Other rare flagon types include those with pinched mouths (IC, 257), double handles (IE, 258-60), simple curved rims (including an example with moulded lip - IH, 261) and pulley rims (not illustrated). These types occur sporadically, but many were present from the Flavian period.

Jars Figs 47-8, Nos 262-71 Most of the jars are Hadrianic or early Antonine in date. These include honey pots with both reeded and concave internal rim surface (IIK, 262-3), necked jars similar to examples in VRW with both grooved and flat rims and shoulder cordons (NJ, 264-5) and face pots used as cremation urns (266-70). All the complete, illustrated face pots (266-8) originally had three handles, with the third

directly opposite the nose. Some are similar in rim form to honey pots and, unless diagnostic sherds are present, may be misassigned. An unusual tall jar with a lid-seat rim (271), also used as a cremation urn, was found in association with a well-fitting LOX1 lid (Section 4.2).

Bowls and dishes Fig 48, Nos 272-3 Vessels in this category are less common than other forms, but moulded-rim bowls (IVA) are present, both with (272) and without (not illustrated) handles. These are normally from Trajanic contexts. A single example of a bead-rim bowl with marbled decoration (273) can also be identified, associated with late 1st to early 2nd century pottery.

Mortaria Fig 48, Nos 274-5 The VCWS mortaria belong to the hooked-flanged variety (HOF). Number 274 has a prominent bead rim, while 275 is distinguished by its swollen flange. Neither can be precisely paralleled among the VRW material. Body sherds of mortaria were present in the Flavian period, but no rims occur in the quantified data.

Other forms Fig 48, Nos 276-9 Many of the unusual vessel types produced in VRW can be paralleled in VCWS: tazze, both rouletted (276) and thumbed (not illustrated); triple vases (277); amphora stoppers including an example with rilled walls (278); and tettina (279). Most are present only in the Reserve Collection, with few from well-dated excavated groups.

Brockley Hill White-slipped ware (BHWS)

This red fabric with white slip is very similar to examples from Brockley Hill (1972 Site C, Kiln 2, D Devereux, pers comm), but there may well be other sources. Collared and ring-neck flagons can be paralleled within the VRW repertoire, but these forms are common to a number of industries. Mortaria, particularly those stamped by Sexrus Valerius, provide the strongest link between the two fabrics.

Dating

Fig 31

The distribution of this fabric is most similar to Hoo ware. It occurs in moderate quantities and is present from the pre-Boudiccan levels, was most common during the Flavian period, and diminished in the Trajanic period. Rare early Antonine forms are also represented (IB7).

*Fabric and technology

PI 51

A fine, sandy, somewhat micaceous white fabric, frequently red or with a reduced brownish-grey core. It is also characterized by abundant small black iron-rich inclusions.

A fairly hard, smooth red or yellowish-red (2.5YR 5/8-6/8) fabric

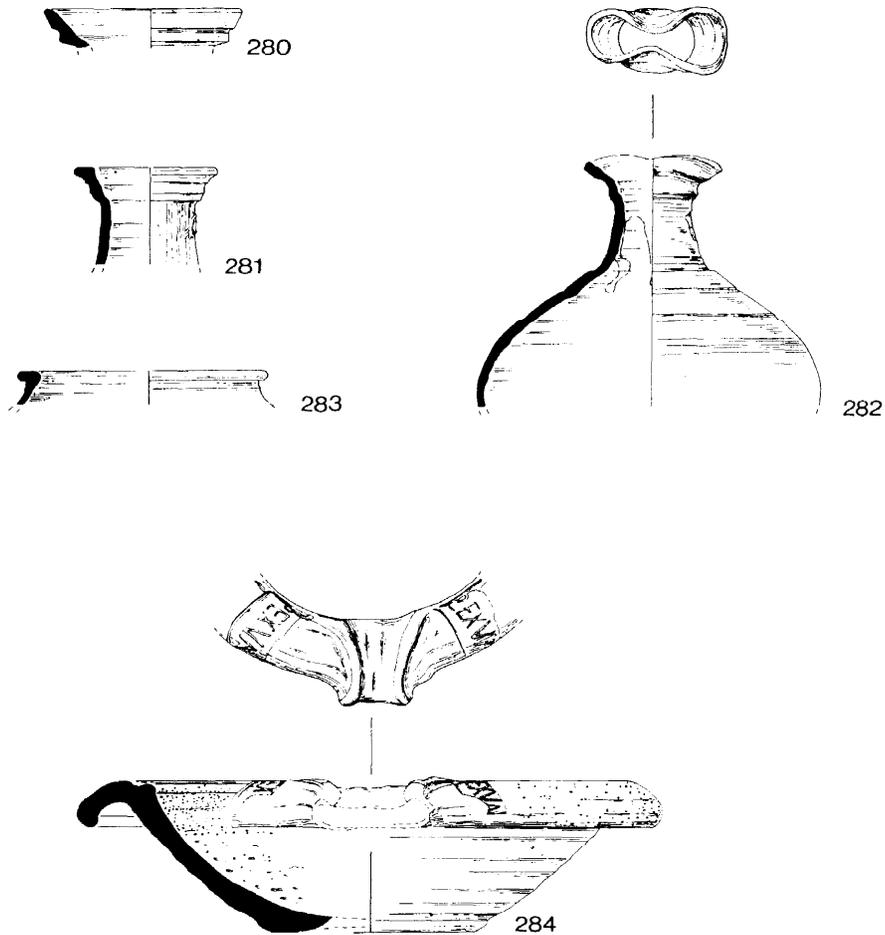


Fig 49 Brockley Hill White-slipped ware, flagons, nos 280-2; jars, no 283; monaria, no 284 (Scale 1:4)

with a finely irregular fracture, although its colour may vary from brown (7.5YR 4/14) to grey (10YR 5/1) depending on firing conditions. The main inclusions are well-sorted fine, silty quartz (SA CO. 1mm, occasionally <0.5mm), some flint and moderate amounts of red or black iron-rich inclusions (R, SA), which are occasionally larger than the quartz and more prominent in some samples. These are mostly opaques, although some iron-rich clay pellets are present. Limestone (SA 0.2-0.3mm) occurs sporadically; white and gold mica is moderate to abundant. The thin creamy-white slip, which is sometimes yellowish (10YR g/2-9/4) in tone, tends to abrade easily.

Forms

Flagons and mortaria are most typical of the BHWS industry.

Flagons Fig 49, Nos 280-2 Collared flagons (IA) are the most common type in this fabric, with the majority appearing in Flavian levels. A IA variant (280) is

grooved on the outer edge of the collar, giving it a pulley rim appearance.

Trumpet-mouth, ring-neck flagons (IBZ) are also present, but in smaller quantities. Number 281, from a Flavian group, has ill-defined rings and may be a prototype of this form. The expanding neck IB7s (not illustrated) are typical of early Antonine contexts.

Pinched-mouth flagons (IC, 282) are rare, and were most common during the Flavian period. The illustrated vessel is decorated with a series of cordons and grooves extending from the neck to the girth of the vessel, a design similar to metal flagons of this period but notably absent from VRW.

Jars Fig 49, No 283 Jars are generally rare and are represented here by a single example with a flat rim and neck cordon.

Bowls and dishes These are rare and a single example of

a moulded-rim bowl (IVA) has been identified among the quantified material.

Mortaria Fig 49, No 284; Fig 142, No 284 Hooked-flange mortaria (HOF) are found in small quantities in late Neronian and Flavian groups. Many of these are stamped SEX.VAL, and belonged to the Sexti Valerii group of potters who were associated with mortarium production in the Colchester area (Hartley 1977, 11). In the City the stamp occurs on VRW, VRR and BHWS. Three virtually complete vessels in VRR and BHWS share the same die stamp, impressed on both sides of the spout (not illustrated), and are from the Reserve Collection. In addition to these vessels there are excavated examples in VRW and VRR (Fig 45, 249; Fig 142, 212, 249).

Stamps from the same die as the VRR and BHWS vessels have been noted in the *Catalogue of Roman Pottery in the Colchester and Essex Museum* as SEX[TUS] VAL[ERIVS] C. (May 1930, text-fig 7, 31), and the source area of this potter has been a matter of some debate. Rodwell (1983) suggests that he may well have been a peripatetic entrepreneur, as mortaria with his stamp occur in three different fabrics: a typical Colchester fabric, one characteristic of southeast England but more likely Kent, and the Verulamium/Brockley Hill region.

More detailed information on these potters is provided by Hartley and Richards (1965, 35), who have investigated the Sexti Valerii group using spectrographic analysis as part of a larger study of mortarium fabrics from southeast England. It is clear that the VRR mortarium and the associated SEX.VAL.C stamp from the City fall into a Kent or, more broadly, southeast England group. Northern Kent can probably be discounted as a source. Monaghan (1987, 44) noted the lack of potential mortarium production in the area and a survey of regional museums failed to locate the stamp. Several are known from Colchester in a typical local fabric (K Hartley, pers comm). However, a source in the Verulamium/Brockley Hill region is preferred for the City examples, as stamps occur in VRW (a fabric which can be regarded as a true Verulamium product - Fig 142, 212), the similar VRR fabric (Fig 45, 249; Fig 142, 249) and the BHWS examples discussed here. Although a Verulamium or even a Brockley Hill source is suggested, further research into fabric, dies and their distribution may provide a clearer indicator of source.

4.7 Unsourced Oxidized wares

OXID-2486

The source of 2486 is unclear, but the fabric is similar to some Colchester products, particularly the early lamps. The similarity of this fairly undistinctive fine micaceous fabric to Colchester material is strengthened by typological associations.

Dating

This fabric is represented by two featured vessels. Quantified sherds account for rare amounts of oxidized wares by weight during the pre-Boudiccan (2%) and Flavian (< 1%) periods.

Fabric and technology

A soft, fine fabric, pale orange-buff in colour.

OXID-2486 is a rather soft, smooth-fractured ware, pale orange-buff (5YR 7/6) in colour. The fabric contains moderate amounts of fine quartz (SA <0.1-0.2mm), sometimes roseate, and sparser, but still common, red iron-rich inclusions (I <0.1-0.3mm, rarely 1.0mm>), fine white mica and rare limestone (R <0.5mm, but occasionally 1.0mm>).

Forms

Flagons Fig 50, No 285 A single flagon is represented, characterized by a long tapering neck and bead rim; cordons are placed halfway down the neck and at the shoulder. It is similar to Cam 171, although 285 is less elaborate, and is considered diagnostic of the pre-Boudiccan period.

Bowls Fig 50, No 286 This category comprises a bowl with a protruding beaded lip and rounded flange.

OXID-1861

The type is similar in fabric and typology to an early Flavian fabric from the Staines area (S Shanks, pers comm).

Dating

This rare type accounts for <1% of all oxidized wares by weight in late Neronian to Trajanic contexts.



Fig 50 Oxidized fabric 2486, flagons, no 285; bowls/dishes, no 286. Oxidized fabric 1861, jars, no 287 (Scale 1:4)

Fabric and technology

A sandy, brick-red fabric.

A hard fabric, with rough surfaces and finely irregular fracture. It is brick-red (10YR 5/10), with moderate to abundant quartz inclusions (SA <0.4mm) and sparser flecks of brown iron-rich inclusions (SA <0.1mm).

Forms

A jar and plain-rim dish (IVJ) are represented; the latter too fragmentary to illustrate.

Jars Fig 50, No 287 The rim of this honey pot (IJK) is flattened with two grooves on the outside. Face pots in a similar fabric and comparable form (cf Green 1980b, fig 30, 206) occur quite frequently in early Flavian deposits in the Staines area (S Shanks, pers comm).

4.8 North French/Southeast English wares (NFSE)

A number of separate common name groups are discussed under this umbrella. Although there is no conclusive evidence to ally the types, similarities in fabric (both macroscopically and in thin section) and form, and corresponding dating sequences, corroborate similar source areas and manufacturing traditions. Furthermore, forms are restricted to flagons and mortaria, which are frequently manufactured together at known production sites. Fabrics discussed below include NFSE-2667, NFSE-1298, Atisii-type or Gillam 236 mortaria (G236), Hartley Group II or Gillam 238 mortaria (G238), NFSE-2838 and NFSE-2844. In aggregate they occur in moderate quantities.

The most common and frequently cited type throughout Britain, and incorporated within this group, are the Hartley Group II mortaria. Hartley (1973b, 1977) has discussed their probable source in detail and concludes that migration of potters from northern Gaul to southeast England (most likely Kent) is a distinct possibility (see *contra*, p ix). This is supported, particularly, by the large number of Group II mortaria identified at Richborough (Hartley 1977, 6). In this context it is significant that mortaria which might be seen as a development of Group II (Bushe-Fox 1913, forms 26–30) are also common at Richborough (Bushe-Fox 1932) and the later group or both may have been produced there. Group II vessels stamped by Q Valerius Veranius are extremely common at Colchester and chemical analysis indicates a Gaulish source (R Symonds, pers comm) which may be supported by kiln evidence from the Continent (NFSE-1298). Whether these fabrics are Romano-British, French or a mixture is still unclear (*contra*, p ix) chemical analysis may be of value in comparing the different groups, but from the London viewpoint pottery from Kent and northern Gaul may have arrived by the same routes.

Although there is a wide range of variability within

the fabrics identified, major sub-groups can be readily isolated, with typology and surface appearance important criteria. All the fabrics share a calcareous, slightly micaceous matrix, frequently conchoidal in fracture, with quartz, flint and iron-rich inclusions. In colour they are normally buff or yellow and have a tendency towards mudstaining.

NFSE-2667

This type has only recently been distinguished from other oxidized fabrics. Evidence for its distribution is therefore minimal from quantified deposits, but it is included separately here because of its importance as an indicator of Neronian assemblages and its relationship with fabric NFSE-1298, of which it appears to be a finer and earlier variant (cf Fig 51).

Dating

Fig 51

NFSE-2667 is rare, but is diagnostic of pre-Boudiccan and late Neronian–early Flavian levels (not among the quantified data on Fig 51) rather than late 1st century deposits.

*Fabric and technology

Pl 5m

The fabric is variable in colour, but is generally pale buff (2.5YR 9/2) or pink-buff (7.5YR 9/2), occasionally with a pale orange (7.5YR 8/4) core. It breaks irregularly and is soft and easily scratched, and feels rather powdery to the touch. Moderate quartz (A, SA <0.2mm, rarely <1.5mm), together with smaller amounts of red and black

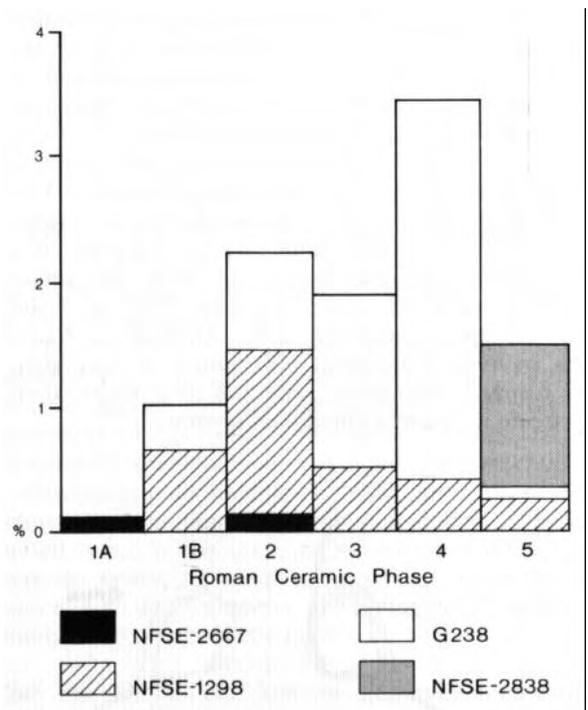


Fig 51 Stacked bar graph of North French/Southeast English fabrics as a percentage of all oxidized wares by weight

iron-rich inclusions (SA 0.1-0.4mm, occasionally <2.0mm), can be identified. Sparse amounts of calcareous material (R 0.5-2.0mm) and white mica are also present. In thin section flint and rare microfossils can also be seen in a calcareous matrix.

All exterior surfaces have been smoothed and the mortaria are gritted with sub-angular quartz, quartzite, occasional flint and some limestone (3.0mm>).

Forms

Flagons Fig 52, Nos 288-95 Collared flagons (IA, 288-93) are the most common and, typically, have a distinctive groove or undercutting on the rim. Few body sherds have survived and it was not possible to reconstruct any complete profiles. The handles generally protrude at a right angle from the neck and usually have either three or four ribs; bases are finished off with a footing (295). Number 293 has a severely distorted rim and may be a kiln second. A single example of a ring-neck flagon (IB2, 294) was present in a residual context. Some of the flagons show evidence of resin on the interior surfaces.

Montaria Fig 53, Nos 296-8 Hartley (1985c, 92-3) has divided wall-sided mortaria in Britain into three broad typological groups. Group III, with a swollen bead, is thought to be post-conquest (45-60/5) and describes all the mortaria in this group (WAL).

NFSE-1298

Green (1980b, fig 21, 41-3; fig 22, 46-7) first noted the similarity between the fabrics of pulley-rim flagons and G238 mortaria. Assuming a source in northern Gaul for the latter, a similar source can be proposed for NFSE-1298. Pulley-mouth flagons were a common form in northern Gaul (from Belgium to the Seine Valley) during the 1st and 2nd centuries and were certainly made at the same production sites as the G238 mortaria. Amongst the pottery from a small kiln site at Bourlon (between Cambrai and Arras) are both pulley-rim flagons in a fabric apparently similar to the City series and a mortarium stamped by a Group II potter (Tuffreau-Libre 1977, figs 3, 6, 7).

Dating

Fig 51

The distribution of this fabric type is broadly similar to that of the G238 mortarium form. It occurs in moderate quantities and is absent from pre-Boudiccan groups, appearing in late Neronian levels, and was most common during the Flavian period. It decreased dramatically from the Trajanic period onwards and thereafter was probably residual.

*Fabric and technology

P1 5n

The fabric varies somewhat in detail, but generally has a fairly smooth or sub-conchoidal fracture with a slightly rough feel. The clay matrix and inclusions are similar to NFSE-2667, but fewer are greater than c 0.1mm. Of these, quartz, red and black iron-rich

inclusions and limestone can be identified, together with mica. Occasionally flint is seen (0.8mm>). The fabric tends to have a harder surface and be less powdery than 2667.

Green (1980b, 45) described many of the examples from Billingsgate Buildings as 'susceptible to mudstaining', but considered them to have been originally 'greyish-yellow (cf 10YR 7/1 or 7/2) or occasionally dull greyish-red' (7.5YR 6/2) in colour. This is partly confirmed by unstained examples from other sites, which range in colour from pale yellowish-buff (2.5Y 9/4; 10YR 9/2-9/4) or occasionally very pale grey (5Y 8/1).

Forms

Flagons Fig 53, Nos 299-305 This fabric is restricted to flagons, and the most common form has a pulley rim (300-3), many with a prominent lower lip. Slight variations occur in both the rims and the handles, which normally have three or occasionally two ribs. Their bases have a rounded lower-body wall with a squared-off footing, of which 305 is a typical example. Other flagon types which occur infrequently include ring-neck vessels (IB, 299), and an example with a flaring beaded lip (304). Like NFSE-2667, some of the flagons are coated with resin on the inside.

Atisii-type or Gillam 236 mortaria (G236)

Atisii-type mortaria refer to a single form type (Hartley 1977, Group 1, rim type 2) which occurs in two fabrics, probably representing two sources. Hartley (1973b, 40; 1977, 8) suggests that two areas were involved: Aoste (Isire) in Gallia Narbonensis and either southeast England or northern Gaul. The latter type is included here, linked to G238 by both fabric and potter's stamps; the Aoste vessels are included with other imported mortaria (AOMO, Section 4.10).

Dating

The only example of this type is an unstratified example from the Reserve Collection. However, it is stamped Q.VAL.SE on both sides of the spout by Q Valerius Se- who belongs to Hartley's Group I (rim type 2) category and dates to c 55-85. This potter may have originated from Aoste (AOMO) or have been inspired by the Atisii, but produced some mortaria in the Pas de Calais region.

Fabric and technology

This fabric is identical to NFSE-1298. It is mudstained brownish-yellow (10YR 8/4) with darker surfaces (10YR 6/4).

Forms

Fig 54, No 306; Fig 142, No 306

The form is identical to Aoste mortaria, with a small bead rim and deep, played flange (HOF).

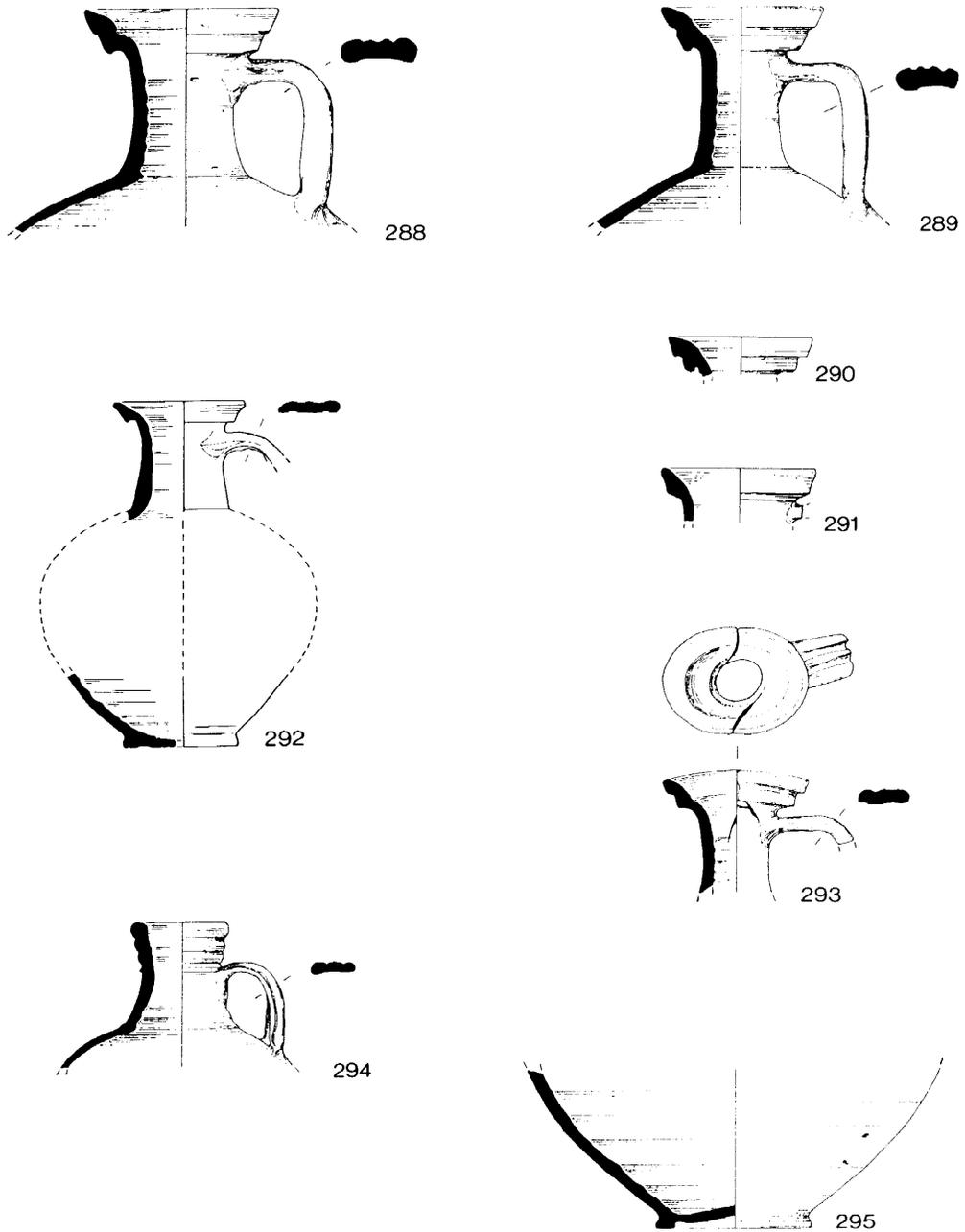


Fig 52 North French/Southeast English fabric 2667, flagons, nos 288-95 (Scale 1:4)

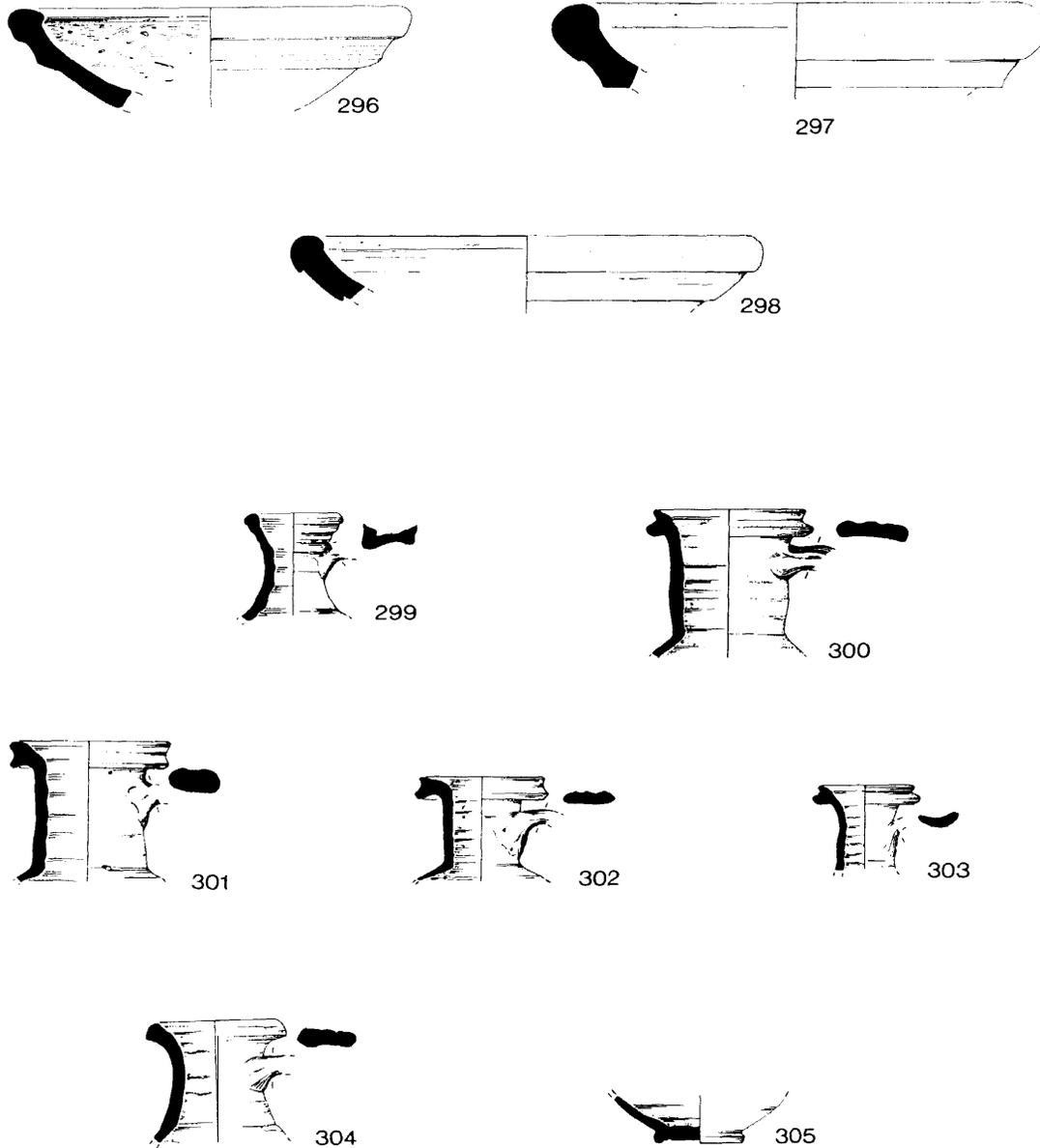


Fig 53 North French/Southeast English fabric 2667, mortaria, nos 296-8. North French/Southeast English fabric 1298, flagons, nos 299-305 (Scale 1:4)

Hartley Group II or Gillam 238 mortaria
(G238)

Dating

Fig 51

Hartley (1977, 5) dates most G238 mortaria to the Flavian period. In the City they first appeared in the

late Neronian and increased in the Flavian period, becoming more common in the Trajanic and Hadrianic periods. Although it is not possible to separate the different rim variations in the quantified data, these later occurrences most likely reflect the developed rim form (Fig 55, 311-13), which have been dated c 80- 150 (Hartley 1985b, 144), together with some residual material. Vessels with developed

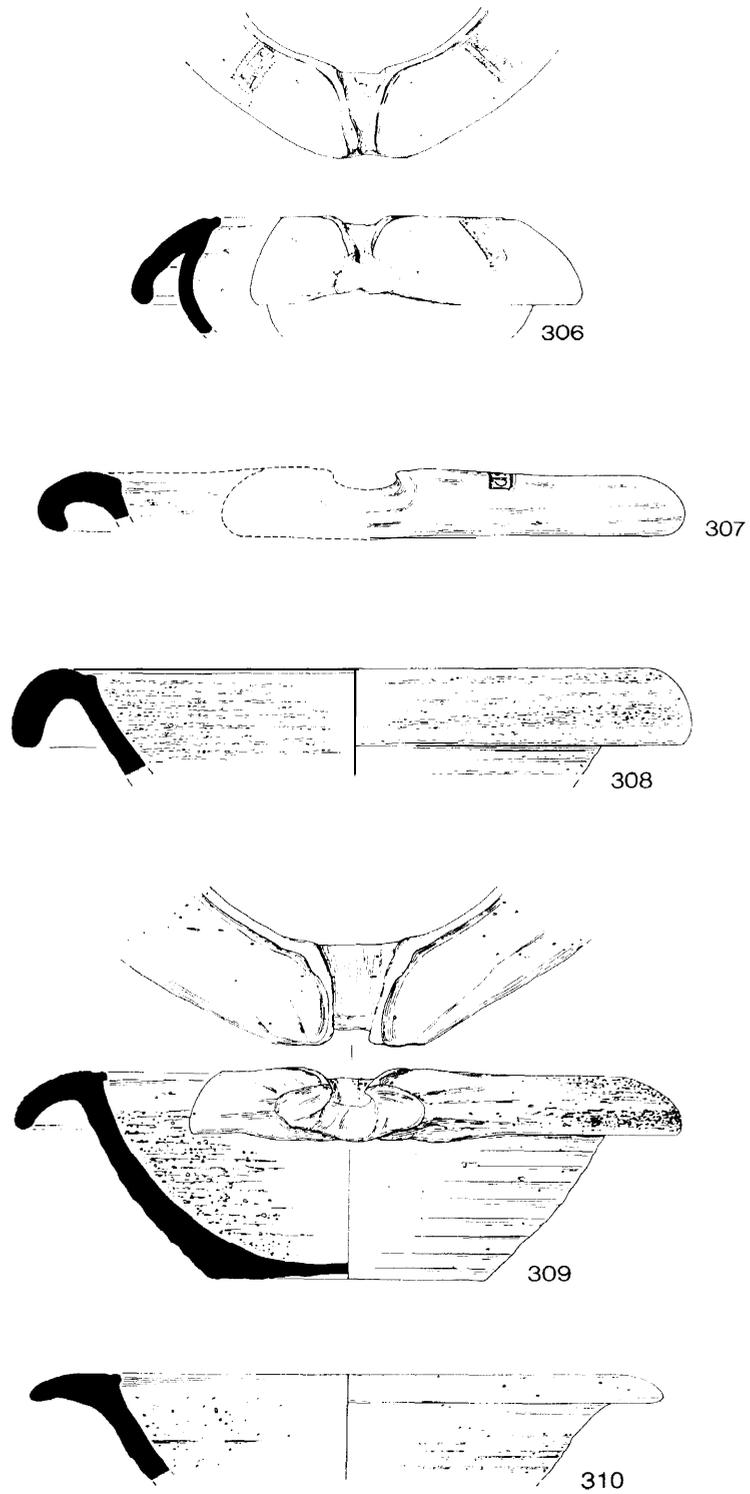


Fig 54 North French/Southeast English Gillam 236 mortaria, no 306. North French/Southeast English Gillam 238 mortaria, nos 307-10 (Scale 1:4)

rims are known from Hadrianic debris at both 5-12 Fenchurch Street and Bucklersbury. A similar chronology, with developed rims dating from the late Flavian to the Trajanic period, was proposed by Green (1980b, 48). As a group they occur in moderate quantities.

Fabric and technology

P1 5o

The fabric is similar to NFSE-1298. It may vary in detail, but generally ranges from light yellow (7.5YR 9/2; 10YR 9/2) to pink or orange-red (10YR 5/2-6/8) in colour. Larger limestone inclusions are occasionally visible (R 0.4-2.0mm) and rare fragments of flint are also present. The trituration grits consist of grey or milky quartz, flint and some limestone, and measure up to 4.0mm.

Forms

Figs 54-5, Nos 307-13; Fig 142, No 307

The classic Group II or G238 is a large deep mortarium with prominent wheelmarks. The rim has a flaring hooked flange with an undercut internal bead (309, Hartley 1977, rim type 3). Small trituration grits are abundant and extend over the flange. Number 310 has an almost horizontal flange (Hartley 1977, fig 2.1, 3c). Examples designated as developed G238 mortararia, or Bushe-Fox 26-30, have a short, squat flange and bead rim which is slightly squared in section (311-13). The trituration grits on both the G238 and the developed forms appear to have been applied while the vessel was turned, causing plucking and/or scoring to the surface.

In contrast with Colchester, where many G238 stamped mortararia have been excavated, City assemblages have produced only one stamped example. This belongs to the potter Cavarius (307) who is known from the pre-Flavian levels at Usk and Wroxeter (Hartley 1977, 11). The rim, from a Flavian context, is similar to Hartley's type 4. Number 308, with a more pronounced curve, also belongs to this group, which is probably earlier than the more typical G238 rim (*ibid*, 9, fig 2.1, 4).

NFSE-2838

Dating

Fig 51

One example of this type has been noted in the City from an early Antonine level. Typologically, it is very similar to a vessel from Billingsgate Buildings for which Green (1980b, fig 22, 52) proposed a 2nd century date.

*Fabric and technology

This fabric is virtually identical to G238 but is distinguished by sparse amounts of quartz and moderate red iron-rich inclusions (SA 0.1-0.5mm). The interior is rather abraded, but has trituration grits of sparse quartz and occasionally flint and iron-rich inclusions (c 3.0mm).

Forms

Fig 55, No 314

The vessel is a poorly executed bead-and-flange mortarium (BEF), with an externally undercut bead and flange that hugs the body wall.

NFSE-2844

Dating

The type is represented by a single vessel from an early Antonine context, whose pottery is otherwise unquantified.

Fabric and technology

The fabric is most similar to G238, but has a vesicular and irregular fracture, as well as being light orange (5Y 7/4-7/6) in colour.

Forms

Fig 55, No 315

The form is very similar to developed G238 mortararia, with the same short, square flange and squared bead rim. Scoring, from the trituration grits, is also present on the interior.

4.9 Gloucester mortararia (GLMO)

The fabric and stamp on this vessel indicates a source in Gloucester.

Dating

The single known vessel, from an unquantified context, is associated with Flavian pottery, which conforms with dates proposed for -the stamp (K Hartley, pers comm).

Fabric and technology

A fine reddish-brown fabric with white slip, very micaceous, with occasional limestone inclusions and some voids resulting from lime leaching or poor wedging.

A hard, pale reddish-brown (7.5YR 7/6) fabric with a darker exterior margin (5YR 6/6), which feels slightly rough to the touch and breaks with an irregular fracture. The matrix is very calcareous with moderate quartz (SA 0.2mm, occasionally <0.5mm) and limestone (R 0.03mm-2.0mm), together with more abundant white mica (0.05mm, more rarely <0.2mm). The vessel is decorated on the exterior and over the rim with a white slip which has virtually worn away, as have the trituration grits. Where present they consist of milky quartz (SA 0.4-0.8mm), with some extending over the rim.

Forms

Fig 56, No 316; Fig 142, No 316

The vessel has a flange with internal bead, slightly undercut (HOF), and is stamped TERE with a counter stamp of RIPAN. It has been identified as

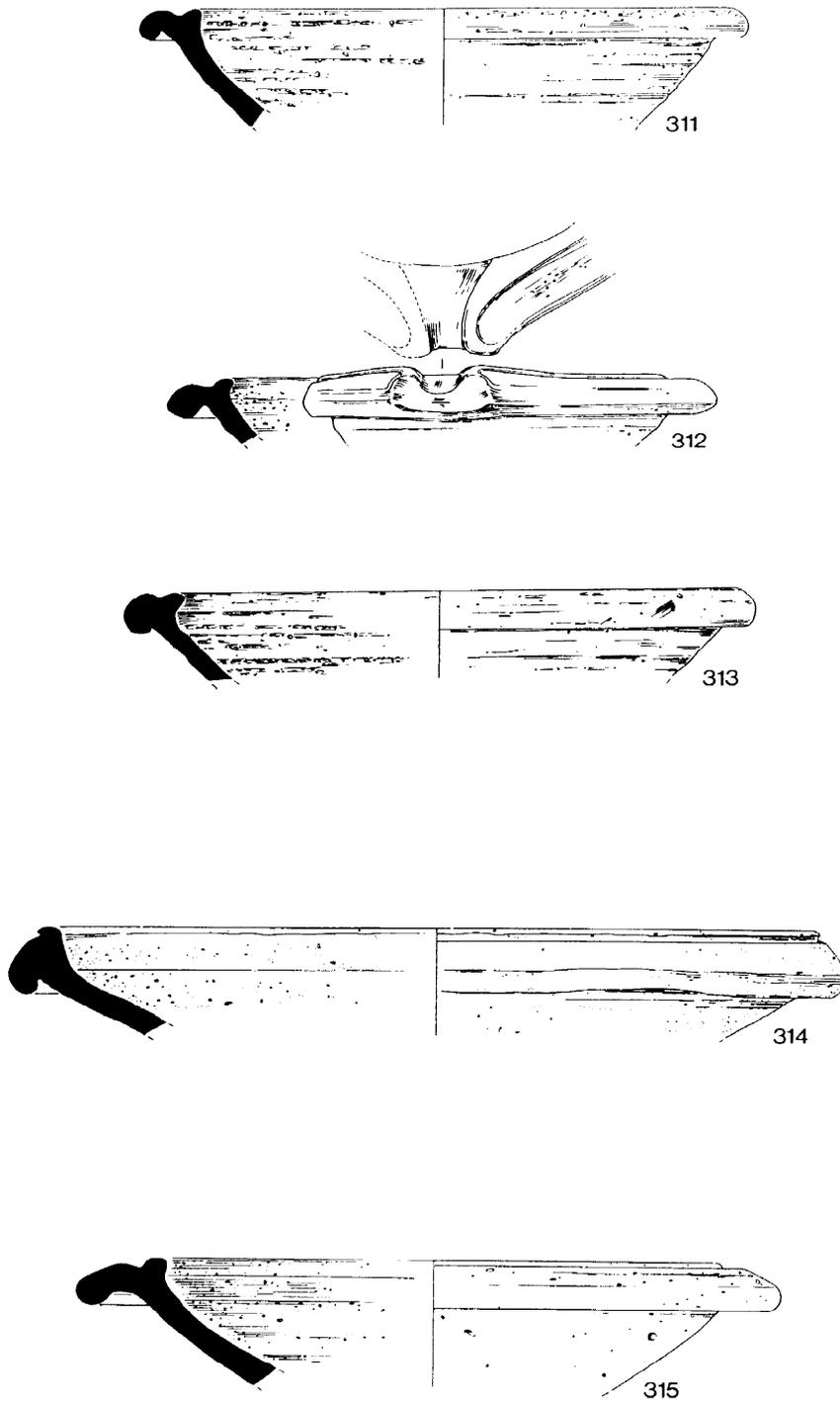


Fig 55 North French/Southeast English Gillam 238 mortaria, nos 311-13. North French/Southeast English fabric 2838, mortaria, no 314. North French/Southeast English fabric 2844, mortaria, no 315 (Scale 1:4)

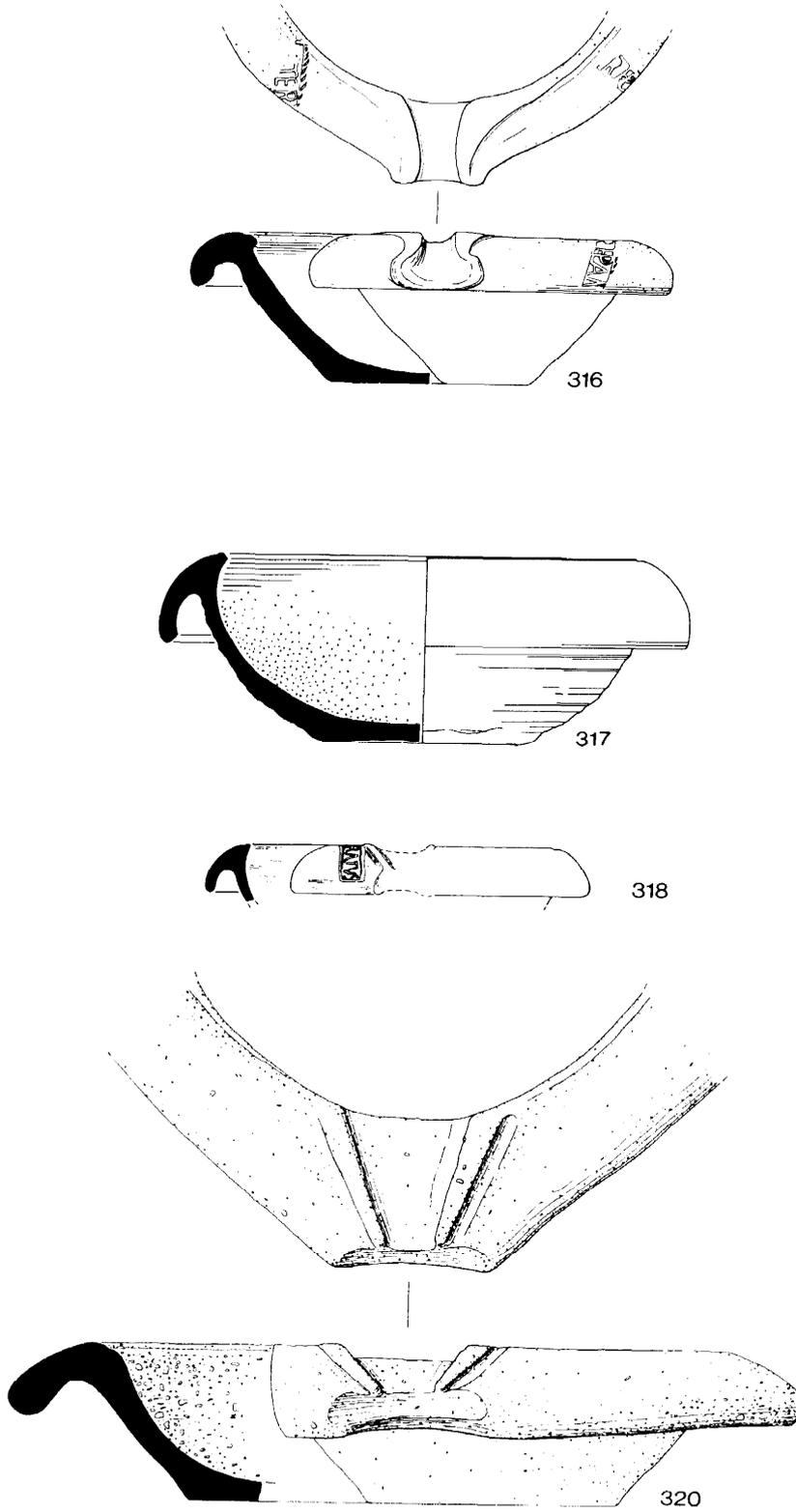


Fig 56 Gloucester mortaria, no 316. Aoste mortaria, nos 317-18. Italian mortaria, no 320 (Scale 1:4)

belonging to the potter A Terentius Ripanus, who was operating in Gloucester c 60-90 (K Hartley, pers comm).

4.10 Aoste mortaria (AOMO)

The fabric, trituration grits and surface treatment of this Atisii-type mortarium compares well with samples from Aoste.

Dating

Hartley (1973b, 40) has suggested that Aoste mortaria were produced from the mid 1st century, well into the Flavian period. They are rare here, but their presence in Neronian and Flavian contexts accords with this date range. Quantified sherds are all from Flavian contexts and comprise <1% of all oxidized wares by weight.

*Fabric and technology

P15p

A fine, off-white fabric with thick, pink core, distinctive wedging marks and visible limestone and iron-rich inclusions.

The fabric is very hard, smooth and feels slightly silky with a finely irregular fracture in which numerous horizontal voids are visible. The colour ranges within the off-white (5Y 9/2; 10YR 8/2) spectrum. Occasionally there is a thick, pink (5YR 7/4) core, and all the examples appear to have been finished with a thin self-slip or pale coloured wash. The matrix consists of abundant well-sorted quartz (A <0.1mm, occasionally <0.3mm), moderate amounts of red (occasionally black) iron-rich inclusions (R <0.1-0.3mm, more rarely 4.5mm) - some of which clearly show through the surface wash - and sparse to moderate amounts of limestone (R 0.2-0.3mm). Moderate particles of white and gold mica, more abundant on the surface, are also present (0.05-0.3mm). The trituration grits are formed of abundant, well-sorted, milky polycrystalline quartz (SA 2.0-3.0mm) and are generally clustered around the lower two-thirds of the vessel. In thin section some trituration grits can be identified as feldspar and granite; the clay matrix is extremely calcareous.

Forms

Fig 56, Nos 317-18; Fig 142, Nos 318-19

The vessels are consistent in form, with a beaded lip and a deep, downward curving flange which is close to the body wall (HOF). Numbers 318 and 319 (profile not illustrated) are stamped GRATUS by the Aoste potter, G. Atisius Gratus (K Hartley, pers comm).

4.11 Italian mortaria (ITMO)

The fabric of these mortaria support a source in Campania (Hartley 1973a, 58).

Dating

Although easily recognisable, this fabric is rare, occurring mainly in pre-Boudiccan deposits or in association with later 1st and early 2nd century pottery. The quantified sherds are all from pre-

Boudiccan contexts and make up 3% of all oxidized wares by weight. Hartley (*ibid*, 54) has identified two rim variants, of different dates, within this type. Most of the City examples are body sherds, but the illustrated one belongs to Hartley's type 2, dated 70-127.

*Fabric and technology

This very distinctive fabric is pale brown and micaceous, with abundant volcanic inclusions and trituration grits.

A pale brown (10YR 6/3) fabric, hard and rough to the touch, with an irregular fracture. Inclusions are frequently to c1.0mm, but can be larger, and are set in a fine, micaceous and calcareous clay. Most prominent are abundant volcanic rocks, augite and volcanic glass (A <5.0mm) and dark mica (0.2-4.0mm); feldspars are also common (A, SA <5.0mm). More moderate are quartzite and polycrystalline quartz (SA, A 1.5-4.0mm) and reddish-brown iron-rich inclusions (R 1.5-5.0mm). The same inclusions occur as trituration grits, where they typically fall into the larger size range.

Forms

Fig 56, No 320

This hooked-flange mortarium (HOF) is a typical example with its large diameter (480mm), plain flange rim with slight groove on the rim interior, and shallow depth. The illustrated example, probably from the City, is held by the Cuming Museum in Southwark.

4.12 Rhone Valley mortaria (RVMO)

A central Gaulish origin is suggested for this fabric type, as many examples have been noted among the material from the Roman town of St Romain-en-Gal, near Vienne, Rhone, where pottery production is known. The large numbers of finds from the town indicate that it is near the main production area of RVMO (P Tyers, pers comm).

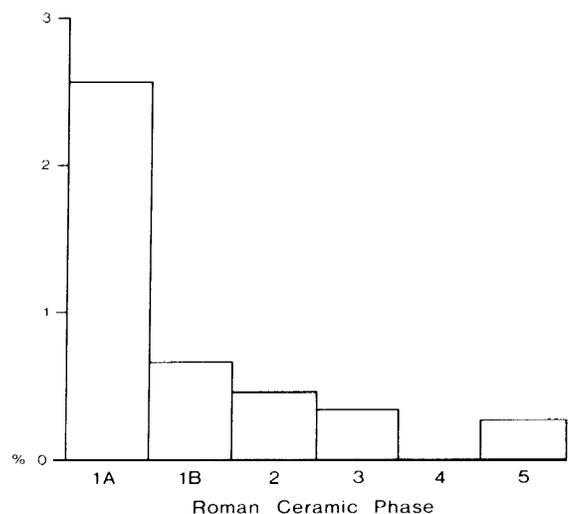


Fig 57 Bar graph of Rhone Valley mortaria as a percentage of all oxidized wares by weight

Dating

Fig 57

The type is dated to c 50-85 by Hartley (1985a, 86). It is sparse in the City, with most examples coming from pre-Boudiccan levels. Approximately five unused vessels were found together in Neronian-early Flavian levels at 37-40 Fish Street Hill.

*Fabric and technology

P1 5q

A very fine, dense buff or pale pink fabric with sparse but large rock inclusions and abundant gold mica.

This fabric ranges in colour from pale orange-pink (7.5YR 8/4) to cream (10YR 9/4). The fracture is smooth or almost conchoidal, and hard in texture, sparsely tempered with poorly sorted quartz and rock fragments (A, SA 0.50-3.0mm) set in a micaceous matrix. The trituration grits consist mainly of well-sorted quartz, feldspar (A 0.30-1.0mm) and mica (<0.5mm). Thin section analysis revealed compound granitic rock fragments. Massive granitic rock fragments in one section were not heavily weathered, suggesting the clay source was near the parent rock (A Vince, pers comm).

Forms

Fig 59, Nos 321-2

The form is uniform, with a prominent bead rim, slightly undercut internally, and a hooked flange which may be flattened at the top (HOF). The spout is formed by pulling the beading forward, and the internal surface is distinctly scored with numerous small trituration grits, suggesting that they were applied while the vessel was being turned. Sparse grits are occasionally present on the flange.

4.13 Rhineland mortaria (RHMO)

This category includes a number of different mortarium types which occurred in the City during the 1st and 2nd centuries. They are considered together because they are likely to have shared a source in the Rhineland. As a group they occur in sparse numbers; individually they are rare.

RHMO-2554

The source of these mortaria was certainly the Rhineland, perhaps near the Eifel region (K Hartley, pers comm).

Dating

Fig 58

The type occurs in pre-Boudiccan and Flavian contexts.

*Fabric and technology

P1 5r

A yellow fabric with abundant red argillaceous inclusions, both mixed throughout the clay and as trituration grits.

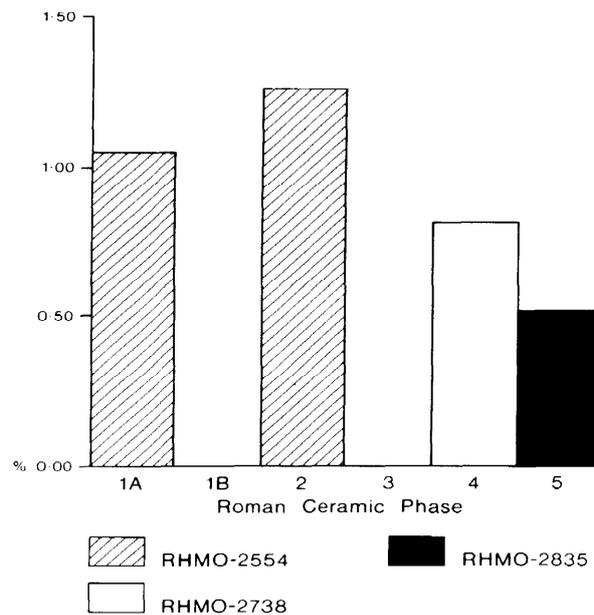


Fig 58 Bar graph of Rhineland mortarium fabrics as a percentage of all oxidized wares by weight

The fabric is typically creamy-yellow (10YR 8/4) with a darker (10YR 7/6) exterior surface. The vessels are hard and rough in texture, containing numerous inclusions of reddish-brown fragments (I, SA 0.1-4.0mm), including siltstones and rare fine-grained sandstone, clay pellets and grog. The calcareous matrix is composed of silt-sized and, rarely, larger quartz (SA, A <0.1mm), with some white mica. Coarse trituration grits (3-0-5.0mm) are in a similar range as the inclusions. Thin sectioning reveals a white groundmass with few inclusions except for red lenses of clay. The red clay contains more inclusions, including quartz, plagioclase feldspar, siltstones and ferro-magnesian minerals of igneous origin.

Forms

Fig 59, No 323

This distinctive mortarium equates to Cam 194 and has a characteristic short, thick flange and a spout which barely projects (HOF). The rim has an undercut internal bead.

RHMO-2738

Dating

Fig 58

Only one example has been noted to date, from a Hadrianic deposit.

*Fabric and technology

A sandy, buff fabric with an abrasive surface resulting from protruding inclusions.

A cream (5Y 9/2) to buff (2.5Y 9/2) coloured fabric which is hard and rough in texture. The hackly fracture reveals moderate inclusions of well-sorted quartz, feldspar and rock fragments (R, SA 0.3-1.0mm), set in a slightly micaceous, calcareous matrix with occasional large inclusions of limestone. The vessel interior is gritted

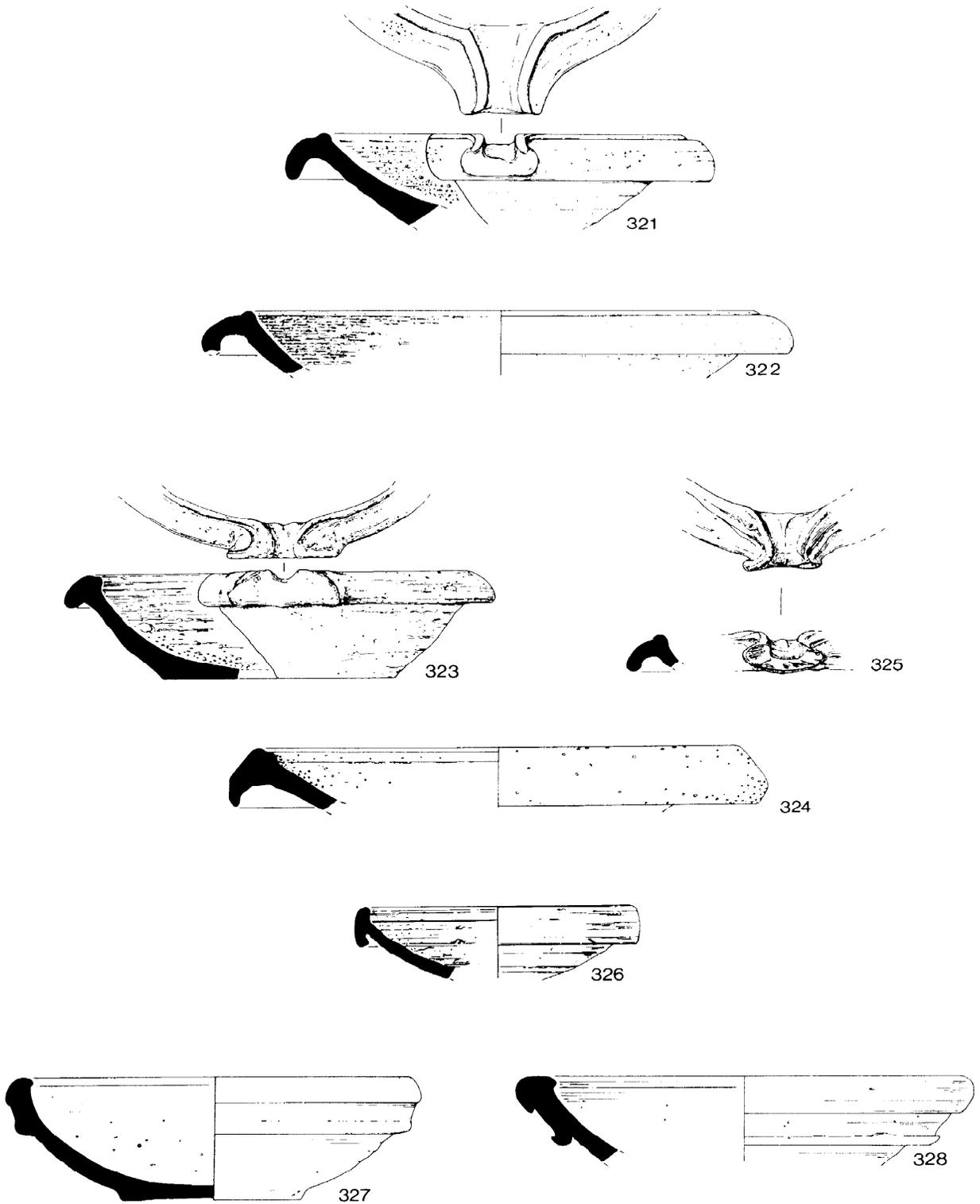


Fig 59 Rhone Valley mortaria, nos 321-2. Rhineland mortarium fabnk 2554, no 323. Rhineland mortarium fabric 2738, no 324. Rhineland mortarium fabric 2835, nos 325-6. Mortarium fabric 2625, no 327. Mortarium fabric 2669, no 328 (Scale 1:4)

with similar inclusions (SA 0.3-2.0mm) and some gold mica (<0.3), which occasionally extends over the flange. In thin section the rocks can be identified as granite, siltstone and quartzite.

Forms

Fig 59, No 324

The vessel (HOF) has a flattened, undercut internal bead. Its flange is distinctively high and drooping, and may be a precursor of the later hammer-head flange.

RHMO-2835

This group, clearly distinguishable from the 1st century Rhineland mortaria (RHMO-2554), is more comparable in fabric, and in some cases form, to the broad range of late 2nd/early 3rd century Rhineland mortaria present at New Fresh Wharf (Richardson 1986, 112).

Dating

Fig 58

This type is rare and occurred in the early Antonine period.

*Fabric and technology

A pale, hard fabric with abundant multi-coloured quartz inclusions.

A hard, slightly rough-textured fabric with irregular break; off-white (2.5Y 8/2) in colour with very pale brown (10YR S/3) surfaces. The main inclusions are moderate to abundant well-sorted quartz, often roseate in colour (R, SA 0.3-0.4mm, occasionally <0.7mm), with sparser limestone and rocks (R, SA <2.0mm) and rounded reddish-orange or black iron-rich inclusions (0.1-0.4mm). Fine white mica is also noticeable in the surface. Quartzite and iron-rich siltstones can be identified in thin section.

Forms

Fig 59, Nos 325-6

Two types of mortaria have been identified in this fabric, hooked flanged (HOF, 325) and hammer head (HAM, 326). The hooked-flange mortarium has a bead rim which is slightly undercut internally and a shallow hooked flange with a barely protruding spout. The hammer head has a slight beading on the rim, with a nearly upright, undercut flange. There are no apparent trituration grits. The latter form is similar to Rhineland mortaria dated to the late 2nd-early 3rd century from New Fresh Wharf (Richardson 1986, I.69-I.72).

4.14 Unsourced Imported mortaria

MORT-2625

Dating

The type is represented by a single vessel from a pre-Boudiccan level, where it accounts for 1% of all oxidized pottery by weight.

*Fabric and technology

A fine, pink, sandy fabric with abundant flattened red clay pellets on the surface, possibly indicating use. It is somewhat similar to RHMO-2554 and may indicate a shared source.

This smooth fabric is pink (7.5YR 8/4-7/4) throughout. It is fairly hard to the touch and the finely irregular fracture reveals abundant and poorly sorted quartz (SA 0.2-0.5mm), iron-rich inclusions (c 1.0mm, but ranging 0.1-2.0mm), sparse limestone (SA <0.5mm) and rare white mica. Thin section reveals a calcareous clay, with numerous opaques and some clay pellets. Large clay pellets, sometimes silty, are more prominent on the interior surface (<4.0mm) and may have served as trituration grits.

Forms

Fig 59, No 327

This wall-sided mortarium has an internally beaded lip and a rounded body wall (WAL).

MORT-2669

Dating

Two vessels are known in this fabric, from Neronian contexts, and quantified sherds account for <1% by weight of all oxidized wares during the late Neronian-early Flavian period.

*Fabric and technology

A fine, slightly sandy fabric with discoloured surfaces. The fabric may be allied with NFSE (Section 4.8).

A soft fabric, which is rough to the touch, varying in colour from light grey (10YR 7/2) to white (10YR 8/2) with darker, more discoloured surfaces ranging from grey (2.5YR 5/0) to white (2.5Y 8/2). The finely irregular fracture reveals a calcareous matrix of abundant discoloured (grey/black) limestone (SA <0.30mm, but occasionally <0.7mm) with inclusions of sparse to moderate grey or milky quartz (R, SA 0.2-0.5mm) and red and black iron-rich fragments (I 0.2-1.0mm, or occasionally <1.5mm). Rare white mica (0.1-0.3mm) is present, but is more noticeable on the surface. There are no obvious trituration grits.

Forms

Fig 59, No 328

A wall-sided mortarium (WAL) with a thick, beaded lip, slightly undercut both inside and out. The lower wall is hooked but, as the vessel is rather crudely made, the detail of this form is likely to vary.

5. Reduced wares

5.1 Highgate Wood wares

These wares are the only locally produced types for which there is kiln evidence. Located at Highgate Wood, approximately 10km from the City, ten kilns and some associated features in two nearby areas were investigated in the late 1960s and early 1970s (Brown & Sheldon 1969a, 1969b, 1970, 1971, 1974). The pottery sequence and types have been extensively discussed by Tyers (1977), Davies (1983), and Davies and Tyers (1983a).

Four pottery phases associated with three major fabric types have been identified at the kiln site, with some overlap in their production. Transitional fabrics have also been identified and are described in detail with HWC below. Within this sequence, the development from handmade native pottery to wheelmade Romanized wares can be seen (Brown & Sheldon 1974, 224). Phase I is represented by a chaff and grog-tempered ware (Highgate Wood A, HWA) and a grog-tempered fabric (Highgate Wood B, HWB), both handmade and in a 'Belgic-derived' tradition and dated c 50–60. Recent excavations at Pinner's Hall (GWS89) have revealed the first sherd of HWA from City deposits. Phase II (c 70–100) is exemplified by HWB, a predominantly 1st century fabric. Finally, a Romanized, wheelmade sandy grey ware (Highgate Wood C, HWC) was produced from c 70–160, although production was not devoted exclusively to HWC until c 80–100 onwards. During this phase, firing technology seems to have changed from simple kiln ditches to updraught kilns. HWC spans Phases III (c 100–40) and IV (c 140–60) at the kiln site, with different forms produced for each phase. HWB was a major supplier to London, and was the precursor of the later 1st and 2nd century grey ware industry (HWC). A range of Highgate Wood wares is illustrated on Plate 2.

The HWB assemblage demonstrates the continuity of essentially pre-Roman traditions of manufacture and style into the post-conquest period. However, it includes increasing numbers of vessels, such as cups and platters, dictated by the requirements of Roman cuisine and taste, including red-slipped vessels (HWBR) imitating finer Continental wares. The ability of the industry to adapt to new tastes and market needs is also apparent by the change in the HWC form repertoire through time, including reeded-rim bowls similar to those produced at Verulamium and copies of samian and black-burnished ware types.

Although a good relative sequence was established from the kiln sites, the City is important in providing external dating evidence, which corroborates some of the general trends apparent from the kiln site. All

types which are quantitatively important at the kiln site are represented in London and *vice versa*. The majority of forms can be paralleled at the kilns, but rare divergent ones (eg Fig 69, 406; Fig 70, 412; Fig 72, 448, 450) are also present. They can be included with the Highgate material on the basis of tradition and fabric, although they presumably derive from unknown kilns.

Highgate Wood B ware (HWB)

Dating

Fig 60

HWB, predominantly 1st century, is the most abundant coarse ware in pre-Boudiccan contexts, declining rapidly in importance after c 100.

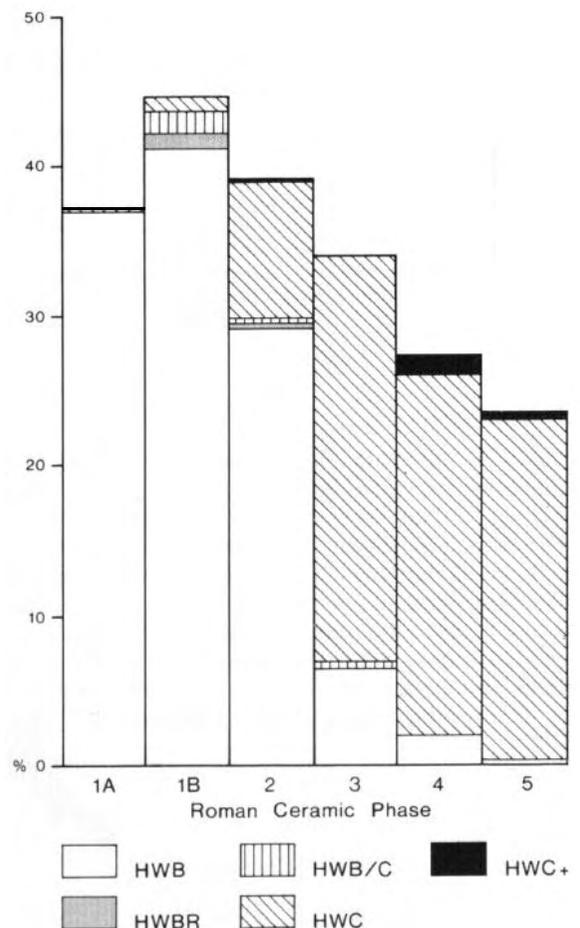


Fig 60 Stacked bar graph of Highgate Wood fabrics as a percentage of all reduced wares by weight

*Fabric and technology

P1 5s

A reduced, grog-tempered fabric, also containing moderate quantities of organic inclusions. The early HWB products are substantially handmade, often featuring finger marks on the interior, especially towards the base (Fig 61, 329). Many vessels are burnished, smoothed or trimmed near the rim and jars are also finished near the base (see 329), but vessels are otherwise unfinished. Later products, particularly the bowls, appear to be either entirely made or finished on a slow wheel.

The fabric is somewhat lumpy and soapy in texture, hard with an irregular fracture. It is abundantly tempered with buff, orange, grey, red or brown grog (0.2-2.0mm, or occasionally larger) and organic fragments (F <1.0mm). Surface colour varies from light to dark grey or grey-brown (2.5Y 6/0-4/0; 2.5Y 5/2-4/2), and is frequently mottled. The core is often light grey (2.5Y 6/0). Occasional fine silt, larger quartz, limestone and white mica are also present. Mica is most prominent on burnished or wiped surfaces.

The absolute quantities of inclusions and the quality of firing vary considerably from one vessel to another, ranging from hard and brittle to soft and crumbly. Examples from the kiln site are often orange or orange-brown and this may have resulted from inadequate firing since the same colours do not appear on material from the City.

Forms

HWB comprises a fairly restricted range of jars, bowls/dishes and lids, including some Romanized forms.

Jars Figs 61-4, Nos 329-62 Bead-rim jars (IIA, 329-46) were the most common HWB type from the pre-Boudiccan period, and were especially important in the late Neronian and Flavian. Generally, they have an upturned, rounded rim which is burnished externally. Rim variants include more angular ones (336), which may be undercut or thickened internally, but differences do not appear to be chronologically significant. Undecorated vessels are most common, but examples with grooves or cordons (340-2) and complex burnishing (343-6) are also present.

Storage jars with rolled rims (SJ, 352-9) form a consistent part of the HWB assemblage throughout the 1st century, and come in two size ranges (cf 352-6 with 357-9). Some have burnished decoration on the shoulder, often in the form of grouped acute lattice (354-6) or, more rarely, with incised wavy lines on the neck (359). A less common and smaller storage jar (360-2), with a narrow neck and slightly everted rim, occasionally features burnished lattice on the shoulder (360). The grouped lattice is not paralleled at the kiln site and could represent another centre, possibly in Hertfordshire where the style is quite common (P Tyers, pers comm).

The majority of HWB necked jars (NJ, 349-51) have slightly beaded rims and round-bodied walls, sometimes with rather elaborate combinations of cordons and grooves (351). Rare examples of the necked, round-bodied IIB (347-8) are also present. HWB necked jars are rare, in contrast with HWC

where they are the dominant vessel form; although they occurred throughout the main period of production, they were most common in the late Neronian and Flavian periods.

Bowls and dishes Figs 64-6, Nos 363-86 HWB bowls, like those in other fabrics, became more common towards the end of the 1st century, with most occurring during the late Neronian and Flavian periods. The most common type is the round-bodied IVF (363-79), which also occurs in HWC. Rims are either rounded (eg 365), flat (366), upturned (372), or very rarely undercut (367). As yet, there is insufficient data to attach any chronological significance to the variations. The rims can be sub-divided into three broad groups according to the number of grooves on top: those without grooves; single groove; multiple grooves. The single-grooved variety (eg 363) is perhaps most frequent, the plainer types (eg 365) less so. Sherds with burnished decoration are occasionally noted (373-8). A tripod variant of IVF (379) can rarely be identified, as rims and body sherds are identical to examples without feet.

Shallow bowls or dishes form only a small part of the HWB assemblage, but many have a slight lid seating (380-4). These dishes are reminiscent of the plain-rim NJ and the rim is similar to 'orlo bifido' ones, probably imitating Pompeian Red ware. Another, with burnished interior (386), has a bead rim. A final illustrated example is a bowl or dish with a heavy, square rim, decorated with vertical burnishing (385). Finally, some forms represented by body sherds (not illustrated) imitate Gallo-Belgic or samian prototypes, similar to Cam 212-15.

Other forms Fig 66, Nos 387-9 Like bowls, lids were most common in the late Neronian and Flavian periods. Their use together is supported by similar rim diameters for the kiln material (Davies & Tyers 1983a, 13). Lids with flaring (388) and domed (387) profiles appear to be equally common, whereas the flatter 389 is a rare variant.

Highgate Wood Red-slipped ware (HWBR)

This sub-group of the standard HWB fabric, with a burnished red slip, appears at both the kiln site and in the City.

Dating

Fig 60

At the kiln site, red-slipped wares are found in a number of secure Phase II contexts (c 70-100). In the City the sparse fabric was most common in the late Neronian-early Flavian period, and continued to be diagnostic in reduced quantities throughout the Flavian period. One rare example (Fig 66, 395) occurs in the transitional HWB/C fabric.

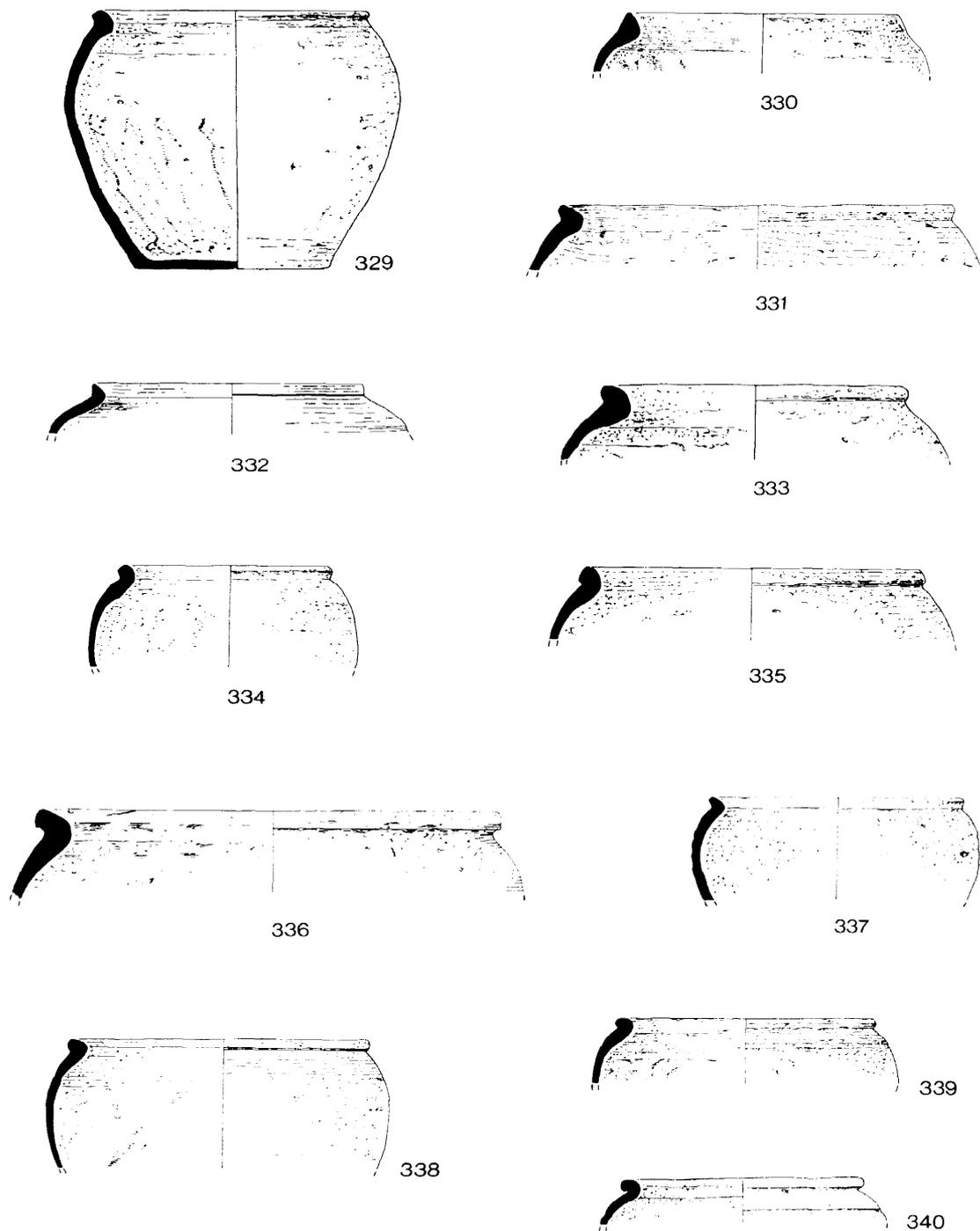


Fig 61 Highgate Wood B ware, jars, nos 329-40 (Scale 1:4)

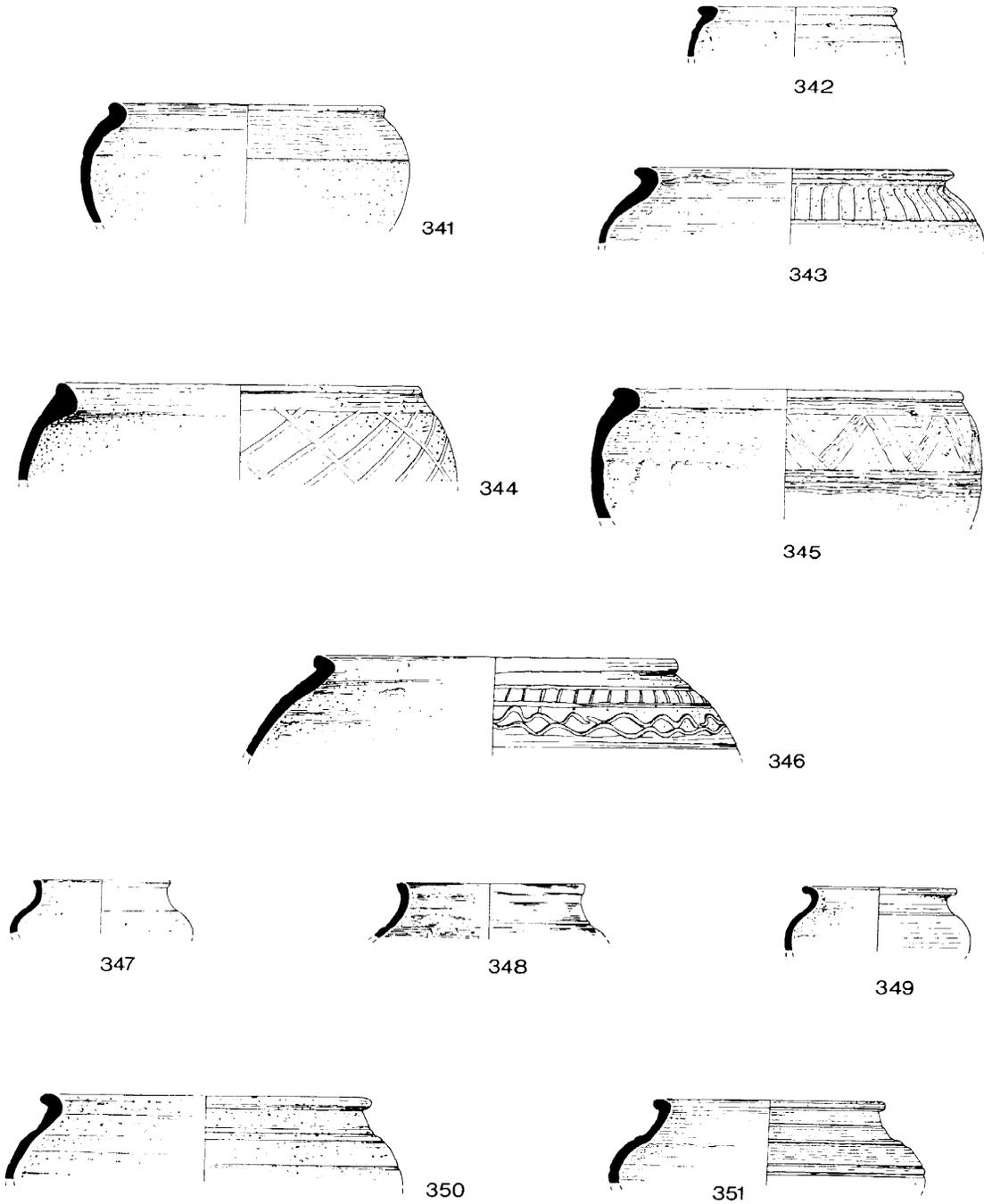
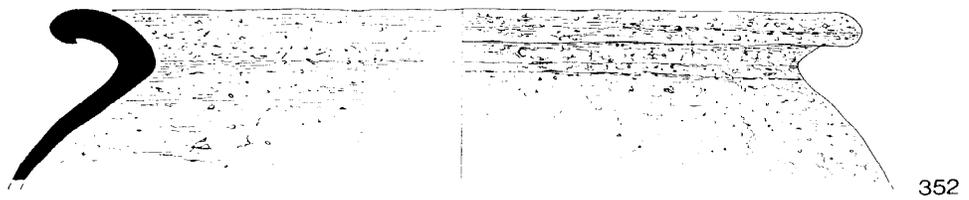
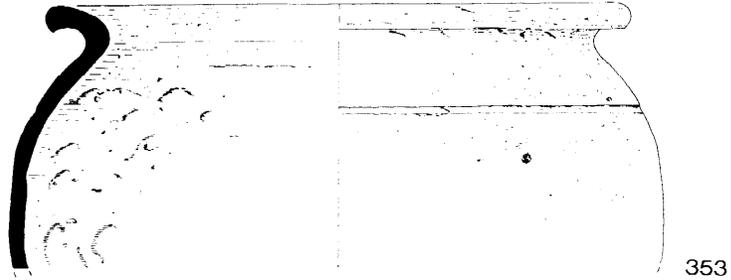


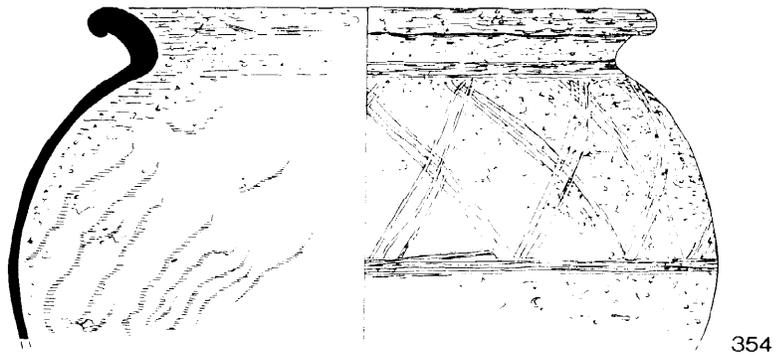
Fig 62 Highgate Wood B ware, jars, nos 341-51 (Scale 1:4)



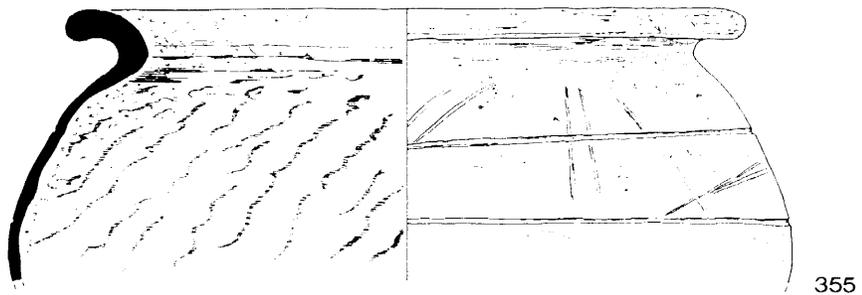
352



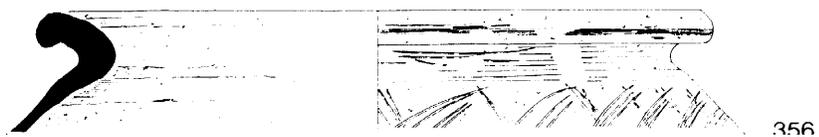
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354



355



356

Fig 63 Highgate Wood B ware, jars, nos 352-6 (Scale 1:4)

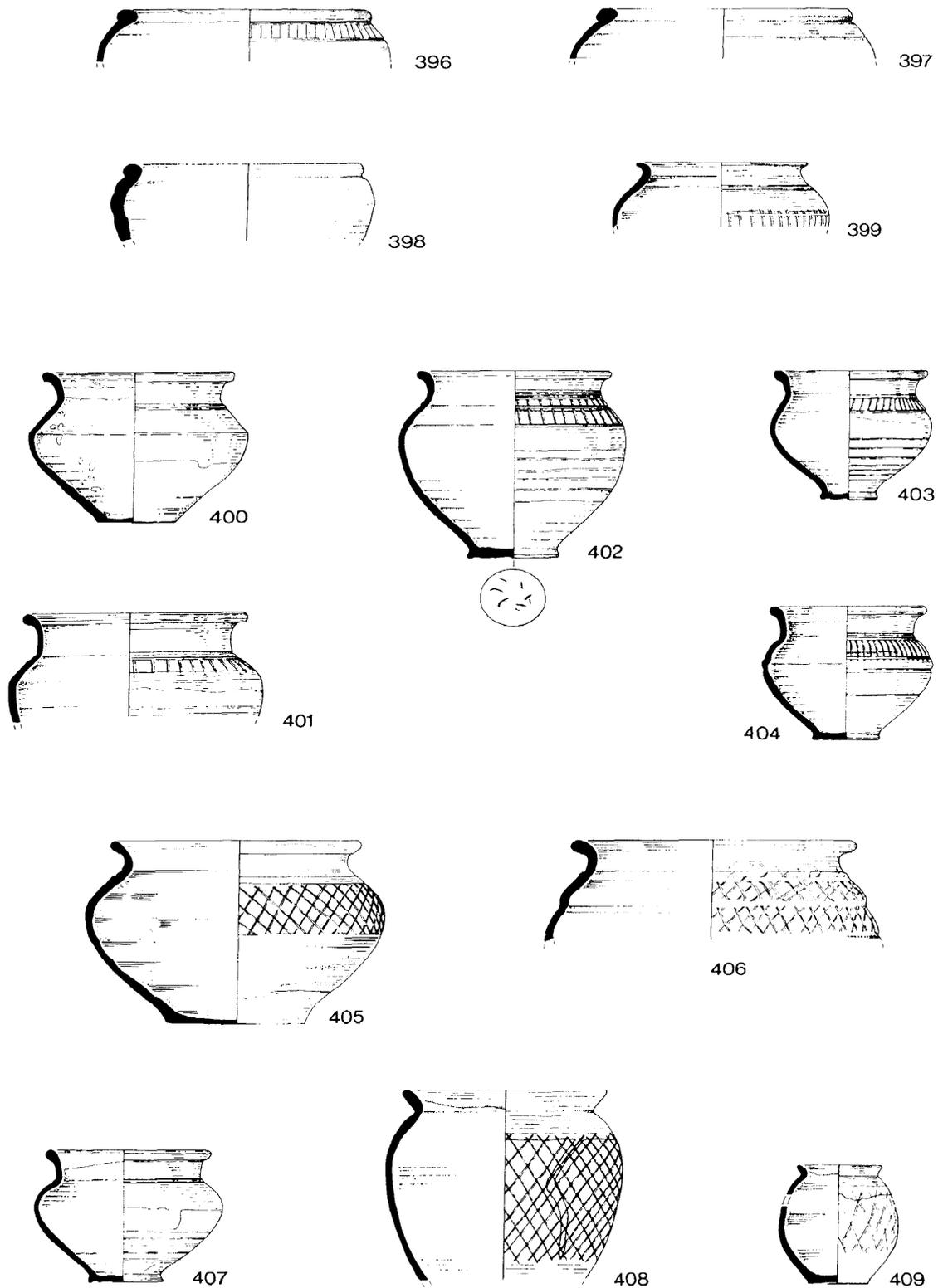


Fig 69 Highgate Wood C ware and variants, jars, nos 396-09 (Scale 1:4)

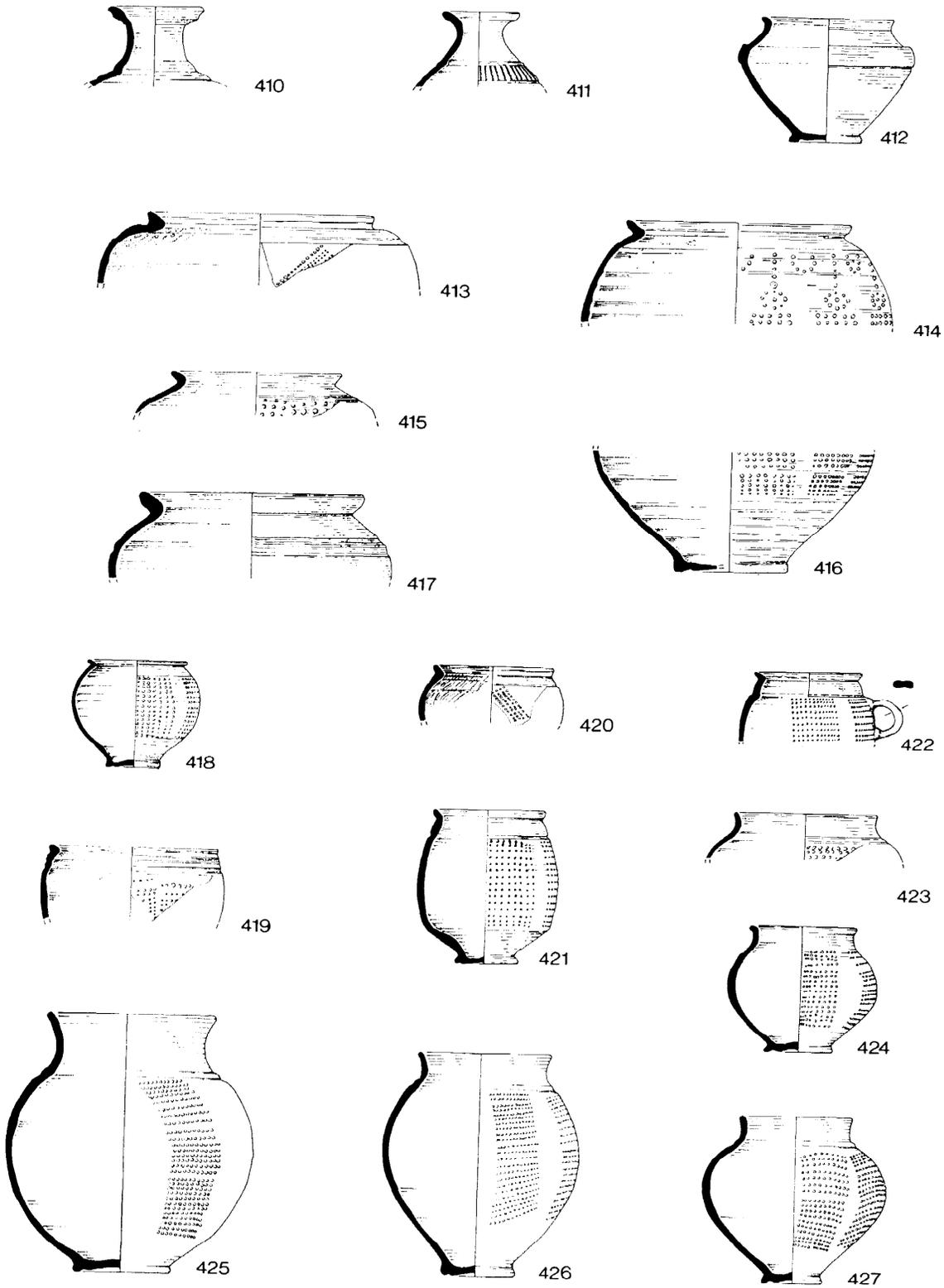


Fig 70 Higggate Wood C ware and variants, jars, nos 410-12; beakers, nos 413-27 (Scale 1:4)

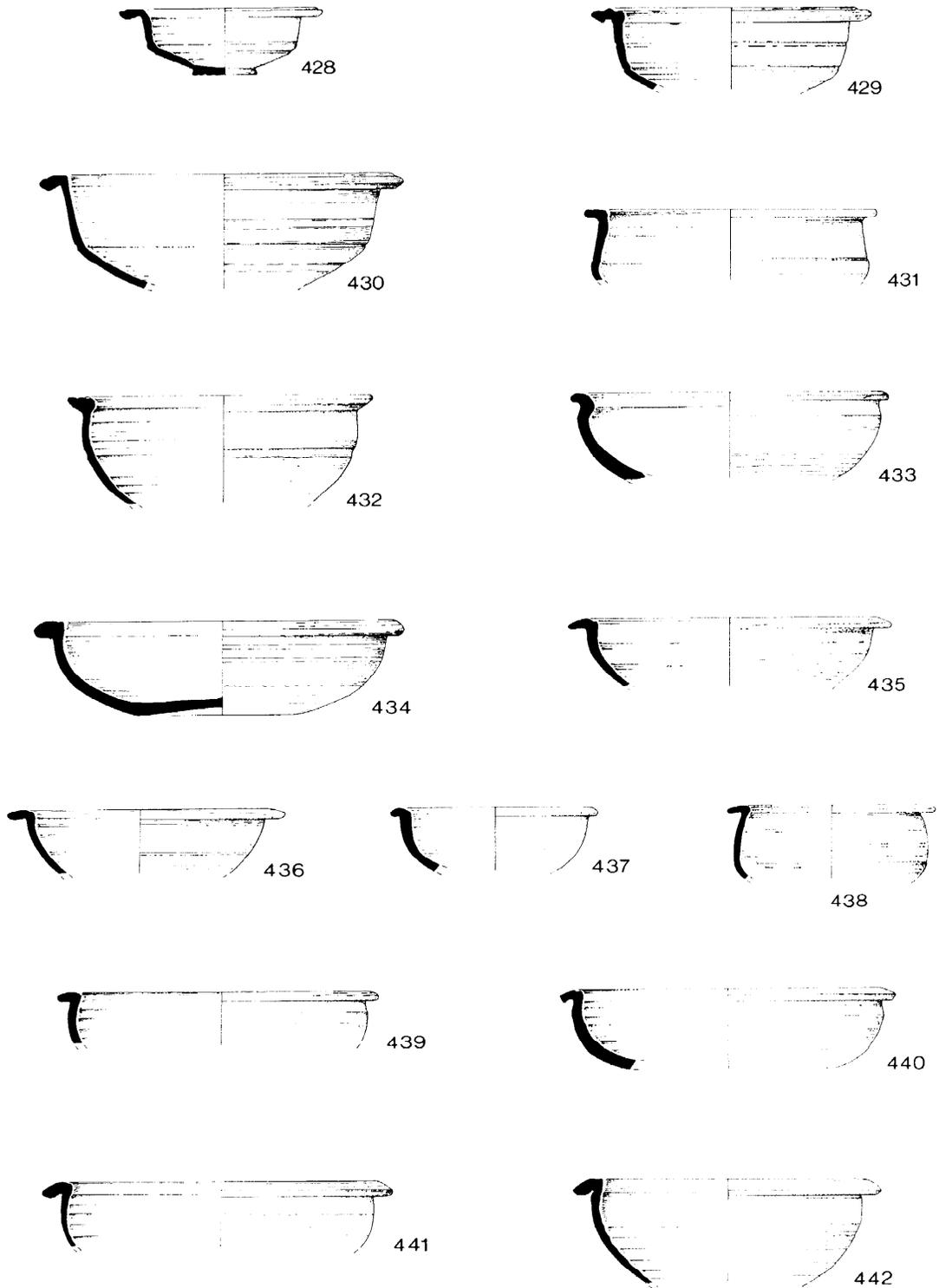


Fig 71 Highgate Wood C ware and variants, bowls/dishes, nos 428-42 (Scale 1:4)

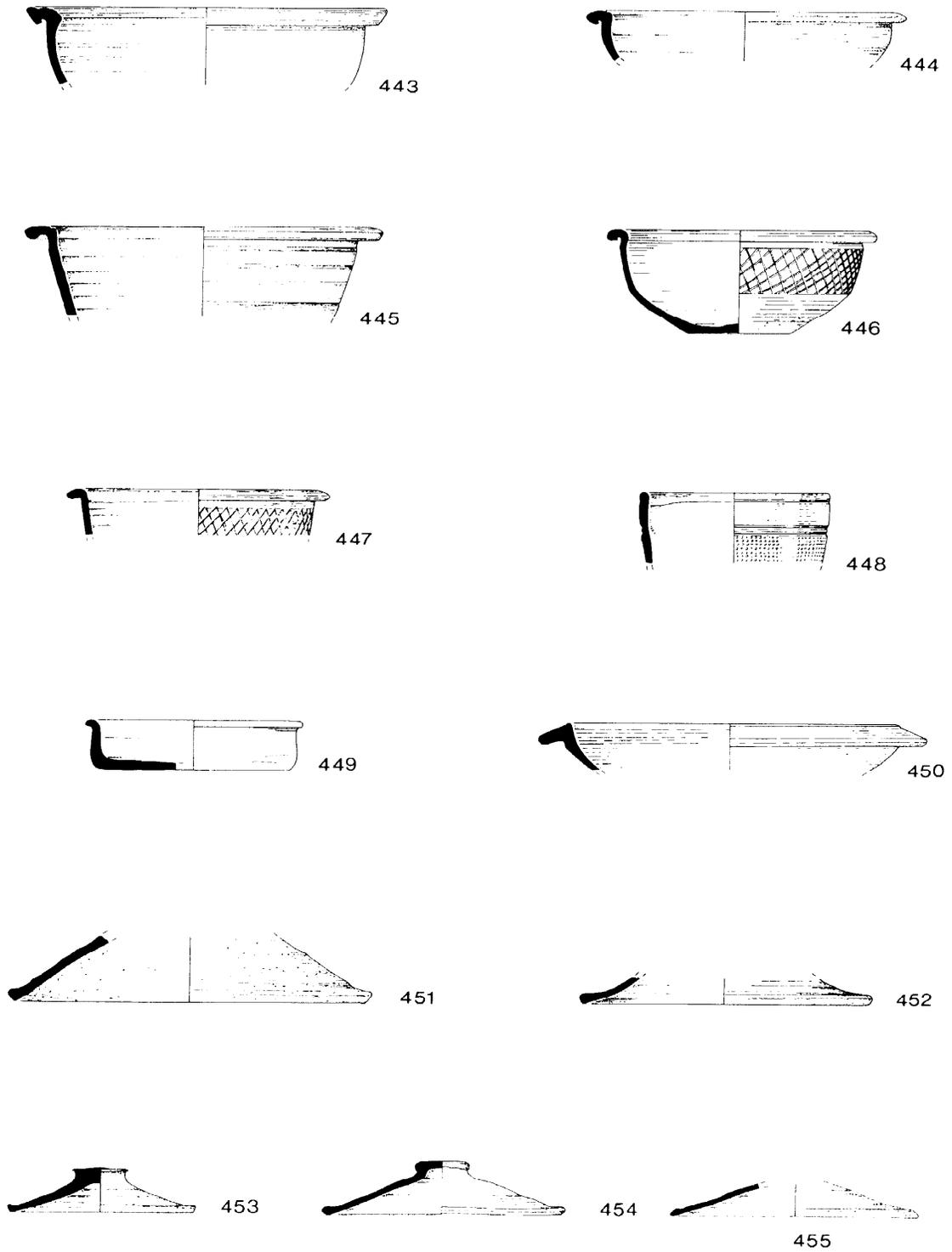


Fig 72 Highgate Wood C ware and variants, bowls/dishes, nos 443-50; other forms, nos 451-5 (Scale 1:4)

diamond shaped and more complex ring-and-dot patterns are restricted to HWC-1403 (413-14, 420). The majority of complete vessels have a characteristic base with a single concentric groove; 416 may well belong to a IIIB.

Bowls and dishes Figs 71-2, Nos 428-50 HWC bowls became common from the Flavian period and were thereafter important, with the greatest number occurring in Trajanic and early Hadrianic levels. There was a gradual decline towards the mid 2nd century when they were superseded by black-burnished wares.

HWC bowls fall into two main groups, the most common being round-bodied IVFs (433-46), which may be either shallow (eg 441) or deep (eg 442). Like their HWB counterparts, the rims are both plain and grooved. Shapes range between flat and rounded, although they are more likely to have down-bent (eg 441), hooked (eg 443) or folded (eg 434) rims. They are generally undecorated, but occasionally the body is grooved (eg 438) like HWB, or burnished, with acute lattice decoration (446). Most are dispersed throughout the main phase of bowl production. As for the HWB IVFs, the data are too small to isolate chronological patterns in most cases: exceptions are 433, an early form in HWB/C fabric from a Flavian context; 447, a variant IVF/G copying black-burnished ware from an early Antonine context; 446, also with lattice decoration, from a Hadrianic context.

The second major group, although substantially smaller than the IVFs, is moulded-rim IVAs (428-32), a type more typical of the Verulamium industry. The HWC vessels occurred from the late Neronian period and peaked in the early Antonine. This corresponds with Verulamium trends, suggesting that the Highgate potters were influenced by, or competing with, the Verulamium products.

Some additional bowl types occur as single examples. These include two imitating samian forms: Rt 12 (450), Drag 30? (IVC?, 448) and a shallow bowl or dish with out-turned rim (449). Rare examples of the plain-rim IVJ also occur, but are not illustrated.

Other forms Fig 72, Nos 451-5 The ratio of lids to bowls is reasonably constant throughout the main phase of production and supports their intended use together. Lids in HWC differ only slightly from those made in HWB. Examples with an undercut rim (453, 455) are perhaps more common than plain or bead rims (452, 454). Number 451 is in HWB/C and has a square rim.

5.2 Cophthall Close Grey ware (CCGW)

Although there is no kiln evidence for the manufacture of this ware, the discovery of wasters (248 sherds) at Cophthall Close indicates that it was produced in or near the Walbrook Valley. The circumstances of this 1936 find and a full catalogue of the fabrics and types are found in Marsh and Tyers (1976). The type has also been identified from west Kent (Pollard 1988, 200).

Dating

Fig 73

The wasters were found in conjunction with mica-dusted and London wares, suggesting that the group dates from the late 1st to early 2nd century (Marsh & Tyers 1976, 237). Distribution of CCGW from other excavated sites supports this, with the highest concentration during the Trajanic period. The type has not, as yet, been identified from Southwark, although it occurs on numerous City sites in sparse quantities.

*Fabric and technology

Pls 5x-y

Marsh and Tyers (*ibid*) identified fine and coarse fabric variations among the Cophthall Close Grey wares. More detailed fabric analysis supports this, but as there appears to be no chronological or form distinction between the two variations, they are treated together here.

It is a light grey sandy ware, frequently burnished, with a wide range of variability.

A hard fabric which is normally light grey (7.5YR 6/0-5/0) in colour with pale grey (7.5YR 8/0) core. The fabric consists of a micaceous silty matrix, with varying quantities of larger quartz and some black iron-rich inclusions (SA, R <0.5mm). In the coarser variant the larger inclusions occur in moderate quantities; flint and quartzite can also be identified. The fine variant is smooth and has a finely irregular fracture; the coarse one is rough with a more irregular break.

Forms

Marsh and Tyers (*ibid*, figs 2-3) have illustrated the forms identified from Cophthall Close. Necked jars (NJ) with a distinctive footring and domed base profile are common, as are bowls with moulded rims and rounded bodies (IVA, IVF). Lids and beakers are rare. On recently excavated sites, bowls are the most typical form and therefore the illustrations here concentrate on them. The dating of the individual forms cannot be refined within the distribution of the ware as a whole.

Jars Fig 74, Nos 456-7 This includes a necked jar (NJ) with rounded body and a typical jar base.

Beakers Fig 74, No 458 A single beaker with sharply evened rim and girth groove is illustrated.

Bowls Fig 74, Nos 459-64 The two most common bowl types are moulded-rim IVAs (459-62) and round-bodied IVFs (463-4).

Other forms Fig 74, Nos 465-6 Lids include those with grooved (465) and plain up-turned (466) rims.

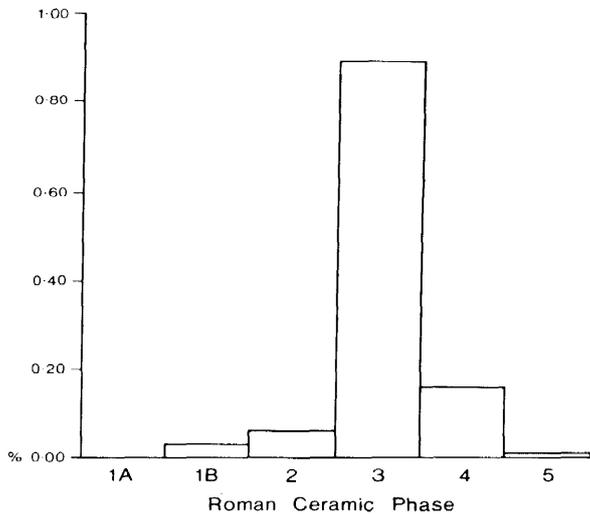


Fig 73 Bar graph of Copthall Close Grey ware as a percentage of all reduced wares by weight

5.3 Early Roman Micaceous Sandy ware (ERMS)

Local production is indicated by the fabric of this ware, as well as its restricted distribution. However, some of the platters are stamped by illiterate potters and Rigby (1978b, 127; 1984) notes that similar examples can be found in Sussex. The typical round-bodied jar form, with its distinctive vertical burnished decoration (IIB), is also closely paralleled by jars from Sussex sites such as Fishbourne (Cunliffe 1971, fig 103, form 181). This may provide evidence of some contact, perhaps the movement of potters, between the London area and Sussex in the mid 1st century. The type may also be present at Verulamium (Wilson 1984, fig 88, 2144).

Dating

Fig 75

The common fabric began in the pre-Boudiccan period and was most frequent in the late Neronian-early Flavian. It decreased in the Flavian, where it is still a chronological indicator, and thereafter declined.

*Fabric and technology

Pl 5z

A reduced fabric, with poorly sorted quartz. It has a distinctive black, micaceous surface and a reduced core. Vessels are frequently burnished and appear to be substantially handmade but finished and smoothed on a turntable.

This fabric is hard, usually feels fairly smooth and has a finely

irregular fracture. It has a light grey (7.5YR 7/0-8/0) or reddish-brown (2.5 YR 4/4; 2.5YR 5/6) core, light grey (2.5YR 8/0) or reddish-brown (10R 4/2) margins and black or grey (7.5YR 4/0-5/0) exterior surfaces. The main inclusions are moderate amounts of ill-sorted quartz (R, SA 0.1-0.5mm) in a very silty matrix, and white mica which is most visible on the surfaces. There are also moderate to sparse black/brown iron-rich inclusions (R 0.1-0.5mm) and very sparse burnt organics (<0.1mm), both of which are absent in some sherds.

Forms

A range of functional types occur, but only jars are typical, followed by plates.

Jars Fig 77, No 467 Necked jars are the most common type, particularly the plain-necked, round-bodied IIB decorated with burnished vertical lines, diagnostic throughout the main period of production.

Beakers Fig 77, No 468 A carinated beaker (IIIG) is present.

Bowls and dishes Fig 77, Nos 469-74; Fig 142, Nos 477-9 Most vessels in this category are shallow dishes or plates. Over half come from pre-Flavian deposits; they are still diagnostic in the Flavian but thereafter are not important. A plain-rim dish (IVJ, 469) with flat base and another with base ring and vertical burnished decoration (470) are present. Internally moulded plates (VA, 471-3) are common; 474 has similar characteristics but a flatter profile. These plates, and also cups, are loosely based on Gallo-Belgic prototypes. Some simple dishes have illiterate stamps placed centrally on the internal surface, and three are illustrated here. Numbers 477 and 478 are similar to ones found in Sussex (Rigby 1984). The final stamp (479), in a different style, is burnt and may not belong to the ERMS fabric group.

Cups Fig 77, No 475 This includes a conical cup (VIB) decorated with burnished vertical lines on the lower girth.

Other forms Fig 77, No 476 Lids are represented, and are generally Flavian in date. The illustrated example has a flat rim and deep convex profile.

5.4 Early Roman Sandy Iron-rich ware (ERSI)

Dating

Fig 76

Although the evidence is sparse, ERSI is most common in pre-Boudiccan levels and to a lesser extent in late Neronian-early Flavian ones, supporting an essentially pre-Flavian date for the fabric.

*Fabric and technology

Pl 5aa

A silty fabric with moderate iron-rich clay pellets and

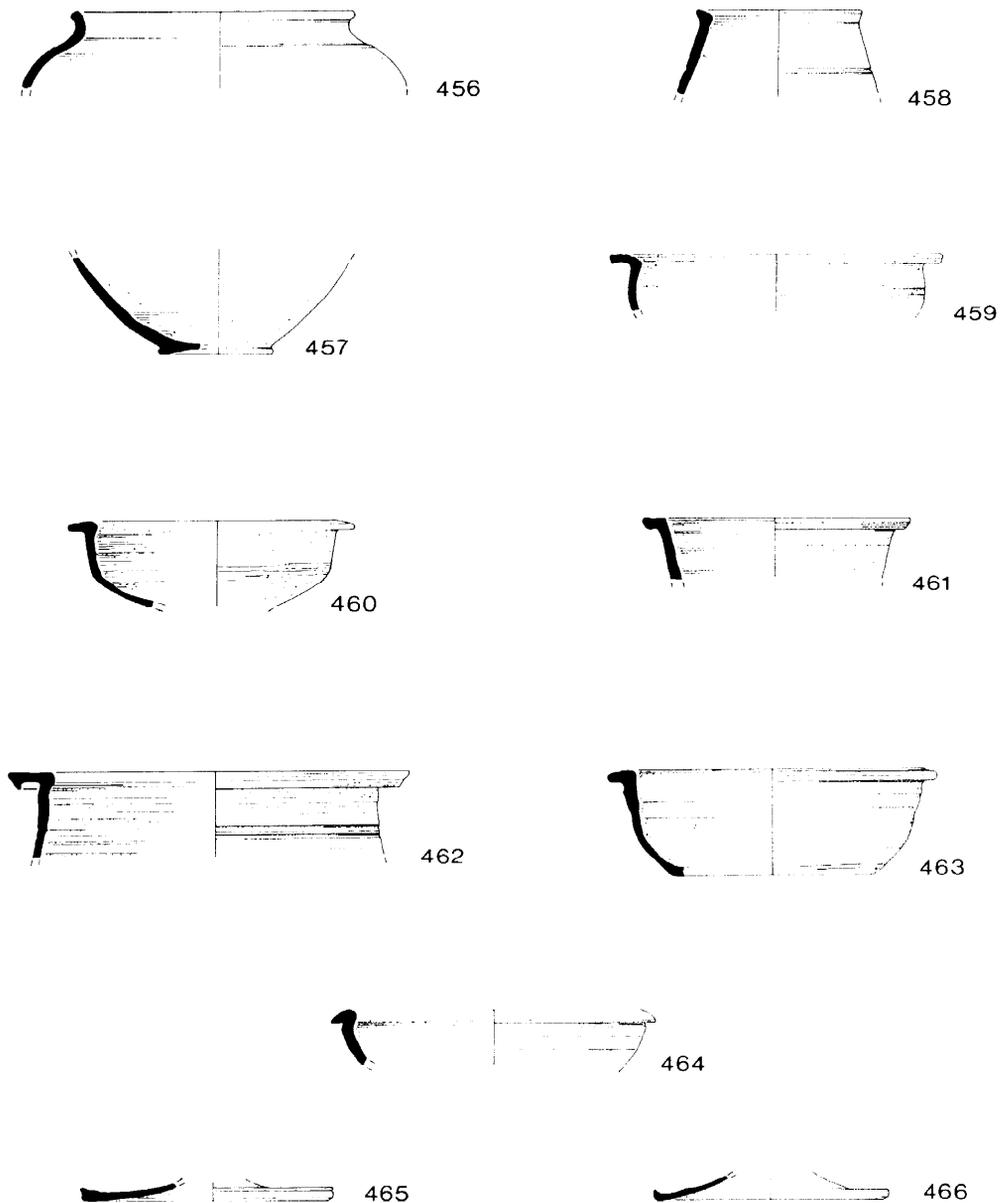


Fig 74 Copthall Close Grey ware, jars, nos 456-7; beakers, no 458; bowls/dishes, nos 459-64; other forms, nos 465-6 (Scale 1:4)

organic temper, characteristically 'heavy'. The vessels are handmade and the upper part of the outside is burnished; the walls are distinctively thick. Elsewhere the fabric has been published as Early Roman Sand and Grog ware (ERGS, Milne 1992).

A dense, heavy fabric which feels fairly rough and has an irregular fracture. It is greyish-brown (10YR 9/2) with orange-red (2.5YR 6/6) margins, a dark grey (2.5yR 5/0) exterior and a lighter grey

(2.5YR 6/0) interior surface. The matrix is silty and the main inclusions are moderate to abundant black and red iron-rich clay pellets (1.0mm, occasionally 2.0mm) and moderate amounts of poorly sorted quartz (SA 0.2-0.5mm) and organic inclusions (I <0.7mm, occasionally <2.0mm).

Forms

The repertoire includes rare lids and bowls, but only the more common jars are illustrated here.

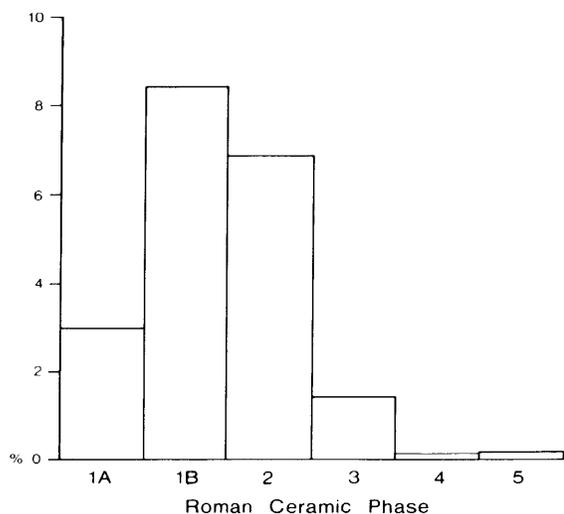


Fig 75 Bar graph of Early Roman Micaceous Sandy ware as a percentage of all reduced wares by weight

Jars Fig 77, Nos 480-2 These are normally bead-rim types (IIA), frequently with a burnished zone beneath the rim and a shoulder groove. When grooves occur both beneath the rim and on the shoulder, the area between them is burnished. Necked jars (not illustrated) are less frequent and there does not appear to be any chronological development between the two jar forms.

5.5 Early Roman Sandy wares (ERS)

This group is composed of four fabric variants associated with different technological features. A local source is suggested on the basis of its restricted distribution, with the only known parallels from Verulamium (Wilson 1984, fig 88, 2140-2).

Dating

Fig 78

ERS is common but it is difficult to date the sub-groups precisely. In general it is pre-Flavian to Trajanic and, as a group, was most common in the late Neronian-early Flavian period. There is some development from ERSA to ERSB; ERSA was more common in the pre-Boudiccan and late Neronian period, with ERSB dominating from the Flavian and continuing through the Trajanic. A sparse intermediate fabric, ERSA/B, was present from the earliest levels and most common during the late Neronian-early Flavian. A final variant, ERSS, is too rare to date.

*Fabric and technology

Pls 5ab-ad

This coarse sandy ware has been sub-divided into two

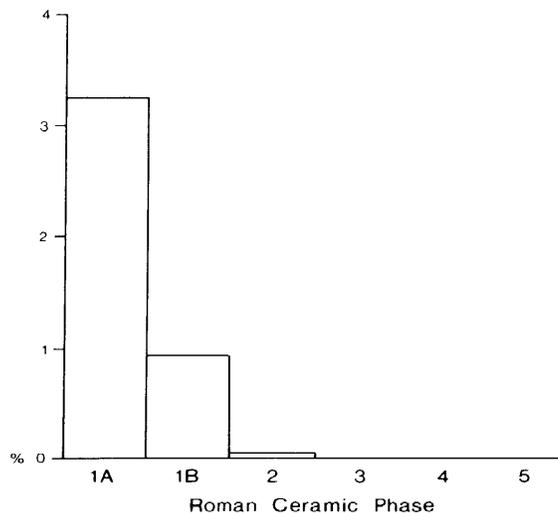


Fig 76 Bar graph of Early Roman Sandy Iron-rich ware as a percentage of all reduced wares by weight

major fabric divisions, based on the size and sorting of quartz and colour (ERSA, ERSB). A third, less common, type (ERSA/B) falls between the two. Finally, a distinctive but rare variant with calcareous (including shell) tempering can be identified (ERSS).

The industry exhibits certain technological changes through the mid-late 1st and early 2nd centuries. In the earliest sequences the clay is less well sorted and the exterior is fired black, perhaps in a bonfire, while the vessels are noticeably handmade and roughly wheel finished (ERSA). By the Flavian period, most vessels were fired to a light or medium dark grey and are almost entirely wheel turned (ERSB). ERSA/B represents a transition between the two techniques where the fabric and finish were evolving.

The fabrics are grey or black, hard (apart from ERSA which is slightly softer) with a harsh texture and an irregular fracture (fine in ERSB). Fine, well-sorted quartz grains (SA, A) are abundant but there is a distinctive scattering of larger, rounded grains (0.3-0.6mm) and sparse flint of various sizes. All other inclusions are sparse or sparse to moderate and include iron-rich clay pellets and opaques (R, SA, I 0.1-0.5mm, but <1.0-3.0mm in ERSA and ERSA/B respectively) and mica (0.1-0.2mm, <4.0mm in ERSA). The exterior surface is burnished.

ERSA (Pl 5ab) is the coarsest fabric of the group and the darkest in colour. It has a grey (10YR 5/1) core with a black (7.5YR 3/0) exterior margin and surface. The interior margin is light brown (10YR 7/2) and the surface is grey (7.5YR 5/0). Additional sparse inclusions of organics (F 0.2-2.5mm), clay pellets (0.8-2.5mm) and limestone (I 0.2-1.5mm) are present.

ERSB (Pl 5ac) is the finest variant, with more densely packed, well-sorted quartz. It is also the lightest in colour: the core is light grey (2.5YR 9/0) with a brownish-grey (5YR 7/1) exterior margin and surface and a grey (10YR 6/1) interior surface.

ERSA/B is transitional between ERSA and ERSB. It lacks the range of inclusions present in ERSA and is darker than ERSB; the quartz is less well sorted than other variants. The core is light grey

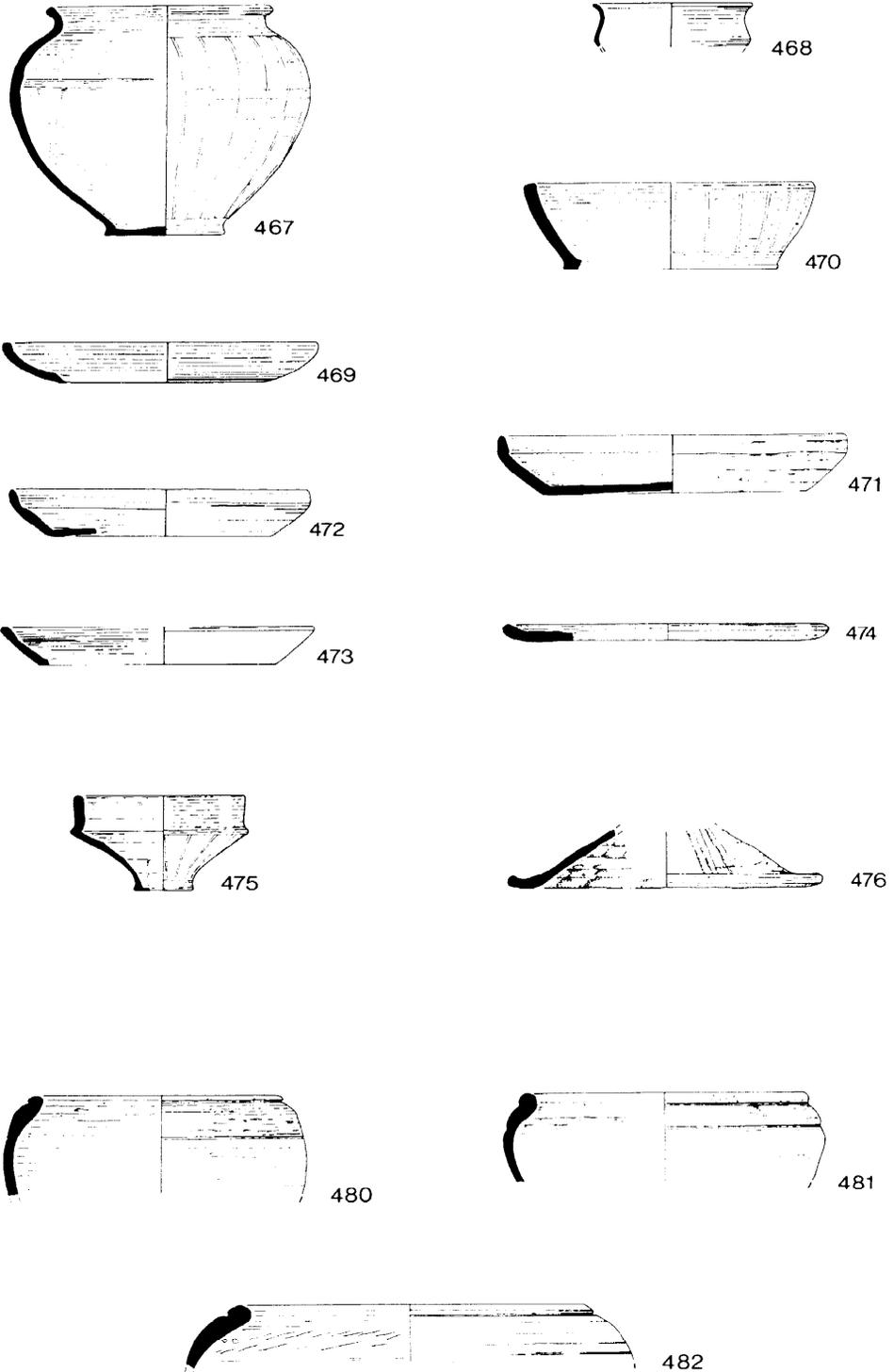


Fig 77 Early Roman Micaceous Sandy ware, jars, no 467; beakers, no 468; bowls/dishes, nos 469-74; cups, no 475; other forms, no 476. Early Roman Sandy Iron-rich ware, jars, nos 480-2 (Scale 1:4)

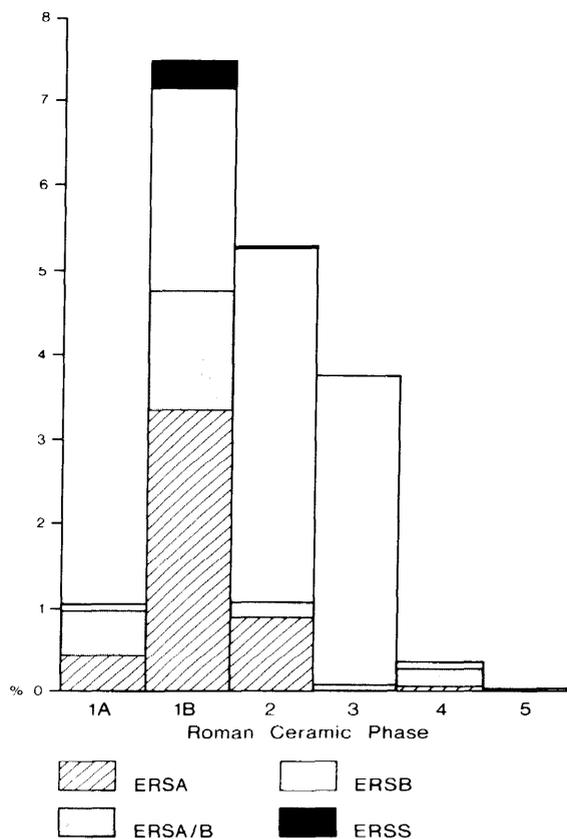


Fig 78 Stacked bar graph of Early Roman Sandy wares as a percentage of all reduced wares by weight

(1 OYR 7/1) to greyish-brown (10YR 5/2) with very dark brown (10YR 3/1) margins and exterior surface and a grey (2.5YR 3/0) interior surface.

ERSS (Pl 5ad) is a calcareous variant of the ERS range and in texture most resembles ERSA. The core is greyish-brown (5YR 6/1) with dark brown (10R 4/1) margins and very dark grey (2.5YR 3/0) surfaces. Calcareous inclusions are sparse to moderate (0.2-0.8mm), including fossiliferous limestone, fine-grained limestone and rare shell. As in ERSA there is a sparse quantity of organics (F 0.3-2.0mm).

Forms

Jars are the most common form, followed by bowls and lids. Most of the forms occur in each fabric variant.

Jars Fig 79; Figs 80-1, Nos 483-523 Necked jars (NJ) occur in all fabric variants, although they are most common in ERSB. They are similar, but not identical, to IIDs and IIEs with thickened and 'figure-7' rims. Found from the late Neronian to the end of the sequence, they were most common during the Flavian-Trajanic period. Most of the necked jars (499-512) are distinguished by having a rounded body with either a cordon or grooves at the join

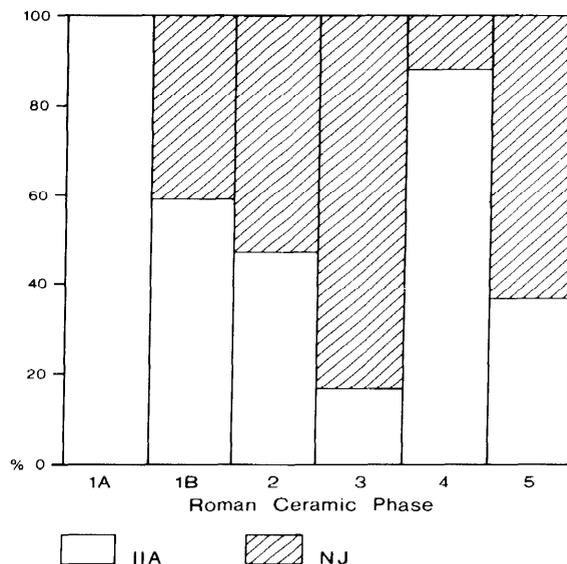


Fig 79 Stacked bar graph of Early Roman Sandy wares jar forms by Eves

between the neck and shoulder, and many also have a groove on the girth (eg 501). Rims vary considerably, but are distinctive and include bead (eg 507), internally grooved (eg 508), 'figure-7' (eg 502) and slightly out-turned (eg 504) examples. Although most are undecorated, rare examples show chevron and diagonal burnishing with the IIAs (501-2). Number 500 in ERSS is similar, although due to its carinated shoulder belongs more precisely to the IIC category. Another necked jar (5 12) in ERSB has straight walls, with a girth cordon, rather than the more usual rounded profile. Finally, an unusual, neckless jar with a sharply evened rim (5 13) also occurs in ERSB.

Bead-rim (IIA, 483-98) jars were first found in the pre-Boudiccan period, but are still diagnostic in ERSB during the Flavian-Trajanic period. Examples are also present in ERSA, ERSA/B and ERSS. The rim is frequently undercut (eg IIA15, 484) and bases are distinctively heavy and thick. Decoration differs somewhat between the various fabrics, but is cohesive for ERS in general. Burnished decoration on the shoulder, sometimes extending down the body and occasionally enclosed between grooves or cordons, is common (eg 486). Burnishing may be diagonal and horizontal lines, chevrons or lattice (eg 492). Although undecorated examples are known in all fabrics, the ERSS ones are consistently undecorated.

The relationship between necked and bead-rim jars is shown on Fig 79; among the unquantified data necked jars tend to predominate. The pattern on Fig 79 is distorted from the Hadrianic period onwards, where the necked jars are residual.

Bowls and dishes Fig 82, Nos 514-24 Bowls occurred from the late Neronian period, continuing throughout

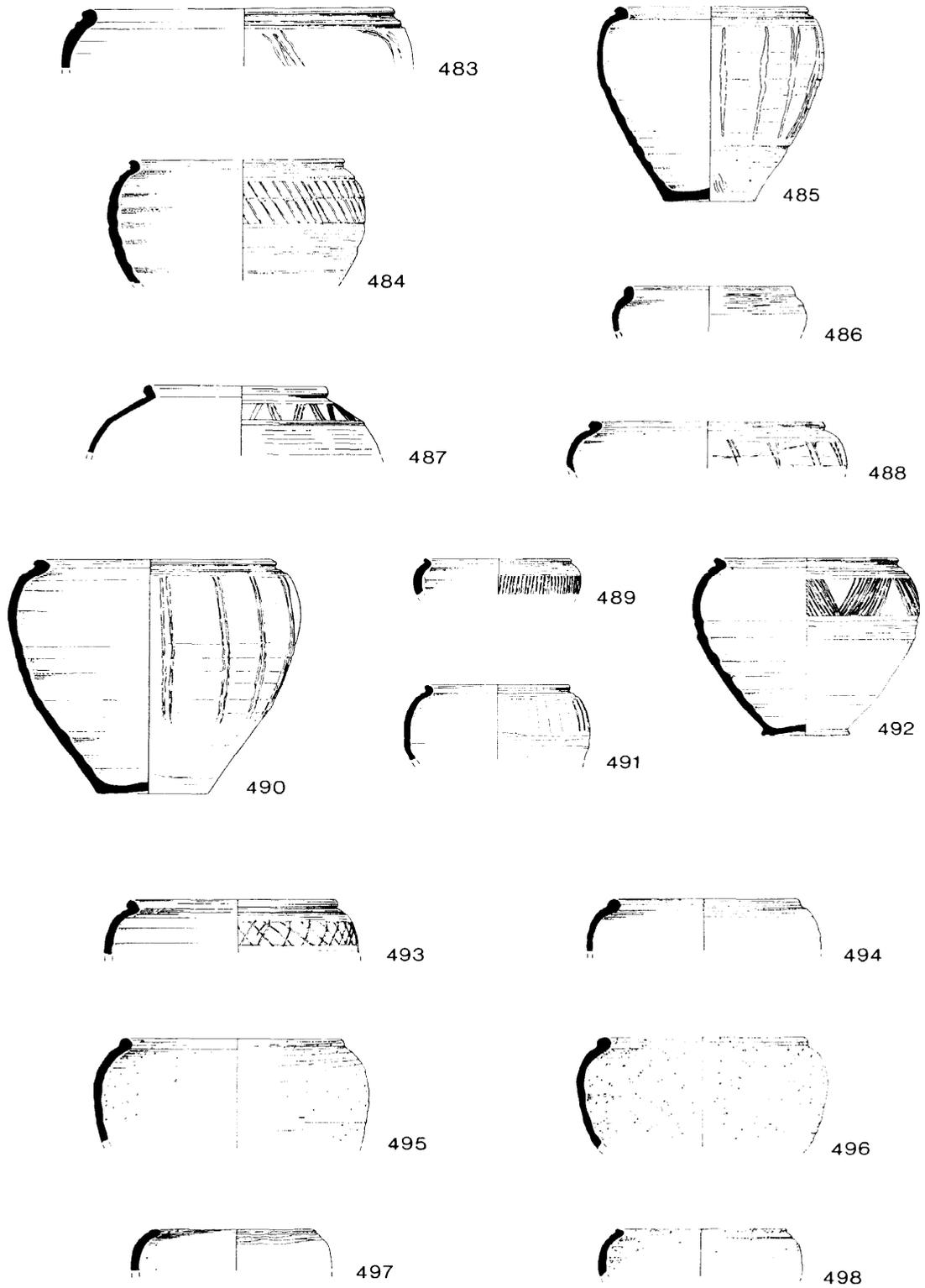


Fig 80 Early Roman Sandy wares, jars, nos 483-98 (Scale 1:4)

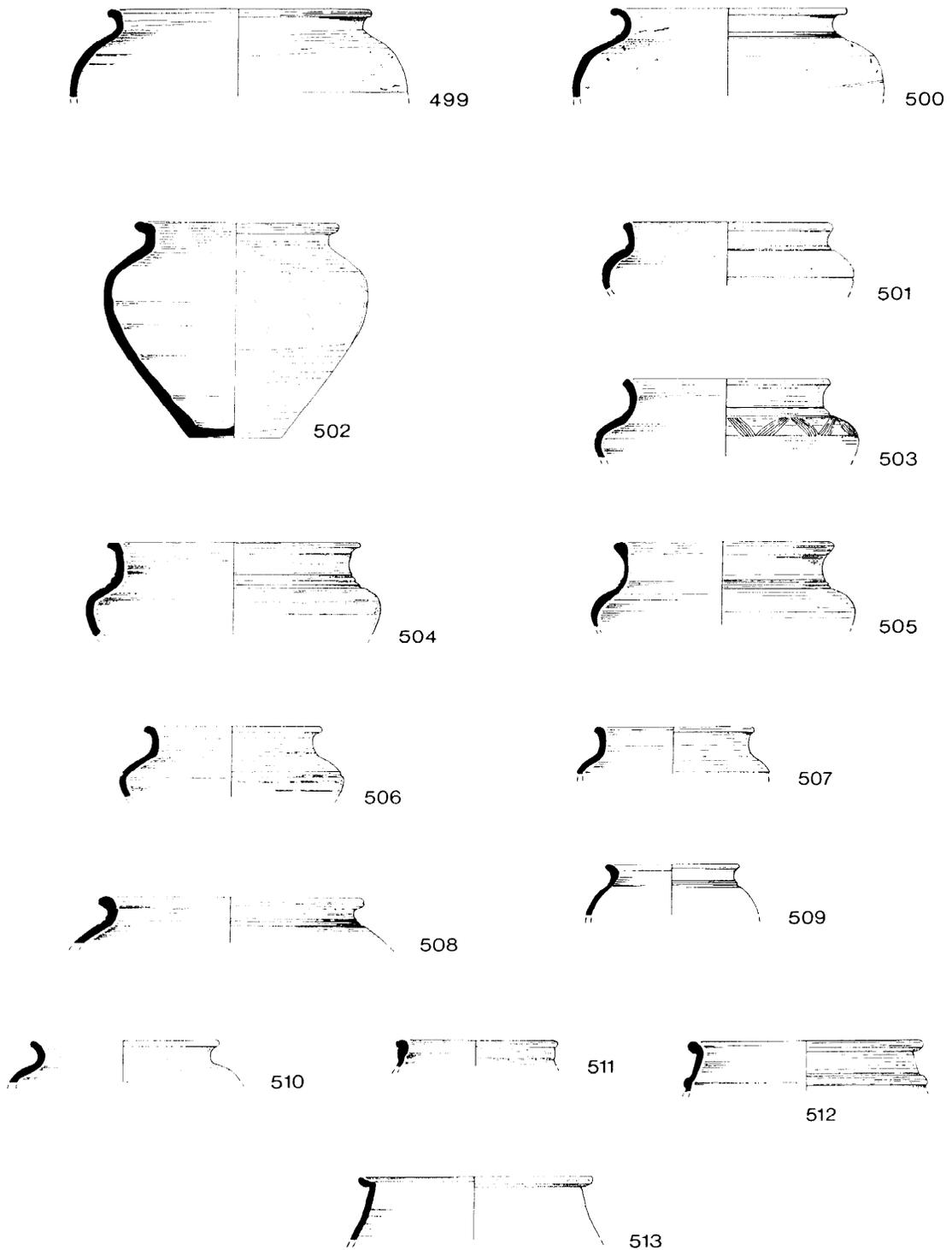


Fig 81 Early Roman Sandy wares, jars, nos 499-513 (Scale 1:4)

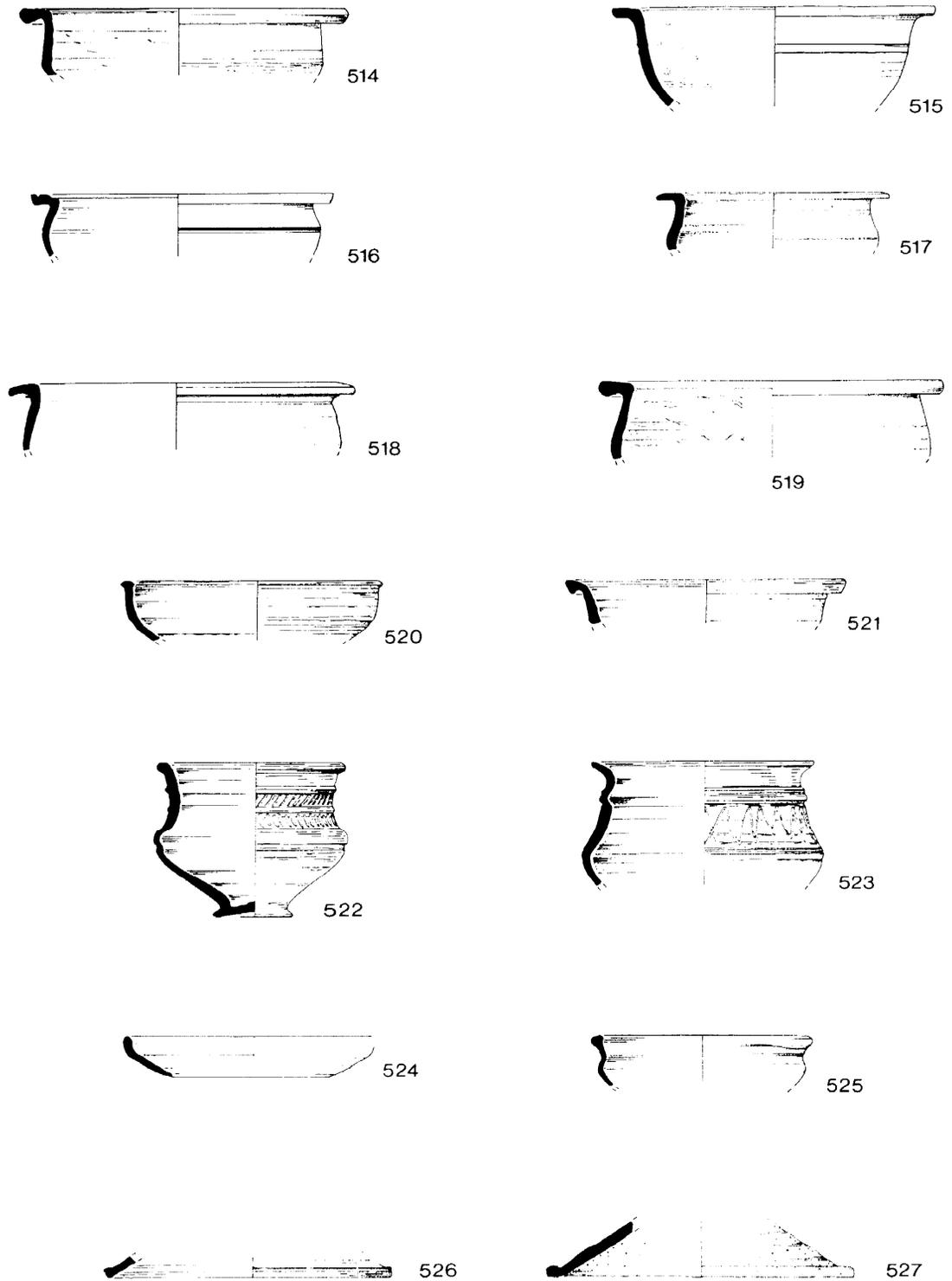


Fig 82 Early Roman Sandy wares, bowls/dishes, nos 514-24; cups, no 525; other forms, nos 526-7 (Scale 1:4)

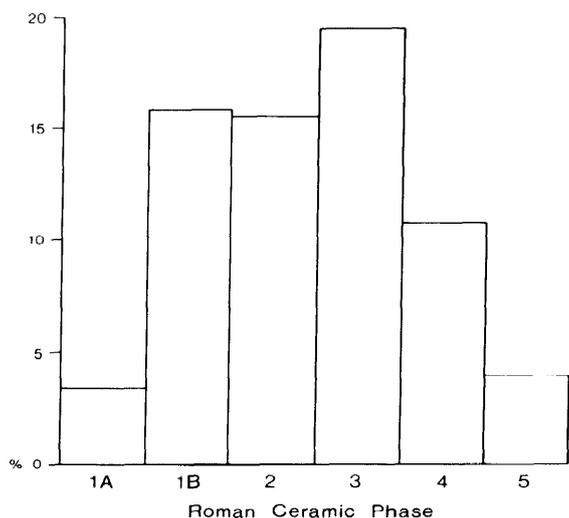


Fig 83 Bar graph of Alice Holt Surrey ware as a percentage of all reduced wares by weight

the Trajanic, but are not common enough to be firmly dated. Moulded-rim IVAs (514-16) and round-bodied IVFs (517-19) are both present; 520 is a IVF variant with a rounded rim.

Necked bowls (522-3) with pedestal bases are a very distinctive form in ERSB, and feature burnished decoration (both diagonal and wavy lines) enclosed between neck and shoulder cordons and girth grooves. An unusual necked bowl with over-turned rim (521) occurs in ERSA/B. Plates include VBs with external moulding in ERSB (524).

Cups Fig 82, No 525 A single vessel in ERSB may be an imitation of Drag 27 (VIA variant).

Other forms Fig 82, Nos 526-7 Lids are rare but have been identified. Number 526 in ERSB has a grooved rim; 527 in ERSS has a flat, grooved rim with an extant, high convex profile.

5.6 Alice Holt Surrey ware (AHSU)

The Alice Holt and Farnham potteries produced grey wares from the late 1st to the late 4th or even 5th century (Lyne & Jefferies 1979). They were an important supplier to the City, with the earlier fabric (referred to here as Alice Holt Surrey, AHSU) probably reaching London via the Thames (*ibid.*, 52). In London, the later fabric (outside the chronological framework of this corpus), is referred to as Alice Holt Farnham (AHFA).

AHSU is a unified stylistic tradition, produced by a number of separate kiln centres. As part of the peripheral distribution area, the City appears to have received a fairly restricted range of fabric variants in

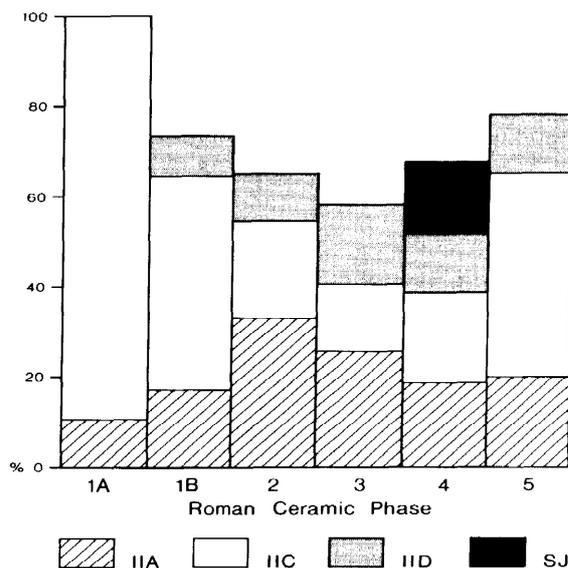


Fig 84 Stacked bar graph of the common Alice Holt Surrey ware jar forms as a percentage of all AHSU jars by Eves

contrast to the Roman villa at Beddington, nearer the production area (H Rees, pers comm). Most of the vessel types found here can be paralleled in Lyne and Jefferies (1979), with 551 (Fig 86) an exception. In other cases, rim variants within standard classes can be noted.

Dating

Fig 83

Although London was situated on the edge of the potential AHSU market, the fabric is abundant in City assemblages. It is present in small quantities from the earliest levels, but its greatest importance was in the late Neronian-Flavian, and particularly the Trajanic period. The storage jars, however, seem to be indicative of the Hadrianic period and later.

*Fabric and Technology

P1 5ae

A sandy grey ware with a light core and abundant well-sorted quartz. External surfaces are usually evenly burnished in zones, often producing a blue, metallic sheen; plain surfaces are distinctly granular. Open vessels such as bowls or plates are almost always burnished both internally and externally over the rim. A number of the jars and bowls are trimmed towards the base and some types are both coil and wheelmade (Fig 86, 545).

AHSU is generally light grey in colour (2.5YR 5/0-6/0) with distinctly darker margins and surfaces (2.5YR 2/0-3/0), although occasionally darker grey throughout. It is characterized by moderate quantities of well-sorted quartz inclusions (SA, SR 0.1-0.5mm),

occasionally brown and probably coated in haematite, set in a clean, slightly silty clay matrix. Although the kilns were located on the greensand, it apparently lacks glauconite. It is hard and rough to the touch, often rather brittle and irregular in fracture. Fine white mica (<0.5mm) is visible in the surfaces, and occasional flint can be identified. A rare, coarse version (1628) with moderate larger quartz measuring to 1.0mm, or occasionally 1.5mm, seems to be confined to large bead-rim storage jars (IIA, Fig 85, 538-9).

Forms

Although the complete range of vessel classes is found in the City, forms are generally confined to standard types.

Flagons Fig 85, No 528 Flagons are rare in the City, and the only example illustrated is a variant of a two-handled IE with a grooved, thickened rim.

Jars Fig 84; Figs 85-6, Nos 529-54 Jars are the most common form found and can be divided into bead-rim (IIA), necked types (IIC, IID) and storage jars (SJ). The relationship between them is shown on Fig 84, where small sample size distorts the figures for pre-Boudiccan, Hadrianic and early Antonine deposits.

Many AHSU IIAs (529-39) are distinguished by their high rounded shoulder with some form of shoulder delineation, either a groove (eg 531), carination (eg 536) or burnishing (eg 530). The bead is usually rounded and well formed (eg 534) although some have a flattened outer face (eg 536) and the vessels occur in several sizes. Large bead-rim storage jars in the coarse fabric variant (538-9) are rare. Although relatively common throughout the sequence, bead-rim jars are normally less frequent than necked ones. In contrast to the Highgate industry, there is no chronological development between the two types and their dating corresponds with that for the industry as a whole.

Overall, necked jars are the most common vessel type within the AHSTJ group and they occur in considerable quantities throughout the sequence. They fall into two main groups: the carinated IIC (540-3) and the IID with decorated shoulder (544-6). Both types generally have a footring base, frequently with a single groove on the underside, and are normally distinguished by a 'figure-7 rim, although there are exceptions (eg 542). A notable but rare example is 545 from the Reserve Collection, which features a pronounced groove on the lip. This same vessel has a zone of burnished wavy-line decoration on the lower body wall, which is knife-trimmed - a feature that can be identified on other examples. Five complete IID vessels from the Reserve Collection were examined and clearly their lower half was coil made and then pressed to join a wheelmade upper portion; hence the finger marks on the inside of 545. The two available complete examples of IICs appear to have been made in the same way. IICs were present throughout the period of production, but occurred more frequently in the late Neronian-early Flavian phase. They are generally more common than the IIDs, which peaked in the early 2nd century. Other

necked jars which do not conform to the above types occasionally occur: 550 has an out-turned rim and wide shoulder cordon; 552 a beaded lip and rounded body.

Flasks (IIR, 547-9) are not common, but were present from the late Neronian period. One example (547) has burnished decoration on the shoulder similar to that seen on the IIDs, but not illustrated on flasks by Lyne and Jefferies (1979).

Unclassified jars include a necked jar or flask with sharply out-turned rim and wavy-line burnishing (551), and a small jar or beaker with a sharply everted rim (553). Finally, a storage jar from the Reserve Collection (SJ, 554) can be paralleled by excavated material of Hadrianic date.

Beakers Fig 86, No 555 Beakers are rare and only a single example of a butt beaker (IIIA), decorated with panels of burnishing, is illustrated.

Bowls and dishes Fig 87, Nos 556-67 Bowls generally form only a small proportion of AHSU assemblages from the City, and the most distinctive type is the grooved-rim bowl (IVK, 558-62). Number 561 with a grooved rim and 562 with a bead rim are variants of the more typical IVK. They occurred throughout the 1st and early 2nd century, principally in late Neronian-early Flavian contexts. Moulded-rim IVAs (556) and round-bodied IVFs (557) occur sporadically.

Plates occur in similar numbers to bowls and were most common during the late Neronian-early Flavian period. They fall into two main groups, both of which are probably derived from Gallo-Belgic prototypes: VAs with internal (563-5) and VBs with external (566-7) moulding. Lyne and Jefferies (1979, fig 6.8) identify the VBs as lids, but a burnished interior suggests that our vessels are more likely to be plates.

Other forms Fig 87, Nos 568-9 Lyne and Jefferies illustrate early Alice Holt lids, and the domed example with a grooved rim (569) is similar to their class 7.6 (*ibid*, fig 39, 7.6). A concave example with a plain rim (568) is unparalleled. Lids are never common, but most examples were from the Flavian and Trajanic periods.

5.7 Shelly wares

This pottery was examined by Mr J Cooper of the Natural History Museum, and his shell identifications and comments on source are integrated below. The only large, identifiable group is North Kent Shelly ware. Small quantities of other shelly pottery are present in the earliest Roman deposits, persisting generally as isolated single occurrences into the 2nd century; they are described here. The majority of their identifiable forms are bead-rim jars (IIA) and variants with high, rather angular shoulders and/or ledge rims (IIA 16). These vessels are difficult to assign to specific production centres, but examination of the shell suggests that a small but distinct group is made from

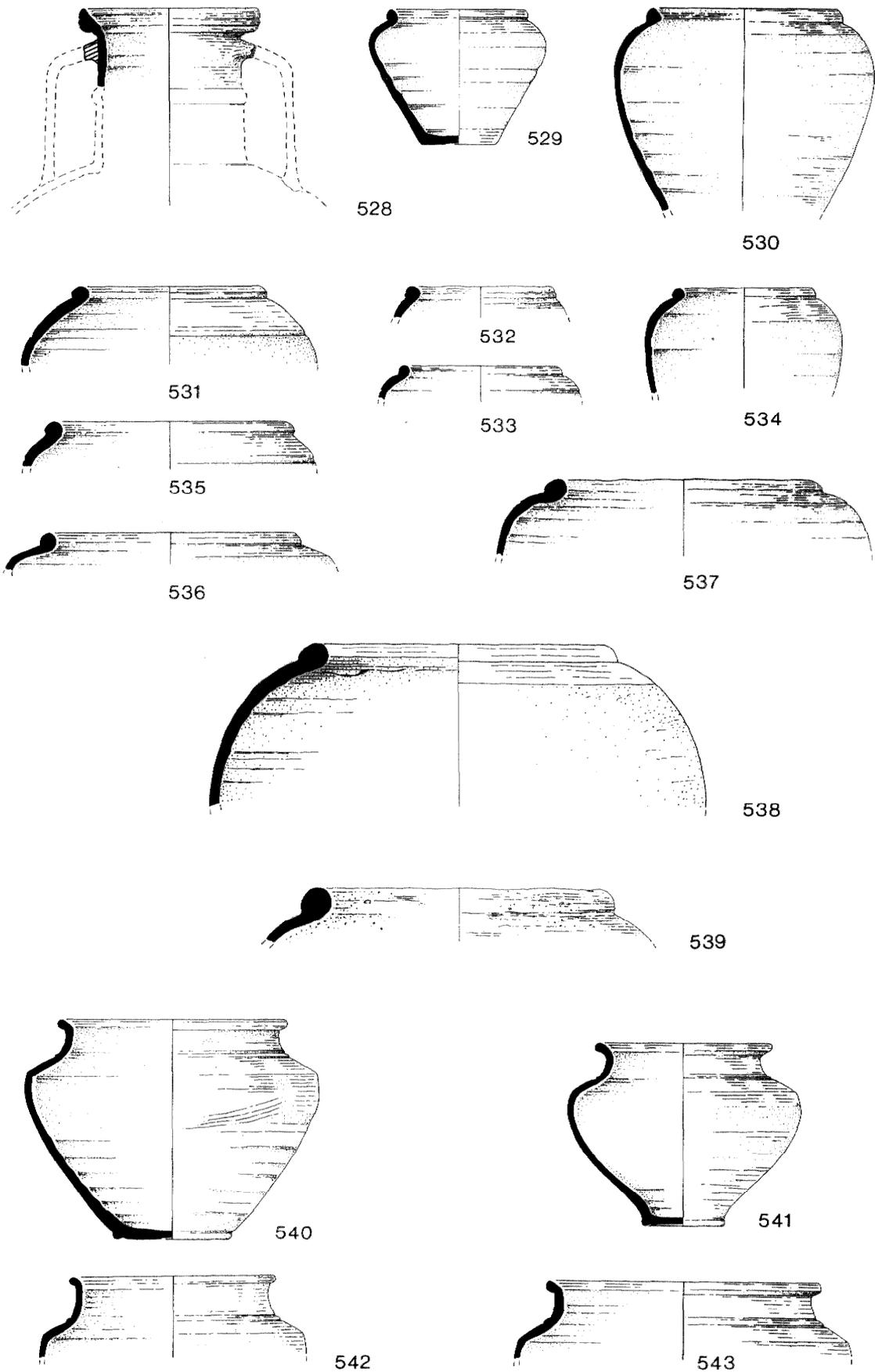


Fig 85 Alice Holt Surrey ware, flasks, no 528; jars, nos 529-43 (Scale 1:4)

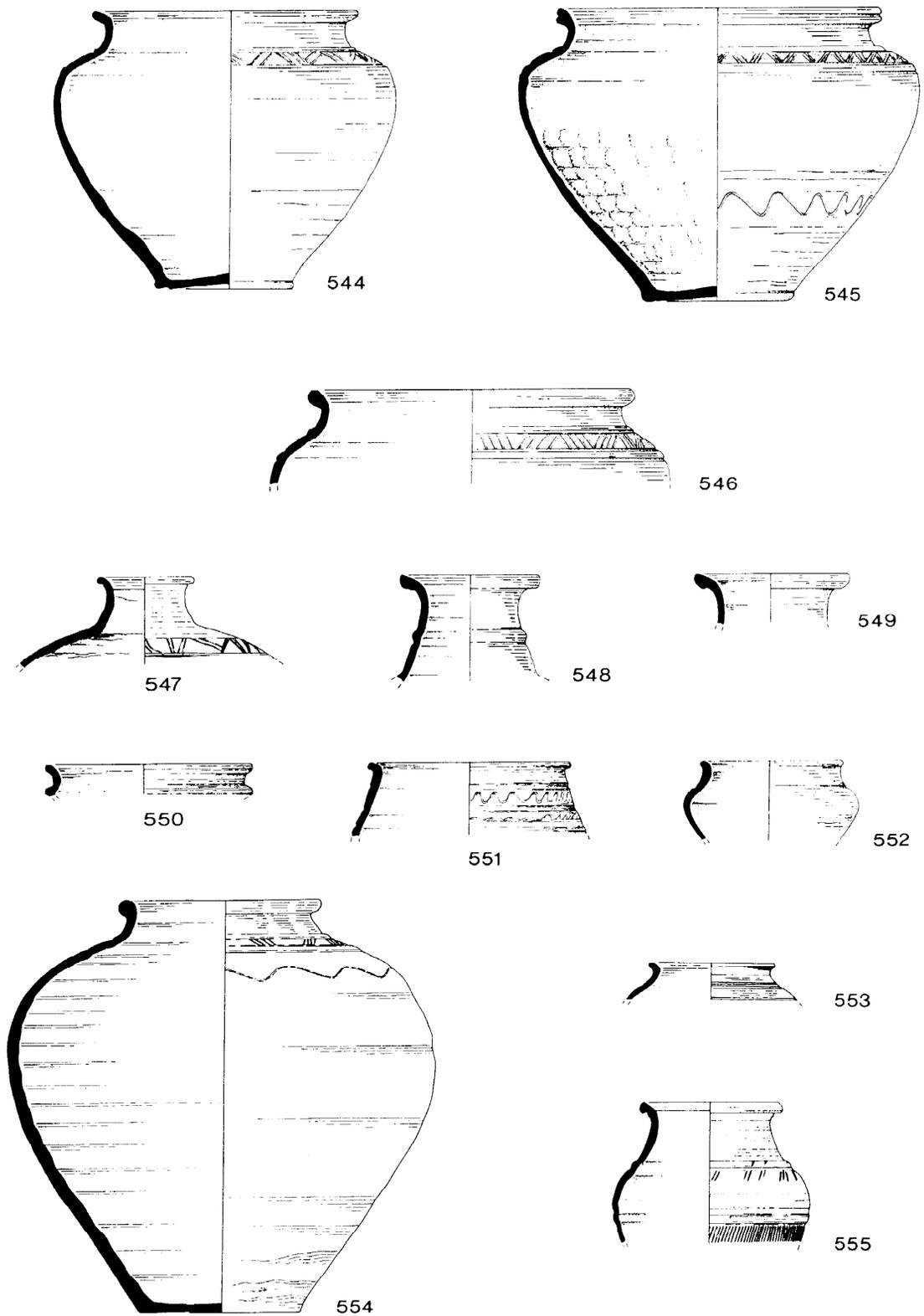


Fig 86 Alice Holt Surrey ware, jars, nos 544-54; beakers, no 555 (Scale 1:4)

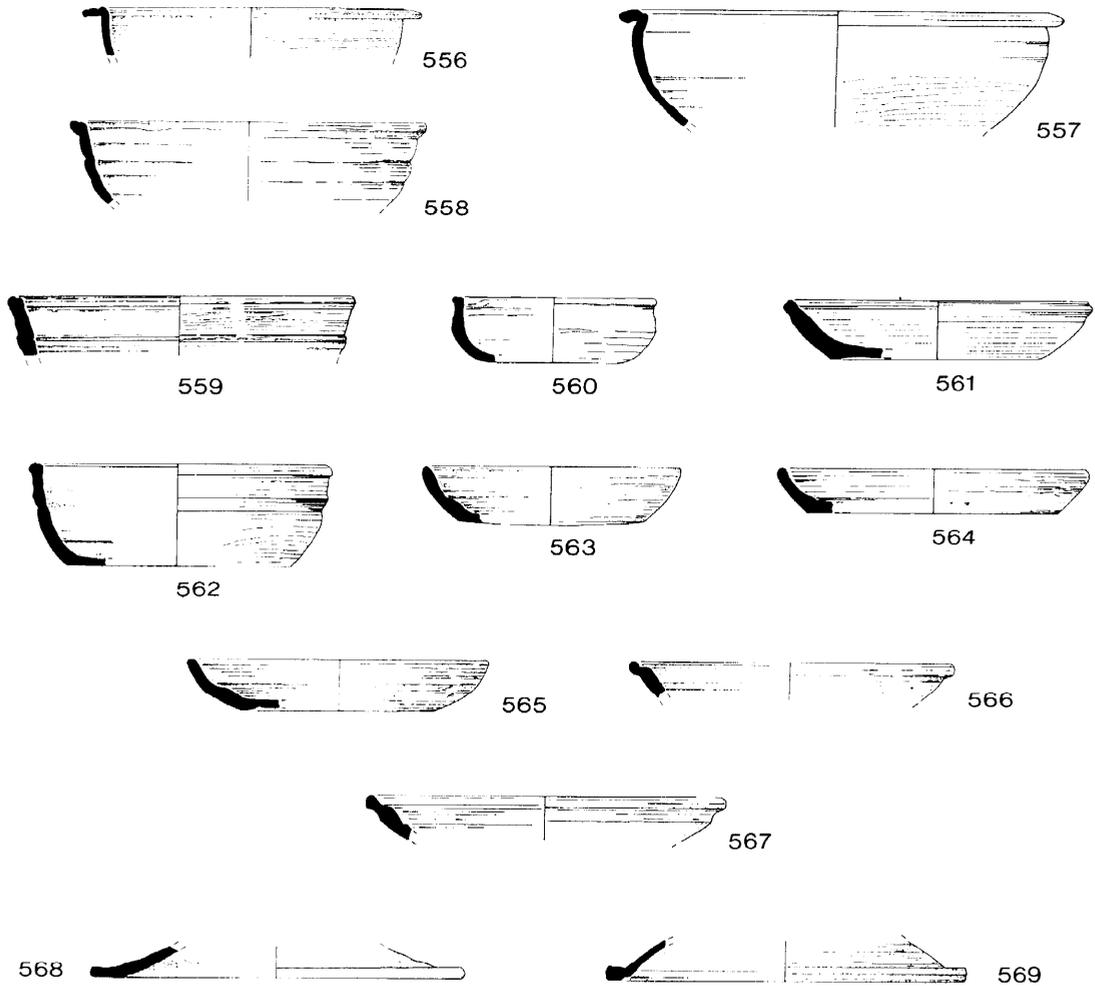


Fig 87 Alice Holt Surrey ware, bowls/dishes, nos 556-67; other forms, nos 568-9 (Scab 1:4)

Oxford Clay, while the majority of other types appear to derive from Essex or Kent and the Thames Estuary.

North Kent

North Kent Shelly ware (NKSH)

NKSH is thought to have originated from a source or sources on or near the coast of northwest Kent. Large quantities of sherds are found along the Thames and Medway estuaries and on the Higham and Upchurch Marshes near Gillingham, Gravesend and Rochester (Green 1980b, 65). Fabric analysis confirms that this is the most likely place of origin. The large jars in this fabric were the commonest large jar type after Highgate B, and virtually the only others to come from a recognized source.

Dating

Fig 88

Although there are rare pre-Flavian examples, NKSH first occurs in quantity in Flavian deposits on virtually every site of this period in the City. It continues to appear in deposits from the Trajanic to early Antonine in varying quantities, but it is difficult to assess residuality (Section 7.7). In west Kent and southeast Essex, the storage jars were in use from the mid 1st to late 2nd century (Pollard 1988, 40). It was clearly absent from City deposits, such as New Fresh Wharf, by the early 3rd century (Richardson 1986) and from the extensive, unpublished 3rd century site at Shadwell, London Docks. Overall, it is found in abundance.

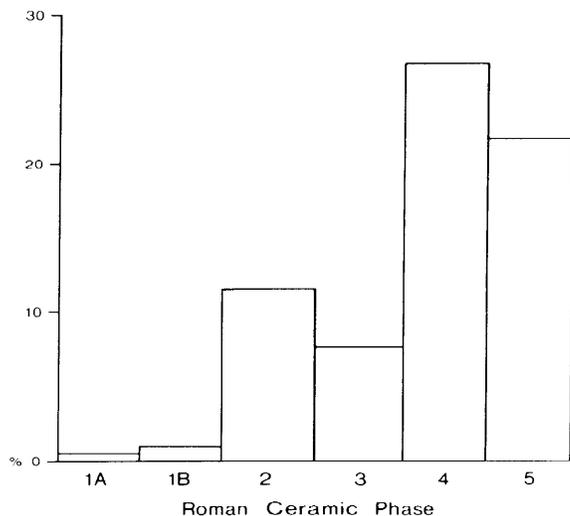


Fig 88 Bar graph of North Kent Shelly ware as a percentage of all reduced wares by weight

*Fabric and technology

Pl 5af

This is a coarse fabric with large fossil shell, distinguished from SESH by having a siltier and therefore less dense matrix. The vessels are handmade and coil-building is often evident in polished section.

Examination of the shell from crushed specimens produced identifiable bivalves and gastropods (*Corbicula*, corbiculid spp., *Brotia*) characteristic of Palaeocene or early Eocene Woolwich Beds which crop out along the Thames Estuary. This confirms that naturally occurring shelly clay was employed in the manufacture of NKSH rather than the shell being added to the clay as temper.

This blue-grey (7.5YR 3/0-5/0), sometimes with reddish-brown (2.5YR 5/4-5/6) surfaces, silty fabric contains very large quantities of fossil shell present as plates up to 4.0mm in size and as fired-out voids. Smaller quantities of quartz (A, SA), rounded clay pellets (0.2-0.7mm) and fine opaques occur; biotite and muscovite micas, flint and feldspars are visible in thin section. The clay is fairly hard and surfaces are slightly rough.

Forms

NKSH is virtually restricted to large storage jars.

Jars Figs 89-90, Nos 570-84 All but a very few of the jars are IIMs (575-83), with an unusual but consistent rolled-rim profile and bands of decorative stabbing and slashes between grooves on the shoulders. Generally, their dating mirrors the overall trends of the fabric. There is no obvious standardization of sizes, although rim diameters of 280-360mm are typical. Some variations on the standard form are shown as 579-83; there is no apparent chronological significance in these sub-types. Numbers 581 and 582

are unusually small. Other forms include generally large bead-rim jars (IIA, 570-3), occasionally with ledge rims (IIA16, 574). Number 584 is an unusual, small necked jar (NJ) from a Flavian context.

In the deep and often waterlogged stratigraphy characteristic of London sites, the large jars are often found with pitch adhering to the rim and shoulder, suggesting some form of waterproof sealing. Analysis by Dr C Heron (Liverpool University) has shown that this is tar made from silver birch bark. It has been suggested (eg Green 1980b, 65) that the jars were containers, perhaps for salt brought from the saltings known to exist on the north Kent shore of the Thames Estuary. Evidence for this theory has yet to emerge; nonetheless, it is likely that these large and somewhat roughly finished jars contained some commodity.

Mortaria Fig 90, No 585 A single mortarium with a bead and hooked flange (HOF) from a Neronian-early Flavian context is present.

Otherforms Fig 90, No 586 A few sherds of vessels large enough to require reinforcement by applied clay bands, perhaps *seria* (Green 1986, 106), are represented.

South Essex

The other main group of shelly wares originates from the Thames Estuary or south Essex, and more than one fabric variant has been identified.

South Essex Shelly ware (SESH)

Both fabric and distribution bear out an Essex source (Green 1980b, 65; C Going, pers comm).

Dating

SESH is generally found in 1st century contexts in Essex (Going 1987, 10). In the City, the sparse fabric normally occurs in early to mid 2nd century deposits, although examples from Billingsgate Buildings may predate 100 (Green 1980b). Among the quantified assemblages presented here, it first occurred in the early Antonine period, where it accounts for <1% by weight of all reduced wares.

Fabric and technology

Pl 5ag

This is a coarse fabric with large fossil shell, distinguished from NKSH (above) by having a denser matrix with less silt. The vessels are handmade with wiped surfaces.

Two examples examined by Mr Cooper contain fragments of brackish salt-water species such as cockle, oyster and *Hydrobia ulvae* (snail) and may well have been made from estuarine clays, which would support the suggested south Essex source.

Macroscopically the fabric, which is dark blue-grey (10BG 4/1)

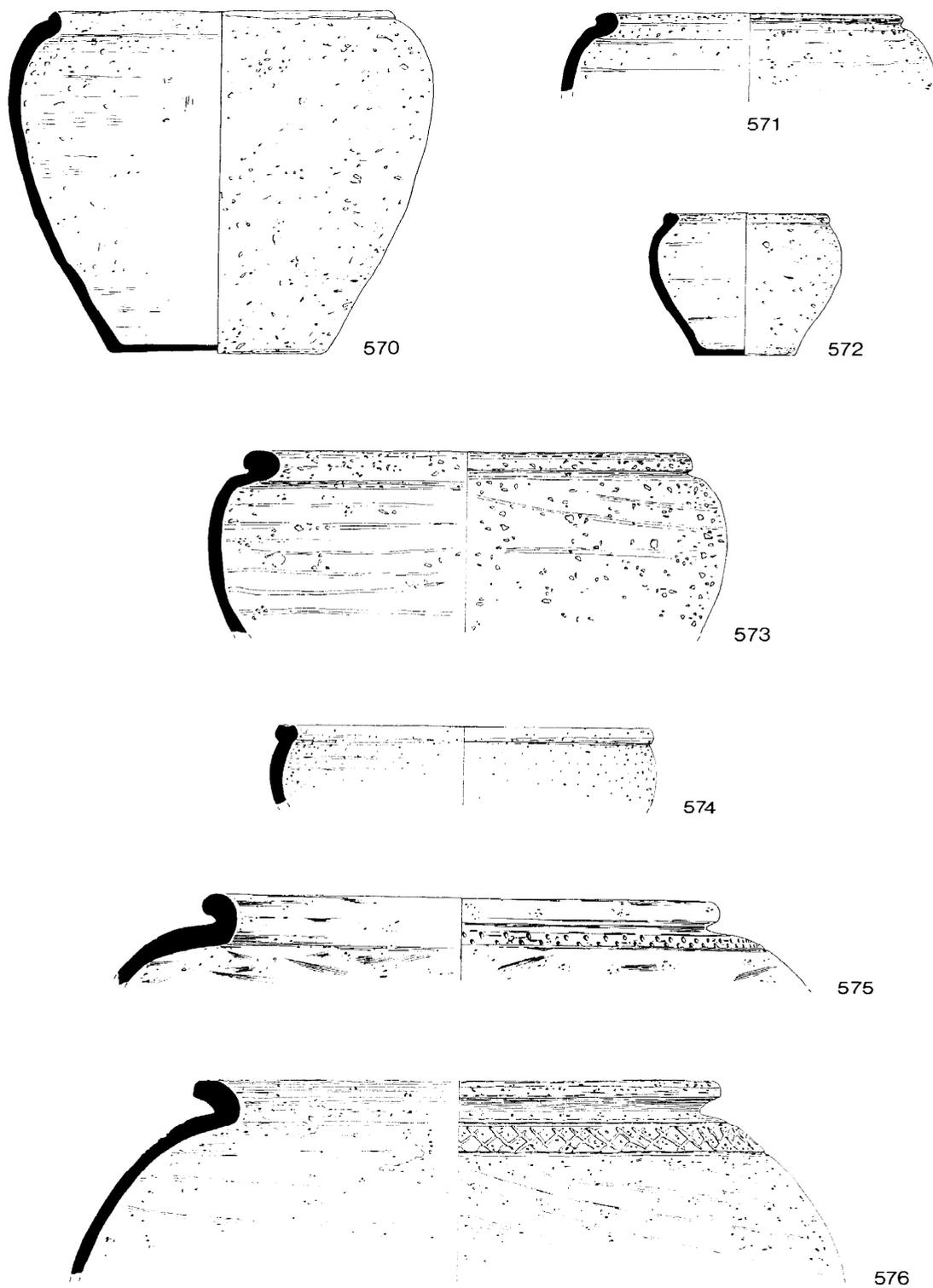


Fig 89 North Kent Shelly ware, jars, nos 570-6 (Scale 1:4)

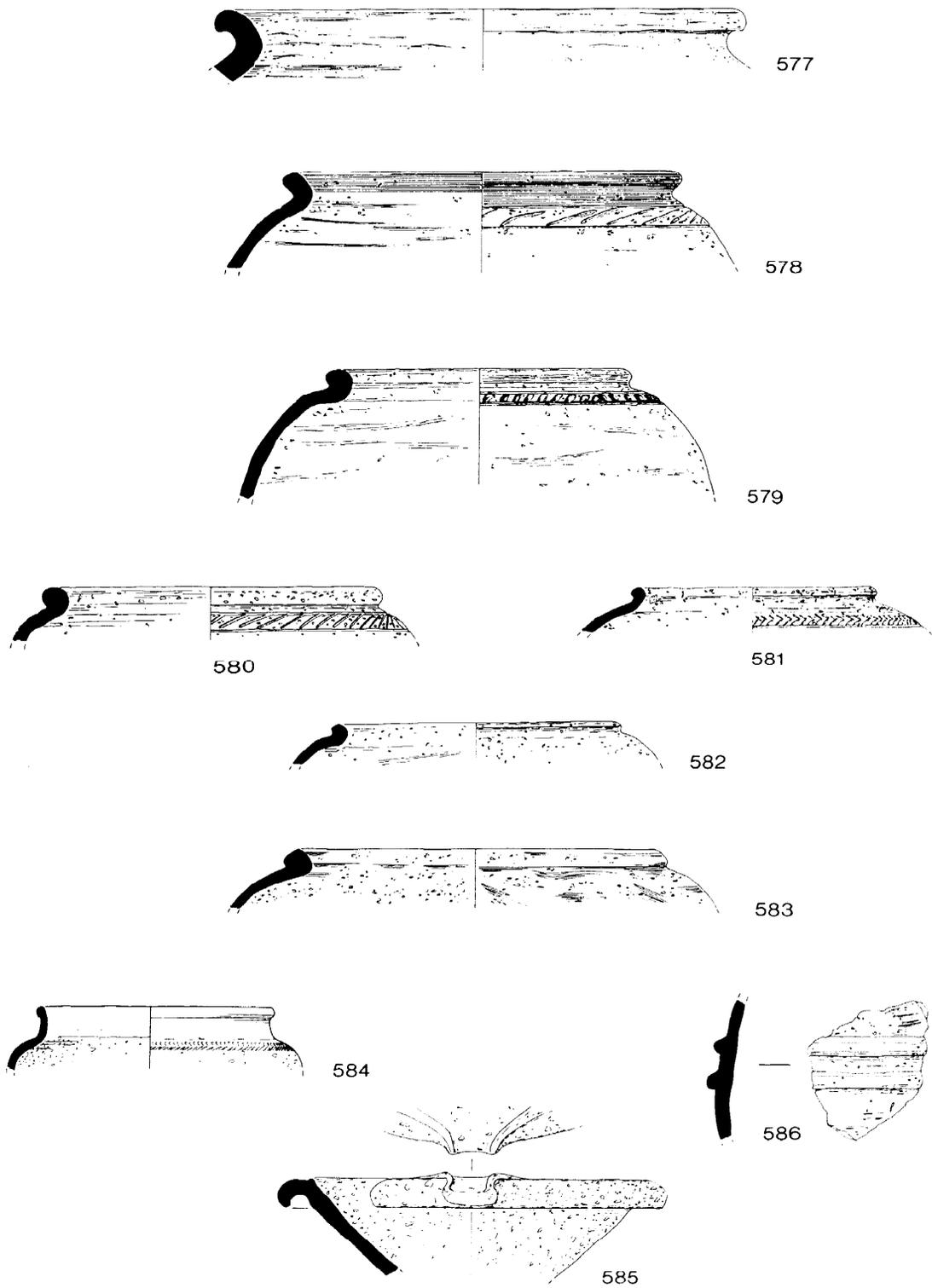


Fig 90 North Kent Shelly ware, jars, nos 577-84; mortaria, no 585; other forms, no 586 (Scale 1:4)

with brownish (7.5YR 6/0) margins and surfaces, is characterized by abundant fossil bivalve shell (to c 4.0mm), variable amounts of quartz (R 0.3-0.7mm) and sparser iron-rich inclusions (<1.0mm).

Forms

Other forms Fig 91, Nos 587-9 In the City, forms are exclusively large, lug-handled buckets or cauldrons, with both clubbed and overhanging rims.

SHEL-2826

Dating

This group is represented by a single vessel from an unquantified Flavian context, but is extremely common on many 1st century Essex sites such as Chelmsford (Going 1987, 10). The vessel could be part of the SESH group, but is described separately because of differences in fabric and their City date.

Fabric and technology

A coarse, vesicular fabric; the vessels are handmade.

This vessel has a vesicular and badly wedged fabric. It is coarse and abrasive, containing sparse quartz (R 0.3-0.6mm) and large (4.0-5.0mm) plates of shell which could well have originated in south Essex but are unidentifiable as to species. The vessel is light grey (7.5YR 7/0) with darker grey (7.5YR 6/0) interior and brownish-red (2.5YR 6/4) exterior surfaces.

Forms

Jars Fig 91, No 590 The vessel is a roughly made ledge-rim jar (IIA16).

SHEL-2810

This group has been assigned a probable source in south Essex by Mr J Cooper.

Dating

The sparse fabric occurs in 1st and early 2nd century contexts; quantified sherds are from Flavian and Trajanic levels, where they account for <1% of all reduced wares by weight.

Fabric and technology

A sandy fabric with occasional shell inclusions. It is distinguished from the other shelly fabrics by being wheelmade. The fabric is thought to originate from south Essex. Clay was compared with samples of London Clay from Ockenden and contains small quantities of unidentifiable shell.

In the hand specimen, this hard fabric is abrasive, with an u-regular fracture containing abundant well-sorted quartz (SA, R <0.5mm) and moderate shell (<5.0mm). It is normally grey (10YR 4/1), occasionally with areas of the surface light brown or red (7.5YR 6/6) and a light grey (7.5YR 7/10) core. A variant of the fabric (28 I 1) has slightly finer inclusions.

Forms

Jars Fig 91, Nos 591-3 Bead-rim jars (IIA), including one with a ledge rim (IIA16, 593), are present.

Oxford Clays

SHEL-2809

Dating

This rare group comes from 1st and 2nd century contexts. Quantified sherds account for <1% by weight of all reduced wares in the Flavian and Trajanic periods.

Fabric and technology

A fine textured shelly fabric, with abundant shell inclusions. This hard, handmade fabric contains fossil shell, such as *Gryphaea* and brachiozoa from the Oxford Clay which extends across England from Lyme Regis to Whitby, cropping out mainly in the Oxford-Peterborough area of the East Midlands. Macroscopically, the fabric is indistinguishable from the East Midlands 'calcite gritted' wares which reached London in the 4th century. The vessels are highly fired and display faint traces of turning marks on their exteriors.

SHEL-2809 contains very abundant fossil shell, including identifiable foraminifera and pieces of brachiopod (0.2-3.0mm, occasionally <5.0mm) and occasional rounded quartz and iron-rich inclusions (0.3-1.0mm) in a silty irregular matrix. The fabric is brown (10YR 5/2) with a pinkish-brown (7.5YR 7/4) margin and grey (7.5YR 6/0) or dark grey (10YR 4/1) core.

Forms

Jars Fig 91, Nos 594-7 All the vessels are jars with bead (IIA, 594), grooved (IIA, 595-6) or ledge (IIA16, 597) rims.

SHEL-2825

Dating

The two vessels identified in this fabric come from a single context associated with unquantified Neronian-mid Flavian pottery.

Fabric and technology

The fabric is similar to SHEL-2809 with smaller, less frequent inclusions, resulting in a dense clay matrix. These handmade vessels have also been identified as Oxford Clay products.

The jars are highly fired with oxidized reddish-orange (5YR 4/4) surfaces and grey (7.5YR 4/0) core. The fabric contains quartz (R 0.5mm) and smaller quantities of fossil shell than SHEL-2809, most 2.0mm or less. Clay pellets occur in moderate quantities and are in the same size range as the shell.

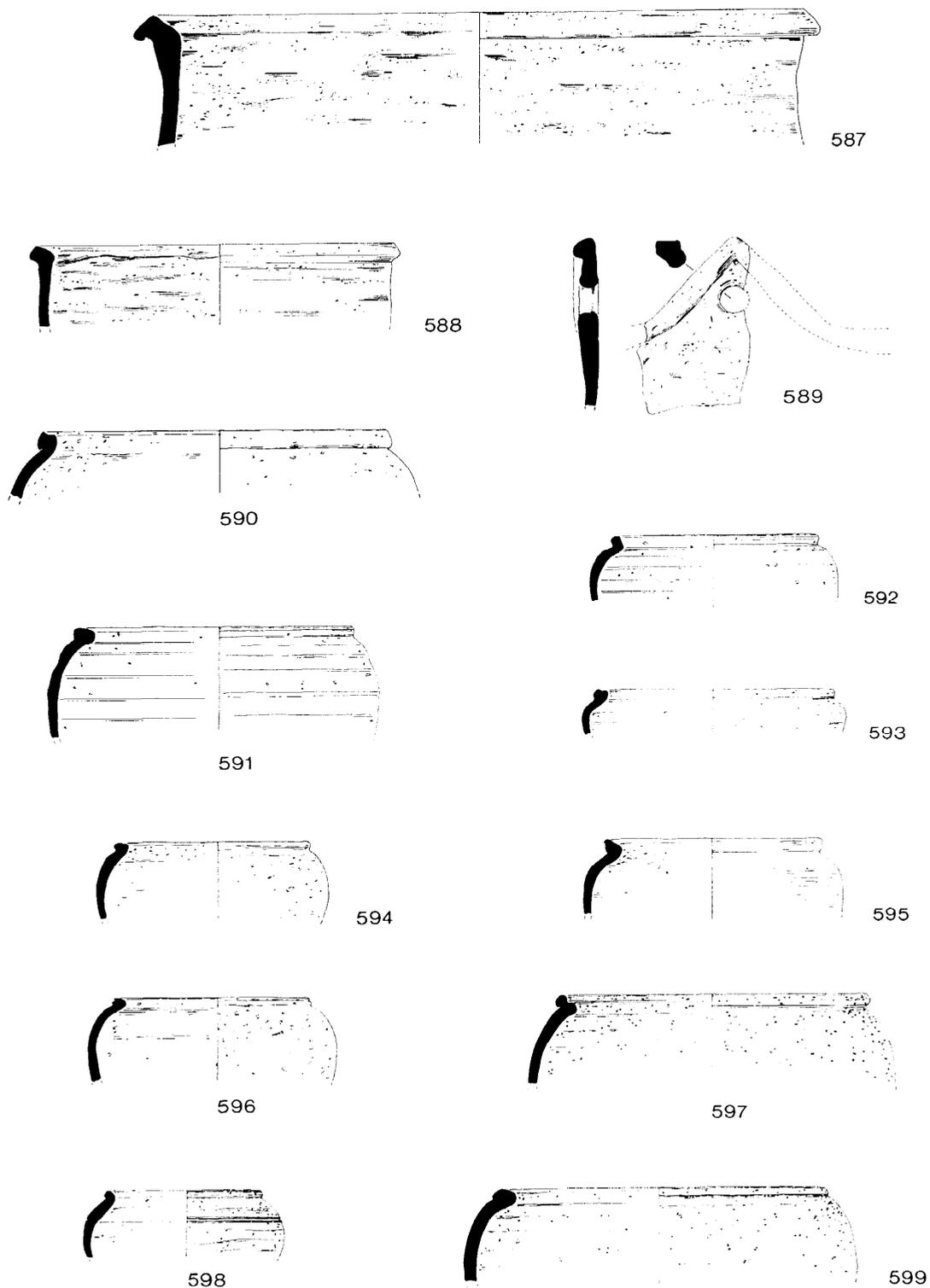


Fig 91 South Essex Shelly ware, other forms, nos 587-9. Shelly fabric 2826, jars, no 590. Shelly fabric 2810, jars, nos 591-3. Shelly fabric 2809, jars, nos 594-7. Shelly fabric 2825, jars, nos 598-9 (Scale 1:4)

Forms

Jars Fig 91, Nos 598-9 Like SHEL-2809, the fabric is restricted to bead-rim jars (IIA); 598 has a groove on the girth.

5.8 Black-burnished ware industries

The origins, typologies and occurrence of black-burnished wares in general (Farrar 1973; Monaghan 1987; Williams 1977) and in London (Marsh & Tyers 1978) have been extensively discussed and, apart from extending the Southwark typology and refining the dating, it is not proposed to comment further on their history. The chronological scope of this corpus allows only a cursory glance at the overall incidence of black-burnished wares in the City but, where relevant, later trends are introduced. These later industries are described in Richardson's (1986, 125-7) account of the Severan assemblages at New Fresh Wharf.

A date of c 120/5, largely based on the evidence from the Northern frontiers, is generally accepted for the widespread distribution of black-burnished wares. The stratigraphic evidence confirms an early Hadrianic date for their arrival in the City. Small quantities of BB1 and, to a lesser extent, BB2 and other burnished wares occur for the first time in layers immediately below and sealed by fire horizons associated with the Hadrianic fire, suggesting a date of c 120 or slightly earlier (Fig 92). This pattern can be noted at sites to the west and east of the Walbrook, as well as the upper Walbrook. It is also probable that BB1 arrived in the City before BB2, as on some sites it is found in the lowest levels of early 2nd century sequences where BB2 is absent.

Williams' (*ibid*, figs 1-2) illustration of the distribution of Dorset BB1 shows that apart from the most easterly areas, East Anglia and the north Yorkshire coast, it reached almost the whole of Roman Britain, with BB2 confined to the east. Quantified data from the City, shown on Fig 92, suggest that although reasonable amounts of BB1 reached as far east as London in the early 2nd century, dominating the black-burnished ware market briefly at this time, it was quickly superseded by more local suppliers from the east of England, Essex and/or Kent (BB2). During the early 2nd century BB1 accounted for 60% of all the black-burnished wares by weight, but it decreased in relation to BB2 to 25% in the Hadrianic and 10% in the early Antonine period.

Williams (*ibid*, 209) concluded that the majority of BB2 found in northern Britain came from Colchester, with smaller quantities from other areas, such as north Kent. The same pattern is reflected in the City of London by both excavated assemblages and the Reserve Collection. During the Hadrianic period there were a limited number of BB2 fabrics, of which 1462 (comparable to Colchester products) assumed the greatest proportion, and a certain homogeneity of form; by the early to mid Antonine period there was a proliferation of both fabric and form variants. However, it should be noted that there is a wide range

of variation within the Colchester material (Monaghan 1987, 171), some of which could be confused with Thameside Kent products. Although Monaghan's work has greatly increased the understanding of black-burnished ware from the Thameside kilns, the lack of large published groups from the kiln sites allows only a tentative allocation of some of our groups to the north Kent/south Essex region.

In this report the term BB1 is retained exclusively for the handmade products of the Dorset area and BB2 for wheelmade black-burnished wares that can be assigned to a particular source area. A third category - Black-burnished Style or BBS - encompasses both handmade and wheelmade fabrics which can be grouped together by petrology, typology and decoration but for which a source area cannot be suggested, and grey ware imitations where industries are restricted to black-burnished types.

The handmade wares form a homogeneous group in terms of fabric and typology, but the wheelmade products are more complex. A small number of wheelmade fabric groups are present in the pre-Hadrianic deposits, but by the Hadrianic period, and increasingly in the early Antonine, there was clearly a diversification in the number of both fabrics and forms (Fig 96). This diversity is represented by at least four BB2 fabrics in the City, and is also apparent in the variety of forms which do not readily conform to the BB2 repertoire identified by Gillam for northern Britain.

The analysis of the BB2 fabrics is difficult because they all share similar quartz tempering and encompass a range of variations whose parameters are not always clear. It is possible to separate the most distinctive ones in the hand specimen, but the majority require microscopic identification. For spot dating, therefore, the blanket term BB2 has normally been used. However, all the quantified data presented here have been subdivided into the groups described below. By studying the fabrics in detail, typological nuances (ie body thickness, rim variants and quality of the workmanship) have been recognized and related to fabric and kiln groups, thereby allowing more precise identification in the hand specimen.

Fabrics classified as BBS are often represented by single or several vessels rather than by homogeneous groups. Although they broadly conform to the term black-burnished ware, they do not appear to be paralleled within known kiln groups.

BB1 and other handmade fabrics

BB1

Dating

Fig 92

In general BB1 is abundant in early Roman deposits. It first occurred in the Trajanic period, in levels sealed by Hadrianic fire debris. It doubled in quantity in the Hadrianic and early Antonine periods, but still only accounted for <5% by weight of all reduced wares.

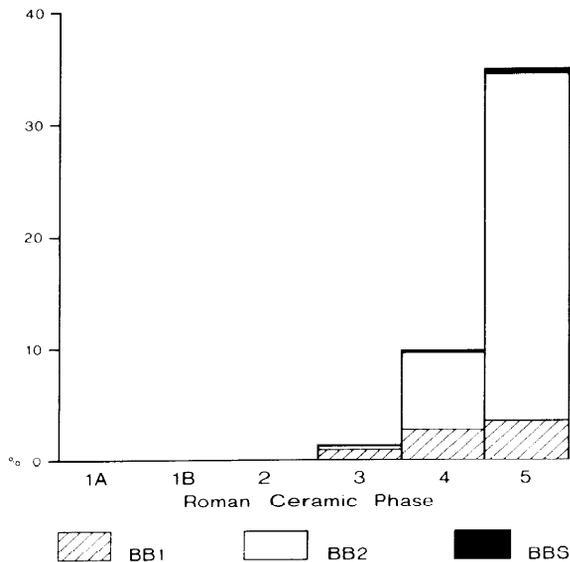


Fig 92 Stacked bar graph of black-burnished wares as a percentage of all reduced wares by weight

Fabric and technology

Pl 7ah

BB1 is a black granular, handmade fabric with abundant well-sorted quartz and a distinct hackly appearance. The burnish is shiny, showing the individual strokes, and the vessels are frequently horizontally wiped and facet-burnished in zones. The interior of closed forms and the background of decorated zones are left rough, with the commonest type of decoration being an acute-angled lattice which tends to be rather irregular. As expected, no examples of the later, obtuse-angled lattice are represented here.

A dark grey or black (2.5YR 3/0-4/0), fairly hard and rather friable fabric, with abundant inclusions of well-sorted quartz (SA 0.2-0.5mm, but occasionally <0.8mm), resulting in a characteristic fracture described as a 'cod's roe' by Williams (1977, 189). Occasional coarse or very coarse fragments of shale, moderate black or red iron-rich inclusions and rare limestone (<1.0mm), together with sparse white mica, are also noted. A variant (2765) consists of the same basic inclusions but the quartz is finer (c 0.2-0.3mm). This fabric, which appears quite dense and heavy, sometimes firing to a brownish-black (7.5YR 3/2), occurs very occasionally as handled beakers (not illustrated) and, more rarely, bowls (613, 615).

Forms

Most of the BB1 forms in the City belong to very standardized types which are common throughout the entire area of BB1 distribution and are paralleled in Gillam (1970).

Flagons Fig 94, No 600 Few flagon handles (Gillam 61) come from excavation, but there are at least three examples from the Reserve Collection. Their fabric is

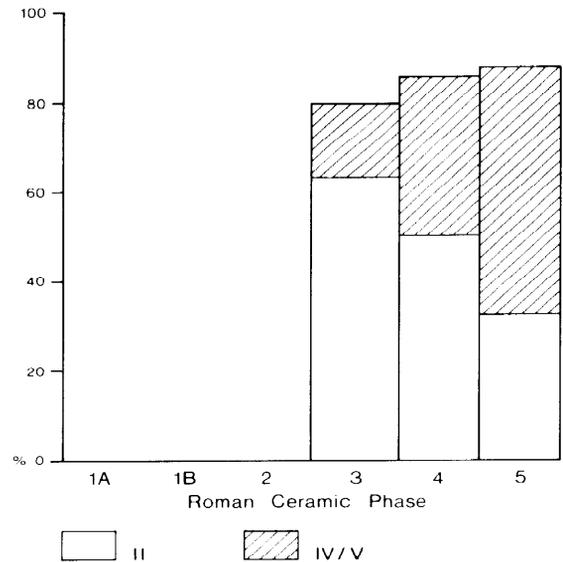


Fig 93 Stacked bar graph of Black-burnished ware I jar and bowl forms as a percentage of all BB1 forms by Eves

slightly coarser than normal and it may have been strengthened with additional quartz.

Jars Fig 93; Fig 94, Nos 601-5 Everted-rim jars (IIF, 602-5) are the most common jar form and, although the decorative style varies from acute lattice to wavy-line burnishing, many have an upright rim with a slight beading at the lip. A burnished wavy line on the rim exterior is another typical feature (IIF1-2, 602-4). Bead-rim IIAs (601), generally undecorated, also occur and the two forms appear to be contemporary. Technologically, BB1 jars are distinguished from their BB2 counterparts by a greater depth of burnishing inside the vessel. As shown on Fig 93, jars are especially common in relation to bowls in the earliest deposits, possibly before c 120/5.

Beakers Fig 94, Nos 606-7 Beakers and handled beakers with short, ever-ted rims (IIIE) rarely occur. Some are undecorated, but others (not illustrated) feature lattice burnishing and are usually very thin walled. Body sherds can be easily confused with thin walled jars, which could account for their rarity.

Bowls and dishes Fig 93; Figs 94-5, Nos 608-20 Bowls occur only sporadically in layers immediately prior to Hadrianic fire levels, but gradually increased after this. Most vessels have either horizontal or slightly upturned flat rims (IVG, 608-17), occurring on both bowls and dishes. Despite standardization in form, they occur in a range of rim diameter sizes (c 160-260mm) and depths (c 35-125mm). Many are noticeably rounded at the base, lacking the chamfer commonly found on wheelmade black-burnished wares. A variety of burnished decorative techniques

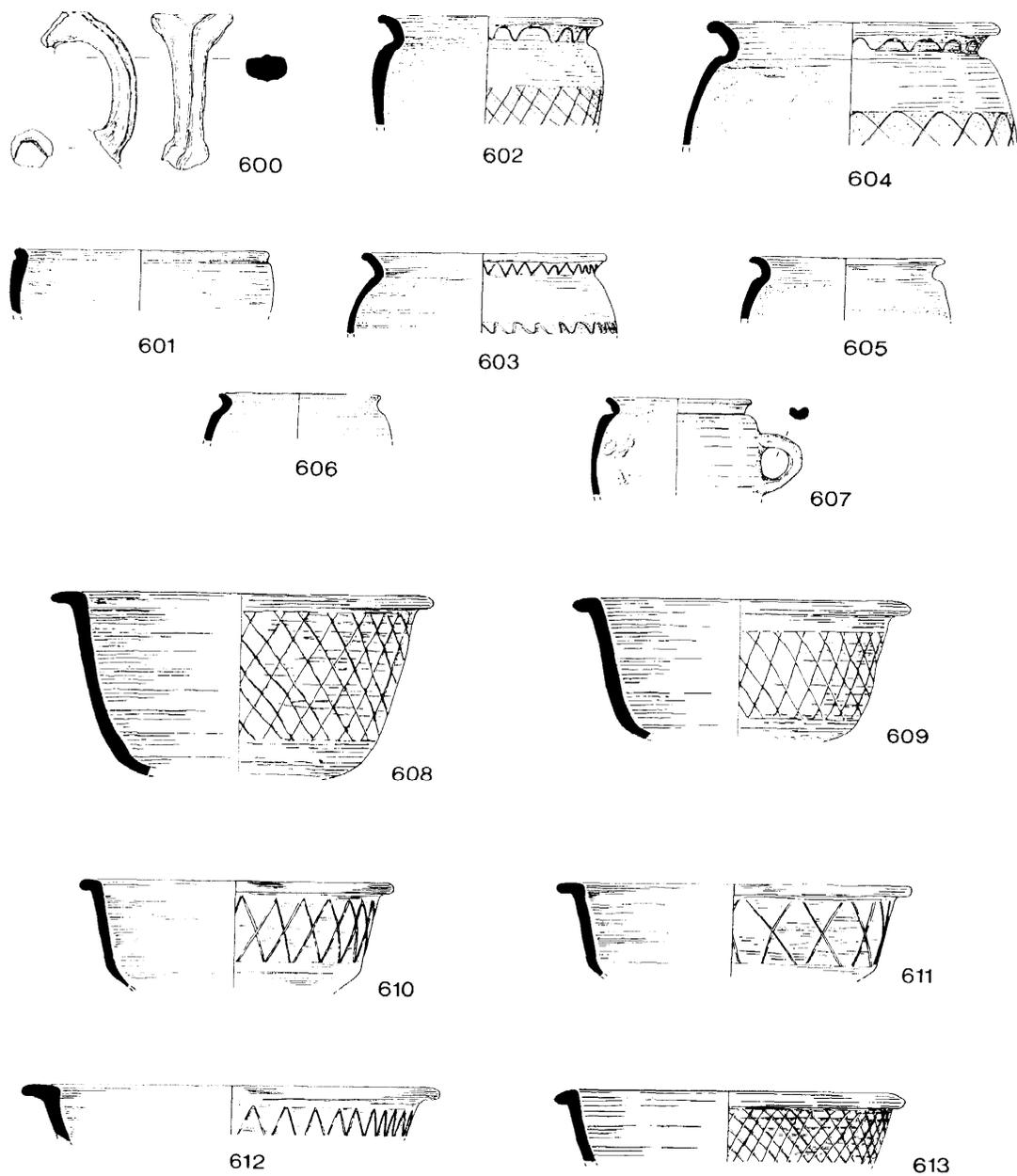


Fig 94 Black-burnished ware I, flagns, no 600; jars, nos 601-S; beakers, nos 606-7; bowls/dishes, nos 608-15
Scale 1:4)

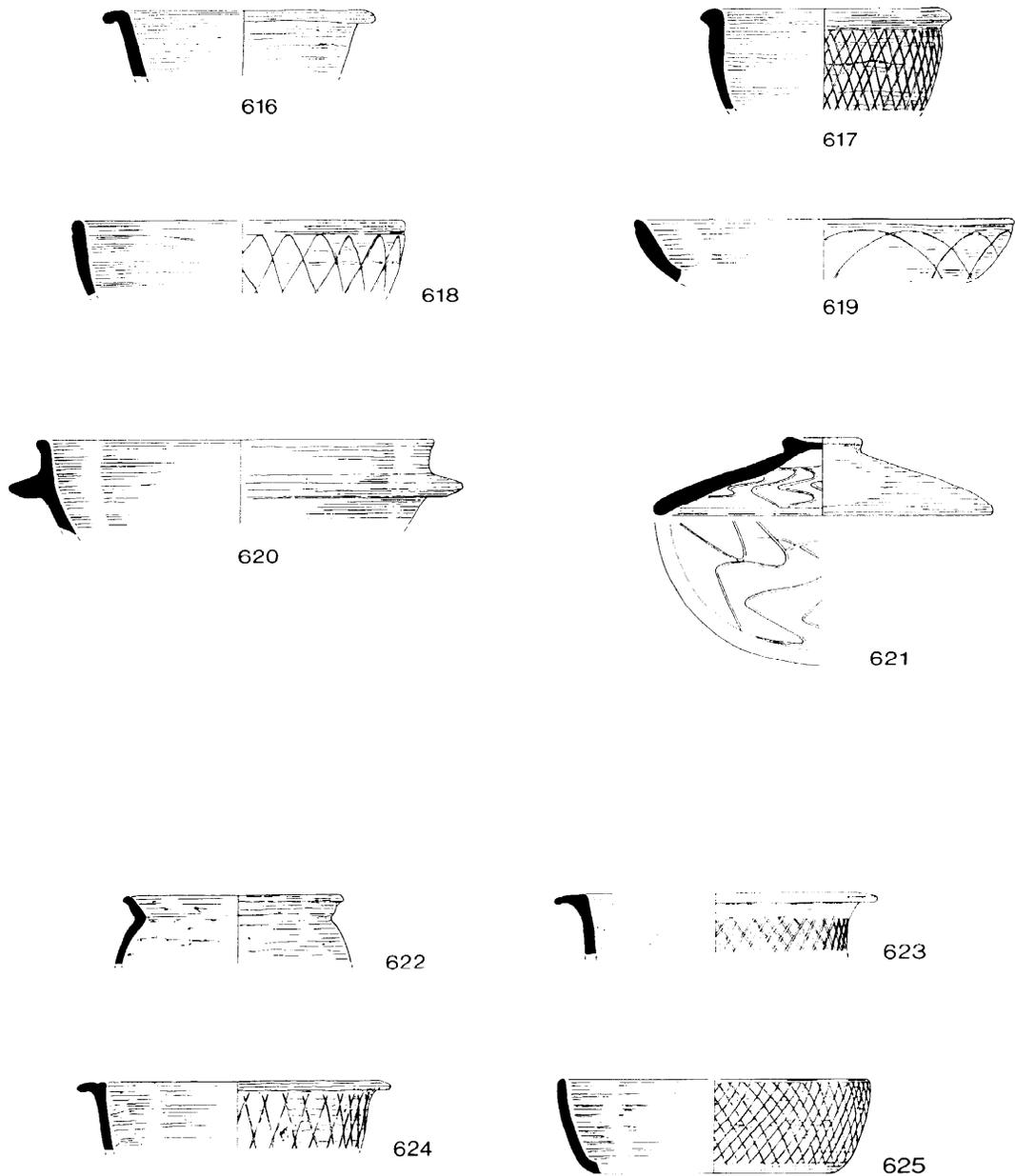


Fig 95 Black-burnished ware 1, bowls/dishes, nos 616-20; other forms, no 621. Black-burnished Style fabric 1547, jars, no 622; bowls/dishes, nos 623-S (Scale 1:4)

occur, ranging from diamond lattice (eg 610), acute lattice (eg 608), wavy burnishing (615), and occasional undecorated vessels (616). More unusual are two vessels with a short and almost triangular rim (IVG3, 613, 617), typically associated with BB2, both of which occur in early Antonine levels.

Flanged bowls (Gillam 228) are absent from quantified sequences of this period, but a small fragment of Gillam 226 (not illustrated) with an

incipient flange, occurs in an early Antonine context in association with an almost identical form in an unsourced handmade fabric (BBS-1547, Fig 95, 624). However, as this phase at Newgate Street was disturbed in some areas, it is not certain that the form was present by the mid 2nd century and it is absent from a pit of the same date at 28-32 Bishopsgate.

Plain-rim dishes (IVJ variants, 618-19) decorated with intersecting arcs are much rarer than the IVG

form, but occurred from the Trajanic period onwards. Often, as here, their rims are beaded and their bases feature burnished diablo decoration.

The most unusual example of the BB1 repertoire is a vessel with bead rim and horizontal flange (620), similar to Drag 38, from a layer dating to c 120-40. Although the form is absent from Gillam, it is known from kiln sites in Dorset (Type 75, Seager Smith & Davies 1993) and is occasionally found elsewhere outside the production area.

Other forms Fig 95, No 621 Lids are scarce, but occur throughout the period, Number 621 with a plain rim is a fine example, showing the burnished diablo decoration inside the vessel.

BBS-1547

The vessels identified in this fabric emulate BB1 forms, but their fabric and finish is clearly different. There are no known external parallels for the fabric and it remains unsourced.

Dating

Although distinctive, the fabric is sparse. It was present at Billingsgate Buildings (Green 1980b, fig 34, 285) in a group dated from the late 1st to 2nd century. Individual occurrences have also been noted in Hadrianic-early Antonine levels. The quantified sherds comprise a single vessel in an early Antonine context (<1% of all reduced wares by weight).

Fabric and technology

Pl 5ai

A very sandy, handmade fabric, differentiated from BB1 in colour and by having less quartz, which is poorly sorted. Surfaces are hand burnished in irregular bands, and the finish is rather dull when compared with the shiny Dorset examples. The principal decoration of acute-angled, burnished lattice is regular and well finished.

A fairly hard, grey (7.5YR 4/0) fabric with brownish-grey (10R 4/2-5/1) margins and surfaces, giving a superficially burnt appearance. The silty matrix, with hackly fracture, contains moderate amounts of ill-sorted clear or occasionally roseate quartz (SA, R 0.1-0.5mm, but occasionally <1.0mm), sparse brown-black/purplish iron-rich inclusions (A <1.0mm) and sparse fine white mica. It lacks the 'cod's roe' appearance and the shale inclusions of Dorset fabrics.

Forms

Vessel types are the same as the common range of BB1 forms already discussed.

Jars Fig 95, No 622 Everted-rim jars (IIF) share the slight beading on the lip and internal burnish to the neck with Dorset products. Examples lack burnished lattice decoration.

Bowls and dishes Fig 95, Nos 623-5 Flat-rim bowls

(IVG, 623) and plain-rim dishes (IVJ, 625) with acute lattice are the main bowl forms in this fabric, although one with incipient flange (624) and acute lattice also occurs. The latter form is generally associated with late 2nd or early 3rd century deposits, and this example is from the disturbed post-Hadrianic fire deposit at Newgate Street discussed above.

BB2 and related fabrics

BB2-1462

The virtually identical fabrics and close parallels between form typologies suggest that both Colchester and the City received the majority of their wheelmade black-burnished products from the same source. Although there is no definite kiln material from Colchester, Williams' (1977, 196) analysis supports a Colchester origin. The only other possible source for this material is the Cliffe parish, north Kent, where a similar but not identical fabric (see BB2-2759, S1/4b, Monaghan 1987, 246) is found, and basically identical forms (eg 5D1-6, 5D1-8, 3E5.1, 3J1-6, 3J2.3, *ibid*, 146) are common from c 110-50/90. Heavy mineral analysis on the Cliffe parish material is needed to

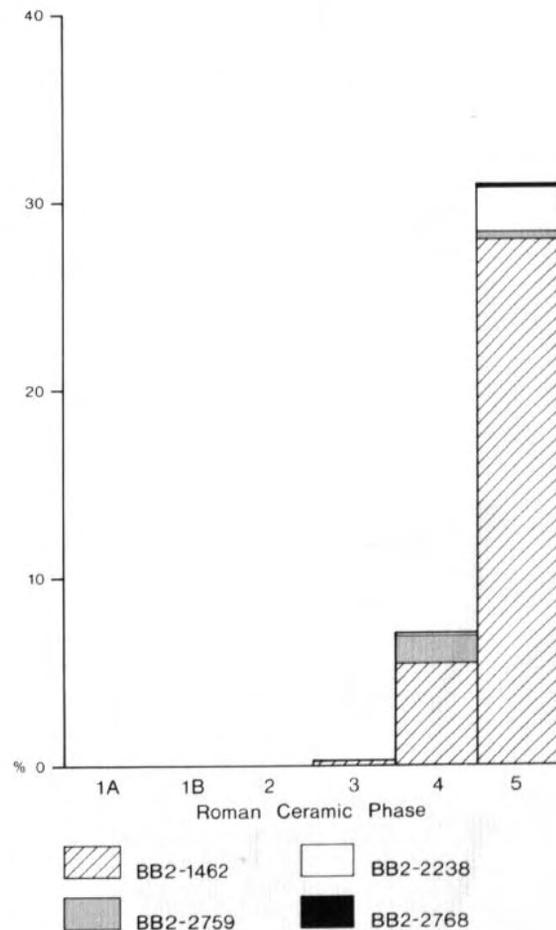


Fig 96 Stacked bar graph of the main Black-burnished ware 2 fabrics as a percentage of all reduced wares by weight

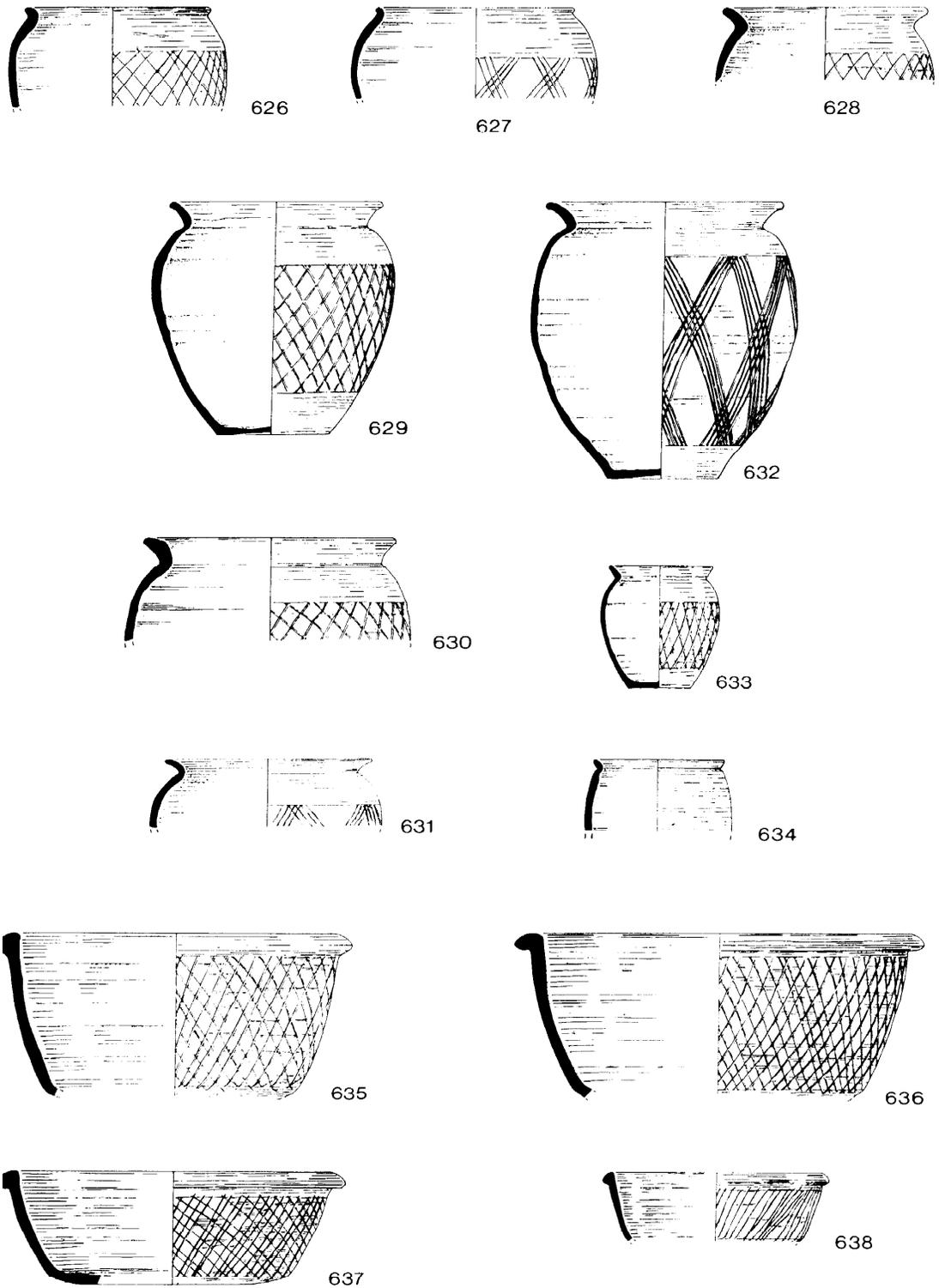


Fig 97 Black-burnished ware 2 fabric 1462, jars, nos 626-33; beakers, no 634; bowls/dishes, nos 635-8 (Scale 1:4)

clarify the differences between the two production centres.

Throughout the period a variety of Kent products reached the City (eg North Kent Shelly and Eccles ware), whereas only rare occurrences of early fine wares indicate imports from Colchester. However, until a clearer picture of these two areas emerges, a Colchester source is preferred for BB2-1462.

Dating

Fig 96

BB2-1462 is abundant, and is the dominant wheelmade fabric in all phases. During the Trajanic period it had little competition, accounting for essentially all of the rare BB2 by weight; it was still important in the Hadrianic and early Antonine periods, representing 76–80% of all BB2.

Fabric and technology

P1 5aj

This is a wheelmade fabric with abundant quartz inclusions and a highly burnished surface. The surfaces are usually jet black or dark bluish-grey, generally with a very shiny finish. There is some evidence that dip was applied before burnishing, particularly on

examples from fire deposits where it has burnt noticeably white. Burnished surfaces are often smooth and silky from treatment on the wheel, but the interiors of some bowls are often burnished by hand, particularly the base. The acute burnished lattice decoration is generally well executed and more closely spaced than on BB1 vessels.

The hard fabric is dark grey or black (7.5YR 3/0–4/0), frequently with oxidized layers beneath the surface, varying from brown (5YR 5/4) to reddish-brown (10R 5/8). Fairly abundant inclusions of well-rounded quartz, including occasional roseate or brown grains (c 0.3–0.5mm, but occasionally 0.2–0.7mm), set in a fine, irregular and silty matrix. Moderate amounts of black iron-rich inclusions (R <0.4mm) and, more rarely, white mica are also present.

Two rare variants may also be Colchester products. The first is fine (2770) and is principally confined to jar forms. It has a grey (7.5YR 5/0) core and dark grey (7.5YR 3/0) margins and the quartz is normally 0.1–0.3mm, or occasionally up to 0.5mm. Jars are slipped and burnished over the lip to the exterior shoulder and decorated with both closed and open burnished lattice and sometimes have a slightly rough texture.

The second variant (2597), apparently restricted to the early Antonine period, is distinguished from the main 1462 group by its reddish-brown (5YR 4/4) colour, possibly resulting from high firing. This is supported by the clay matrix which is compacted and slightly vitrified. The vessels are slipped and highly burnished like the typical BB2, but the exterior is not always uniform in colour, firing patchily from black (7.5YR 3/0) to brownish-black (10YR 3/1). The interior, however, is almost always black. It also differs from the usual 1462 fabric in having larger quartz inclusions (SA, frequently c 0.8mm) and consequently a more hackly fracture.

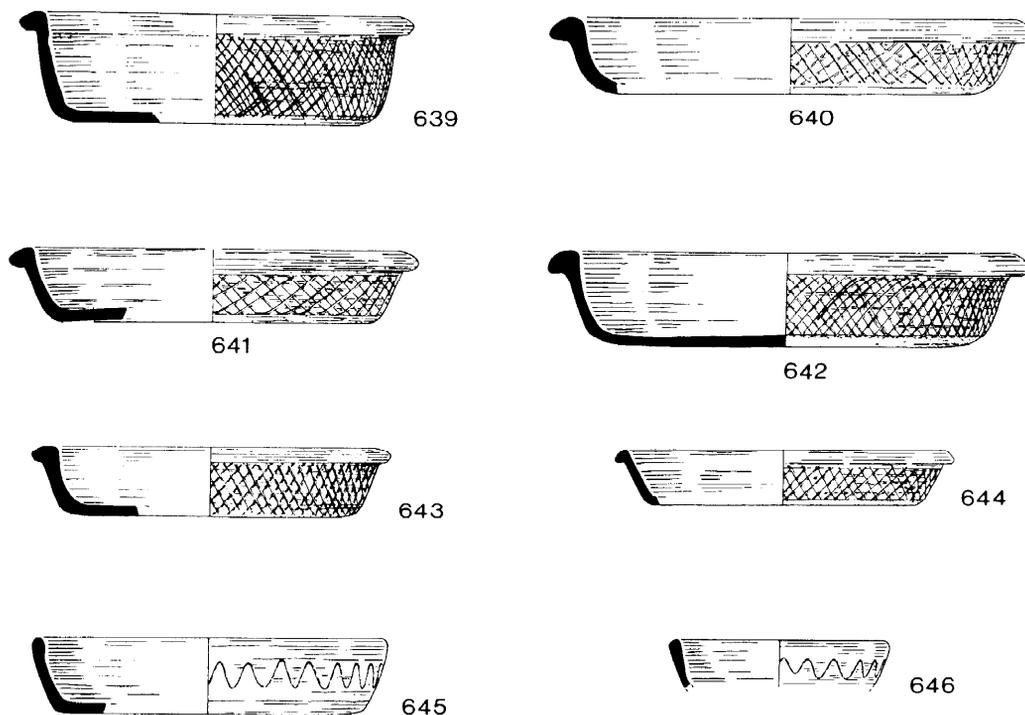


Fig 98 Black-burnished ware 2 fabric 1462, bowls/dishes, nos 639–46 (Scale 1:4)

Forms

Jars and bowls are the main forms and their ratio varies from deposit to deposit, although there was a tendency for bowls to predominate from the Hadrianic period onwards.

Jars Fig 97, Nos 626-33 Both bead-rim (IIA, 626-7) and everted-rim (IIF, 628-30; IIF6, 631-2) jars are present. Bead-rim examples are never common and, unlike the BB1 equivalent, did not appear until the Hadrianic period, with the majority from early Antonine contexts. They have acute lattice decoration which is most commonly an overall lattice (626) but sometimes a more grouped one (627) characteristic of Gillam 144.

All the everted-rim jars of the early Roman period have slightly curved or almost upright rims with acute lattice (IIF). Their bases appear to be broader (eg 629) than those in other BB2 or BBS fabrics. The most common form (628) has a relatively upright rim, thickened internally, and can be paralleled at Colchester (Type 113, 145, Symonds & Wade forthcoming). Number 629, which has a thinner, slightly curved rim (Colchester Type 113, 148, *ibid*), is less common and has been noted only in early Antonine layers in the City. A vessel with upright, bevelled rim is an unusual IIF (630) in the BB2-2597 variant. The dated IIF6 (631) with grouped lattice decoration is essentially early Antonine in date, with only rare Hadrianic examples; 631 is in the fine 2770 fabric. A miniature vessel, with an almost upright rim (IIF1 1, 633), is unusual, but because of its size often survives intact.

Beakers Fig 97, No 634 Beakers with short everted rims (IIIE) are rare, and handled examples do not normally survive. The type vessel is paralleled at Colchester (Type 101, 131, *ibid*).

Bowls and dishes Figs 97-8, Nos 635-46 The most common bowls are triangular-rim, lattice decorated IVH1-4s (635-44). There are no examples of the later, undecorated versions (IVH5-7) common at New Fresh Wharf (Richardson 1986, 127, I.191-2). They range in diameter from c 160-280mm, clustering around 240mm; and in depth from c 40-130mms. Unlike the BB1 examples, all have chamfered bases. Generally, the burnished decoration is regular and finely executed and is usually acute lattice, with occasional single diagonal lines (638). A wide variety of bowls and dishes can be distinguished within this category, but no chronological developments can be suggested. Two illustrated examples, 635 and 640, are in the variant BB2-2597. All forms can be paralleled at Colchester, including the example with single diagonal lines, which is rare in the City (Colchester Type 42; Type 46, 103, Symonds & Wade forthcoming).

Plain-rim dishes (IVJ, 645-6) featuring a burnished wavy line are much less common than the lattice decorated IVH1-4s, but appear throughout the period. Both illustrated vessels can be paralleled at Colchester (Type 11, 13; Type 18, 28, *ibid*).

BB2-2238

A significant development within the BB2 range is the emergence of rare sherds in the Hadrianic groups, but more typically in early Antonine, of BB2-2238. This appears to be a precursor of the later industry, evidenced at New Fresh Wharf (Richardson 1986, 127). The principally Severan pottery from New Fresh Wharf has a finer fabric and a glossier finish than the earlier Antonine material. Equally, the forms at New Fresh Wharf are later types with a large number of rounded-rim, undecorated bowls (IVH5-7).

A similar fabric, distinguished by organic inclusions, and similar forms have been noted from Cliffe (S5/4b, Monaghan 1987, 248). Material from Kiln 2 at Mucking is also similar (R Arscott, pers comm), but the majority of Mucking pottery seems to be undecorated (Jones & Rodwell 1973, fig 4, 7-13), and a Kent source is preferred.

Dating

Fig 96

When considered as a single group, BB2-2238 and related fabrics form a sparse but significant proportion of black-burnished wares. Although it appeared from the Trajanic period onwards, it was rare (4 grammes, not visible on Fig 96) and not until the early Antonine period did it occur in any quantity (8% by weight of all BB2). Understanding of the fabric is hampered by the lack of mid to late 2nd century assemblages; however, evidence from New Fresh Wharf indicates that by the late 2nd/early 3rd century it had become one of the major BB2 fabrics (Richardson 1986, 127).

Fabric and technology

P1 5ak

Four variants within this fabric were initially separated to test for chronological and typological differences. However, the homogeneity of both fabric and form suggests production from a single source or two sources within close proximity, and they are therefore considered together here as BB2-2238. They all share a silky surface with 1462, but differ from it in having more fine quartz and organic inclusions.

BB2-2238 is a hard, light grey fabric (7.5YR 6/0), sometimes with light brown (7.5YR 5/0) margins or core which is slightly laminar in fracture and has abundant quartz (SA, A <0.6mm). Other inclusions in the same size range include sparse black iron-rich fragments (R, SA), organics (F, R) and limestone (SA), with lesser amounts of white mica set in a silty matrix. The vessels are slipped medium dark grey (7.5YR 2.5/0), although some examples vary to light grey (7.5YR 6/0), and are usually well burnished. BB2-2127 is a variant containing more silt-sized inclusions, while the quartz in 2237 is usually to c 0.3mm. BB2-2127 tends to be dark grey or black (7.5YR 3/0-4/0), but sometimes has dark brown (2.5YR 3/0; 2.5YR 5/6) margins or core. Finally, BB2-117 is almost identical to 2237 but is restricted to jar forms and lacks the highly burnished surface seen on other variants.

Forms

The forms are restricted to jars and, more commonly, bowls.

fars Fig 99, Nos 647-8 Jars have pronounced everted or cavetto rims (IIF6), which differ markedly from the more upright rims of the Hadrianic period, and are burnished with grouped lattice. These vessels are restricted to the early Antonine groups from Newgate Street and may therefore be later than 160.

Bowls and dishes Fig 99, Nos 649-57 The majority of the bowls are decorated IVH1-4s (649-55). In this fabric the normal triangular rims of the IVHs deviate quite significantly towards rounded rims (cf 652 with 654). Generally they feature acute lattice, but some have single diagonal lines (655). Similar rim variants are noted at Cliffe (5D4.2, 5D7.2, Monaghan 1987, 146), and the single diagonal line decoration can be paralleled at Upchurch (5D6.1, *ibid*). Number 649, a deep bowl with acute lattice, has a typical rim, but features the thin body wall distinctive to the Kent products. Others are more unusual: 650 has a rolled rim, heavily undercut, which can be paralleled by vessels from Cliffe and Upchurch (5D0.2, 5D0.3 respectively, *ibid*); 651, burnished with intersecting vertical and horizontal lines, is unparallelled.

Rounded-rim undecorated bowls, belonging to IVH5-7 (656-7), and generally thought to be late 2nd century in date, are also present in these fabrics at Newgate Street, but in very small quantities. The poor quality of the burnishing distinguishes the early Antonine examples from the glossier Severan ones. Undecorated bowls with round rims are common among the Kent assemblages, and generally date to mid and late 2nd to early 3rd century (*ibid*, 140).

BB2-2768

The fabric is similar to material from the Chalk area of Kent (J Monaghan, pers comm)

Dating

Fig 96

BB2-2768 is represented by a single vessel from an early Antonine layer.

Fabric and technology

P1 5a1

This fabric with silky burnished surfaces is distinguished from the other BB2 fabrics by a very dense, hard matrix and large limestone inclusions.

This hard, smooth fabric is distinctive with prominent amounts of limestone (R 0.2-0.7mm) and black iron-rich inclusions (R 0.1-0.8mm), together with moderate amounts of quartz (R, SA <0.5mm, but occasionally 1.5mm) in a dense, silty matrix. Sparse white mica is present and is more noticeable on the surface. The irregular fracture is dark grey (7.5YR 3/0) with brown (7.5YR 4/4) margins and a burnished slip varying from black (7.5YR 4/0) to brownish-grey (2.5YR 5/2).

Forms

Bowls and dishes Fig 99, No 658 The vessel is a IVH1-4 dish with a downward curving triangular rim, decorated with single diagonal lines. Its typology conforms well with the Kent series (5D1.4, Monaghan 1987, 145).

BB2-2759

Comparison with material held by the Dartford Museum and the Kent Archaeological Society, and, most importantly, similarities between City and Kent BB2 fabrics drawn by Monaghan (pers comm) indicate a Kent source for this fabric. Close parallels can also be found between south Essex and the Thameside-Kent pottery traditions, and a south Essex source must not be excluded. However, the lack of large published groups makes it difficult to assign our material to this area with confidence.

Dating

Fig 96

The fabric was always sparse, but during the Hadrianic period it was the second most common BB2 fabric after BB2-1462 (22% of all BB2 by weight); by the early Antonine period it was diminishing.

Fabric and technology

P1 5am

A fabric similar to 1462, usually including the silky surface, but distinguished by having sparse but consistent calcareous inclusions. BB2-2759 is virtually identical to a Kent fabric (S1/4b, Monaghan 1987, 246).

A hard, dark grey (2.5YR 4/4) fabric, with brownish-grey (7.5YR 4/2) margins and dark grey (7.5YR 4/0) surfaces, which is smooth to the touch and irregular in fracture. The main inclusions are abundant, fairly well-sorted quartz, sometimes with a brown appearance, possibly coated in haematite (R, SA 0.2-0.5mm, but occasionally <1.0mm). Also present are moderate amounts of black, less frequently red, iron-rich inclusions (R 0.2-0.7mm) which tend to weep into the silty matrix. Prominent fragments of quartz (SA 0.5mm>) are noticeable in the fabric, together with sparse limestone (SR 0.2-0.3mm) and moderate amounts of white mica visible on the surface. Rare flint can also be identified (0.6mm). The surfaces tend to discolour and not all vessels are necessarily slipped.

Forms

Although the decorative features of these vessels conform to the traditional BB2 style, the forms, consisting almost entirely of bowls, tend to deviate. Jars are rare and are not illustrated here.

Bowls and dishes Fig 100, Nos 659-67 The most common form is the IVH1-4, with triangular rim and acute lattice (662-3). The vessel walls are distinctly thinner than on other BB2 fabrics, a feature also noted in assemblages from Cliffe (5D1.2, SD0.4, *ibid*, 145-6). The same general types decorated with single

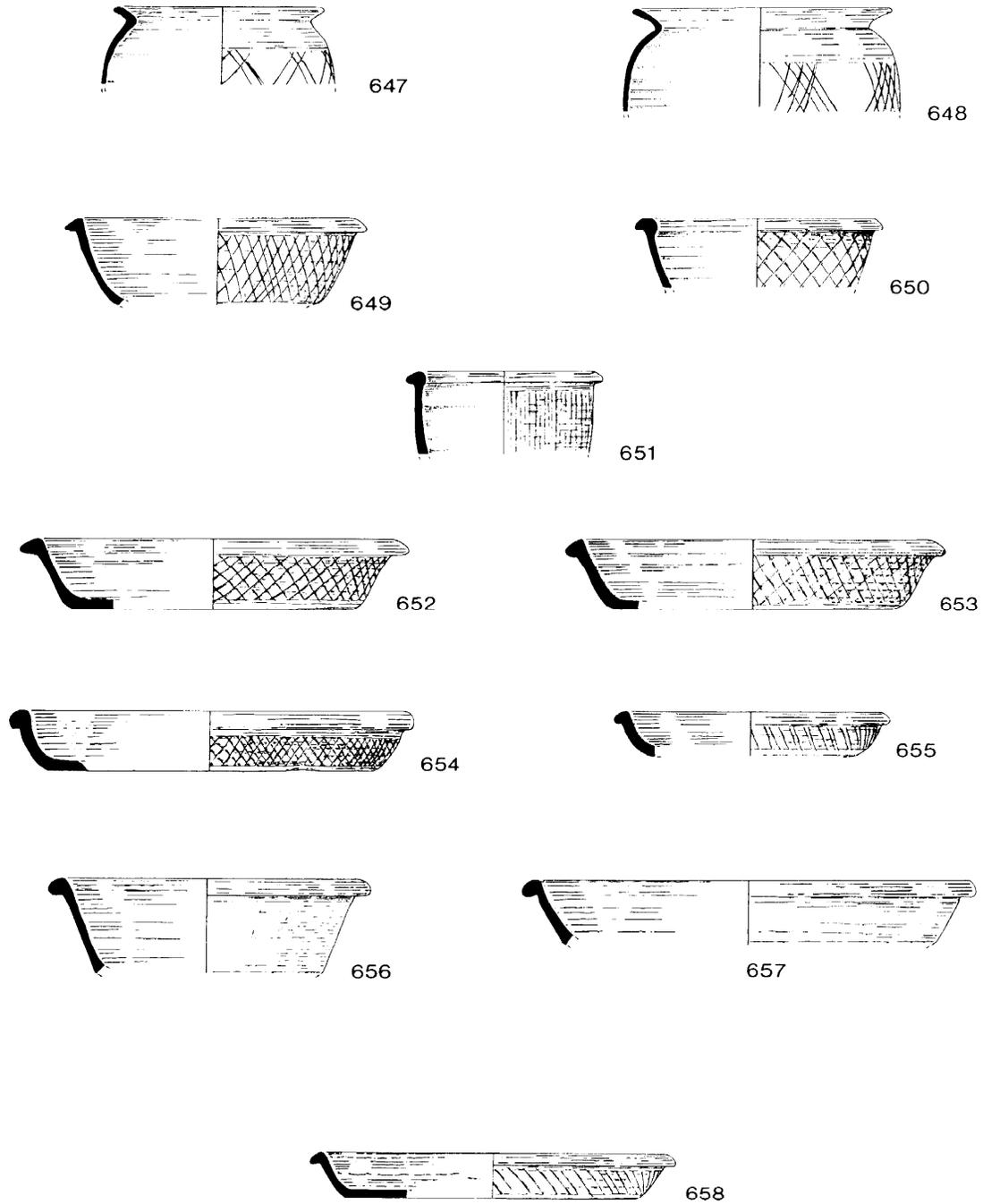


Fig 99 *Black-burnished ware 2 fabric 2238, jars, nos 647-8; bowls/dishes, nos 649-57. Black-burnished ware 2 fabric 2768, bowls/dishes, no 658 (Scale 1:4)*

diagonal lines (664-5) can also be paralleled at Cliffe (5D1.3, 5D2.2, 5D4.1, 5D5.3, *ibid*) as well as at Upchurch (5D5.1, 5D6.1, *ibid*, 146). A single vessel is undecorated (IVH7, 666). It has a thick, triangular, slightly downward pointing rim, as does 5C4.1 from Cliffe (*ibid*, 141).

A second bowl form with a flatter rim (IVG, 659-61) and acute lattice decoration, is more consistent with those in BB1. The vessels are clearly wheelmade and although unusual for BB2, similar vessels are noted at Cliffe (5D3.1, *ibid*, 146).

Plain-rim dishes (IVJ variant, 667) are rare in comparison with IVGs and IVHs. They differ from those published by Gillam in that the rim and external body wall are delineated by a groove. Similar vessels are common among the Kent assemblages at Cliffe, Cooling and Upchurch (5F, *ibid*, 150), but they appear to lack the single diagonal lines illustrated here.

BBS-2764

Dating

The fabric is rare, with quantified examples accounting for <1% of all reduced wares from Trajanic-early Antonine contexts.

Fabric and technology

A black-burnished ware with light grey silky surfaces, distinguished by a having only moderate amounts of quartz.

The fabric is loose in texture with sparse to moderate well-sorted quartz (R 0.3-0.5mm, but occasionally 0.7-1.3mm) and sparse black iron-rich inclusions (R 0.1-0.4mm) set in a fine silty matrix. It is dark grey (7.5YR 4/0) with slightly lighter (7.5YR 5/2) margins and an irregular fracture. Surfaces are also light, and are slipped and burnished; where burnt the iron-free slip is white.

Forms

Bowls and dishes Fig 100, Nos 668-9 Vessels in this fabric are the flat-rim IVG, normally associated with handmade BB1 products, and are either decorated with acute lattice or plain. Number 668 is an enlarged variant of the more typical flat rim.

BBS-718

The fabric is similar to a grey ware, but the form allies it to black-burnished ware.

Dating

BBS-718 is rare and only occurs in early Antonine levels, where it accounts for <1% of all reduced wares by weight.

Fabric and technology

A fine textured fabric with abundant quartz inclusions and rough surfaces. The vessels are wheelmade;

external burnishing is grey with lattice decoration on an unburnished zone.

This light grey (7.5YR 5/0) fabric with dark grey (7.5YR 3/0) margins is hard and rough in texture with abundant well-sorted quartz (SA 0.2-0.3mm) and sparser black iron-rich inclusions (SA 0.2mm>). The clay is highly fired, with a hackly fracture.

Forms

Jars The jars consist of upright everted-rim types (IIF6) and feature grouped lattice decoration. Examples are too fragmentary to illustrate.

Bowls and dishes Fig 100, No 670 The only surviving profile in this fabric type belongs to a plain-rim dish (IVJ); decorated with a burnished wavy line, it is carinated sharply towards the base.

5.9 East Sussex Grog-tempered ware (SUG)

This handmade, grog-tempered ware from East Sussex continues an Iron Age tradition throughout the Roman period (Green 1980a).

Dating

Examples are extremely rare but are represented by at least two vessels from 25-6 Lime Street, where they first occur in Trajanic deposits (<1% of all reduced wares by weight); later sherds are from the same vessels and therefore residual.

Fabric and technology

A grog-tempered fabric with abundant black grog in a light grey matrix. The vessels are handmade and burnished on the exterior.

A coarse, hard fabric with a soapy feel and an irregular fracture. It has a light grey (2.5YR 8/0) core, a brown (10YR 5/4) exterior margin and brownish-black (10YR 4/1) exterior surfaces. The main temper is abundant grey grog (0.4-1.0mm) and a moderate quantity of fine white mica which is only visible on the surfaces. There are very sparse amounts of limestone (SA 0.2-0.4mm), iron-rich inclusions (R 0.3-0.7mm) and quartz (SA c0.5mm).

Forms

Jars Fig 101, Nos 671-2 Two storage jars (SJ) with neck cordons are represented in this category; both can be paralleled by Green (1980a). Number 672 has an everted rim and groove on the girth. Typical 'eyebrow' decoration occurs on the shoulder, together with circles on the cordon and over the rim edges. Black slip, which may be pitch, is denoted by stippling. Number 671, an undecorated example, belongs to a similar type with a slightly out-turned rim. Both occur in early 2nd century deposits, which conforms with Green's (1980a, 73-5) suggested late 1st to early 2nd century date for these forms.

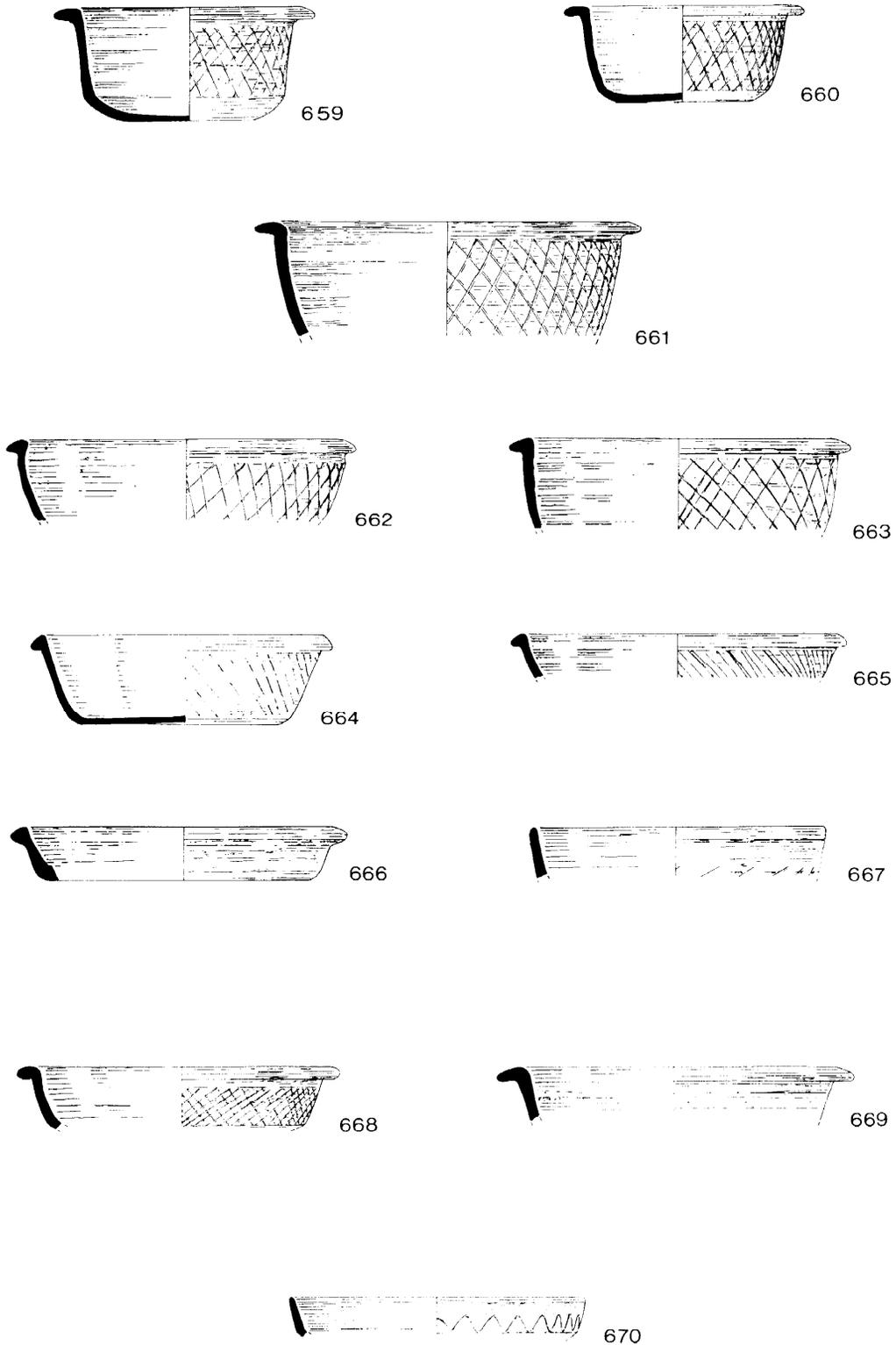


Fig 100 Black-burnished ware 2 fabric 2759, bowls/dishes, nos 6.59-67. Black-burnished Style fabric 2764, bowls/dishes, nos 668-9. Black-burnished Style fabric 718, bowls/dishes, no 670 (Scale 1:4)

5.10 Rusticated ware (RUST)

Dating

Rusticated wares are extremely rare in the City, as throughout the southeast. Most examples are pre-Flavian in date although this is not apparent from the quantified data, where it forms <1% by weight of all reduced wares in pre-Boudiccan and Trajanic contexts.

Fabric and technology

A moderately fine, micaceous fabric with coarser clay used for the rustication.

A hard smooth textured fabric, brown (7.5YR 7/2-5/2) with darker grey (7.5YR 5/0-4/0) surfaces. Sparse quartz, black and brown iron-rich inclusions (R <0.6mm), a scatter of limestone (R) and white mica are set in a fine silty matrix. The external surface has been smoothed and a coarse rustication applied over part of the body. The latter appears to be the same clay matrix as the body, but with additional abundant quartz (R <1.0mm) tempering.

Forms

Beakers Fig 101, No 67 Beakers with sharply everted rims and rusticated decoration occur in the Reserve Collection. Stratified examples are restricted to body sherds.

5.11 Unsourced Sandy Grey wares (SAND)

SAND-2862

Two fabric variants (amalgamated here as SAND-2862) are similar in texture and form to what is commonly referred to as Rhineland Granular Grey ware (RGGW, Anderson 1981), although they form a separate group which is most likely to be Romano-British in origin. There is some debate as to whether the vessels from the Reserve Collection are RGGW or products of Rhenish potters in Britain (Anderson 1981 *contra* Marsh & Tyers 1976, 242). However, the fabric included here is distinct from those described by Marsh and Tyers.

Dating

The rare City examples occurred sporadically between the pre-Boudiccan and Hadrianic periods (always <1% of all reduced wares by weight), whereas Anderson (1981, 95) dates those produced in the Rhineland to the 1st century.

Fabric and technology

A granular, sandy, reduced fabric with very rough surfaces.

Two variants are incorporated in this group. SAND-2862 is a grey (7.5YR 5/1), very hard fabric with a rough texture and hackly

fracture. The matrix is silty and the principal inclusion is abundant well-sorted quartz (R, SA 0.3-0.8mm). There are sparse iron-rich inclusions (R 0.1-0.3mm) and very occasional flint (<1.3mm) and sub-angular calcareous inclusions, in the same size range as the quartz, together with sparse white mica which is visible on the surfaces. SAND-2873 is somewhat coarser, with rounded quartz grains measuring 0.5-1.2mm. It is greenish dark grey (2.5Y 4/2) with very dark grey (2.5YR 3/0) margins and surfaces.

Forms

Three forms are represented, each by one example.

Jars Fig 101, No 67 4 This includes a bead-rim jar (IIA) with grooved shoulder. Although the form cannot be paralleled to Anderson's (1981) typology, the texture and appearance are similar to Granular Grey ware and the other City examples.

Beakers Fig 101, No 67 5 This distinctive beaker with grooved shoulder and pinched, moulded girth relates to Anderson's fig 6.2, 7-12.

Bowls and dishes Fig 101, No 67 6 A bowl, similar to the moulded-rim IVA but with an inclined rim, equates with Anderson's fig 6.3, 26.

5.12 North Gaulish Grey wares (NGGW)

This rare fabric represents the earliest occurrences of North Gaulish Grey wares produced in Picardy/Pas de Calais which became more common at some sites, such as New Fresh Wharf, from the late 2nd century onwards (Richardson 1986, 106-9).

Dating

Grey wares were produced in this region from the Tiberian or Claudian period and continued throughout the Roman era (Richardson & Tyers 1984). Dating of the various jar forms depends on the relationship between the rim and shoulder, and therefore fragmentary examples cannot be precisely dated. The rare quantified examples (<1% by weight of all reduced wares) come from contexts of the Trajanic period or later. Both illustrated examples, but particularly 677 (Fig 101), are decorated with the vertical burnishing or *bandes lustrée* typical of the ware from the Flavian period onwards (Richardson & Tyers 1984, 136). NGGW-2718, which is virtually identical to the later material found at New Fresh Wharf (Richardson 1986, 106-9), was first present during the early Antonine period.

Fabric and technology

A hard, reduced fabric with dark surfaces and light core, and abundant well-sorted quartz. The City material compares well with a sherd from Arras.

A hard fabric which is rough to the touch with an irregular fracture. The core is light grey (2.5YR 8,0-7/0) with darker grey

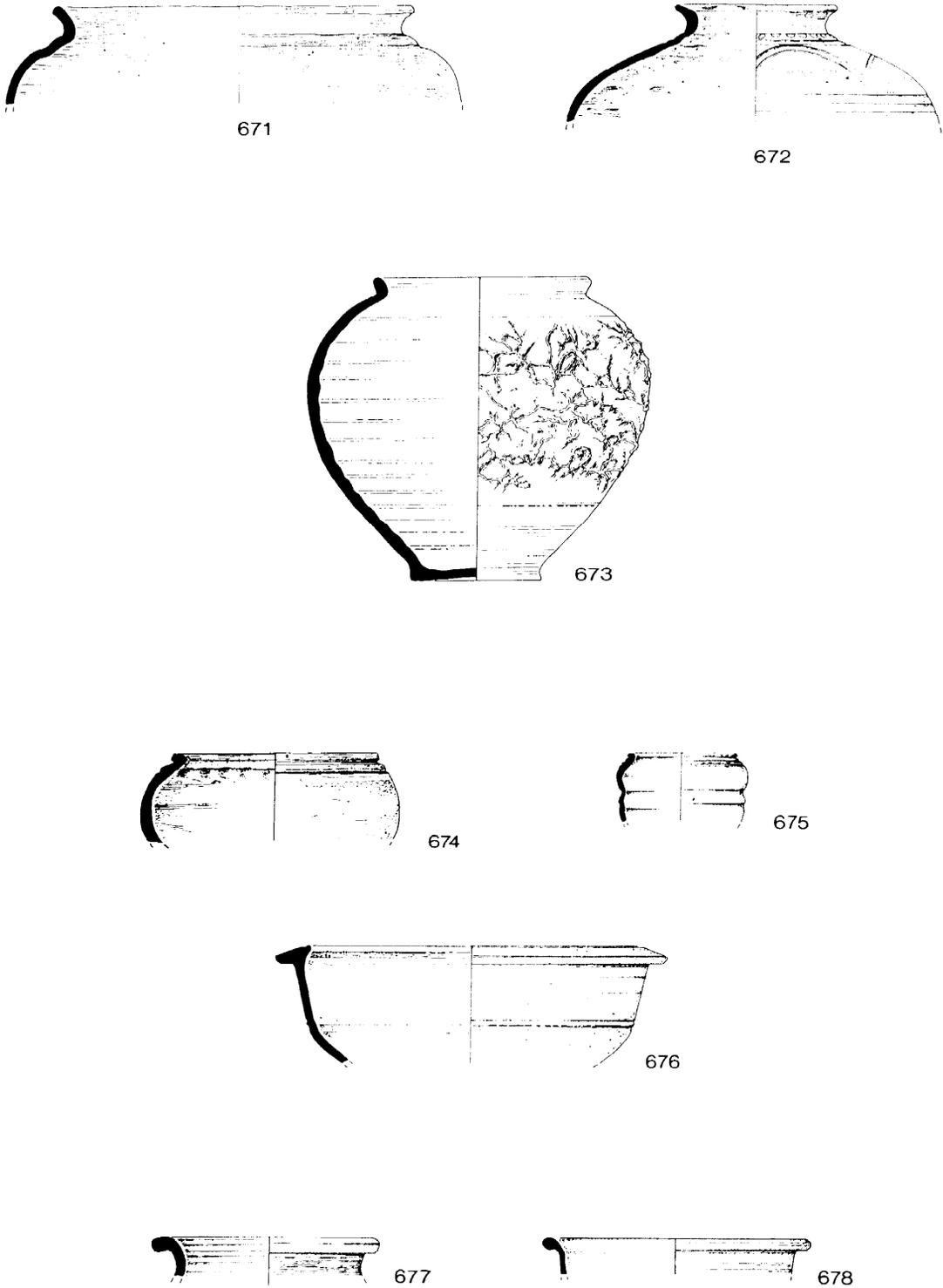


Fig 101 East Sussex Grog-tempered ware, jars, nos 671-2. Rusticated ware, beakers, no 673. Sandy fabric 2862, jars, no 674; beakers, no 675; bowls/dishes, no 676. North Gaulish Grey wares, jars, no 677; bowls, no 678 (Scale 1:4)

(10YR 4/1) surfaces; the main inclusions are abundant well-sorted quartz (SA 0.2-0.4mm) and ill-sorted black iron-rich fragments (SA, R 0.1-1.0mm). Sparse, very fine white mica is also present. Burnt sherds are inverted in colour, with light surfaces and a dark core.

Forms

Jars Fig 101, No 677 A necked jar (NJ) with a hooked rim can be identified.

Bowls Fig 101, No 678 A bowl with bead rim and internal bevel on the inside wall is present in NGGW-2718.

6. Fine wares

Apart from samian ware, the division between 'fine' and 'coarse' wares, as terms of archaeological description, is not well defined (cf Pollard 1988, 20-2). Both fabric and function contribute to the definition of fine wares, for they will usually (but not always) have a fine clay and be intended for use at the table rather than for storage or food preparation. Additionally, fine wares normally have special surface treatment, either slip or other decoration.

In this discussion fine wares are divided into major technological groups (colour-coated, Pompeian Red, mica-dusted, ring-and-dot, Gallo-Belgic white wares, eggshell, terra nigra and reduced wares). Aspects of production, importation and typological origins of non-sigillata fine wares have already been discussed (Arthur & Marsh 1978; in particular Marsh 1978) and are not addressed here.

The fine ware groups presented here constitute only a small percentage of the total pottery but, because of London's location and status, the number of different fabric groups represented is large in comparison with actual quantity. Plate 4 illustrates a range of Romano-British fine wares, most of them probably local.

6.1 Colour-coated wares

Colchester Colour-coated ware (COLC)

Dating

Fig 102

First century colour-coated Colchester products are rare in the City and are mainly confined to lamps, which are not included here. It was not until the late 1st century that colour-coated wares from Colchester began to appear in any number and they only became significant, although still sparse, in early Antonine contexts. In later Roman levels they become moderately common.

*Fabric and technology

Pl 5an

A fine, sandy colour-coated ware. The slip is generally dark grey (2.5Y 4/0) and its thickness varies. Other decoration usually consists of roughcasting composed of crushed clay particles and occasional rounded quartz grains (1.0-2.0mm).

Some products assumed to have been made at Colchester have been shown to be chemically similar to material from Sinzig in east Gaul (Symonds 1990, 12), and some or all of our sherds could be Continental in origin.

A reddish-brown (2.5YR 5/6) fabric, occasionally with a grey (5YR 8/1) core or margin. The fracture is finely irregular and the surface is rough from abundant silt-sized quartz. Larger quartz grains (A c 0.25mm) are sparse, as are reddish-brown iron-rich inclusions, limestone and mica.

Forms

Beakers There are no surviving rims. The single example from Flavian levels is scale decorated, whereas those from early 2nd century and later contexts are from roughcast and folded beakers.

Local Marbled ware (LOMA)

These marbled wares are thought to have been local and are identical in fabric to Local Eggshell ware (LOEG, Section 6.6). The two fabrics are contemporary and share typological features as well as fabric. Other marbled wares are Verulamium Region Marbled ware (4.6 below) and Romano-British Marbled ware (p 123).

Dating

Fig 103

LOMA occurs sparsely and was sometimes found in the Flavian and Trajanic periods, but was primarily Hadrianic.

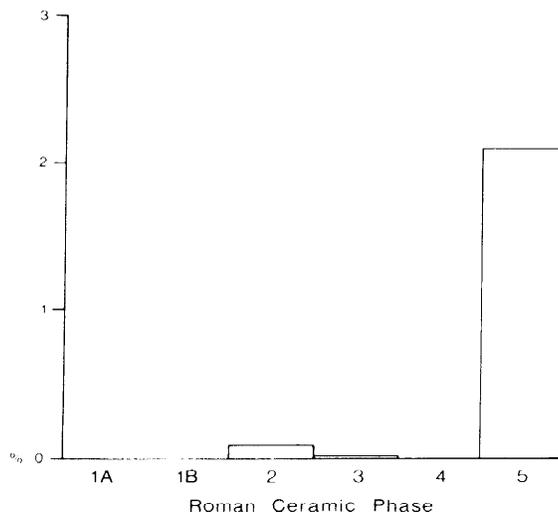


Fig 102 Bar graph of Colchester Colour-coated ware as a percentage of all non-samian fine wares by weight

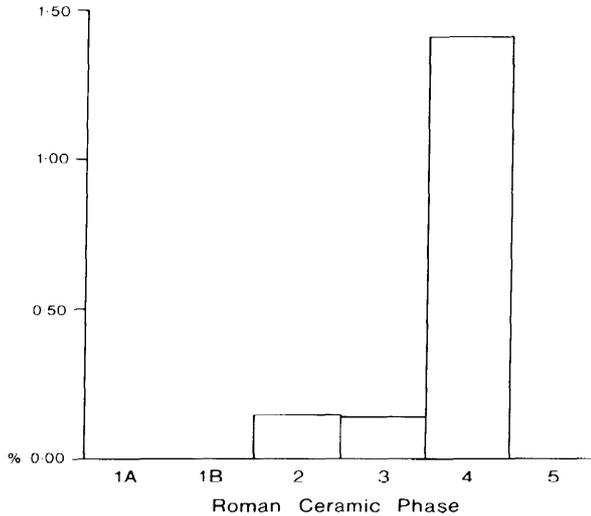


Fig 103 Bar graph of Local Marbled ware as a percentage of all non-samian fine wares by weight

*Fabric and technology

Pl 5ao

A fine, white fabric with marbled slip. The photographed example is unusual in having a light grey core. The marbled effect seen on this and other marbled pottery may well have been created by 'lightly wiping the surface or sharply rotating the pot on a wheel' (Leach 1940, 114).

A hard fabric with a smooth fracture. It is normally pure white in colour, with a dense clay matrix containing moderate well-sorted quartz (SA <0.5mm), with occasional larger grains (c 1.0mm) and red iron-rich inclusions (R <0.5mm). The clay matrix is identical to Local Eggshell ware (LOEG) but the quartz is denser. The marbled slip is either orange-red (2.5YR 6/12) or greyish-brown (10YR 4/4).

Forms

In many cases LOMA is represented only by small sherds, difficult to assign to a particular vessel type. The range of forms is similar to LOEG, as are their dates, but only the more common bowls and cups are discussed below.

Bowls and dishes Fig 104, Nos 679-81 Three of Marsh's bowl types can be identified from the City. These include MT 45 (679), a carinated bowl with strainer and plain, out-turned rim; MT 34 with curving rim (680, also identified in LOEG, Fig 126, 798); MT 28 (681), a shallow dish with a lid seat. Bowls imitating Drag 37 (IVE, MT42) are also known, although not illustrated here.

Cups Fig 104, No 682 Wide-mouthed cups (VIC, MT11), which are common in LOEG (Fig 127, 80 1-2), also occur in LOMA but have yet to be found in stratified groups and are not illustrated here. Cups imitating Drag 27 (VIA, MT12, 682) are also present on City sites.

Romano-British Marbled ware (RBMA)

Other marbled wares are Verulamium Region Marbled ware (Section 4.6) and Local Marbled ware (above).

Dating

Although rare, the two identified sherds fall within the late 1st to early 2nd century date range suggested for Romano-British Glazed ware (RBGW). They comprise <1% of all non-samian fine wares by weight in the Trajanic period.

Fabric and technology

A reduced, fine sandy ware with marbled slip.

This fabric is generally grey (2.5YR 7/0), with margins sometimes oxidized reddish-brown (2.5YR 5/10). It is fairly hard and fine with a silty matrix containing occasional rounded, brown iron-rich inclusions to c 0.6mm; some white mica is also present. Both vessels have a white under-slip on all surfaces covered with orange-red (2.5YR 6/10-6/12) marbling.

Forms

Bowls and dishes Examples of this fabric are rare and, as yet, restricted to bowls. Two vessels have been identified: a bead-rim bowl sherd, possibly an imitation of Drag 37 (IVE), from unstratified levels at Billingsgate, and a body sherd of a bowl from a Trajanic group at 25-6 Lime Street.

Romano-British Glazed ware (RBGW)

Romano-British Glazed ware has been discussed by Arthur (1978), who suggests that the types present in London had their origins in southeast England. This group is easily distinguished from its Continental counterpart by its fabric and glaze. It is, however, superficially similar to medieval glazed London ware (Vince *et al* 1985).

Dating

In general, RBGW was produced during the late 1st and early 2nd century (Arthur 1978, 300- 1). The fabric is sparse in the City and most stratified examples occur in unquantified Trajanic-early Antonine contexts, although in the latter it may well be residual.

Fabric and technology

Pl 5ap

This fabric is identical to Romano-British Marbled ware (RBMA), but is glazed rather than slipped. The translucent lead glaze appears as a medium green (5Y 4/2-4/4), dulled by the grey fabric underneath (Arthur 1978, 300). In some cases the glaze has been applied over barbotine decoration made of white inclusionless clay.

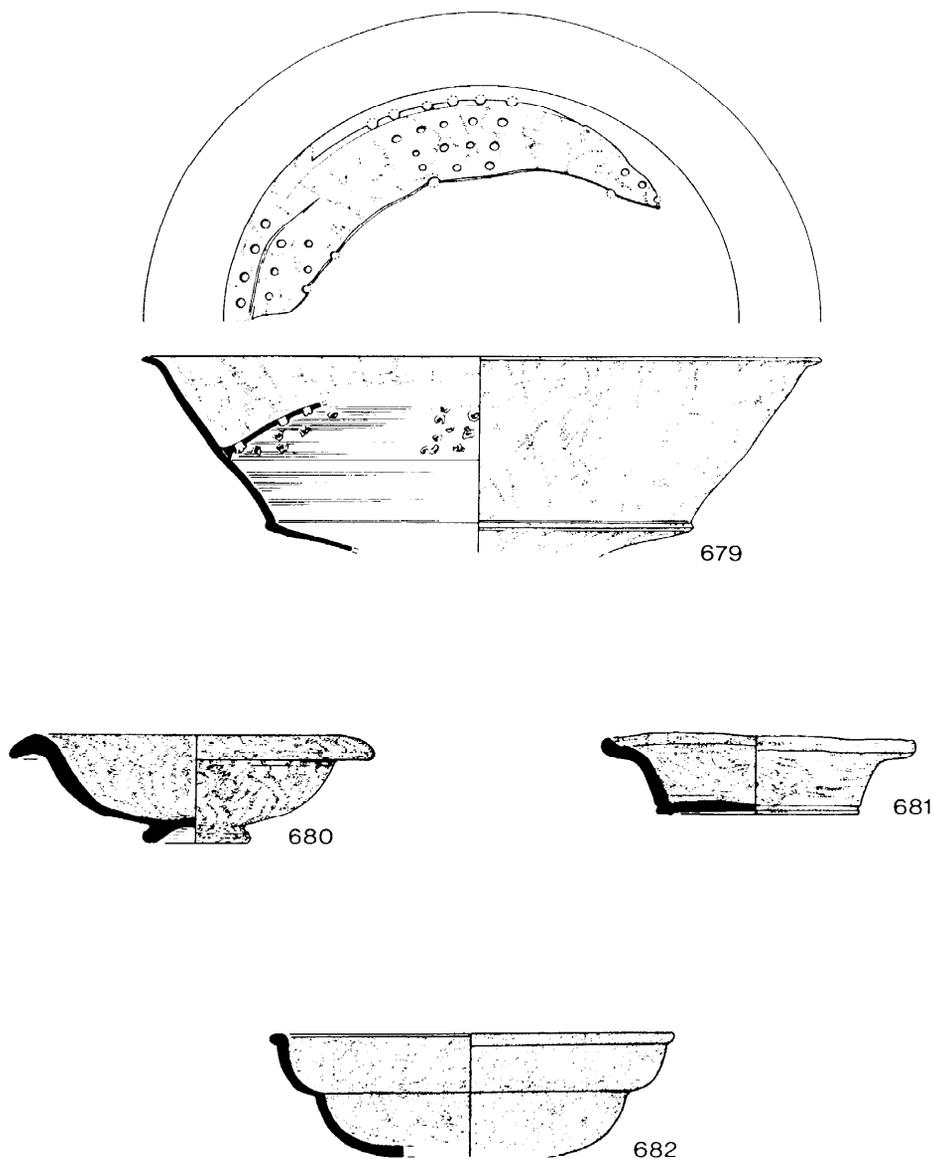


Fig 104 Local Marbled ware, bowls/dishes, nos 679-81; cups, no 682 (Scale 1:2)

Forms

Imitation samian forms, flagons and beakers are represented in this group, many with barbotine decoration.

Flagons Fig 105, No 683 This category is represented by a pear-shaped flagon with cup rim, decorated with barbotine circles (AT1). An unillustrated sherd of an

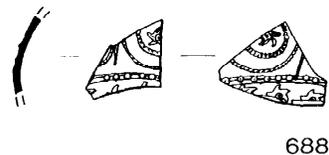
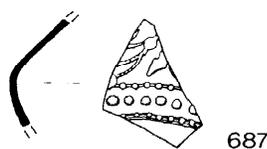
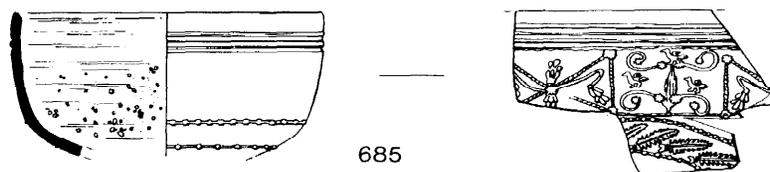
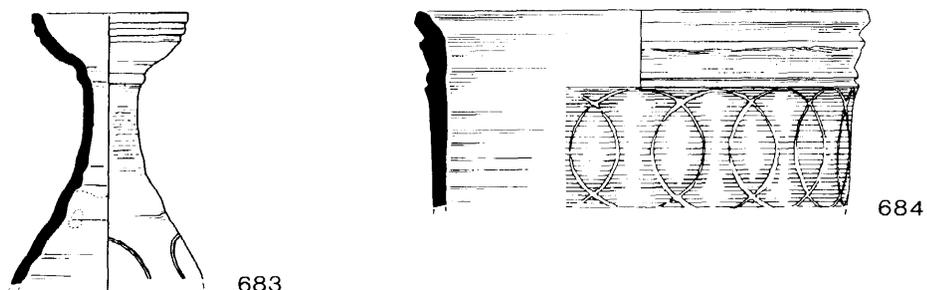


Fig 105 Romano-British Glazed ware, flagons, no 683; bowls/dishes, no 684. South Gaulish Colour-coated ware, cups, nos 685-8. Spanish Colour-coated ware, cups, no 689 (Scale 1:2)

enclosed vessel from a Trajanic context, possibly a flagon or a beaker, is decorated with small barbotine loops or scales, a style not previously noted in Arthur's typology.

Bowls and dishes Fig 105, No 684 An unstratified example of Drag 30 (IVC, AT5) has a barbotine decorated panel of overlapping circles under the glaze.

South Gaulish Colour-coated ware (SGCC)

In addition to samian, the kilns at La Graufesenque produced small quantities of colour-coated wares for export, which are referred to here as South Gaulish Colour-coated wares.

Dating

The fabric, which is not common in Britain, is a rare and unexpected London type. All the examples come from the pre-Boudiccan deposits at 5-12 Fenchurch Street (Chadburn & Tyers 1984, 21) and fall within Greene's (1979, 54) Claudian-Neronian date for moulded cups. It accounts for 2% of all non-samian fine wares by weight during the pre-Boudiccan period.

Fabric and technology

A fine, inclusionless, light-coloured oxidized fabric, with reddish-brown slipped surfaces.

There is some variation within this high-quality fabric, but the ware is usually pinkish-brown (7.5YR 7/4; 5YR 7/4). The clay is virtually inclusionless, apart from rare visible quartz. The exterior surface, which is slipped a light reddish-brown (2.5YR 6/6), frequently has a metallic sheen, giving the vessels a bronzed appearance.

Forms

Cups Fig 105, Nos 685-8 The City examples can all be classified as moulded cups. Number 685, the most complete vessel, has a fairly thick, coarse rim, in common with most other examples found in Britain (Greene 1979, 52). All of them have internal rough-casting; externally they have moulded decoration in the style of samian ware, including leaves, wreaths, rosettes and bead-rows, although there are no identical published parallels known (Willis 1990, 30). Prior to these City finds, there were seven moulded cups from Britain (*ibid*), so the four new vessels from 5-12 Fenchurch Street almost double the total of recognized examples.

Spanish Colour-coated ware (SPAN)

Dating

The rare examples of this type come from unquantified deposits and cluster in the Neronian-Flavian period, which accords with Greene's (1979, 71) proposed dates.

Fabric and technology

A fine, oxidized fabric with a bronze-orange metallic slip.

A fine fabric, cream-buff (10YR 8/4), soft with a smooth fracture. Visible inclusions consist of rare red iron-rich (I, SA) and limestone (R) inclusions (<0.2mm). The slip is typically bronze-orange (2.5YR 6/8) with a metallic sheen.

Forms

Both beakers and cups are known in SPAN.

Cups Fig 105, No 689 The fabric is illustrated by a cup with an applied roundel, typical of the Spanish repertoire.

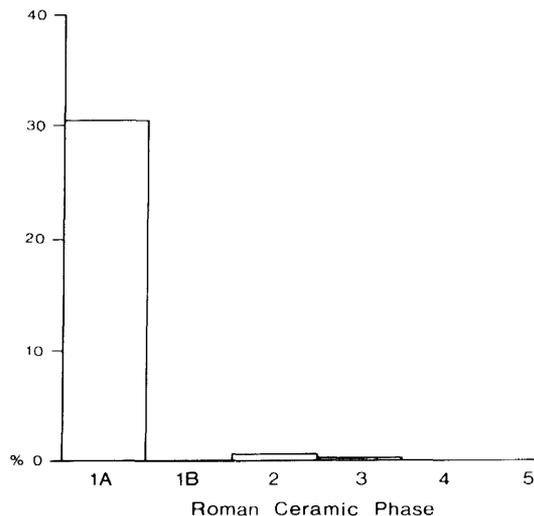


Fig 106 Bar graph of Lyon ware as a percentage of all non-samian fine wares by weight

Lyon ware (LYON)

Lyon ware is perhaps the best known of the Claudio-Neronian non-sigillata fine ware industries of Gaul and is certainly the most widely recognized in Britain.

Dating

Fig 106

Although most common in pre-Boudiccan layers in the City, as elsewhere in Britain it still circulated in small quantities in the Flavian period. Greene (1979, 17-18) suggests that it may have occurred up to c 75, and the sparse evidence from the City does not contradict this. In general it occurs in moderate quantities.

Fabric and technology

A fine, white fabric with a greenish tinge. Many vessels are decorated with roughcasting composed of quartz in the same size range as the fabric, while the slip is typically greenish-brown (2.5YR 4/4-4/2) and has a metallic sheen.

This fabric has a buff-white clay with a greenish or yellowish (5Y 8/2-9/2) tinge, usually soft to medium but sometimes hard, with a fairly clean fracture. Inclusions are rare, consisting of quartz and iron-rich fragments (SA 0.4-0.8mm>).

Forms

LYON is usually represented only by sherds, but the pre-Boudiccan levels from 5-12 Fenchurch Street were exceptional and produced an unusually rich assemblage of early Roman fine wares (Chadburn & Tyers 1984). This included a range of Lyon types including lamps (not included in this corpus), cups

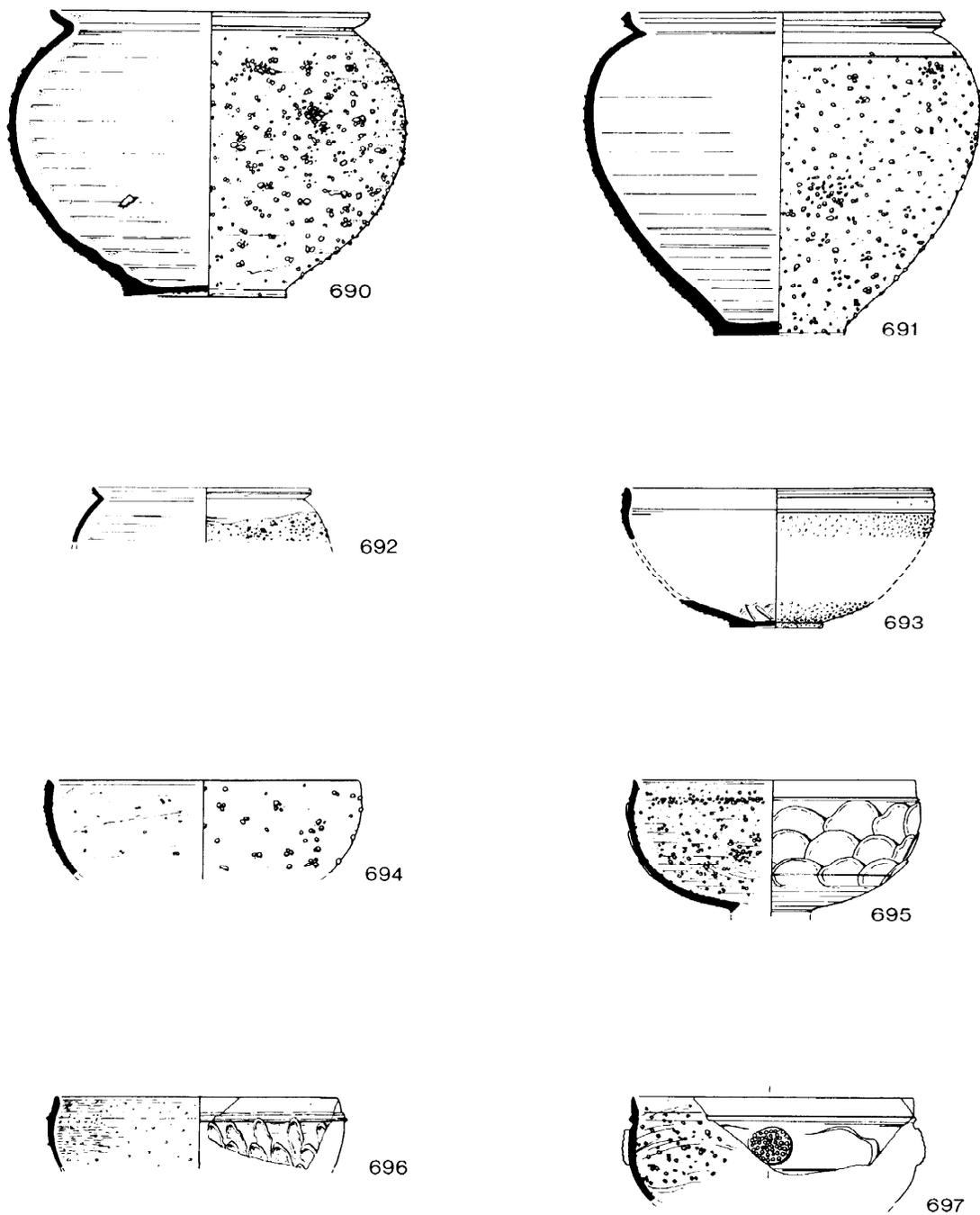


Fig 107 Lyon ware, beakers, nos 690-2; cups, nos 693-7 (Scale 1:2)

and beakers, all of which can be paralleled in Greene.

Beakers Fig 107, Nos 690–2 Beakers are generally the most common type on City sites, although they occur in approximately equal numbers to cups in the quantified data. They have high rounded shoulders with roughcast decoration and everted rims, which are both plain (690) and grooved (691–2). All illustrated examples belong to Greene's Type 20.

Cups Fig 107, Nos 693–7 Cups are usually roughcast on the interior and feature a variety of applied decoration on the exterior. The rims are plain, some with ridges or grooves just below them on the outside. Greene (1979, 18–24) separates them into types, many on the basis of decoration. Illustrated examples include vessels with exterior roughcasting (GT1, 693–4), rounded imbricated scales (GT3, 695), elongated applied scales (GT4, 696), and raspberry roundels with paired leaves or wings (GT5, 697).

Central Gaulish Glazed and Colour-coated wares

The central Gaulish fine ware industry produced vessels, principally roughcast and barbotine decorated beakers, in a range of fabrics. Two main groups have been identified in the City and are discussed separately here: Central Gaulish White wares (CGWH) and a series of other micaceous buff-coloured fabrics (CGOF). As the fabrics of the glazed wares from central Gaul (CGGW) are indistinguishable from the

colour-coats and the technique of decoration is allied, they are also included here, as are the black-slipped fabrics (CGBL).

Greene (1979, 44) suggested a source in the Lezoux area for the Central Gaulish Colour-coated wares; while the glazed wares (CGGW) were produced in both the Lezoux area and the Allier Valley (Greene 1978, 39). Many of our colour-coated wares have a fabric identical to the Allier Valley glazed wares and a similar source is therefore proposed for them. The Lezoux colour-coated wares are coded CGOF and CGBL and those from the Allier Valley as CGWH.

Evidence from the City suggests that the combined central Gaulish industries were the main suppliers of colour-coated wares to the City (excluding samian) in the Flavian-Trajanic period. However, when considered individually, it is clear that the wares overlapped, but flourished at different dates. Although they are the principal Continental products at this time, their share of the total fine ware market was small and the City was clearly drawing on other sources for its table wares.

Central Gaulish Glazed wares (CGGW)

Fig 108

Two possible sources of Central Gaulish Glazed wares have been identified: the Allier Valley and Lezoux. During spot dating both are coded as CGGW, but when quantified they are separated. Elsewhere their distribution is similar in date to Lyon ware (Greene 1979, 99–100), but in the City they occur in such small quantities that they add little to our understanding of the industry. As a whole, the type is distinctive but sparse. Quantified sherds are from Flavian and Trajanic deposits, but pre-Flavian examples are known.

CGGW-1039

Dating

The majority are found in contexts associated with pre-Flavian (not among the quantified data on Fig 108) or Flavian pottery.

Fabric and technology

The fabric is identical to that of Central Gaulish White ware (CGWH) and is almost certainly from the Allier Valley area of central Gaul (*ibid*, 86). The green lead glaze is often rather unevenly applied and sometimes is more yellow (5Y 7/6-6/6; 5Y 7/8-6/8) in tone.

Forms

Most of the rare occurrences are of single sherds, but the four recorded vessel types can be paralleled in Greene (1978, 1979) and have been noted at the production sites at St Remy and Vichy.

Flagons Fig 110, No 698 Two flagon types have been identified. This includes GT 1 or Déhelette 61 (not

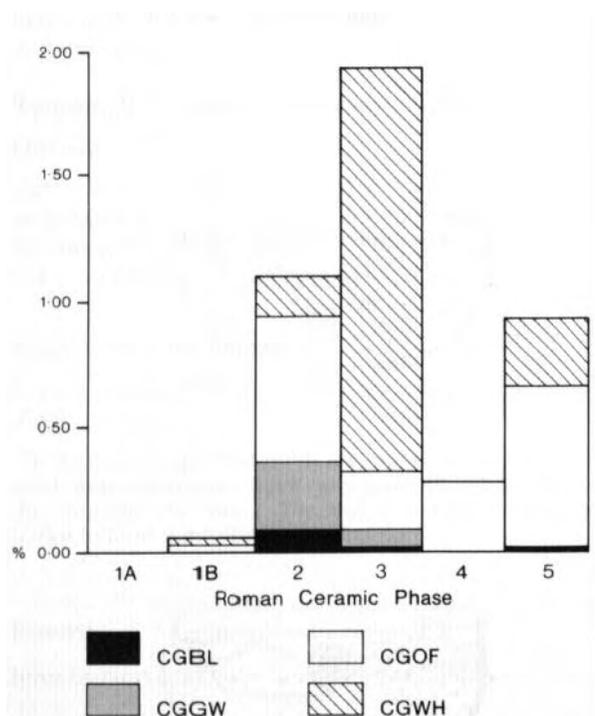


Fig 108 Stacked bar graph of Central Gaulish Colour-coated wares as a percentage of non-samian fine wares by weight

illustrated, cf Greene 1979, fig 40, 1) from a post-Roman context, which has a sharp carination and is decorated with moulded roundels and rosettes. Number 698 is another mould-decorated flagon, with circles on the shoulder, and it equates to GT 2 or Déchelette 60. The form is the most commonly occurring type in Britain and, when complete, is globular with a pedestal base. The rim is similar to our 703 discussed below.

Beakers Fig 110, Nos 699-700 Examples of beakers have both hairpin decoration and applied circles. Number 699 is similar to GT 13, although the slightly concave rim is more like GT 14; 700 is decorated as GT 14 but is represented only by a body sherd (cf *ibid*, fig 42, 13-14).

Cups Fig 110, No 701 A hemispherical cup with plain rim decorated with barbotine hairpins is included here. The type is similar to GT 8, but the decoration cannot be paralleled in Greene's typology.

Other forms Fig 110, No 702 An unusual fragment of an unguent jar in the shape of a boar has been identified from a late 1st/early 2nd century context. A wide variety of animal types is known from the Allier Valley (cf Rouvier-Jeanlin 1975-9, 103).

CGGW-3967

Glazed wares, in a micaceous fabric typical of the area, are also known from Lezoux, where Drag 29 bowls were produced (Greene 1978, 39). Although micaceous glazed fabrics are also known from Vichy/St Remy, similarities between these samples and Central Gaulish Other fabric (CGOF) may support a Lezoux source for CGGW-3967. In recent atomic absorption spectroscopy analysis, fabrics similar to the City CGGW clustered with unsourced sherds that were stylistically assigned to Vichy/St Remy (Symonds & Hatcher 1989). Additional analysis of kiln material may refine the source of micaceous glazed wares.

Dating

Two vessels of this type have been identified in the City and are Flavian and Trajanic in date.

Fabric and technology

The fabric is virtually identical to CGOF, though containing less prominent red inclusions. A light olive-green or yellow (2.5Y 7/8; 5Y 6/4) glaze is evenly applied and finely crazed on the surface.

Forms

Flagons Fig 110, No 703 The flagon belongs to GT 2 or Déchelette 60 (see description above) and bears similar but not identical decoration to examples known from Vichy and St Remy. It is wheelmade, with rosette-moulded decoration.

Bowls and dishes This vessel has an applied moulded leaf decoration and lacks internal glazing. Only a small proportion of the body wall has survived, but the constriction beneath the decoration, the decoration itself, and the internal diameter of c 110mm all make it similar to the handled bowls from Usk (Greene 1979, fig 41, 7). The vessel is burnt and occurs in a Trajanic group.

Central Gaulish White ware (CGWH)

Both the fabric and some decorative motifs are similar to those used on Central Gaulish Glazed ware (CGGW), pointing to a source in the Allier Valley.

Dating

Fig 108

CGWH occurs in moderate quantities and is clearly more common than glazed ware from the same source. It generally occurred in the City from c 60-120 and remained important throughout the Trajanic period.

***Fabric and technology**

Pl 5aq

A fine, white fabric with sparse red inclusions. There is some variation in the colour of the slip, ranging from dark brown or black (2.5YR 3/0) to red (2.5YR 6/4), where it is thin. It generally has a metallic sheen which may be due to the formation of ferrous iron, leading to surface vitrification (I Freestone, pers comm). Occasionally the lower body and interior are blood-red (1 OR 4/8) in colour, possibly from stacking in the kiln, which would have shielded the pottery from the reducing atmosphere. Body sherds are superficially similar to Cologne ware (p 131).

A hard fabric made of almost pure white (2.5Y 9/0) or sometimes creamish (2.5Y 9/2) clay, smooth or occasionally laminar in fracture. The extremely fine matrix contains sparse quartz and red inclusions (<0.25mm), with some white mica visible. Fine horizontal cavities, probably wedging marks, are noticeable in the break.

Forms

The majority of vessels are everted-rim beakers. Lamps and lampholders or open lamps also occur in this fabric, although they are not published here.

Beakers Fig 110, Nos 704-7 Beakers have everted or cornice rims. Ever-ted-rim examples illustrated here (704-5) have both rouletted and roughcast decoration. Those with roughcast decoration can be paralleled by Greene (1979, eg fig 17, 3), but rouletted examples are absent from his corpus. The cornice-rim beaker (706) is similar to Greene (*ibid*) fig 18, 1, and has hairpin and tear-drop decoration. These are all typical decorative motifs for the ware; roughcasting is the most common and there seems to be no apparent chronological development between

the two styles. An unusual medallion from the wall of a beaker depicts a circus charioteer (707, Audin & Vertet 1975-9, 104-5) and is the first of its kind from the City, associated with Flavian-Trajanic pottery.

Bowls and dishes Bowls are represented by a tripod vessel from an early 2nd century context. Although not illustrated here, it can be paralleled to 708 (Fig 111) in CGOF.

Central Gaulish Other fabric (CGOF)

CGOF is the most abundant of the Central Gaulish Colour-coated wares represented in the City. Links with the other central Gaulish industries (CGWH, CGGW) are reflected by the barbotine decoration and metallic lustre of the slip; it also shares form types with CGWH.

Dating

Fig 108

CGOF occurs in moderate quantities, beginning in the late Neronian period, and is slightly more common than CGWH. Greene (1979, 44-5) proposed a date into the Hadrianic period for some form types; our material supports this and may extend its use into the early Antonine, although the data are too small to be certain.

Fabric and technology

A buff coloured fabric, fine, but distinguished from CGWH by its silty matrix and more micaceous appearance. The slip is fairly thin, ranging from brownish-black (cf 2.5YR 3/0) where thick, to reddish-yellow (5YR 7/8) where thin, with a lustrous sheen.

Although there is some variation within this group of fabrics, they are generally hard with a smooth fracture. Surfaces are slightly rough, and pale buff (10YR 8/4) or pink (5YR 8/4-7/B) in colour. Occasionally it is highly fired to reddish-yellow (7.5YR 7/6), with numerous fine cavities, presumably from wedging. The principal inclusion is abundant silt-sized quartz, although rare larger quartz (SA) together with red fragments (I, R <0.3mm) and occasional rounded, black inclusions and limestone (<0.1mm) are also identified. White mica is present and is more visible than in CGWH.

Forms

In addition to the beakers, bowls and cups described below, lamps and lampholders or open lamps are present in this fabric, although they are not included here.

Beakers Everted- and cornice-rim beakers are common. Roughcast and barbotine decoration (not paralleled by Greene 1979) occur frequently with no apparent chronological distinction between the two. Other types include sherds of a folded beaker with rouletted decoration and sherds with hairpin decoration.

Bowls and dishes Fig 111, No 708 Bowls are as common as beakers. Tripod bowls with roughcasting (cf *ibid*, fig 17, 5) are rare, but the type is generally Flavian-Hadrianic in date.

Cups Fig 111, No 709 Cups with roughcast decoration are rare, but do occur. The illustrated example, with an externally grooved rim, is similar to Greene (*ibid*) fig 17, 1.

Central Gaulish Black ware (CGBL)

Fig 108

Two types of Central Gaulish Black ware occur in the City and both are classified as CGBL. The first (CGBL-1658) consists of Flavian-Trajanic beakers and cups which may have moulded or rouletted decoration and are of interest here. Technologically, and in some cases typologically, these are close to the standard samian from Lezoux and are probably the products of potters such as Libertus who are known to have made a range of samian forms in a wide variety of fabrics during this period (J Bird, pers comm). The second group (CGBL-2383) occurred from the later 2nd century (Richardson 1986, 115-18); these products, distinguished by both form and decoration, are not discussed here.

CGBL- 1658

Dating

Fig 108

This fabric is rare in early Roman deposits, most of it coming from Flavian levels.

Fabric and technology

A fine fabric, virtually identical to CGOF, but pink (2.5YR 7/8) in colour. The clay and slip are the same as some central Gaulish samian fabrics, but are reduced dark brown (10YR 3/1).

Forms

No rims warranting illustration have been recovered, but forms include a moulded beaker, a rouletted beaker and a cup represented by a handle.

Cologne ware (KOLN)

This ware is termed 'Cologne' although its exact source in the lower Rhineland may lie elsewhere, and a number of kilns may be involved (Greene 1979, 56). The City examples equate with Anderson's (1980, 14-2 1) Lower Rhineland fabric 1.

Although principally a 2nd and early 3rd century product, KOLN first appeared in Britain during the pre-Flavian period as cups (Greene 1979, 60). In the City the industry is represented mainly by roughcast beakers dating to c 120-60. This corpus concentrates

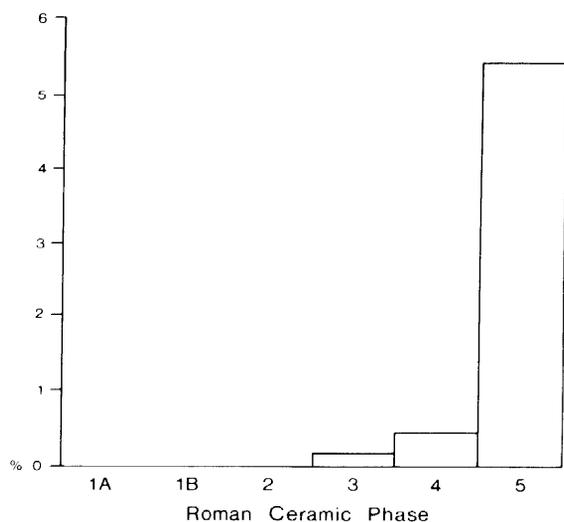


Fig 109 Bar graph of Cologne Colour-coated ware as a percentage of all non-samian wares by weight

on the early forms; the later KOLN types are discussed by Richardson (1986, 112-13).

Dating

Fig 109

This sparse fabric occurred from Trajanic levels, but the majority are early Antonine in date.

*Fabric and technology

Pl 5ar

The distinction between this fabric group and Central Gaulish White ware (p 129) can be quite subtle for body sherds; where rims and profiles survive, the typological differences are obvious. KOLN is a fine, white fabric, distinguished from CGWH by its matt slip and silty matrix. The slip is generally thicker than that seen on CGWH and often lacking the metallic lustre associated with Central Gaulish Colour-coated wares, although it occurs in a similar range varying from dark grey (5YR 3/1) to reddish-grey (5YR 6/8). Green (1980b, 67) noted that the slip contains many minute flakes of red and black iron oxides. KOLN also tends to be softer and more powdery than the Gaulish ware, possibly fired at a lower temperature.

The fabric is usually white (2.5YR 9/0) or faintly creamy-white (10YR 8/3) in colour; it is hard, with a fairly smooth (but occasionally irregular) fracture. Inclusions are sparse, but consist of quartz (SA), red iron-rich fragments (R, I) and occasionally visible white mica (all <0.5mm) set in a silty matrix.

Forms

Greene's (1979, 56-64) discussion centres on the earliest products - the cups - which only occur twice in residual Hadrianic-early Antonine contexts in the

City; beakers, however, are more common. Lamps in this fabric are not published here.

Beakers Fig 111, Nos 710-14 Most of the vessels are bag-shaped beakers with roughcasting, although body sherds indicate that folded beakers were also present (not illustrated). Cornice-rim beakers are distinctive, and when roughcasting is employed it is usually applied c 20mm below the rim (7 10-12). These compare with Anderson's (1980) fig 7, 1-3. Roughcasting is sparse to moderate and comprises crushed clay particles in the same fabric as the vessel. Barbotine scale motifs also occur on some beakers (713, cf *ibid*, fig 7, 5). The base (7 14) probably belongs to a cornice-rim beaker. As yet, there are no examples of the globular beakers with high curved necks, dated c 120-30 (*ibid*, type 3).

6.2 Pompeian Red wares (PRW)

Pompeian Red ware is included here as a fine ware although it is perhaps better classed as 'oven-to-table' ware. With its functional but distinctive red slip, the fabric has qualities that are ideal for cooking purposes, including heat resistance and a 'non-stick' surface (Boon 1967, 40). Examples of these vessels used for breadmaking, with several still containing flat loaves, were found at Pompeii (Greene 1979, 130). Sooting on the outside surface of some of our examples suggests use over an open fire. At the same time, the vessels are well made, often with fine rouletted or stylus grooved decoration and carefully finished footings.

Peacock (1977b) has identified seven PRW fabrics, three of which have been recognized in the City and are described below as Pompeian Red ware fabrics 1, 2 and 3. They appear in a range of shared forms (shallow dishes with plain, sometimes intumed, rims and domed lids with bead rims). Additional PRW fabrics are rare and are housed with the Archive.

PRW 1

This fabric, with a Campanian source, is normally the most common of the PRW fabrics in Britain (*ibid*, 149-53). However, in the City it is far less common than PRW3.

Dating

Fig 112

The fabric is sparse, but nearly all examples of PRW1 from the City are confined to 1st century levels, many of which are late Neronian-early Flavian in date. The material may confirm Peacock's (*ibid*, 159) suggestion that production ceased after 79.

Fabric and technology

A reddish-brown fabric with abundant black sand inclusions and dark red slip applied to the inner and lower surfaces of the bowls; lids, also slipped, are often

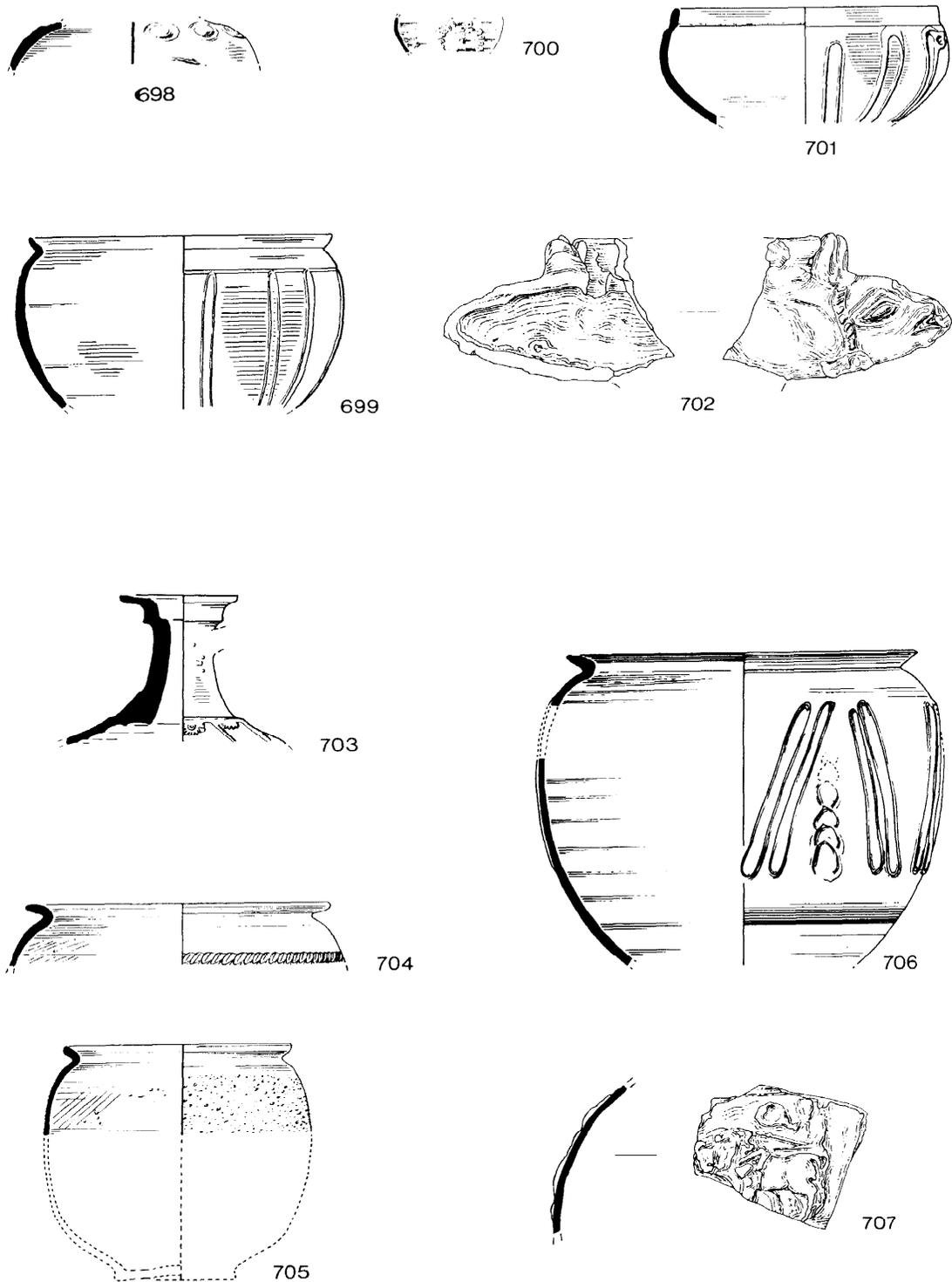


Fig 110 Central Gaulish Glazed ware, Allier Valley, flagons, no 698; beakers, nos 699-700; cups, no 701; other forms, no 702. Central Gaulish Glazed ware, Lezoux, flagons, no 703. Central Gaulish white ware, beakers, nos 704-7 (Scale 1:2)

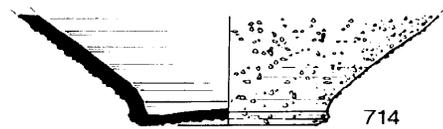
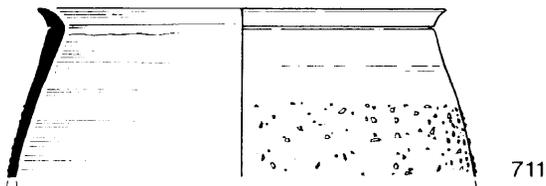
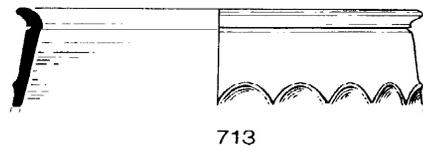
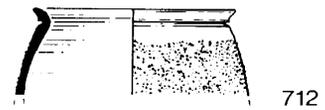
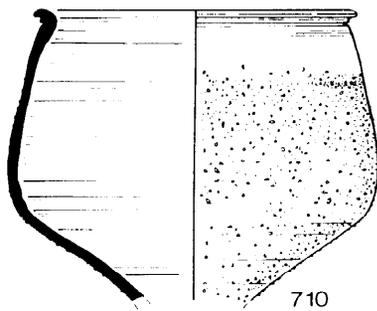
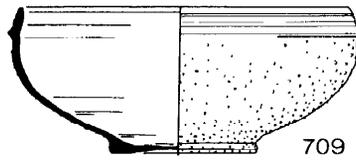
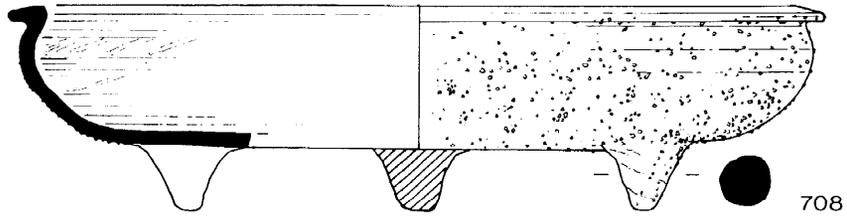


Fig 111 Central Gaulish Other fabric, bowls/dishes, no 708; cups, no 709. Cologne Colour-coated ware, beakers, nos 710-14 (Scale 1:2)

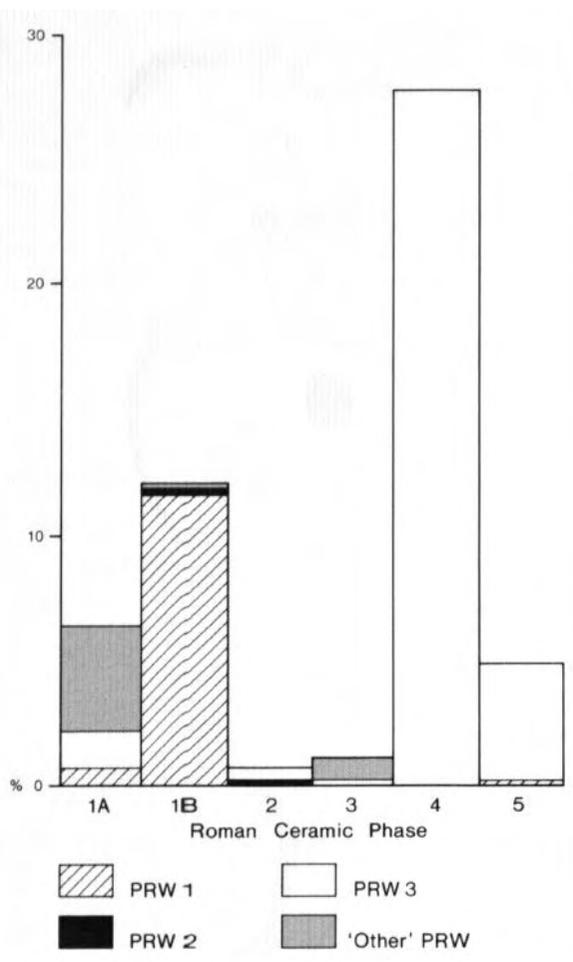


Fig 112 Stacked bar graph of Pompeian Red wares as a percentage of all non-samian fine wares by weight

heavily burnt and sooted.

The fabric is hard, with an irregular fracture. Macroscopically, it is reddish-brown (2.5YR 5/6) in colour, with abundant well-sorted black sand inclusions, which can be identified microscopically as augite, with lesser amounts of quartz and feldspar (SA, A <0.5, occasionally <1.0mm). Peacock (1977b, 149) identified a range of feldspars, as well as augite and volcanic rock, in thin section. The slip is dark red (10Y 4/6).

Forms

Bowls and dishes Fig 142, No 715 Most vessels are plain-rim dishes (IVJ, profile not illustrated) with incised grooves on the base, similar to those illustrated for PRW3 below (cf Fig 113, 717). Occasionally they were signed by the potter on the underside (Wynia 1979), and a sherd from a pre-Boudiccan context at 5–12 Fenchurch Street features a small mark, incised before firing, which may be part of a signature.

Other forms Fig 113, No 716 Number 716 clearly illustrates the diagnostic features of the lid, particularly the single concentric groove on the upper surface.

PRW2

PRW2 is the least common of the Pompeian Red ware fabrics found in the City, although at both Colchester and Fishbourne it is almost as abundant as PRW1; in contrast, there is none recorded from Richborough (Peacock 1977b, fig 1). A Mediterranean source has been proposed for this fabric (*ibid*, 153).

Dating

Fig 112

Peacock (*ibid*, 159) suggests a similar date range for this fabric as for PRW1. The sparse City examples are again generally restricted to the 1st century, beginning in the pre-Boudiccan period (not among the quantified data on Fig 112), and continuing into the Flavian period.

Fabric and technology

An orange-red, sandy and micaceous fabric, with dark red slip.

A hard, orange-red (10R 5/10) fabric, rough in texture, with an irregular fracture. The clay is intensely micaceous, particularly on the unslipped surfaces, with both white and gold mica present (0.5mm>). Other inclusions are abundant, and consist of fairly well-sorted quartz (SA <0.5mm) and occasional limestone (SA 0.2mm). Thin section also revealed the presence of quartz-mica-schist and quartzite (Peacock 1977b, 153). The plates (but not the lids) are internally coated with a thick, deep red slip (10R 4/9).

Forms

Bowls and dishes To date, PRW2 is restricted to plain-rim dishes (IVJ). They are too fragmentary to illustrate, but can be compared with Peacock's (*ibid*) fig 3, 5, having two concentric circles of faint double grooving on the basal interior. With a diameter of only c 140mm it is smaller than most dishes, but not lids, in other PRW fabrics.

PRW3

This, the most common of the PRW fabrics in the City, may well have a central Gaulish source – possibly Lezoux (*ibid*, 154–5).

Dating

Fig 112

PRW3 occurs in sparse amounts and is present with PRW1 and PRW2 from pre-Boudiccan levels. However, it is equally common in association with pottery of the mid 2nd century, although the latter results from only a single, fairly complete vessel from the early Antonine pit at Bishopsgate. The quantified data suggest that it was particularly common in the Hadrianic period when substantial portions of at least two lids and one dish were found *in situ* in fire deposits at 5–12 Fenchurch Street. This same pattern can be seen from fire deposits elsewhere in the City, which contrasts with evidence compiled by Peacock (*ibid*,

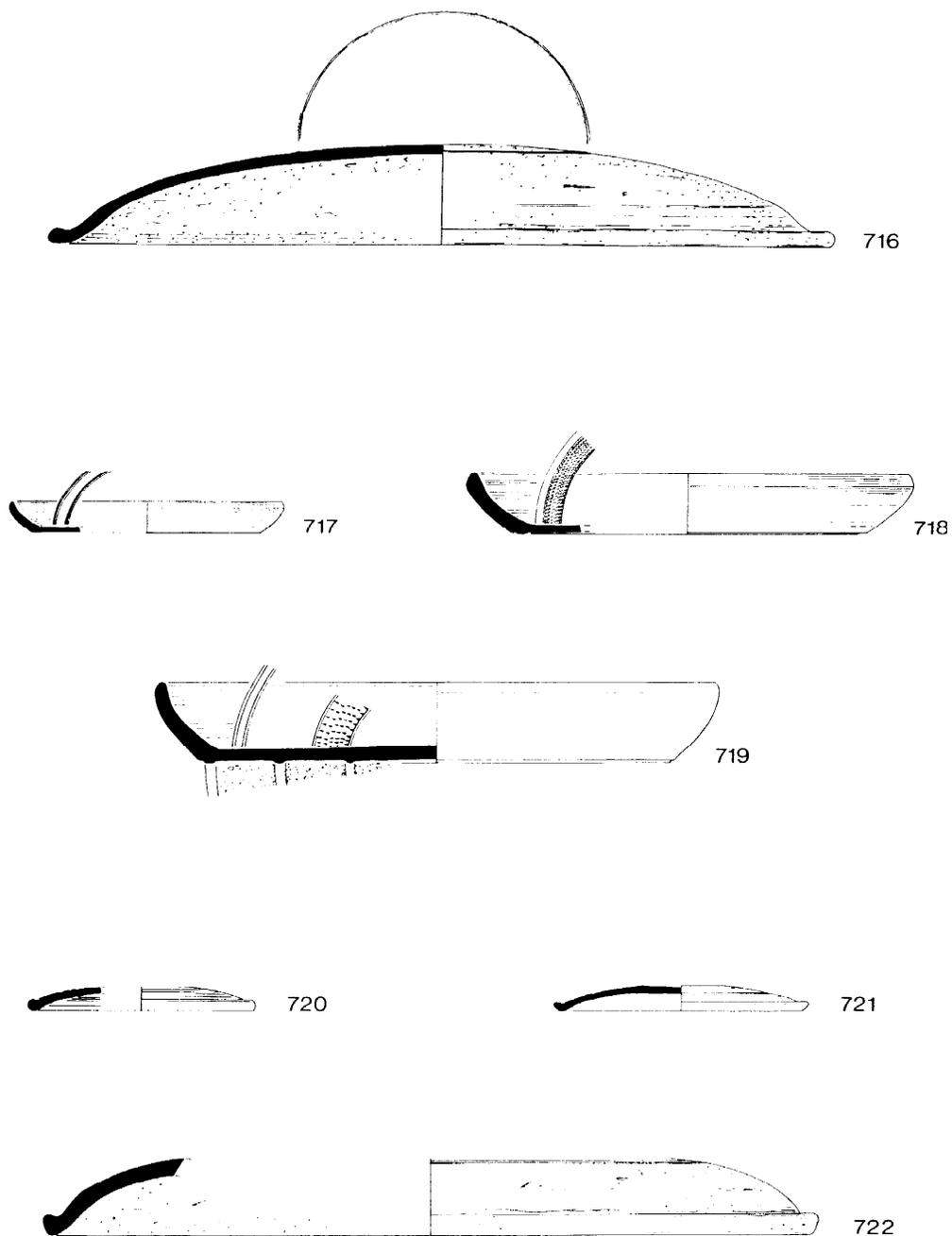


Fig 113 Pompeian Red ware fabric I, other forms, no 716. Pompeian Red ware fabric 3, bowls/dishes, nos 717-1 9; other forms, nos 720-2 (Scale 1:4)

159) and evidence from Colchester (Symonds & Wade forthcoming), where it appears to have been residual after the late 1st century.

Fabric and technology

A fine, beige fabric; intensely micaceous, with a thin, red slip. The interior slip is thinner than that of the other two PRW fabrics and has often been badly or completely abraded. The external surfaces of the dishes and some of the lids have a thin, light brown (10YR 7/4) wash, and sooting is often noticeable on the exterior of both forms.

PRW3 is beige (10YR 7/3-7/7; 5YR 7/4) with a red (10R 8/4) slip on the inside of the dishes. The fabric is hard, with a smooth fracture. Mica, both white and gold, is the principal inclusion (<0.5mm), set in a fine, silty matrix with rare larger quartz inclusions (SA <0.3mm). The bases of some of the dishes are covered with quartz, as well as with smaller amounts of red iron-rich inclusions and mica (0.1-0.5mm)

Forms

Bowls and dishes Fig 113, Nos 717-19 Plain-rim dishes (IVJ) are the most common type and vary considerably in size. Internal decoration differs somewhat from the other PRW dishes, with multiple incised grooves and dense rouletting found on the interior. Footrings are another distinctive feature and 719, with sand roughcasting, is a fine example.

Other forms Fig 123, Nos 720-2 The lids are generally decorated with incised concentric circles on the upper surface (720-1).

6.3 Mica-dusted wares

All fine wares with conventional mica-dusting are discussed here. In the City they were one of the most common types of fine ware from the Trajanic period, occurring very rarely in earlier phases but steadily increasing in the Trajanic until the end of the sequence, by which time they may have been residual (see LOMI).

These wares fall into two main groups: fabrics considered to be local (LOMI), as discussed by Marsh (1978, 195-8); and mica-dusted wares whose provenance is not at present confirmed (MICA), although one fabric may be imported (MICA-1242). A third group, most likely to have been produced within the Verulamium region (VRMI), is discussed with the Verulamium industry as a whole (Section 4.6).

Local Mica-dusted wares (LOMI)

Marsh (*ibid*) has discussed the evidence for local production, and concluded that some mica-dusted wares were produced in the City during the late Flavian/Trajanic period.

Within this group, three main fabric variants can be separated by technological and textural criteria. Two

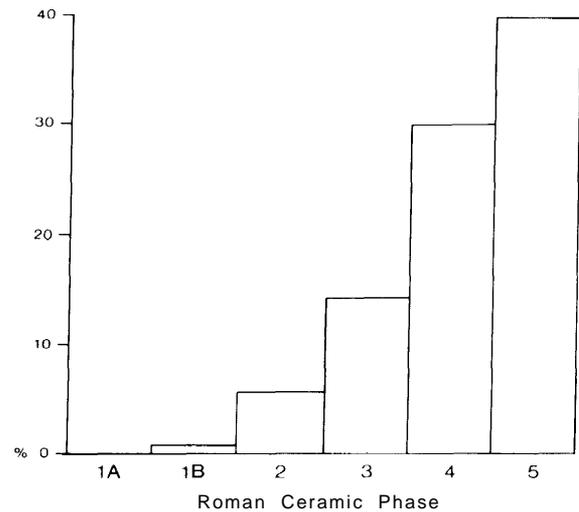


Fig 114 Bar graph of Local Mica-dusted wares as a percentage of all non-samian fine wares by weight

are relatively coarse (LOMI-1244, LOMI-371) and a third is finer (LOMI-1247). As they form a homogeneous group both typologically and petrologically, they are combined here. A stack of four vessels fired together (including Fig 116, 743) were found at Moorgate Street (*ibid*, 168) and included both LOMI-371 and LOMI-1247, supporting the link between the two fabric variations.

Dating

Fig 114

These locally produced wares are clearly the most abundant of all the mica-dusted fabrics in the City. There are a few from late Neronian-early Flavian levels (somewhat earlier than Marsh's proposed dates), but they were first prominent in the Trajanic period and they continued to increase thereafter. Although Marsh (*ibid*, 122, 199) considered that their production ceased in London c 130, they were still present in some quantity during the early Antonine, and mica-dusted wares in general continued until the late 2nd century. It is difficult to determine whether the later occurrences of this type are residual, but there is nothing inherently early in their form types, and some of those same forms continued into the Hadrianic period in other fabrics, such as the moulded-rim IVAs in the Verulamium Region White ware. As a group they are abundant, with LOMI-1244 the most common.

*Fabric and technology

Pls 5as-au

A distinctive, grey fabric with bronze or orange surfaces, containing varying amounts of coarser quartz.

LOMI-1244 (Pl au) has brown (7.5YR 5/4) or reddish-brown (5YR 5/8) surfaces and a grey (2.5YR 6/0) or dark grey (2.5YR 4/0)

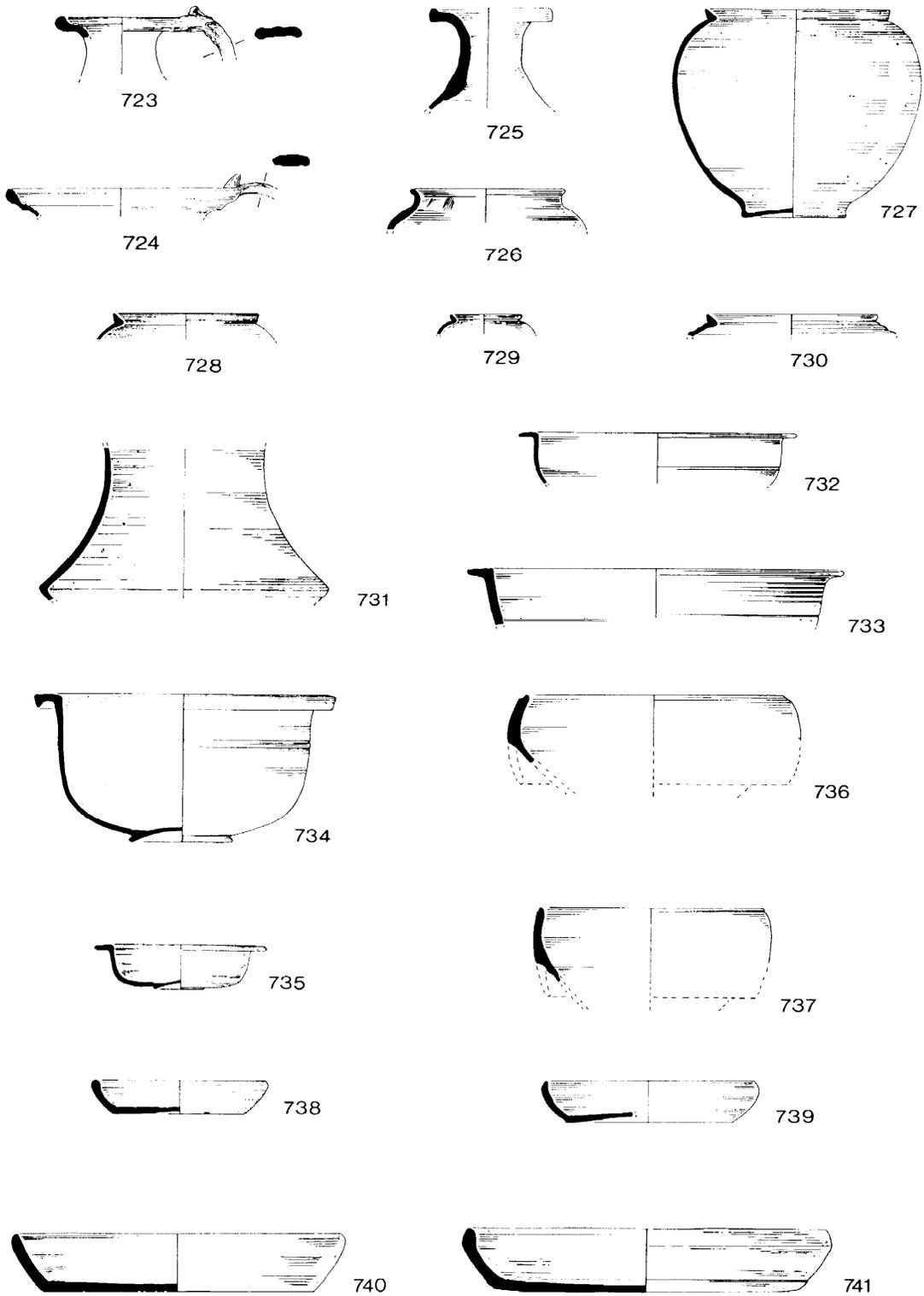


Fig 115 Lucal Mica-dusted wares, flagons, nos 723-5; jars, no 726; beakers, nos 727-31; bowls/dishes, nos 732-41 (Scale 1:4)

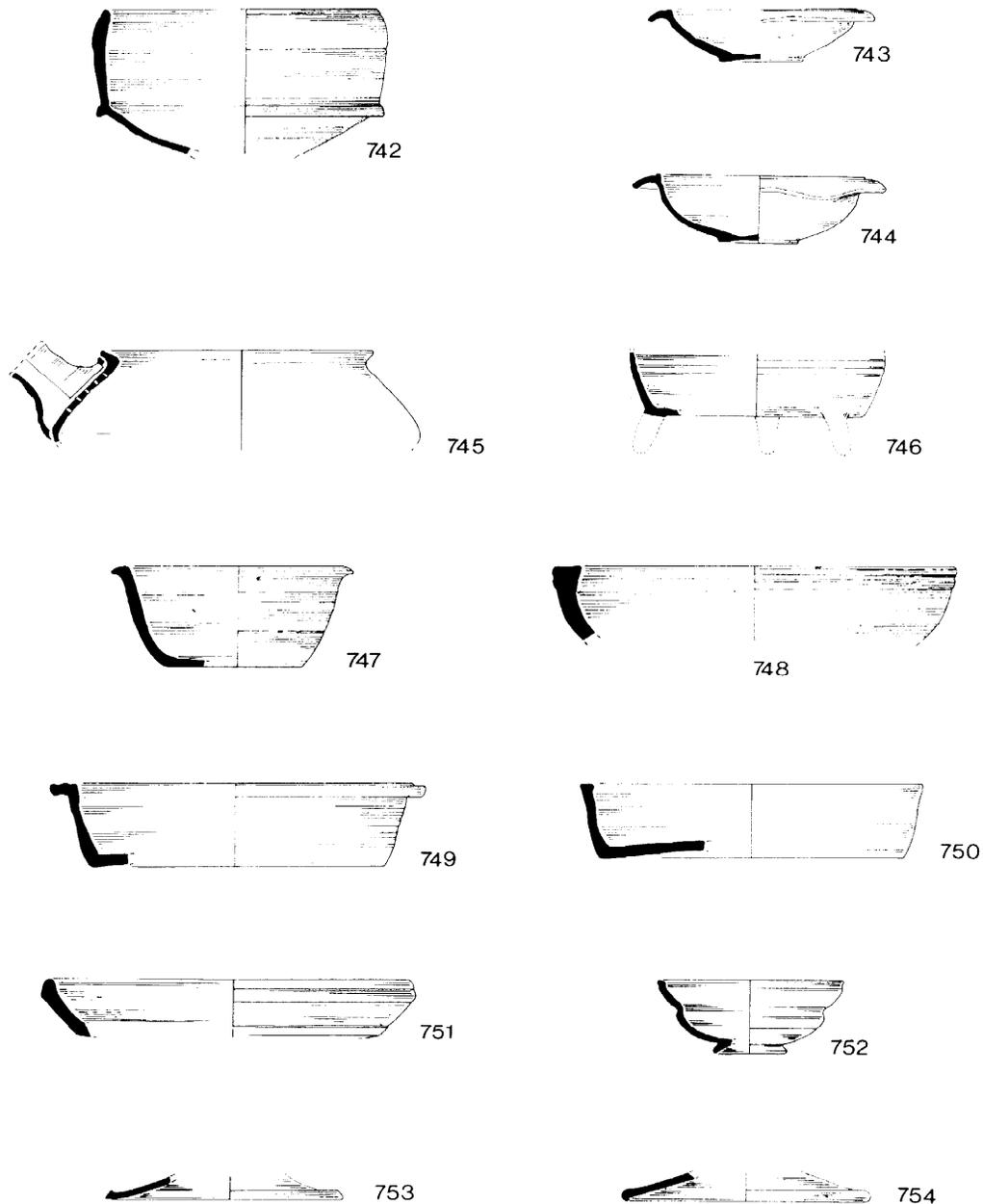


Fig 116 Local Mica-dusted wares, bowls/dishes, nos 742-51; cups, no 752; other forms, nos 753-4 (Scale 1:4)

core. It is a hard fabric, irregular in fracture, with abundant well-sorted quartz (SA 0.3-0.6mm). Other inclusions are sparse black and light red fragments (iron-rich clay pellets and opaques) (SA 0.1-0.4mm, occasionally <0.8mm) with occasional particles of burnt organics (F, R), large flint and sparse white mica. All surfaces of open forms have a bronze-coloured mica slip.

Many of the vessels made in this fabric are roughly turned and rather inferior in quality when compared with other fine wares. This

may be due, in part, to the presence of larger inclusions such as flint, which sometimes causes pitting and flaking. Variant 1244 is particularly associated with plain-rim dishes (IVJ).

In contrast, LOMI-371 (P1 as) is harder and probably more highly fired, with a denser appearance. It also contains poorly sorted quartz grains to c 1.0mm. Like 1244 it has a grey core, here with a blue tinge (10P1 6/1), and the surface is more orange (5YR 6/6-6/8). The vessels made in this fabric are generally well finished and of a

higher quality than 1244.

LOMI-1247 (Pl at) is a fine variant with a blue-grey core like LOMI-371, and golden-orange (7.5YR 6/6) surfaces. It is similar in hardness to LOMI-371 but, lacking the larger inclusions, its surface is smoother.

Forms

The dating of forms in LOMI reflects the distribution of the fabric in general, and little can be added about particular vessel types. LOMI lamps (not included here) are one of the most common types found within the City, and occur in both fine and coarse fabric variants.

Flagons Fig 115, Nos 723-5 Rare, ring-neck flagons have been identified (IB, MT7, not illustrated). More common are IFs with lid seatings (IF, MT3, 723-5) imitating metallic forms.

Jars Fig 115, No 726 Jars also are rare, but a single example of a necked jar (NJ, MT23) with bead rim is illustrated.

Beakers Fig 115, Nos 727-31 Ovoid beakers with rounded shoulders (IIIB, MT22, 727-9) are the most common and occurred from the Flavian period. Included in this group is one with folded decoration (MT21, 730). A single carinated beaker (IIIG, MT17, 731) is also present.

Bowls and dishes Figs 115-16, Nos 732-51 These are the most common forms and, among the quantified data, were present from the late Neronian Period. Moulded-rim IVAs were represented from the Flavian period (MT34-5, 732-5). Flange bowls include IVBs, with deep flange (MT37, 736-7), and MT 34 with curved rims (743-4), as well as a vessel similar to MT 37 (742) with a small flange where the body is carinated. Another deep bowl has a slightly out-turned rim (747). Rare examples of a spouted bowl (MT46, 745) and a tripod bowl (MT27, 746) have also been identified.

Shallow vessels are the most common type in this category, and plain-rim dishes (IVJ, MT24, 738-41), which occasionally have concentric grooves on the underside, predominate. The diameter of these vessels ranges from c 120-270mm, with most clustering towards the larger size. They resemble the shallow platters of Pompeian Red ware and, like those, often feature sooting on the base, suggesting that they were used for cooking as well as at the table. Like the Pompeian Red ware dishes, they continue to the end of the sequence. Other dishes include one with a squared, grooved rim (MT38, 748); a flat, reeded rim (MT26, 749); a flat or grooved rim (MT25, 750); and a grooved rim with a cordon towards the base (751).

Cups Fig 116, No 752 A campanulate cup imitating Drag 27 (VIA, MT1 2) is present.

Other forms Fig 116, Nos 753-4 Lids with concave

profiles and undercut (MT56, 753) and bead (MT57, 754) rims are represented.

Other Mica-dusted wares (MICA)

For spot dating, these fabrics are classified together as MICA, and only during quantification are they separated into different fabrics. Although not common in relation to LOMI, in absolute quantity they are common as a group and occur occasionally from pre-Boudiccan deposits, with the majority from 2nd century levels. Some fabrics discussed below have been included with 'other' MICA on Fig 117.

MICA-1245

The fabric shows affinities with Colchester roughcast beakers; both occurred in the early Antonine period.

Dating

Fig 117

The fabric is rare, first found in the Trajanic period, with most sherds from early Antonine phases. Of the MICA group as a whole, it comprises 14% by weight.

*Fabric and technology

A red, sandy, mica-dusted ware, distinguished from MICA-376 by both colour and larger quartz inclusions.

A coarse, brick-red (2.5YR 5/10) fabric, varying to brown (7.5YR 5/4), occasionally with a grey (10YR 8/1) core. It is hard and rough in texture with abundant well-sorted and frequently iron-coated quartz (R, SA 0.2-0.5mm), together with sparse red and brown iron-rich inclusions (R, SA) and white mica. A variant (2693) contains rare limestone (SA <1.0mm). In thin section flint and quartzite are also identified. Open forms are covered on all surfaces with a thin, dark bronze micaceous wash.

Forms

Sherds of flagons, beakers and dishes are found in this fabric. Only the dishes are illustrated below.

Bowls and dishes Fig 118, Nos 755-6 Plain-rim dishes (IVJ, MT24 MT24), represented in other MICA fabrics, occur in early Antonine contexts.

MICA-2577

Dating

This fabric is represented by one vessel from a pre-Boudiccan level and is distinct from the typical MICA fabrics of the later 1st and 2nd centuries. It accounts for 1% by weight of all the MICA fabrics.

Fabric and technology

A coarse, sandy ware with golden micaceous wash.

A hard fabric, rather irregular in fracture and dark brown (5YR 4/

2) in colour, although the type vessel is burnt. It contains quartz (SA, R <0.1-0.2mm, rarely <1.0mm) and rare red iron-rich inclusions (R 0.2-0.3mm). A thin golden wash of fine mica has been applied to the upper and outer surfaces.

Forms

Beakers Fig 118, No 757 The vessel is a beaker or jar with distinct internal lid seating. Despite some typological resemblance to Cam 102, it is unrelated to the fine jars imported from central Gaul during the early 1st century and known at Camulodunum, Skeleton Green and elsewhere in the southeast (Tyers 1981).

MICA-3 76

This homogeneous group is the most distinctive and relatively common of the MICA fabrics (36% by weight), and seems unrelated to the LOMI (p 136) series. The source is unknown, but one vessel (Fig 118, 761) contains a streak of white clay similar to Verulamium Region White ware.

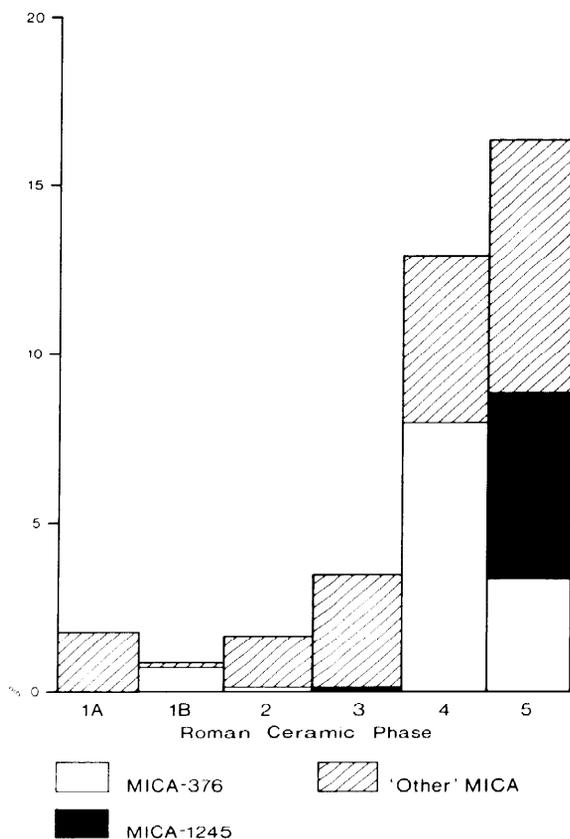


Fig 117 Stacked bar graph of main Other Mica-dusted ware fabrics (MICA) as a percentage of all non-samian fine wares by weight

Dating

Fig 117

MICA-376 occurred sporadically from the late Neronian-early Flavian period to the end of the sequence, peaking in the Hadrianic period.

*Fabric and technology

P1 5av

A fine, sandy fabric with a generally brown appearance and golden micaceous slip. Vessels are well made and some display more decorative features than most other mica-dusted wares.

A hard pinkish-grey (5YR 6/2) fabric, with light brown (10YR 6/4) margins and finely irregular fracture. It is slightly rough in texture with abundant, densely packed, well-sorted quartz (A, SA c 0.1-0.2mm, occasionally <0.4mm), fine black iron-rich inclusions (R <0.25mm) and slightly rarer white mica. The almost black (7.5YR 3/0) exterior surface is covered in a thin wash of dark bronze-coloured mica.

Forms

A variety of forms are present, although bowls are the most common.

Jars Fig 118, No 758 This fragment is from a very finely made face pot, with a pierced ear and part of an eyebrow surviving. It is included in this corpus although it occurs in an early 3rd century context.

Beakers Sherds of folded beakers have been noted in this fabric at Angel Court and at New Fresh Wharf, although they are otherwise rare in the City.

Bowls and dishes Fig 118, Nos 759-62 Bowls include a deep, moulded-rim IVA (MT36, 759); a shallow bowl with internal bead on the flange and finger-impressed decoration on the rim top (MT31, 761); and a dish with a grooved flange and slight internal groove (MT26 variant, 762). Three concentric grooves are incised on the base underside of 762. Plain-rim dishes, common in LOMI, are represented in this fabric by a variant with an internal depression (IVJ, MT24, 760) more similar to a VA.

MICA-383

This fine fabric is similar but not identical to the Local Mica-dusted wares, lacking the grey core typical of LOMI (p 136).

Dating

A sparse fabric present in the Flavian, Trajanic and early Antonine periods, although it never accounts for even 1% by weight of all non-samian fine wares (4% of all MICA by weight). It may well be residual in the later contexts.

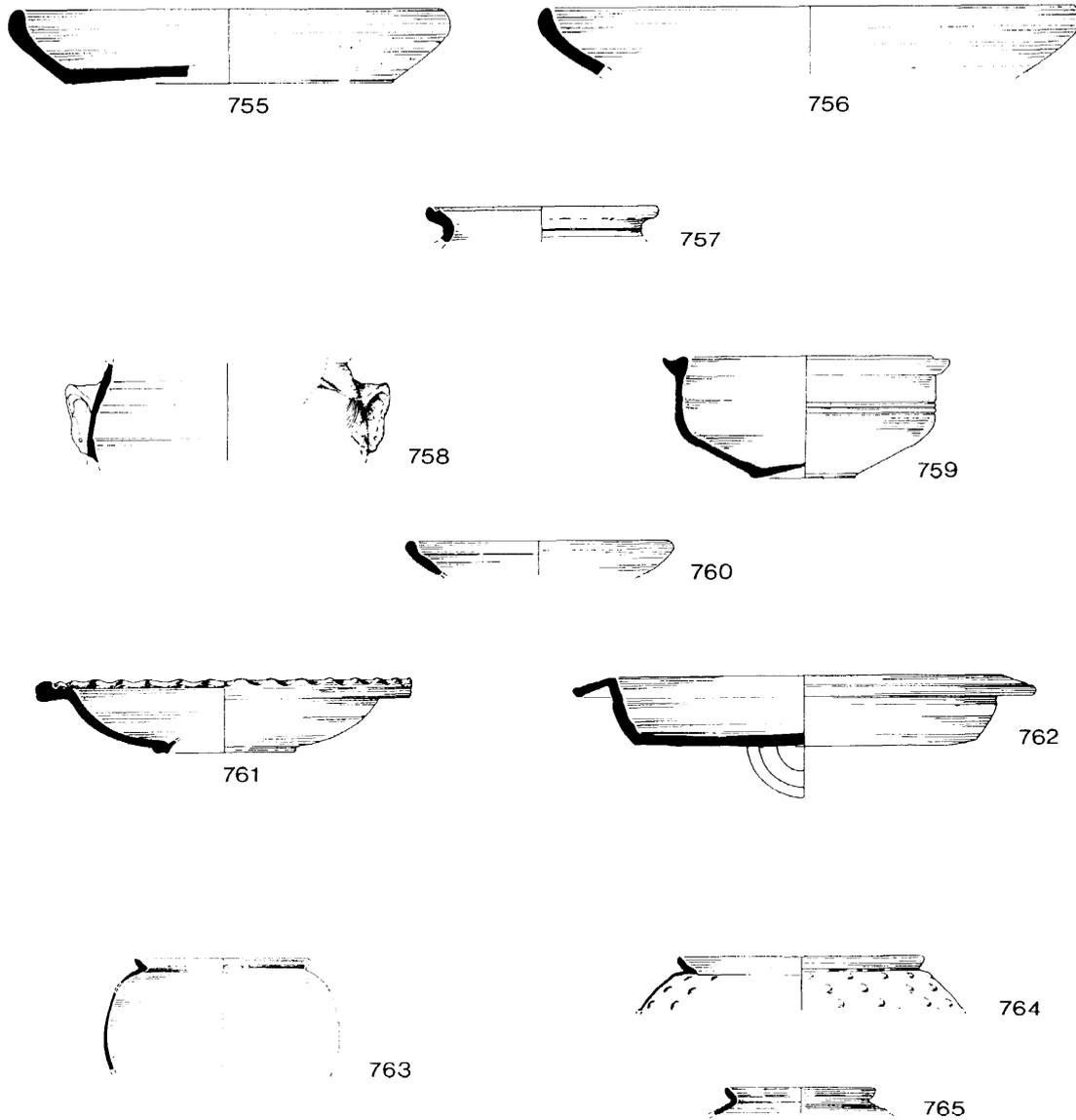


Fig 118 Mica-dusted ware fabric 1245, bowls/dishes, nos 755-6. Mica-dusted ware fabric 2577, beakers, no 757. Mica-dusted ware fabric 376, jars, no 758; bowls/dishes, nos 759-62. Mica-dusted ware fabric 383, beakers, no 763. Mica-dusted ware fabric 1242, beakers, nos 764-5 (Scale 1:4)

*Fabric and technology

A very fine, oxidized fabric with a thin micaceous slip.

A hard yellowish-red (5YR 7/6) fabric, fine and fairly smooth in fracture with abundant silt-sized quartz and occasional larger grains (A, SA <0.1-0.25mm). Sparse black iron-rich fragments (R, SA) and white mica are also visible. In thin section flint can also be identified with some regularity. The smoothed exterior is covered in a thin wash of very fine gold mica.

Forms

Beakers Fig 118, No 763 Vessel types are restricted, so far, to beakers. Most are ovoid with high, rounded shoulders (IIIB, MT22), although there are rare sherds from folded beakers (MT21, not illustrated).

MICA-1242

Vessels with embossed decoration are known from the Rhineland (Marsh 1978, 151-2), but recent evidence suggests that they are more likely to have originated in Gallia Belgica, just west of the Rhine (Brulet 1985). An example from the Reserve Collection is stamped by Bacilus (not illustrated), for whom a similar source is proposed (V Rigby, pers comm).

Dating

This rare fabric occurs in Flavian and Trajanic contexts (<1 % of all non-samian fine wares; < 1% of all MICA by weight), but is dated by Marsh (1978, 150) to the second half of the 1st century.

*Fabric and technology

A thin, virtually inclusionless, mica-dusted fabric with light surfaces and black core.

An extremely fine fabric with a black (7.5YR 3/0) core and pinkish, pale grey (7.5YR 8/0) surfaces. It is hard with a finely irregular fracture, and contains abundant densely packed and well-sorted silt-sized quartz with sparse black and brown iron-rich inclusions (SA, A <0.1-0.2mm) and white mica. The exterior surface is covered in a dark bronze micaceous wash. MICA-1241, which is pink (2.5YR 7/6) in colour with similar inclusions and an identical micaceous wash, may be related but lacks the carbon-rich core of 1242.

Forms

Beakers Fig 118, Nos 764-5 The fabric appears to be restricted to beakers. Two types are illustrated here, both loosely belonging to everted-rim IIIBs. A bulbous beaker with short ever-ted rim (MT20, 764) is distinguished by the embossed decoration. Similarly decorated beakers from Usk (Greene 1979, fig 53, 4-7) are thought to be pre-Flavian; our examples are from later contexts. A beaker with everted rim and grooves on the shoulder (MT21, 765) has also been identified.

6.4 Ring-and-dot Beaker fabrics

RDBK)

This common name describes a distinctive group of lightly burnished buff-coloured fine wares; the most characteristic and common form is an ovoid beaker with alternating panels of barbotine dots and circles (Green 1978). The type dominates late Neronian and Flavian assemblages, by c 60-70 constituting approximately one-third of all non-sigillata fine wares, before a sharp decline in the early 2nd century.

RDBK - 1606

This is by far the most common of the RDBK fabrics. Green (*ibid*, 109) drew attention to the similarity between this and Verulamium Region White ware, and suggested that it might be a finer version of the

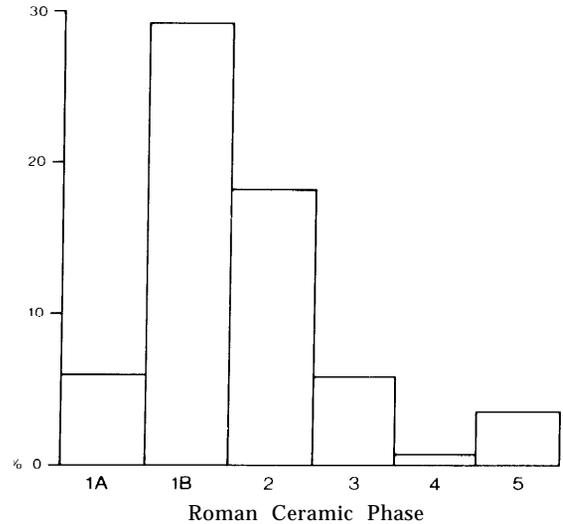


Fig 119 Bar graph of Ring-and-dot Beaker fabric 1606 as a percentage of all non-samian fine wares by weight

typical Verulamium product. Although on distributional grounds a source in the St Albans-London area is likely, there is no evidence as yet that they were made or even occur at any of the known kilns. In this section the fabric differs from the normal Verulamium fabric (although in range and size of inclusions, not significantly from BHWS, Section 4.6).

Dating

Fig 119

The dating for this common fabric conforms to that outlined for the RDBK group in general. A few sherds of RDBK appear in pre-Boudiccan groups within the City, and at Verulamium (Wilson 1984, fig 84, 2007A-B).

*Fabric and technology

Pls 5aw-ax

A very fine, oxidized fabric with well-finished surface. The vessels are usually coated with a self-slip and lightly burnished, producing very fine horizontal lines.

A moderately hard fabric with a slightly irregular or laminated fracture and a smooth surface. It is usually cream (10YR 8/3) throughout, often grading patchily to very pale pinks and oranges (5YR 8/4; 5YR 6/8), although occasionally the core is reduced light blue-grey (10GY 8/1). The matrix is composed of abundant well-sorted silt-sized quartz inclusions, together with sparse to moderate inclusions of larger quartz and reddish-brown iron-rich fragments (SA 0.5mm>), sometimes exposed on the burnished surfaces, with the iron-rich compounds producing fine red streaks. Frequently the visible quartz is more common and a little larger. White mica (0.1-0.3mm>) is usually rare although it is visible in a number of examples, especially on the exterior where the surface has been burnished.

In some cases the mica is so prominent that a separate fabric number has been allocated (3501), although the principal inclusions remain the same. These more micaceous examples tend to be friable with a thin self-slip that is easily worn, and occur in mid rather than

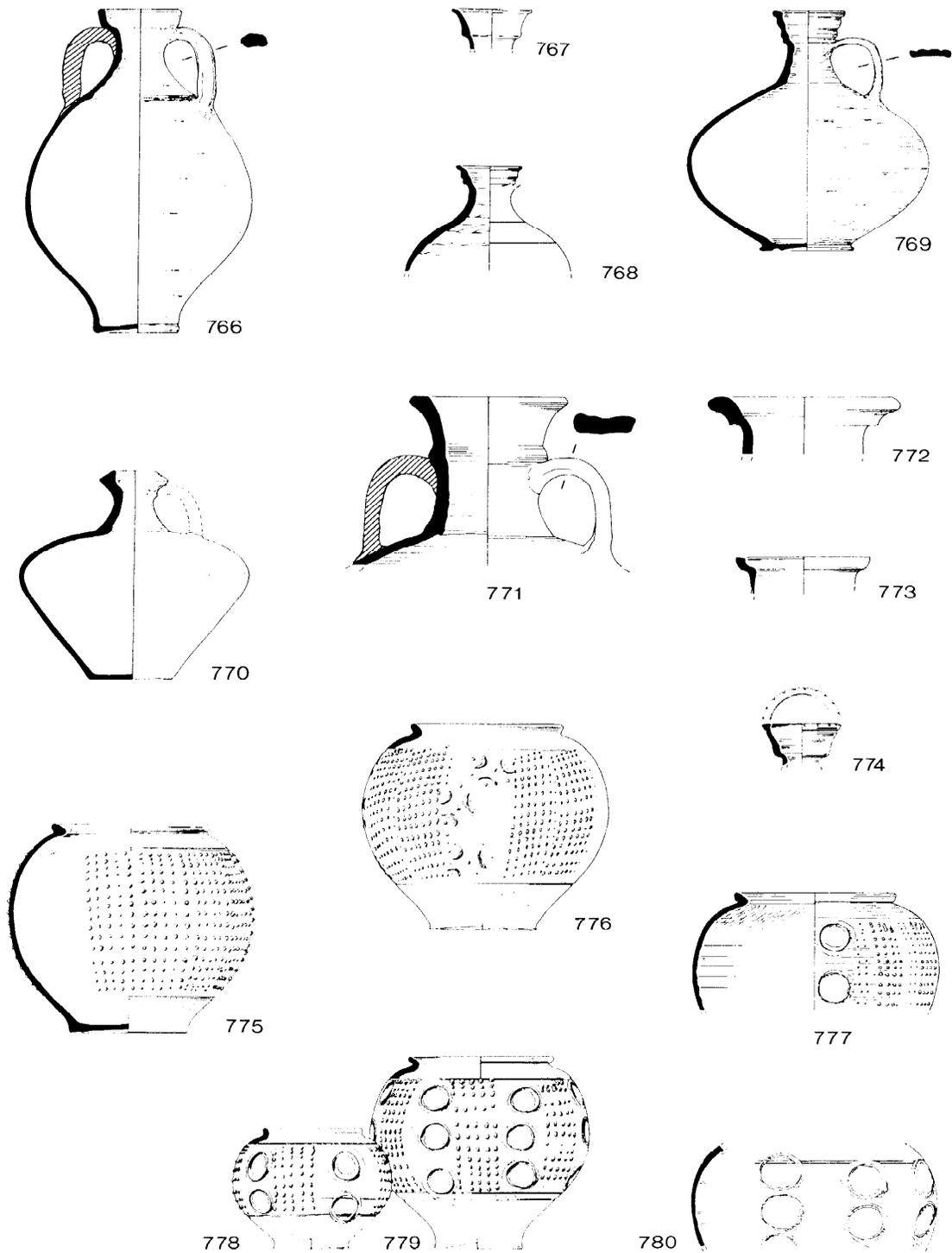


Fig 120 Ring-and-dot Beaker-fabric 1606, flasks, nos 766–74; beakers, nos 775–80 (Scale 1:4)

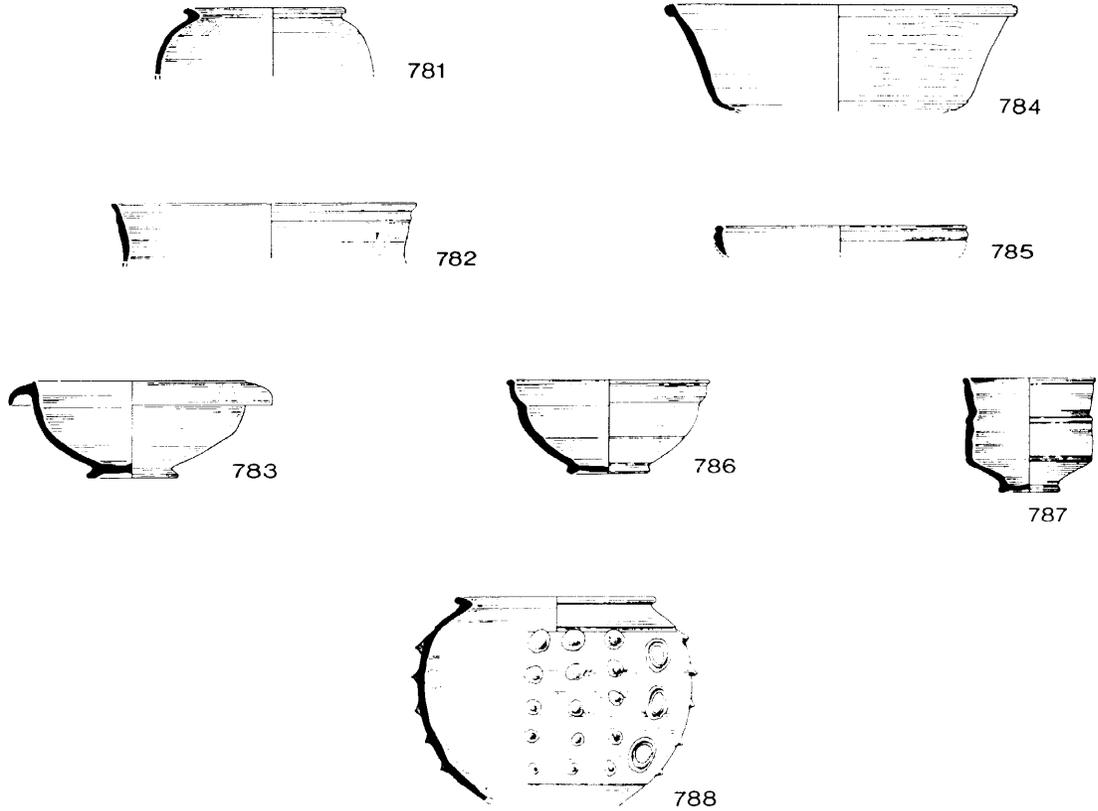


Fig 121 Ring-and-dot Beaker fabric 1606, beakers, no 781; bowls/dishes, nos 782-5; cups, nos 786-7. Ring-and-dot Beaker fabric 2635, beakers, no 788 (Scale 1:4)

late 1st century groups. Another rare sub-group, RDBK-2580, differs only in colour, perhaps from firing, and is light red (2.5YR 6/8) to orange (2.5YR 4/8) on the surface.

In thin section, the silty matrix is verified and a moderate amount of mica is visible in all sections. These two features distinguish the fabric from the mica-free, clean matrix product typical of Verulamium Region White wares.

Forms

A range of forms can be identified in the RDBK fabric, although beakers are the most common and comprise 80% by Eves of the entire group. The dating of the forms reflects the fabric in general, and most were present in the late Neronian-Flavian periods.

Flagons Fig 120, Nos 766-74 A wide variety of flagon types occur in this fabric, including thin walled and larger more robust vessels, although none are particularly common. Numbers 766-7 are variants of collared flagons (IA), while ring-neck (IB, 768-9) and disc-mouth (ID, 770) flagons conform more to standard vessel shapes.

The largest vessels in the series are classified as

amphora-flagon IJs. Number 771, with a flaring-collared rim and a cordon at the base of the collar, is virtually identical in form to Cam 170; a second large vessel (772) is similar to collared IA flagons, but is distinguished by virtue of its size.

Two cup-mouthed flagons, which cannot be assigned to a particular form type, include 773-4. The former is short and squat; the latter has a high rim with notches on the top.

Beakers Figs 120-1, Nos 775-82 Nearly all the beakers, and all those illustrated, are ovoid, high-shouldered IIIBs. Most are burnished externally and internally over the rim; the surface is covered with a thin self-slip or wash and decorated with a variety of barbotine decorated zones. This decoration has been discussed in detail by Green (1978) and several of his examples are illustrated here. One vessel is undecorated (781), but a groove at the shoulder delineates the area where decoration usually occurs. RDBK-2580 is restricted to ring-and-dot beakers.

Bowls and dishes Fig 121, Nos 782-5 Bowls are also fine

and relatively thin walled, and many copy samian forms. Number 782 is similar to Drag 29, although it lacks decoration; 783 is similar to Cu 11. Others include a carinated bowl with a bead rim (784) and a small, rounded, bead-rim vessel with grooves beneath the rim and at the girth (785).

Cups Fig 121, Nos 786-7; Fig 142, No 786 Two cup forms have been identified in the RDBK fabric. Number 786 is an imitation of Drag 27 (VIA), featuring an illiterate stamp on the basal interior which is similar to stamps noted on vessels from Southwark, Fishbourne and Chichester (Down & Rule 1971, fig 5.20, 24c; Rigby 1984). Number 787 is a carinated vessel with bead rim and a cordon at the waist.

RDBK-2635

Dating

Green (1978, fig 5.2, 10) noted a single example of this fabric from a Flavian level in London. Rare additional sherds are also Flavian.

*Fabric and technology

A fine, sandy, red fabric with well-finished surface.

A hard fabric, red (2.5YR 5/8) in colour with surfaces varying from light red to reddish-yellow (2.5YR 6/6; 5YR 7/6) on the interior. The fracture is finely irregular and, although the exterior surfaces are smooth, the interior is slightly rough and sandy.

Inclusions consist of well-sorted, abundant quartz (A, SA), generally to c0.2mm, but up to 0.7mm. Moderate black iron-rich fragments (R, SA 0.05-0.15mm), sparse white and rare golden mica (0.1-0.4mm) and even rarer limestone (SA 0.5mm->), are all set in a silty matrix. The inclusions, particularly the mica, are very prominent on the surface.

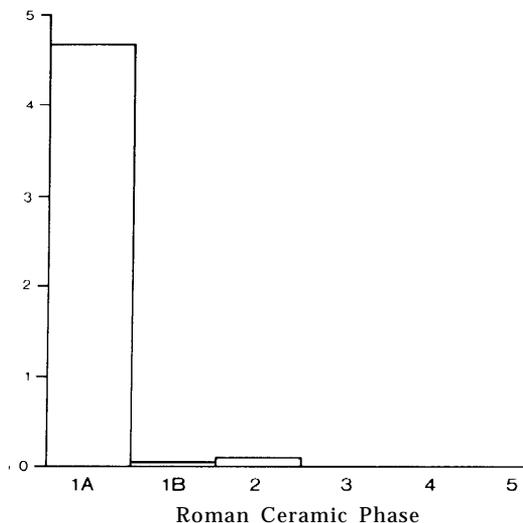


Fig 122 Bar graph of Gallo-Belgic white wares as a percentage of all non-samian fine wares by weight

Forms

Beakers Fig 121, No 788 Beakers are the only vessel type represented so far in the City. Although they are typologically similar to the typical RDBK-1606 beaker, they appear to be more crudely finished. Number 788 is an example of an ovoid IIIB ring-and-dot beaker. The body is decorated with a contrasting cream barbotine which has been very liberally applied with rings and individually placed dots in panels.

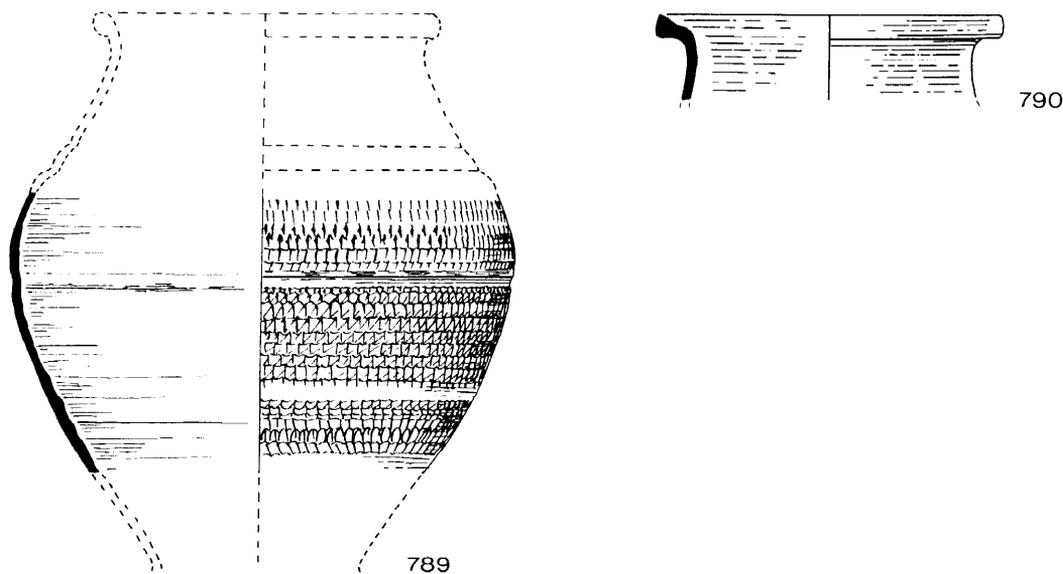


Fig 123 Gallo-Belgic White wares, beakers, nos 789-90 (Scale 1:2)

6.5 Gallo-Belgic White wares (GBWW)

This type includes a series of fine, white fabrics of the 1st century which are loosely grouped together as Gallo-Belgic White wares.

Dating

Fig 122

Most examples of this rare fabric are pre-Boudiccan in date, with smaller amounts from late Neronian and Flavian levels. Among the unquantified data, they are still found in association with Trajanic pottery.

Fabric and technology

A fine, sandy, buff fabric with rough surfaces.

A very hard and brittle fabric with an irregular fracture. It is buff (10YR 7/3) in colour and contains sparse quartz and brown iron-rich inclusions (R, SA 0.1-0.5mm), together with fine white mica.

Forms

Beakers Fig 123, Nos 789-90 The type is rare, and all vessels appear to be butt beakers. Finely rouletted sherds belong to a typical butt beaker (IIIA, 789); while the everted rim with concave interior (790) is somewhat atypical, it occurs in the same fabric and may well belong to this form.

6.6 Eggshell wares

Local Eggshell ware (LOEG)

The concentration of white eggshell wares in and around London may indicate that it was manufactured locally (Marsh 1978, 129). LOEG exhibits a diversity

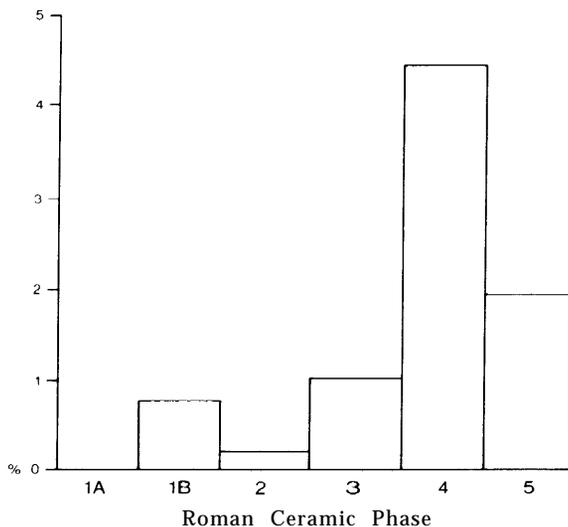


Fig 124 Local Eggshell ware as a percentage of all non-samian fine wares by weight

of forms and this, together with the wide distribution within the City, would be consistent with local manufacture.

Dating

Fig 124

LOEG occurs in moderate quantities. It first appeared in small amounts during the late Neronian period, increased in the Trajanic and continued into the Hadrianic, when it was particularly prominent. As most of the quantified Hadrianic contexts are primary *in situ* fire deposits dated c 120-5, this date range accords well with that of 90-130 proposed by Marsh (*ibid*, 199).

*Fabric and technology

Pl 5ay

A fine white, eggshell ware with silky external surface, perhaps achieved by burnishing over a very thin wash. The vessels are often extremely finely made, sometimes trimmed to a thickness of 2.0mm, and are often decorated with light horizontal grooves or fine rouletting.

This fabric is almost identical to Local Marbled ware (LOMA, Section 6.1). It is pure white, very pale cream (5YR 9/1) or orange-pink (5YR 7/8) in colour, often with a streaky appearance and slightly duller surfaces. It is smooth-fractured and contains generally sparse quartz (SA <0.3mm) and red iron-rich inclusions (I, SA <0.5mm), which occur in variable amounts up to moderately common.

Forms

Although a wide range of forms is present, few are common enough to be closely dated. Rouletted decoration, however, is frequently found in early Antonine deposits, although this is not clear from the quantified data.

Flagons Fig 126, No 791 Flagons are rare, but a ring-neck vessel with pronounced rim is illustrated (IB, MT7).

Beakers Fig 126, Nos 792-3 Beakers are not common but ovoid ones with high shoulders (IIB, MT22), including a handled example (792), and the slimmer IICs (MT22, 793) can be identified.

Bowls and dishes Figs 126-7, Nos 794-800, 806 Bowls are well represented and include a variety of types which cluster in the Hadrianic period. Many belong to MT 13 of small hemispherical bowls with bead or plain rims, frequently rouletted (794-6). MT 14 (797) has a bead rim with a flange halfway down the body wall and is rouletted. MT 33-5 (798-800), shallow bowls with a footring and a curved or flat flange, can also be identified. Also rouletted is 806, an unusual example of an omphalos base from a MT 43 bowl.

Cups Fig 127, Nos 801-5 Most cups are wide-mouth VICs (MT11, 801-2), which occurred throughout the period of production. The form is frequently rouletted,

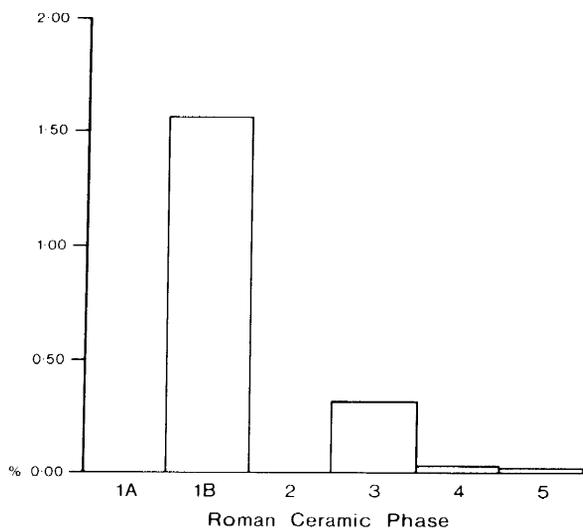


Fig 125 Bar graph of Black Eggshell ware as a percentage of all non-samian fine wares by weight

although not illustrated here; illustrated examples have both plain and externally grooved rims. Number 803 is a shallow variant, lacking the carination seen on complete VICs. Miniature cups also occur in the City: MT 15 (804) with down-turned rim and thick base, and MT 16 (805) with a footring base and sharply everted rim.

Other forms Fig 127, No 807 Lids are presumably intended for use with the bowls. Included among the lids is an example with a concave profile, up-turned rim and grooved internal and external concentric circles (807). Like the bowls, most are from Hadrianic deposits.

Black Eggshell ware (BLEG)

Most examples, including stamped ones, are in a single fabric, and may well have come from north Gaul, where there is a marked concentration of finds (V Rigby, pers comm); in some cases the stamp evidence concurs (see below).

Dating

Fig 125

Although largely pre-Flavian in date, examples appeared in Britain from c 45-75 (Green 1980b, 67). This accords with quantified evidence, with most examples from the late Neronian-early Flavian period.

Fabric and technology

A fine, reduced eggshell ware with black glossy slip. The vessels are finely tooled and extremely thin, with walls approximately 1.0mm thick.

The fabric is fine and dark grey (7.5YR 4/0), sometimes brown (5YR 7/2), with brownish margins and smooth black (2.5YR 3/0) surfaces that are burnished externally. The fracture is smooth and the principal inclusions are moderate to abundant silt-sized quartz (SA, occasionally 0.1mm), and sparse white mica. A variant of this ware is virtually identical but is higher fired, resulting in a brittle, grey (2.5YR 5/0) fabric, with slightly darker (2.5YR 4/0) surfaces.

Forms

BLEG is almost entirely represented by body sherds, and where diagnostic fragments do occur they are normally too small to merit illustration.

Beakers Fig 127, Nos 808-10; Fig 142, Nos 808-10
This is the most common class of vessel type. Beakers with high rounded shoulders (IIIB) and carinated bodies (IIIG) are represented, although not illustrated here. Several stamps have been identified in BLEG. Number 808, the base of a thin vessel with an omphalo footring is stamped with an illegible mark - possibly VIIVI. It is probably from a very small carinated beaker or necked jar, similar to Holwerda's types 26-7 or 74 (1941, pls VII, XIII; V Rigby, pers comm in Green 1980b, 67). Two other stamps in this fabric have been noted in the Reserve Collection: VINDACI (809) from a small carinated beaker, a variant of Cam 120; and a similar vessel stamped by Gemini (8 10).

Other stamps occur on a grey fabric variant. Two small-necked or carinated vessels from the Reserve Collection (not illustrated here) have a moulded base and are marked off-set with the same die of Induccius on the underside. Their distribution suggests that those stamped by Induccius are from north Gaul and are largely Flavian in date (V Rigby, pers comm).

6.7 Terra Nigra (TN)

Here the term terra nigra is confined to the products of certain north French industries, in particular those operating in the vicinity of Rheims.

The fabrics described in this section include one which may be a product of the primary north Gaulish terra nigra industry (TN-1712), and another whose exact origin is unknown and is classified as Terra Nigra Imitation (TNIM).

TN-1712

This fabric has been identified by Dr J Timby as standard terra nigra, with a likely source in the Vesle Valley region of northeast France.

Dating

Fig 128

In Britain, the accepted end date for terra nigra has been 80, based primarily on evidence from military sites (Rigby 1978a, 201). By weight, most examples of this sparse type in the City are from late Neronian-early Flavian deposits, but sherds continue

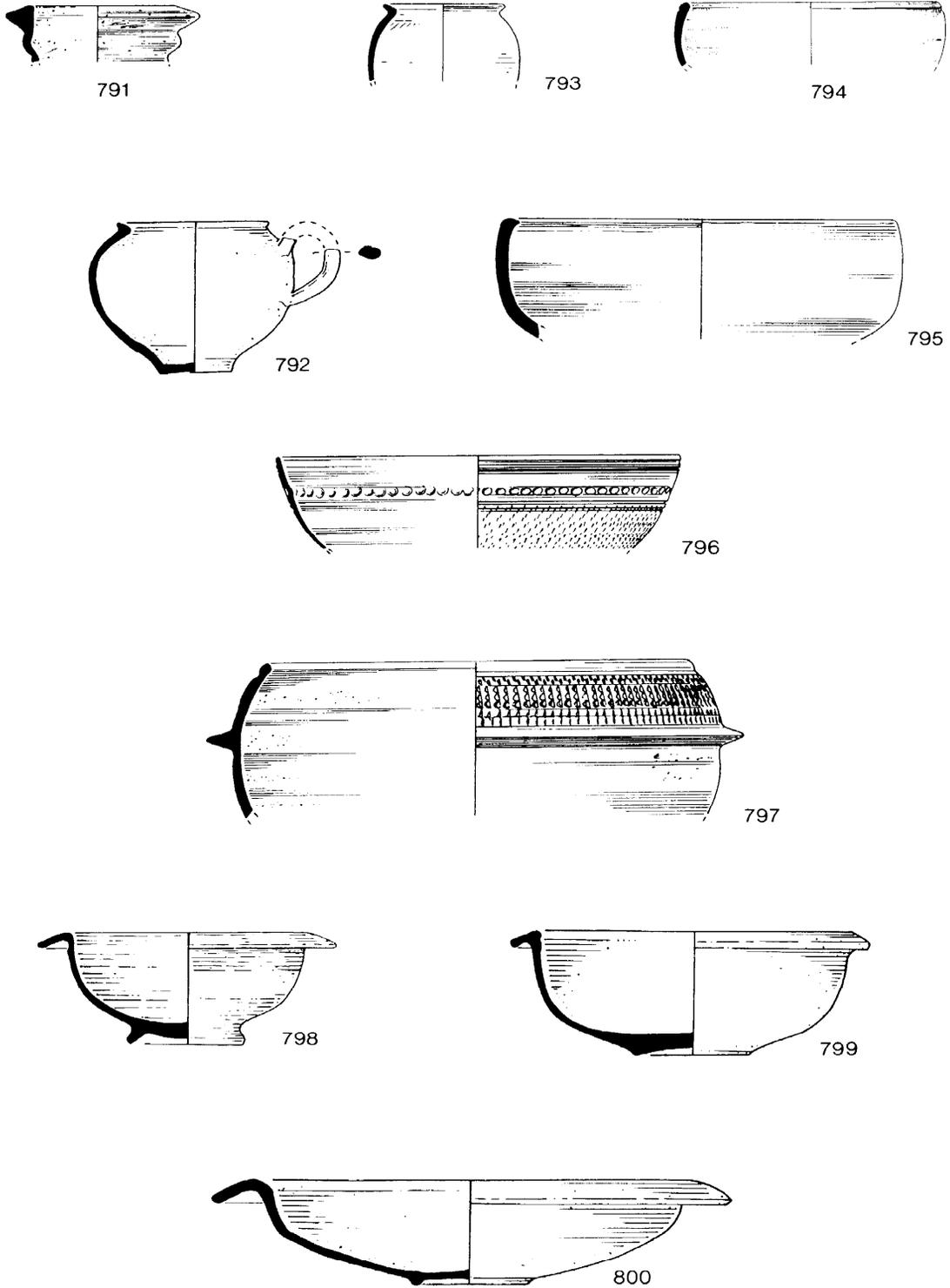


Fig 126 Local Eggshell ware, flagons, no 791; beakers, nos 792-3; bowls/dishes, nos 794-800 (Scale 1:2)

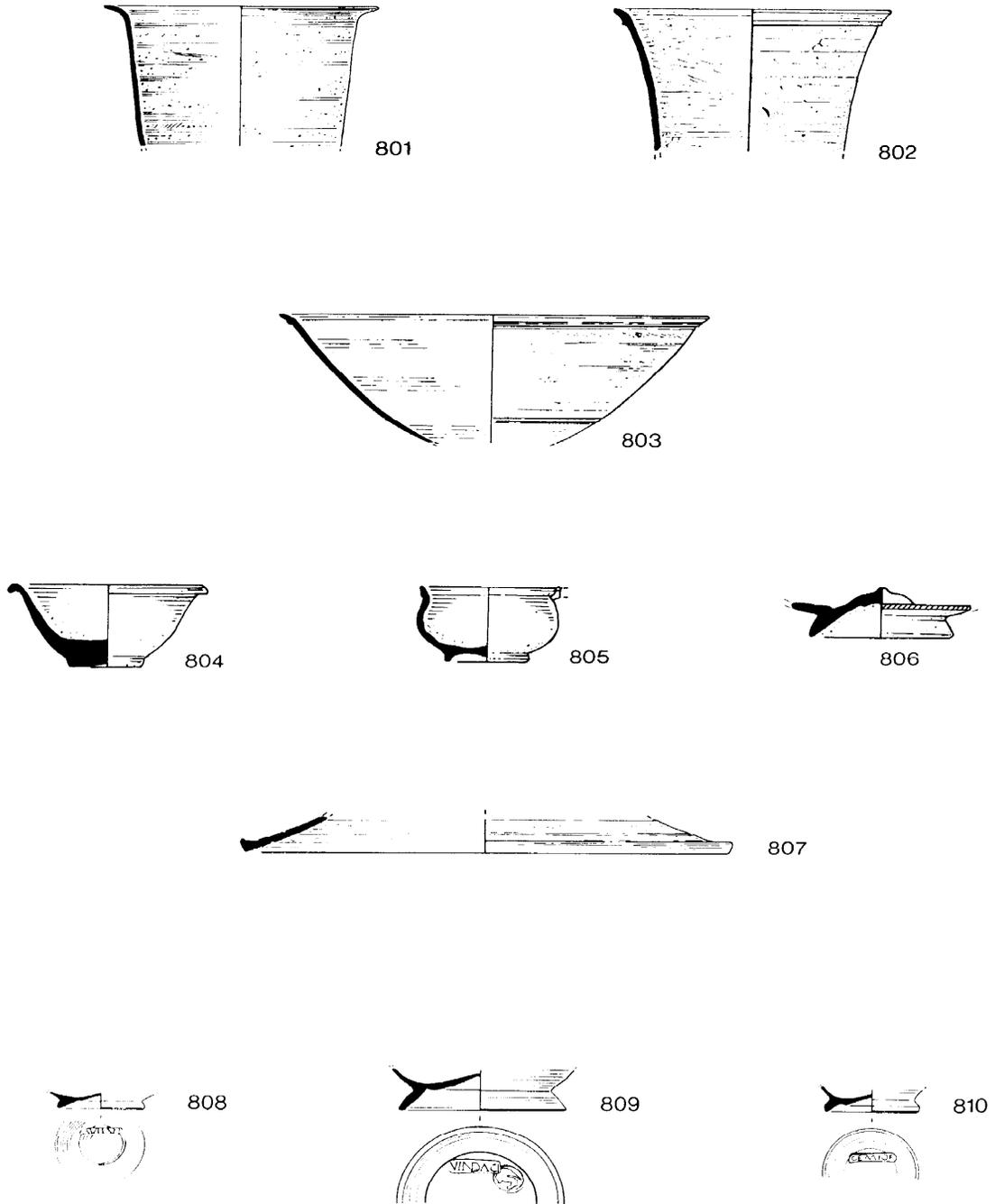


Fig 127 Local Eggshell ware, cups, nos 801-5; other forms, nos 806-7. Black Eggshell ware, beakers, nos 808-10 (Scale 1:2)

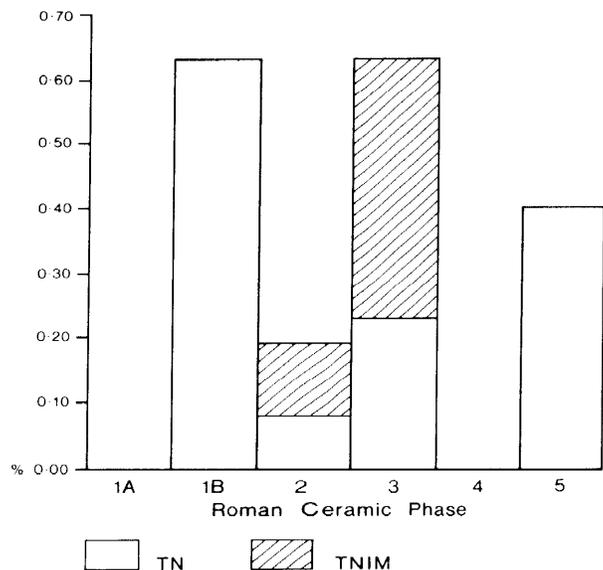


Fig 128 Stacked bar graph of Terra Nigra and imported Imitation Terra Nigra as a percentage of all non-samian fine wares by weight

into the early Antonine. Greene (1979, 115) suggests that the plates illustrated here continued into the 2nd century in Belgium and at Nijmegen.

Fabric and Technology

A fine, light grey fabric with smooth black slip.

A medium or hard fabric, greyish-white (2.5Y 8/0-7/0) in colour with thin, darker (2.5Y 5/0) margins and a finely irregular fracture. It contains rare, fine quartz (A, SA <0.3mm) and brown inclusions (SA <0.5mm) in a silty matrix. The surfaces of the platters are coated with a dark grey (2.5Y 4/0) slip and are highly burnished.

Forms

Bowls and dishes Fig 129, Nos 811-12; Fig 142, No 812. Vessels are either dishes or platters. The dishes nor-

mally have a plain rim, like Cam 16 (cf V or IVJ, 811), but a more unusual vessel is a stamped example of Cam 8 (cf VB, 812) with a moulded rim. The stamp of Bentos found here occurs on the production site at Sept-Saulx, Marne, between Rheims and Châlons-sur-Mame, supporting a source in the Vesle Valley. Dating evidence is sparse, but its manufacture should fall between 35-60 (Rigby 1984).

TNIM-2181

TNIM-2181 is similar to the North Gaulish Grey wares found in some quantity in Severan contexts at New Fresh Wharf (Richardson 1986, 106-9; Richardson & Tyers 1984) and is thought to originate in northern France, probably Picardy.

Dating

Fig 128

This rare fabric occurs in quantified Flavian and Trajanic contexts.

*Fabric and technology

A sandy, white fabric with smooth black slip.

A hard fabric with an irregular fracture; it is off-white to light grey (2.5YR 8/0). Inclusions are abundant, densely packed silt-sized quartz, white mica and occasional feldspar with larger rounded quartz (<0.3mm), and black (0.3mm-1.0mm) fragments. The surfaces are slipped dark grey or black (2.5YR 3/0-2/0) and wiped, and some white mica is visible on them.

Forms

Bowls and dishes Fig 129, Nos 813-14; Fig 142, No 814. At least two vessels are present, from shallow, plain-rim dishes of Cam 16 (cf V or IVJ). Number 814 may belong to a different tradition, for it has an illiterate stamp in *plantum pedum* which cannot be paralleled on terra nigra.

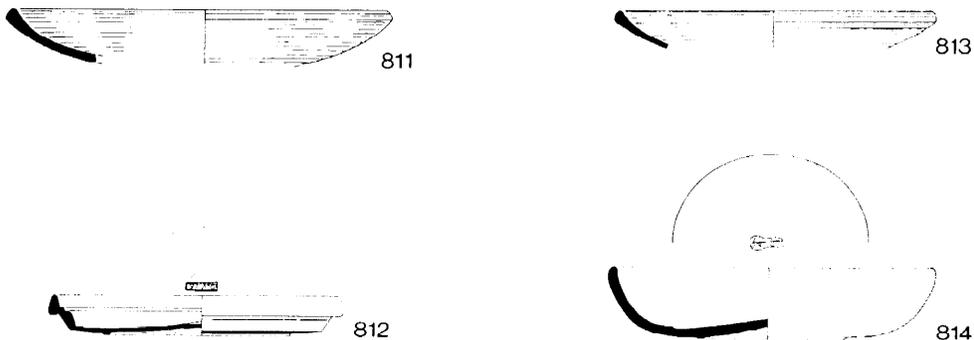


Fig 129 Terra Nigra fabric 1712, bowls/dishes, nos 811-12. Imitation Terra Nigra fabric 2181, bowls/dishes, nos 813-14 (Scale 1:4)

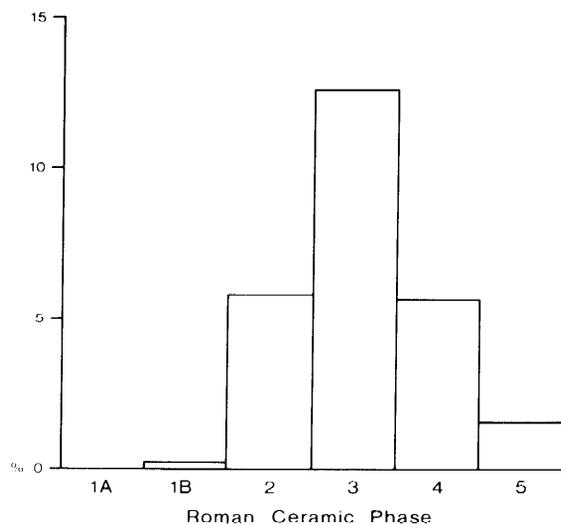


Fig 130 Bar graph of London ware as a percentage of all non-samian fine wares by weight

6.8 Reduced Fine wares

London ware (LONW)

This fine, black or grey fabric described as London ware or London-type ware is characterized by incised lines (including compass-scribed circles), rouletting and stamps. London ware was almost certainly produced in the London area (Marsh 1978, 124) and at a number of different production centres on both the Continent and in Britain. Other British centres include Oxford, West Stow, the Nene Valley and the Upchurch Marshes of Kent (Medway) (*ibid*; Rodwell 1978, 228).

It is occasionally difficult to distinguish between the fabrics of the various production areas, particularly between the London and the Medway products. However, probable London products feature a smoothly finished, black surface and generally lack the pronounced black sandwich effect and clay pellets of the Medway products. Examples from the City are apparently restricted to the London products. Stamped decorated variants (LONW-STD) discussed by Rodwell (1978), and Upchurch products (NKFW) are presented separately below.

Dating

Fig 130

London ware is common and is present in negligible quantities in late Neronian-early Flavian levels. It became more frequent in the Flavian period, but its floruit occurred during the Trajanic; it was absent from Flavian deposits at Leadenhall Court where a similar Fine Micaceous type was instead found and its presence in quantified deposits at Newgate Street may be related to slumped stratigraphy.

*Fabric and technology

Pl 5az

A fine, reduced micaceous ware with smooth black-slipped surfaces, which have a tendency to laminate. Although differing typologically, London ware fabrics bear a marked resemblance to a group of fine micaceous grey or black wares (FMIC-1659, FMIC-1746) noted in City assemblages and discussed below.

A soft and smooth fabric with a finely irregular fracture. There are several variants, but the typical one (2647) has a very fine sandy matrix with a dark greyish-brown (7.5YR 4/2) core varying to dark reddish-brown (5YR 4/4) at the margins. It has sparse quartz (SA 0.05-0.15mm, occasionally <0.4mm). Fine white mica, which is more visible on the surfaces, and slightly rarer black opaques (I, SA <0.4mm) are also present. Other fabric variants may be somewhat finer, and lack the margins seen on 2647. A matt or occasionally lustrous slip, very dark grey grading to black (2.5YR 4/0-3/0), covers both surfaces of open vessels, which are burnished and decorated externally. Oxidized vessels appear in the Reserve Collection and occasionally from sites. Their decoration conforms to the typical black LONW.

Forms

The majority of London ware forms found in the City are copies of samian bowls, where the incised decoration is clearly imitating ovolos of the samian originals. As indicated by its overall distribution, most forms started in the Flavian and peaked during the Trajanic period.

Jars Fig 132, Nos 815-16 Flasks (IIR, MT51) are heavily decorated with incising and rouletting and are probably Gallo-Belgic in origin.

Bowls and dishes Figs 132-3, Nos 817-25 The most common London ware type is the hemispherical bowl, broadly imitating Drag 37, with a variety of compass-scribed and rouletted motifs (IVE, MT42, 820-3). Imitations of Drag 29s are also well represented and decorated with similar patterns (IVD, MT44, 817-19). Dishes or plates with flat rims are less highly decorated than the normal London ware, but are rouletted on the rim, and sometimes the base (VC, MT31, 824-5).

Stamped London ware (LONW-STD)

This can be distinguished from the usual London ware by decoration and fabric. Comparison of form, fabric and stamp dies suggests that the rare City vessels belong to Rodwell's (1978, 234-45) group 2, which is widely distributed in the London-Essex area.

Dating

The rare City examples come from 2nd century contexts, but the group 2 types are thought to have been produced in the mid to late Flavian period (*ibid*, 245). Quantified sherds account for <1% by weight of all non-samian fine wares during the Trajanic period and 1% during the early Antonine, and are therefore likely to be residual.

*Fabric and technology

A fine fabric, with reduced core and very hard, burnished exterior.

The most common fabric (255 1) is hard and fairly fine, with a distinctive sandwich effect of a dark greyish-brown (5YR 3/1) core and orange (2.5YR 5/6) margins. The external surface, which is burnished and stamped, varies in colour from brown to orange (5YR 5/4-4/2), although the interior is usually orange (2.5YR 6/6), unburnished and slightly rough. Abundant quartz (SA 0.05-0.1mm, rarely 0.2mm) and moderate red iron-rich clay pellets (SA 0.1-1.0mm) are set in a matrix containing fine white and gold mica (0.1mm>). In thin section the quartz is seen to be angular, densely packed and well-sorted, and readily identifiable from the unstamped London ware.

Forms

Examples of stamped London ware are rare in the City and usually survive only as sherds. Four sherds have been noted from beakers and a bowl; only the bowl is illustrated here.

Bowls and dishes Fig 133, No 826 A copy of the samian form Drag 30/37 is represented.

North Kent Fine ware (NKFV)

Reduced Fine wares from the Medway region of north Kent, particularly vessels in the London or Upchurch ware tradition, are distinguishable from those made in or close to the City (see LONW above), both petrographically and typologically. NKFV has a finer fabric with abundant, naturally occurring clay pellets visible macroscopically, and the forms are primarily beakers (sometimes rouletted) and undecorated bowls.

Dating

Fig 131

NKFV is sparse on City sites, and was first noted in a group of Severan poppy beakers at New Fresh Wharf (B Richardson, pers comm). The ware first occurred in the late Neronian period, but was most typical of the Trajanic, and continued into the early Antonine period; all the examples fall within the Kent range for Upchurch ware, where it was found from the late 1st to 3rd centuries (Monaghan 1984).

*Fabric and technology

Pl 5ba

A fine, inclusionless, reduced fabric with distinctive black core and argillaceous fragments. Occasional decoration consists of barbotine, burnishing or rouletting. Knife trimming can often be seen near the base. In thin section the fabric compares well with pottery from Upchurch.

This fabric is hard and finely irregular in fracture, with a smooth, silky exterior surface and a slightly rough, soapy texture on the interior. The dark grey or black (7.5YR 3/0) core and the yellowish-brown (5YR 5/6) or grey (5YR 6/1) exterior margins produce a

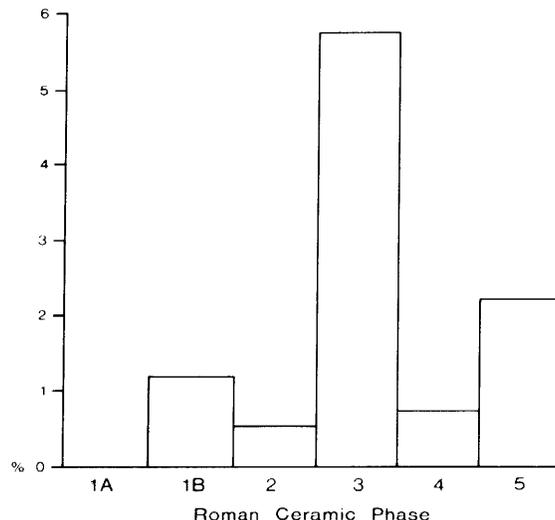


Fig 131 Bar graph of North Kent Fine ware as a percentage of all fine wares by weight

distinctive sandwich effect. The main inclusions are moderate amounts of brownish-grey or rounded red pellets (0.8mm>) set in a fine silty matrix of quartz. Fine white and gold mica is rare, although it is more apparent on the burnished surfaces. In thin section the pellets can be identified as naturally occurring clay pellets. The exterior surfaces are generally slipped and burnished grey (7.5YR 4/0) or black (7.5YR 3/0).

City vessels are identical to samples of Upchurch line ware fabric 1 identified by Monaghan (1984) as being from the Upchurch Marshes of Kent. Comparison in thin section of the City material and samples of the principal fabric from the Upchurch Marsh area shows the fabrics to be identical. Most distinctive are nodules, dark to light grey in colour, which are iron or manganese rich, formed in a soil where organics are present. These, together with the dense black core, suggest a rather organic blue or black clay source which might well be estuarine in nature, but - lacking shell particles - is more likely to be riverine (A Vince, pers comm).

Forms

Forms are principally beakers, but jars and bowls/dishes are also present. Most forms are Trajanic in date.

Jars Fig 133, No 827 Jars are represented by a round-bodied vessel with thickened rim (IIE variant) and burnished decoration - similar to those produced at Highgate - from a Hadrianic deposit. The vessel lacks the neck cordon frequently associated with the type.

Beakers Fig 133, Nos 828-9 An ovoid high-shouldered beaker (IIIB, 829) with rouletted decoration is illustrated, as well as a variant of a butt beaker (IIIA, 828). Other types represented by body sherds and not illustrated include carinated (IIIG) and poppy (IIIF) beakers.

Bowls and dishes Fig 133, Nos 830-2 Included in this category are round-bodied bowls (IVF, 830) and dishes imitating terra nigra Cam 13, with moulded

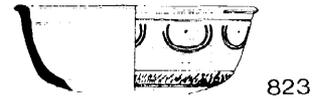
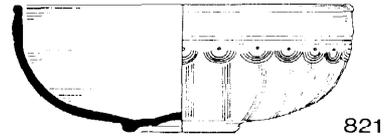
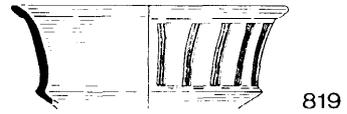
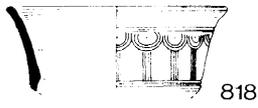
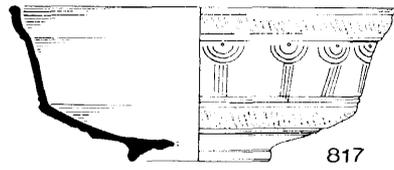


Fig 132 London ware, jars, nos 815-16; bowls/dishes, nos 817-23 (Scale 1:4)

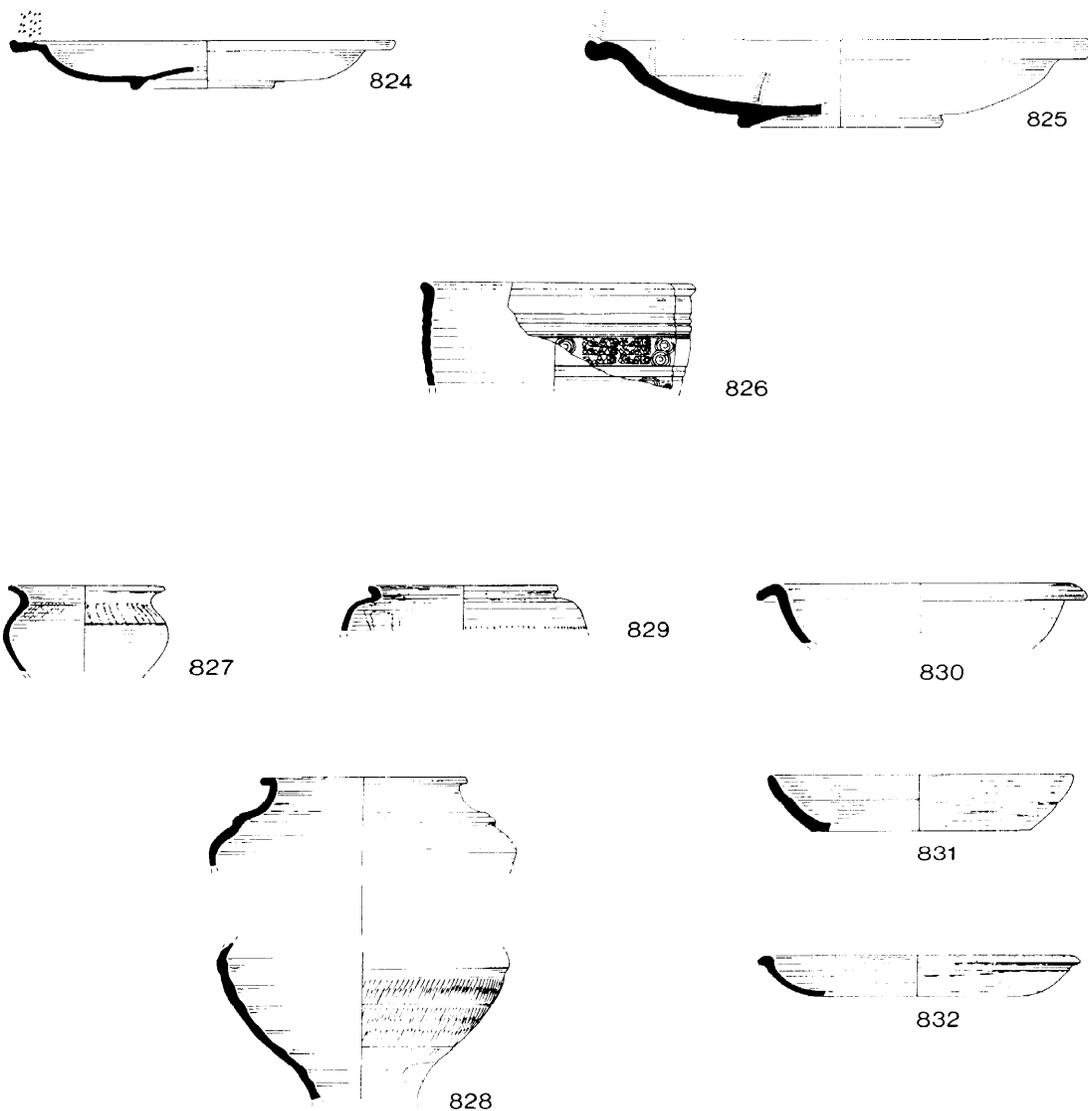


Fig 133 London ware, bowls/dishes, nos 824-5. Stamped London ware, bowls/dishes, no 826. North Kent Fine ware, jars, no 827; beakers, nos 828-9; bowls/dishes, nos 830-2 (Scale 1:4)

interior (VA, 831); both are from Flavian contexts. Another vessel, with a bead rim slightly grooved beneath the lip (832), is from an early Antonine level.

Fine Micaceous wares (FMIC)

These are the commonest non-sigillata fine ware, frequently comprising almost half of the remaining types by weight. Although no exact sources are known

they form a consistent group both technologically and typologically, and some fabrics may be local.

Four main fabric variants can be identified within the FMIC group, but all are distinguished by a micaceous clay which is especially noticeable on the surface and a thin wash or self-slip which is finely burnished on the external surface. Decoration consists of occasional incised, rouletted or, more commonly, barbotine dot circles. A wide range of vessels, includ-

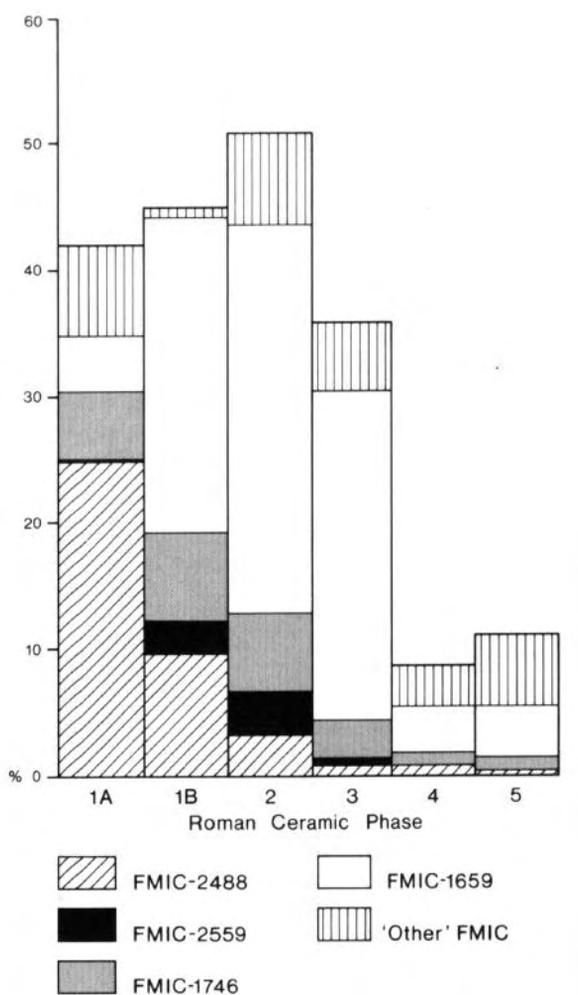


Fig 134 Stacked bar graph of Fine Micaceous ware fabrics as a percentage of all non-samian fine wares by weight

ing flagons, jars, bowls and cups are made in these fabrics, but beakers are by far the most common.

As a group FMIC is abundant. It appears in pre-Boudiccan deposits and was common through the Trajanic period; rapid decline began in the Hadrianic period and it was probably residual from this point onwards (Fig 134). Individual fabric variations are only separated during quantification, but both fabrics and forms provide a good chronological indicator.

FMIC-1659

This is the largest of the FMIC groups, accounting for nearly 60% by weight of all the FMICs. The fabric is identical to London ware, although it lacks the thick black slip; by analogy to LONW it may have a local source (p 151). There is also a marked similarity between LONW and FMIC-1659 in Drag 29 bowls, but the FMIC potters apparently used a scoring tool for the decoration, rather than the more precise compass scribing noted on London ware.

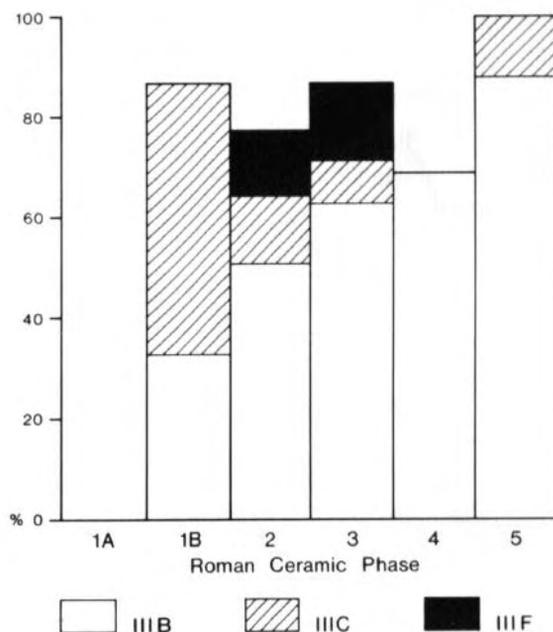


Fig 135 Stacked bar graph of the common Fine Micaceous ware fabric 1659 beaker forms as a percentage of all FMIC-1659 beakers by Eves

Dating

Fig 134

FMIC-1659 is moderately common. It is present in small quantities in pre-Boudiccan contexts and was clearly the most dominant FMIC group from the late Neronian period to the Trajanic, after which quantities declined and it may well have been residual.

*Fabric and technology

Pl 5bb

A fine, silty fabric, with light core and dark reduced surfaces which are noticeably micaceous; occasional large inclusions of limestone, organics and clay pellets can be seen. Although the external finish and decorative forms are dissimilar, the general range of inclusions and sorting of FMIC-1659 resemble the typical London ware fabric (LONW-2647), also thought to be local.

A hard, fine-textured, light grey (10B 7/2) fabric, almost free of larger inclusions, with a black or grey (7.5YR 4/0-3/0) slipped and burnished surface. The fabric is slightly irregular or laminar in fracture, with abundant silt-sized quartz in a slightly micaceous matrix with white mica, together with larger inclusions of clay pellets (SA <0.5mm) and, less frequently, irregularly sorted organics (F 0.2-0.5mm) and limestone (R <0.3mm). A rarer sub-group (1747) lacks the organic inclusions; another, FMIC-760, imitates terra nigra forms and has smooth light grey (7.5YR 6/0) burnished surfaces. It often features groups of barbotine dot decoration and occasional rouletting.

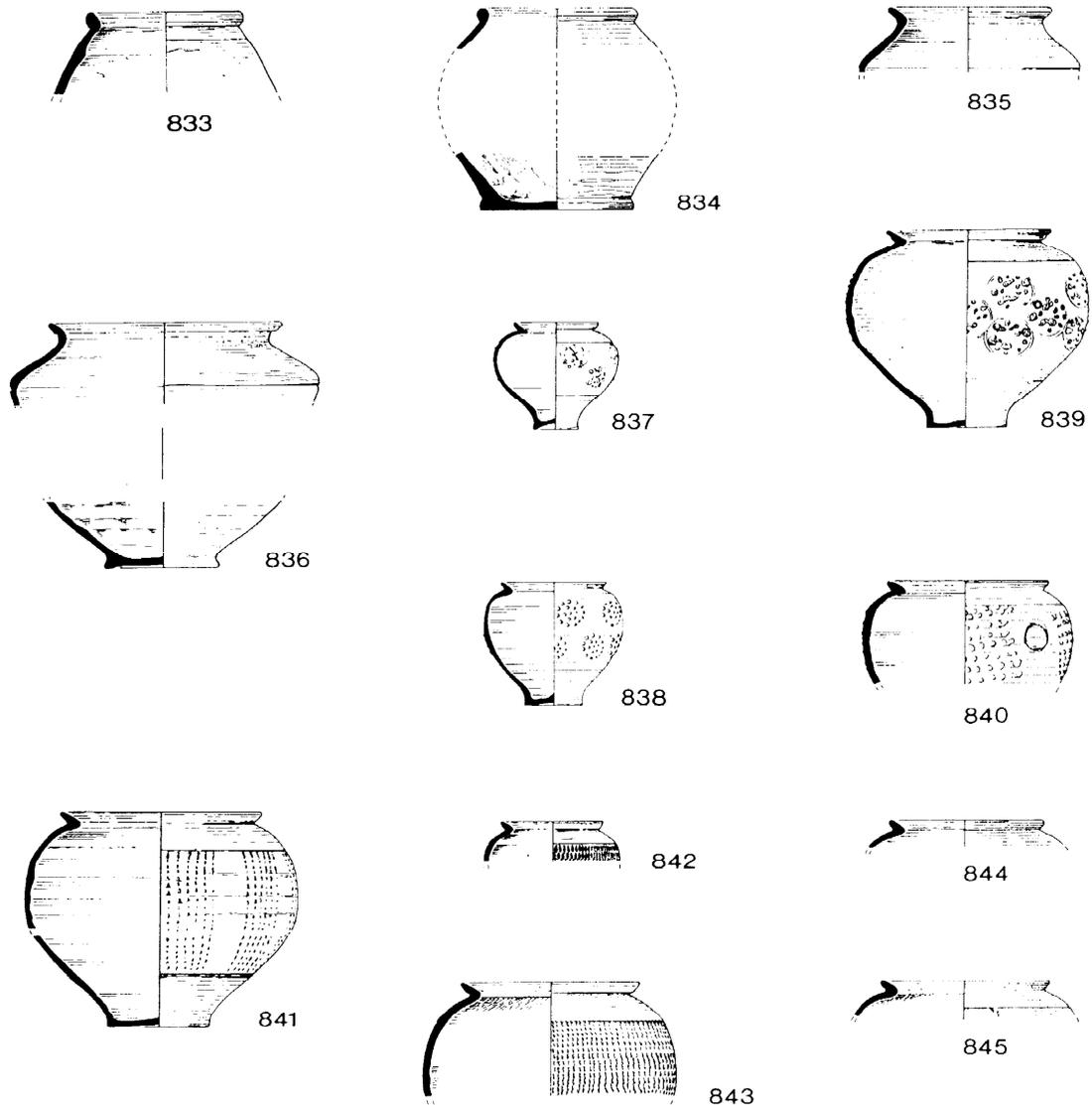


Fig 136 Fine Micaceous ware fabric 1659, jars, nos 833-6; beakers, nos 837-45 (Scale 1:4)

Forms

The 1659 repertoire includes the entire range of fine ware vessel types with a variety of decorative motifs. By far the commonest of these are beakers, which form over 80% (by Eves) of the total, but during the Flavian and Trajanic periods a wider range of types, including jars, bowls, cups and lids, was present.

Jars Fig 136, Nos 833-6 This group includes bead-rim IIAs (833-4) and necked jars (NJ) with both plain-everted (835) and undercut (836) rims. Both are

grooved at the girth; 836 has a footring base. Flasks (IIR) are present, but not illustrated.

Beakers Fig 135, Figs 136-7, Nos 837-60 The most common group is the ovoid high-shouldered IIIBs, decorated with lines and circles of barbotine dots (837-41, 845) and rouletting (842-3). Although they vary in size they are remarkably consistent in form and decoration. They were most abundant in Flavian and Trajanic levels although earlier examples are known. One plain vessel is also illustrated (844). Ovoid beakers without high shoulders clustered in the late

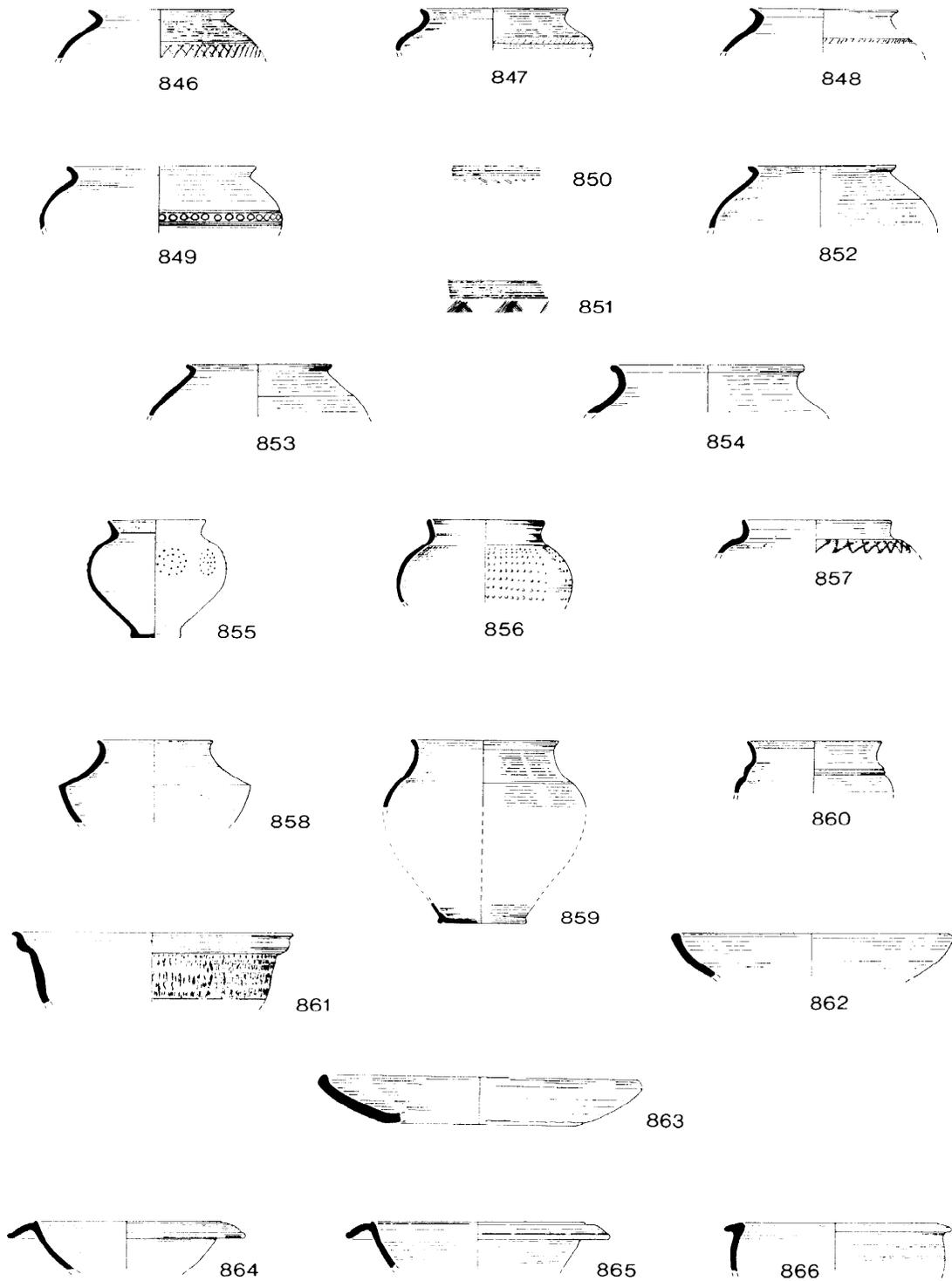


Fig 137 Fine Micaceous ware fabric 1659, beakers, nos 846-60; bowls/dishes, nos 861-6 (Scale 1:4)

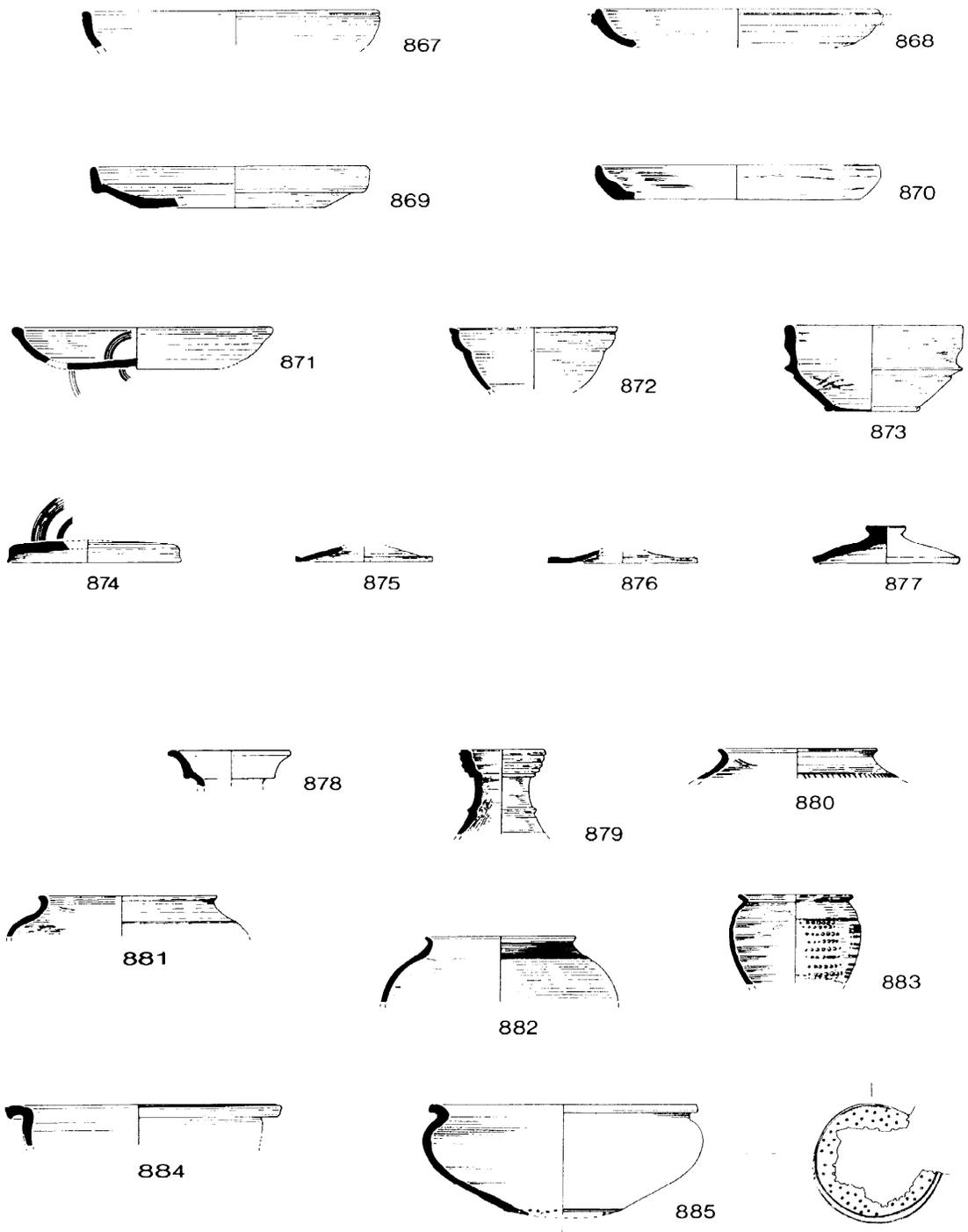


Fig 138 Fine Micaceous ware fabric 1659, bowls/dishes, nos 867-71; cups, nos 872-3; other forms, nos 874-7. Fine Micaceous ware fabric 1746, flacons, nos 878-9; beakers, nos 880-3; bowls/dishes, no 884; other forms, no 885 (Scale 1:4)

Neronian-Flavian period, and are decorated with incising, combing, circles, lines and stabbing (IIIC, 846-51), although some may have been undecorated (852-4). Poppy (IIIF, 855-7) and carinated (BIG, 858) beakers, normally Flavian-Trajanic, and a bulbous one (IIIH, 859) associated with Neronian-mid Flavian pottery, are also represented. In addition to the normal IIIFs is a variant decorated with a barbotine criss-cross motif (857). A small beaker with upright rim and shoulder cordon (860) is also unusual. The trends of the major beaker forms are illustrated clearly through the Trajanic period on Fig 135; residuality distorts their patterns for the Hadrianic and early Antonine periods.

Bowls and dishes Figs 137-8, Nos 861-71 A variety of bowls and dishes are included, although none occurs with regularity. Examples of samian imitations, both Drag 29 (IVD, 861) and Rt 12 (864-5), are represented, as are flat-rim bowls (866). Dishes include plain-rim (IVJ, 862-3) and bead-rim (867-8, 871) items, as well as plates with internal (VA, 870) and external (VB, 869) moulding. The VBs are imitations of terra nigra and are similar to Cam 7/8 and 13.

Cups Fig 138, Nos 872-3 An imitation of a samian Drag 27 (VIA, 872) is represented in this category, as is a terra nigra imitation of a Cam 59 (873).

Other forms Fig 138, Nos 874-7 Two main lid types can be identified. These include small lids with concave profiles and upturned (875), flat and grooved (876), and square (877) rims. An unusual vessel (874, possibly a dish), with a shallow, flat profile and plain rim, is burnished externally as well as being finely decorated on the top with two groups of compass-scribed, concentric circles, similar to London ware.

FMIC-1746

The fabric compares with a London ware variant (LONW-753) and may be local.

Dating

Fig 134

FMIC-1746 is a small group in comparison with 1659 (11% of all FMICs by weight), although still moderately common. It is present throughout the entire sequence, but was most abundant from the pre-Boudiccan through the Flavian period, and is almost certainly residual in Hadrianic and early Antonine contexts.

*Fabric and technology

Pl 5bc

A fine, reduced fabric with moderate large quartz inclusions in a micaceous, silty matrix. It is slightly coarser and less well made than FMIC-1659.

A hard sandy fabric, finely irregular in fracture with a slightly rough feel. Moderate coarse quartz (R, SA 0.1-0.6mm) is set in a grey or greyish-brown (10YR 4/4; 2.5YR 4/0) fine silty matrix, with

white and gold mica, and with sparse, soft reddish-brown iron-rich inclusions and poorly mixed clay (I, SA <0.5mm). This fabric is one of the coarser variants of the FMIC category and vessels are not usually as well finished as those in FMIC-1659. However, as with 1659, there does appear to be a parallel within the London ware fabrics (LONW-753, not discussed above), which is a rare variant of the typical fabric.

Forms

The range of types is primarily restricted to beakers and occasional flagons, bowls and lids (not illustrated). Barbotine decoration is found on some vessels but is less common than for FMIC-1659.

Flagons Fig 138, Nos 878-9 These include both collared (IA, 878) and ring-neck (IB, 879) flagons.

Beakers Fig 138, Nos 880-3 Beakers are the most common form and are present throughout the entire period of production. Most frequent are ovoid IIICs (880-2), including an example with diagonal incised lines. A short ever-ted-rim IIIE (883) decorated with barbotine is an early form of poppy beaker from a Flavian deposit; other unillustrated types include butt (IIIA), ovoid (IIIB) and bulbous (IIIH) beakers.

Bowls and dishes Fig 138, No 884 Bowls are not common and occur principally in Flavian or Trajanic deposits; a variant of the moulded-rim IVA can be identified.

Other forms Fig 138, No 885 An unusual strainer with over-turned, grooved rim is present.

FMIC-2488

Dating

Fig 134

This was by far the largest group of FMICs during the pre-Boudiccan period, and was still relatively well represented in the late Neronian-early Flavian. Although present in very small quantities towards the end of the sequence, it was clearly superseded by other fabrics from the Flavian period onwards. Overall, it is moderately common and accounts for 9% of all FMIC fabrics by weight.

*Fabric and technology

Pl 5bd

A reduced, finely granular fabric, with slipped, micaceous surfaces. The granular matrix of 2488 distinguishes it from the other FMICs.

A hard sandy fabric with a harsh, slightly granular surface. It is finely irregular in fracture, with a grey or greyish-brown (7.5YR 3/0; 5YR 312) core. The main inclusion is abundant, well-sorted quartz (SA c 0.2mm), sometimes reddish-orange in colour. There are also occasional fine, rounded brown iron-rich inclusions and white mica. Although the exact source is not known, 2488 resembles a fine micaceous grey fabric which occurs at Chichester (V Rigby, pers comm). A variant (FMIC-1661) is restricted to forms imitating terra nigra and has light grey (2.5YR 6/0) surfaces.

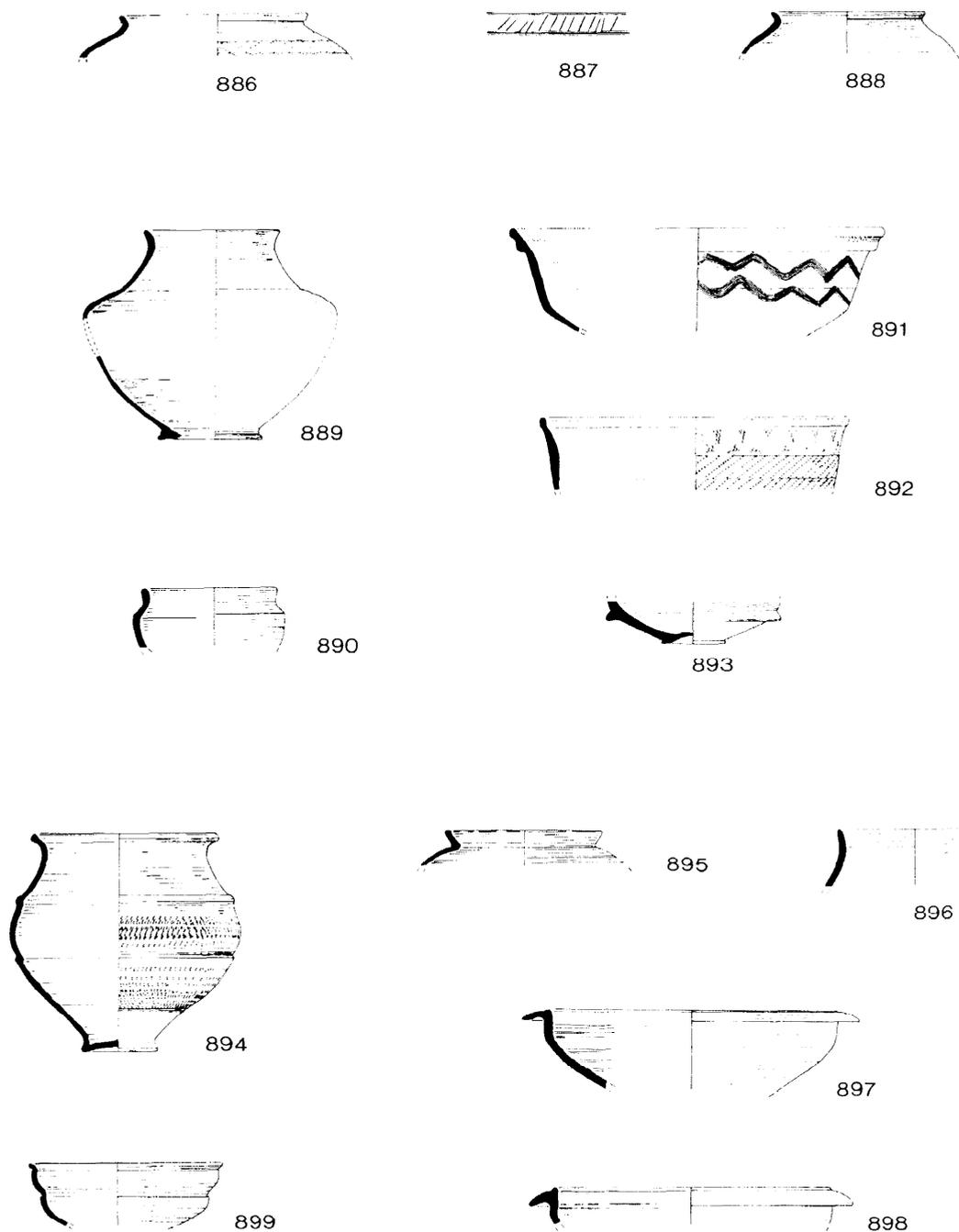


Fig 139 Fine Micaceous ware fabric 2488, beakers, nos 886-90; bowls/dishes, nos 891-2; cups, no 893. Fine Micaceous ware fabric 2559, beakers, nos 894-6; bowls/dishes, nos 897-8; cups, no 899 (Scale 1:4)

Forms

In common with all the fine micaceous grey wares, FMIC-2488 occurs mainly as beakers, although other forms are present.

Beakers Fig 139, Nos 886-90 Beakers are principally ovoid IIICs (886-8), which occur throughout the period of production and have stabbed or incised decoration as seen on FMIC-1659 and FMIC-1746. Carinated (IIIG, not illustrated) and bulbous (IIIH, 889) beakers are also typical; another beaker has a tall neck and carinated shoulders (890). In contrast to FMIC-1659, IIIBs are rare.

Bowls and dishes Fig 139, Nos 891-2 A small number of bowls imitating samian Drag 29 (IVD), distinguished by combed and incised decoration, appear at Newgate Street in the Trajanic period. Elsewhere in the City they occur with Neronian-mid Flavian pottery.

Cups Fig 139, No 893 Included here is a terra nigra imitation of Cam 59.

FMIC-2559

This fabric may well be from Kent, for the butt beaker (Fig 139, 894) can be paralleled with vessels from Upchurch (2B2.5, Monaghan 1987, 62). The fabric contains numerous microfossils which are reminiscent of some Hoo fabrics (Section 4.4); it also has a definite core, although not as distinct as NKFV (p 152).

Dating

Fig 134

FMIC-2559 is a sparse, short-lived industry, mainly represented during the late Neronian-Flavian period, although examples occurred before and after. It accounts for 4% of all FMICs by weight.

*Fabric and technology

Pl 2be

A particularly distinctive reduced fabric with equal amounts of fine quartz and calcareous inclusions, and a matt slip on the outside.

A hard, smooth, grey (2.5Y 5/0) fabric with a dark or light grey (10YR 4/1-6/2) core and a finely irregular fracture. It is composed of equal proportions of abundant well-sorted fine quartz (SA, A) and calcareous inclusions (SA, R <0.15mm) and smaller amounts of white mica. Occasionally the calcareous inclusions have hollow centres and have been identified in thin section as possible microfossils (A Vince, pers comm).

Forms

A restricted range of forms includes beakers and some imitations of samian bowls and cups.

Beakers Fig 139, Nos 894-6 Beakers are the most common vessel type. Two Gallo-Belgic types include butt beakers with rouletted decoration (IIIA, 894) and carinated or bulbous (IIIG/H, 896) varieties; ovoid

forms also occur (IIIB, 895).

Bowls and dishes Fig 139, Nos 897-8 Examples of bowls imitating the samian Rt 12 are present.

Cups Fig 139, No 899 An imitation of Drag 27 (VIA) is included in this category.

Other Fine Reduced wares (FINE)

Related to the FMIC fabrics are a group of reduced grey wares which have less mica than the previous ones. Four variants are described here. Although additional ones can be identified, they are not sufficiently represented to contribute to typological or dating studies. In common with FMIC fabrics, beakers are the most typical form. As an overall group, the FINE fabrics occur abundantly and are found from the pre-Boudiccan period, but were most common during the Trajanic. Individual fabric numbers are assigned only during quantification.

FINE-492

Dating

Fig 140

This sparse fabric began in the late Neronian period and continued throughout the sequence; it peaked in the Trajanic, and was probably residual in Hadrianic and early Antonine levels. It is the most common of all FINE fabrics and represents 32% by weight. Forms mirror the dating trends of the fabric in general.

*Fabric and technology

Pl 5bf

A fine, highly fired fabric, distinguished by its reddish-brown core and by having few visible inclusions apart from mica and rare quartz. The exterior surface is slipped and burnished.

A fine fabric, with light grey (7.5YR 5/0) surfaces, darker grey (7.5YR 5/0) margins and a reddish-brown (7.5YR 5/4) core. It is very hard and highly fired, feels fairly smooth and has a finely irregular fracture. Inclusions are sparse and consist of quartz (SA <0.25mm), black iron-rich fragments (R 0.1mm), fine white mica and occasional fine limestone.

Forms

Beakers Fig 141, Nos 900-2 Examples include barbotine-decorated, short everted-rim (IIIE variant, 900) and poppy (IIIF, 901) beakers. An unassigned beaker (902) has a slightly everted rim, long neck and shoulder cordon.

Jars Fig 141, No 903 The single jar is a necked example (NJ) with a cordon on the neck, most similar to IIDs.

7. A chronological overview of early Roman pottery in London

7.1 Presentation

Each of the five main ceramic phases (RCP) is considered in two ways: i) 'Sources and trade', based on broad functional ware groups illustrating general trends and source areas and ii) 'Assemblage composition', which chiefly concerns vessel forms. All relevant major vessel categories are considered. Miscellaneous forms (IX), mainly lids and tazze, are not regularly included since they do not necessarily enhance the conclusions; lids, for example, are generally intended for use with bowls and therefore mirror their pattern. Unless otherwise qualified, relative percentages in section i) are derived from weight, and are expressed as a percentage of the group under discussion (eg all reduced wares, all oxidized wares). In contrast, section ii) relies upon estimated vessel equivalents (Eves), again expressed as a percentage of a particular group (eg all flagons, all jars).

The 'Sources and trade' text is accompanied by a series of graphs illustrating trends for each ware group within RCP (Figs 144-7). These comprise a pie chart of fabric, some of which are grouped together as 'other fabrics' and then expanded on a linked bar graph. The data have been presented in this manner to provide a visible scale for the more uncommon fabrics. A separate bar graph indicates the relative chronological importance of different source areas by Eves (Fig 143).

Interpretative maps illustrate the relative major and minor pottery suppliers, by period, for sourced fabrics (Figs 154, 158, 163, 169, 173, 177). In addition, typical vessel types are illustrated for each phase, as well as some more unusual examples to emphasize diversity. Whenever possible, illustrated sherds derive from contexts belonging to the actual phase groups. However, the method of recording, by comparison with a type vessel, means that illustrated items may belong to earlier or later contexts. This also accounts for the reuse of drawings in more than one ceramic phase. All illustrations used for the phase groups appear in the industry sections, apart from a few Verulamium region vessels.

'Assemblage composition' is illustrated by a bar graph showing the overall distribution of major form types for each period by Eves (Fig 148), as well as linked pie charts and bar graphs like those described above and giving more detail than Fig 148 (Figs 149-52). Finally, the main samian forms are displayed on a series of bar graphs (Fig 153).

Wherever possible the City assemblages are com-

pared with quantified material from Chelmsford (Going 1987) and Kent (Pollard 1988), together with unquantified deposits from Verulamium (Wilson 1972) and Southwark (Bird *et al* 1978). The City, Southwark and Verulamium are most akin to each other in their heavy reliance on Verulamium wares; Chelmsford is clearly linked to Colchester and its locally produced wares, but from the Hadrianic-Antonine period, with the advent of regional wares, the two become truly comparable (Going 1987, 117). Kent provides an interesting contrast with the City because of its well-established pre-Roman tradition; comparisons are most notable between west Kent and London (Pollard 1988, 200).

7.2 Background

The dating of the initial occupation of Roman London has been discussed in detail elsewhere (Davies & Tyers 1983b, 24-5). It is useful to summarize that evidence here, for it provides a framework in which to place the earliest assemblages. The near complete absence of any of the early south Gaulish samian pottery types represented at Camulodunum (Hawkes & Hull 1947), Fishbourne (Cunliffe 1971) and Richborough (Bushe-Fox 1932) indicates that London was not occupied during the initial conquest period. Rather, the first substantial quantities of samian in stratified deposits seem to be broadly Neronian in date. In addition, early Gaulish fine wares which occur in some quantity on other sites in the southeast are lacking. For example, terra rubra is absent from stratified deposits and terra nigra is represented by only a handful of sherds, contrasting with the moderate quantities now known from Chichester (eg Rigby 1978a), Canterbury (eg Rigby 1982) and elsewhere. At the time of writing there is nothing in the early assemblages of pottery from the City that would contradict a foundation date in the 50s, and no suggestion that the earliest phases of London's occupation are marked by a particularly wide range of imported fine wares. This conclusion is supported by the coin evidence from Southwark, which indicates an initial occupation date in the 50s (Hammerson 1978, 592-3), and Sheldon has suggested that evidence, if any, of earlier occupation may be found in the vicinity of Westminster rather than on the City-Southwark axis (Sheldon 1978, 25).

Extensive Neronian fire deposits, present in many areas of the City and usually assigned to the Boudiccan revolt of 60/1, provide an opportunity to separate pre- and post-Boudiccan deposits. For this reason,

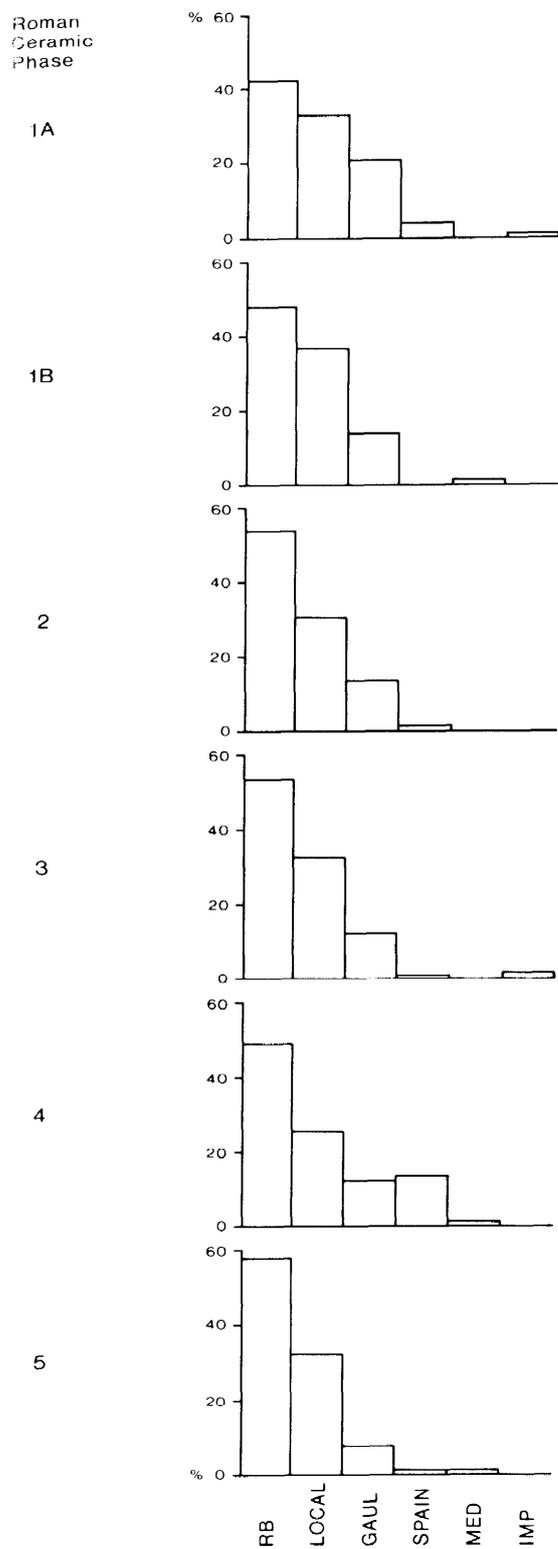


Fig 143 Bar graph of major source areas by ceramic phase (Eves)

RCP 1 is sub-divided in order to distinguish early and later Neronian assemblages.

Before describing the individual ceramic phases it is appropriate to stress some of the general trends. Firstly, there is the gradual decrease in imported wares through time which can be seen on Fig 143. In this, as in other patterns, the most visible change occurs after the pre-Boudiccan period (RCP 1A). Figure 143 also highlights the anomalous nature of quantified data from the Hadrianic period (RCP 4). The increase in Spanish imports here can be easily attributed to the developed Haltem 70 amphora at 5-12 Fenchurch Street; otherwise there is a consistent decline in fabrics during this period (see Chapters 3-6). The reason for this is unclear. While the total sample is small in comparison with some of the other ceramic phases, it is no smaller than that available for RCP 1B; instead the anomaly may result from the short chronological period represented by these fire deposits, which encapsulates a single event concurrent with a dramatic change in ceramic supply.

Secondly, the ratio of jars to bowls can be seen to change through time (Fig 148), with bowls gaining in importance. During the Neronian period jars far exceed bowls, regardless of fabric, but by the early Antonine period they are nearly equal. This shift may well reflect changes in food preparation and is not restricted to London; for example, a similar pattern can be seen at Verulamium Insula XIV (Wilson 1972).

Other general trends are clear from the examination of pottery throughout the City, but are somewhat obscured in the quantified data shown on Table 2. This table reveals an overall tendency for reduced wares to predominate increasingly over oxidized ones; and as throughout Britain, there is a general decrease in amphorae in the Hadrianic and Antonine periods. Again, the Boudiccan destruction is the critical breaking point, though the amphorae are biased by the nearly complete amphorae in the Fenchurch Street Hadrianic fire deposits, which distort the proportions of the remaining wares.

Table 2 does, however, clearly illustrate the changing relationship between samian and other fine wares. Samian is far more common during the pre-Boudiccan period, but by the Flavian period the two occur in fairly equal proportions by both Eves and weight.

7.3 Roman Ceramic Phase 1A: Pre-Boudiccan c 50/-60/1

Imported wares are more common in pre-Boudiccan assemblages (Fig 143, 25% Eves) than in any subsequent period. Although small in absolute terms, they include all the amphorae and fine wares that one would expect in a mid 1st century assemblage in southeast England. A feature of this period is the numerous coarse wares which are often unsourced, contrasting with later ceramic phases where a smaller number of suppliers dominate the market. At the same time this earliest phase sets the foundation for many of the Romano-British types which increase in subsequent periods.

Table 2: Proportions of ware types by ceramic phase (Eves/weight)

Ware Type	RCP 1A	RCP 1B	RCP 2	RCP 3	RCP 4	RCP 5
Amphorae	5%/40%	1%/33%	2%/41%	2%/30%	16%/43%	3%/25%
Oxidized	34%/25%	24%/22%	22%/21%	21%/24%	28%/23%	34%/28%
Reduced	40%/31%	56%/40%	50%/31%	54%/38%	40%/29%	51%/42%
Fine	4%/1%	6%/2%	13%/3%	12%/4%	8%/3%	6%/2%
Samian	17%/3%	13%/3%	13%/4%	11%/4%	8%/2%	6%/3%

*Sources and trade***Fig 154****Amphorae****Fig 144**

The Dr 20 olive oil container from southern Spain is the most common amphora type, comprising almost three-quarters of the total. The others occur in much lesser quantity, only up to 6% each. Additional Spanish amphorae are the Cam 186 and Baetican Haltem 70. The remainder of the assemblage is primarily wine amphorae, notably Dr 2-4 (KOAN, mainly Campanian) and Gaulish types (PE47). Finally, Rhodian (including vessels from Rhodes itself) and carrot (C189) amphorae are present in very small quantities.

Oxidized wares**Fig 145**

A small number of tie mortaria are imported, and come from the Rhone and Rhine (RHMO-2554) Valleys and Italy. In aggregate they account for 6% of the oxidized wares. Gillam 238 mortaria are notably absent in pre-Boudiccan deposits, but the North French/Southeast English source is represented by minimal amounts of NFSE-2667.

The remainder of the oxidized wares are Romano-British in origin. Although its distribution varies considerably throughout the City, the locally produced Sugar Loaf Court ware seems to be the best indicator of pre-Boudiccan assemblages. Probably made by Continental potters, it demonstrates the important role of non-native influences at this period. Here it accounts for almost half of all the oxidized wares, although this figure is somewhat inflated by the data from the Sugar Loaf Court site. Other oxidized wares are supplied by a variety of sources, including the Verulamium region kilns (22%), primarily the white wares, but Brockley Hill White-slipped and rare Verulamium Region Coarse White-slipped (not visible on Fig 145) wares also occur. Evidence from both London and Verulamium indicates that Verulamium region products were common by c 55/60, and substantial groups of pottery from which Verulamium products are absent or rare may well belong to an earlier period. The absence of Verulamium Region wares, together with small amounts of Hoo and Eccles products, is a feature of early assemblages seen in Southwark (Bird *et al* 1978, figs 102-4) and at some sites in the City. While both Hoo and Eccles ware are

indicative of RCP 1A, they become more important in Phase 1B. A feature of this period, which subsequently alters, is the large number of unidentified oxidized sources (OXID), accounting for almost one-third of the group.

Reduced wares**Fig 146**

There are no imported reduced wares in this period. The largest identifiable group is the locally produced Highgate B Grog-tempered ware which accounts for over one-third of all reduced wares. Other grog-tempered wares which cannot be assigned to source are also common (GROG). Although they are not catalogued in this corpus, their presence draws attention to the importance of the native tradition of grog tempering here, and some of the forms in these fabrics include shallow dishes and pedestal bases reminiscent of late Iron Age tradition.

As in the case of the oxidized wares, nearly one-quarter of the reduced fabrics are unsourced grey wares (SAND), which are generally less common in subsequent phases. Despite the large number allocated to SAND, other fabrics can be assigned to a source or probable source area. Alice Holt ware forms a very small sourced group, as do rare sherds of Verulamium Region Grey ware. However, the greater proportion (7% in aggregate) comprises potential local production. Early Roman Micaceous Sandy ware is found throughout the 1st century, but another local fabric, Early Roman Sandy Iron-rich ware, appears to be particularly diagnostic in pre-Boudiccan groups. The presumed local Early Roman Sandy wares are present at minimal levels, with the earlier variants (ERSA, ERSA/B) more typical than the later ERSB. In parallel with the oxidized wares, Kent sources are evidenced by the rare North Kent Shelly ware.

The reduced ware assemblages compare well with 201-11 Borough High Street from Southwark, particularly the Alice Holt and Highgate B wares, although the latter is not as common in Southwark as in most City assemblages. Early Roman Micaceous Sandy (eg Bird *et al* 1978, fig 38, 125) and Early Roman Sandy Iron-rich (*ibid*, fig 35, 51) wares are also found in Southwark.

Fine wares**Figs 147a-c**

Fine wares are dominated by samian (Fig 147a, 77%),

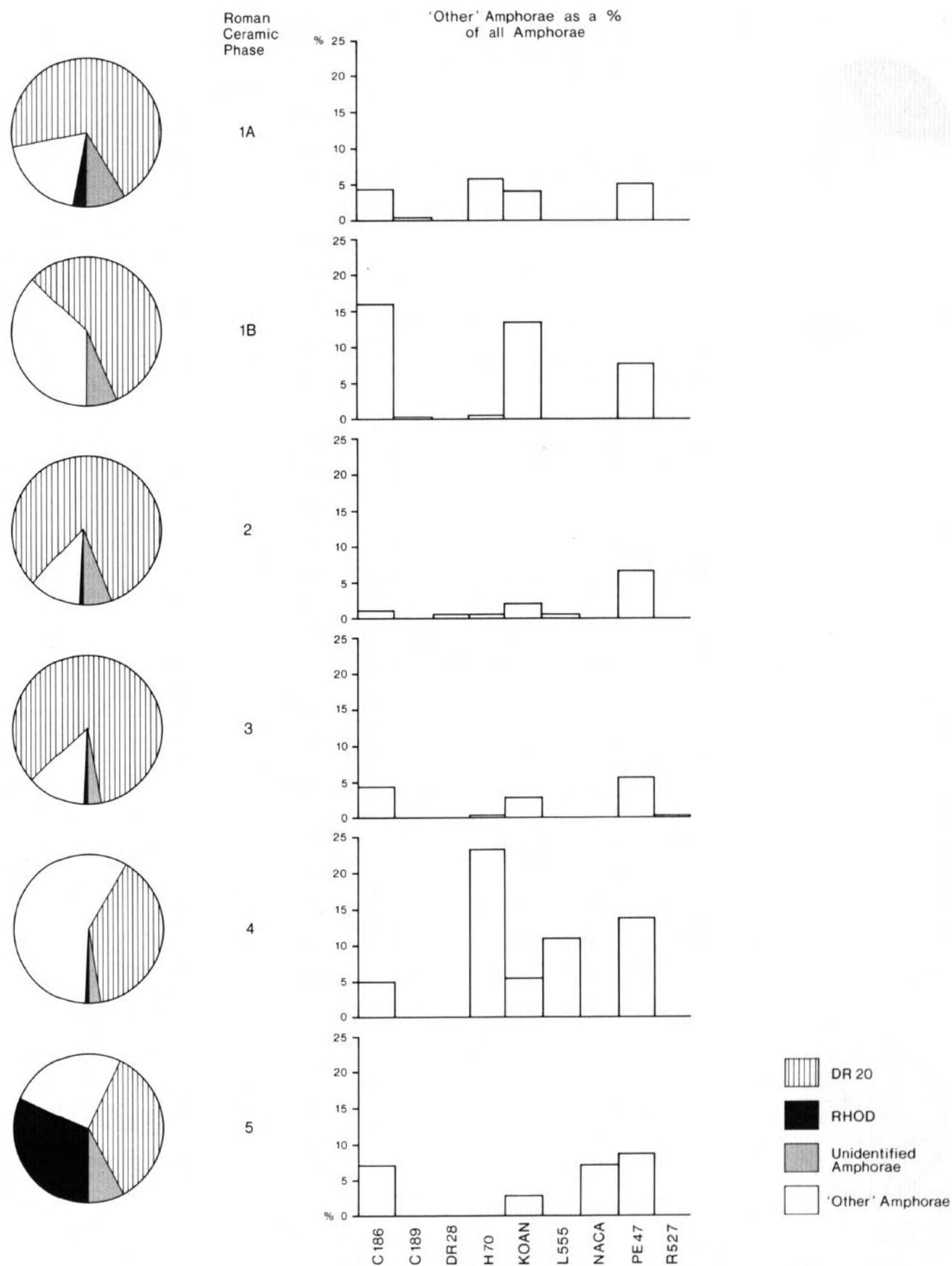
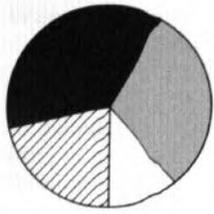
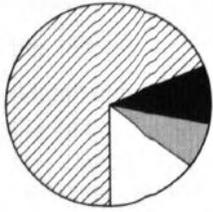


Fig 144 Linked pie charts and bar graphs of amphorae by ceramic phase (weight)

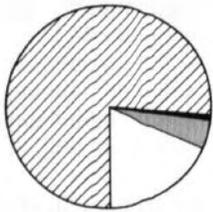


Roman Ceramic Phase

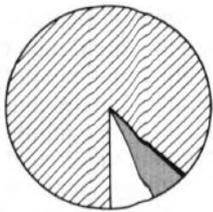
1A



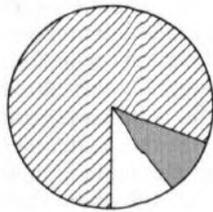
1B



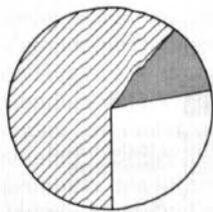
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3



4



5

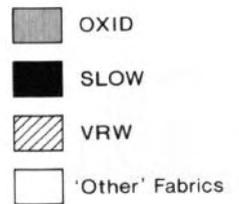
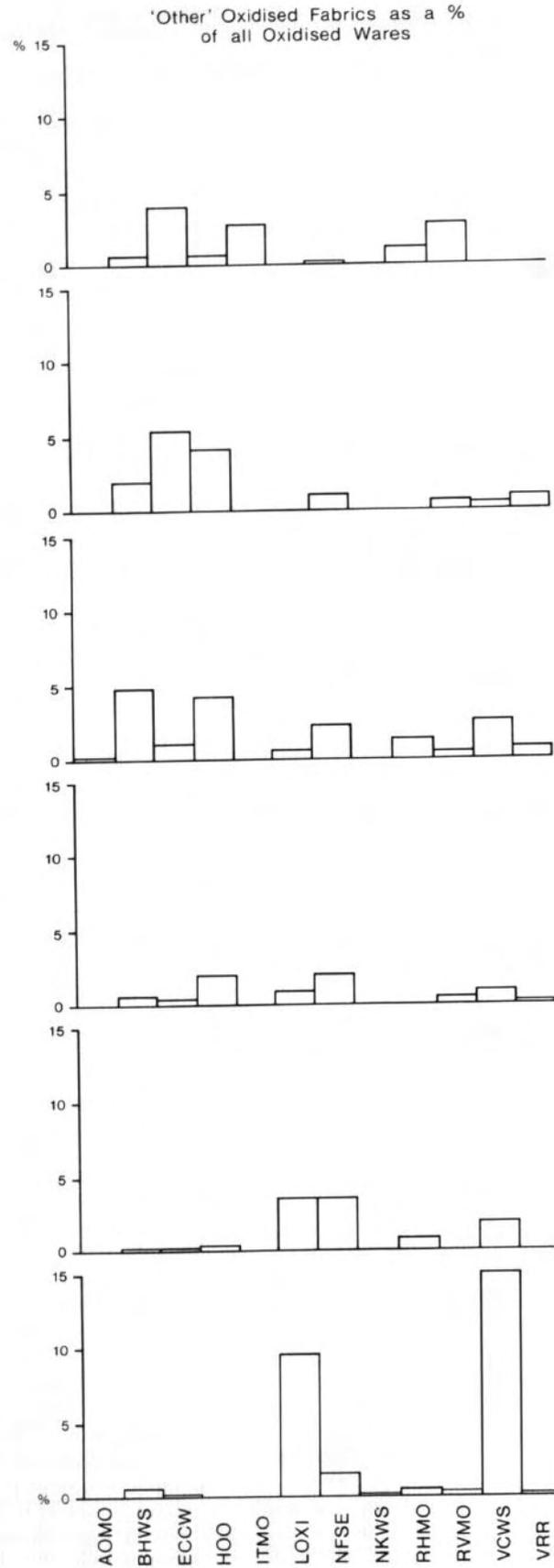


Fig 145 Linked pie charts and bar graphs of oxidized wares by ceramic phase (weight)

Court ware (938) are the only secure sources; vessels from northern France/southeast England have also been identified (NFSE-2667, 940).

Flanged mortaria are more common than the wall-sided variety and are supplied by a number of industries. Those from the Verulamium region (944, 70%) are the most common and include a vessel stamped by the potter L. Arrius Caludus, dated 55-70. Vessels from the Rhone Valley (945, 12%) are less common but particularly distinctive, as are those from the Rhineland (RHMO-2554). The Sugar Loaf Court (942) and Eccles (943) industries also produced flanged mortaria.

Many of the early flanged mortaria, particularly those from Verulamium, have gritting on the flanges. The Sugar Loaf Court mortaria are distinguished by their lack of trituration grits.

In keeping with bowls, lids are not well represented during this phase, Tazze occur from these earliest levels and continue throughout the remainder of the sequence.

Samian

Fig 148; Fig 153

The earliest forms derived from Arretine are virtually absent from London, but the base of a Drag 11 crater was found at 5-12 Fenchurch Street. The samian is largely composed of generally equal proportions of plates (Drag 15/17, Drag 18) and cups (Drag 24/25, Drag 27, Rt 8, Rt 9). Decorated forms are present in small proportions, with Drag 29 more common than Drag 30. As expected, later 1st century forms such as Drag 18/31 and Drag 37 are absent from pre-Boudiccan groups. The single Drag 33 is from Newgate Street.

7.4 Roman Ceramic Phase 1B: late Neronian-early Flavian c 60/1 -75

This phase marks a period of reclamation following the Boudiccan fire. Inevitably, assemblages must include some earlier redeposited material and therefore share many traits with RCP 1A. Imports have decreased (Fig 143, 15% Eves) although a range is still present. Within the Romano-British assemblages, Verulamium Region White wares, local reduced wares and Alice Holt all increase, and the variety of fabrics from Kent are notable; the absence of South Gaulish Colour-coated ware, the near absence of Lyon ware and the decline in the local Sugar Loaf Court ware are all diagnostic.

Sources and trade

Fig 158

Amphorae

Fig 144

Dr 20 is the most abundant type, followed by Cam 186, which peaks during this phase. Dr 2-4 (KOAN, over half of which is Campanian) and Gaulish amphorae

(PE47) are more common here than in RCP 1A. Richborough 527 (not visible on Fig 144) occurs for the first time.

Oxidized wares

Fig 145

Gillam 238 mortaria occur for the first time in this phase. Other imported wares continue in small quantities, mainly as flagons in North French/Southeast English fabrics (both NFSE-1298 and NFSE-2667, not visible on Fig 51) and Rhone Valley products; the early Rhineland fabric does not occur.

The dominance of Verulamium Region wares (72%) over all other oxidized wares is illustrated here. These are primarily white wares, but white-slipped wares from the same region are also present. This is in contrast to Chelmsford (Going 1987, 106) which from its foundation in c 60 relies on Colchester oxidized wares with few Verulamium products. Amounts of the local Sugar Loaf Court ware have declined radically, and Kent sources are represented by small increases in Hoo and Eccles ware, although the latter may be residual after c 65. This hypothesis is supported by the absence of Eccles ware from some large late Neronian-early Flavian groups such as Monument Street. The two fabrics are common on Kent sites (Pollard 1988, 38).

Reduced wares

Fig 146

Local wares from the Highgate kilns continue to dominate the reduced ware assemblage (45%). In contrast to the pre-Boudiccan groups that consisted solely of Highgate B, rare sherds of the transition fabric with both grog and sand inclusions, together with small amounts of red-slipped Highgate B, are present here.

Other supposed local fabrics become more important (17% in total), with both the Early Roman Micaceous Sandy and Early Roman Sandy diagnostic of the phase; all variants of the latter increase from RCP 1A. Alice Holt products increase significantly. These trends are matched by the decreasing amounts of miscellaneous SAND and GROG wares, and follow a similar pattern of consolidation seen for the oxidized fabrics, as well as demonstrating a slight shift in emphasis from native to more Romanized techniques. North Kent Shelly ware continues in very small quantities.

Fine wares

Figs 147a-c

The balance between samian and other fine wares, as in the remainder of the sequence, is approximately equal by weight (Fig 147a); by Eves samian is twice as common (Table 2). Going (1987, 106) has already drawn attention to the smaller amounts of samian from Chelmsford's earliest levels. A possible distinction between pre- and post-Boudiccan assemblages is

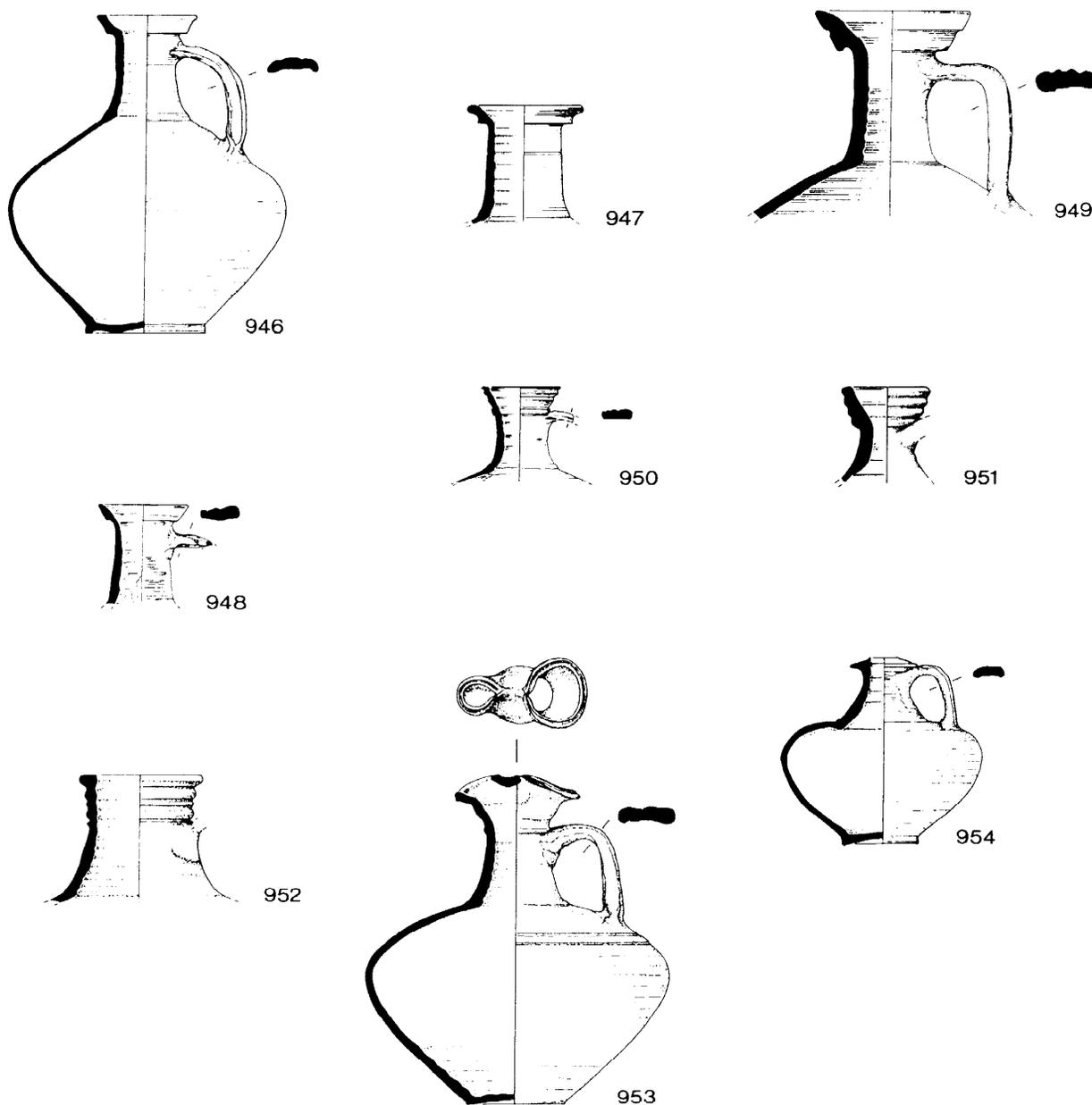


Fig 159 Roman Ceramic Phase IB, flagons, nos 946-54 (Scale 1:4)

the virtual absence of marbled samian and material from Montans in immediate post-fire levels. Non-amian fine wares (Fig 147b) are represented by 15% imports, which is a decrease of over one-quarter from the previous phase. Both Lyon and South Gaulish Colour-coated wares are absent, with Campanian

Pompeian Red ware most common here. North Gaulish sources are represented by small amounts of Terra Nigra, Mica-dusted beakers (MICA-1 242; cf Wilson 1972, fig 103, 125, 127) and Black Eggshell ware. Rare Central Gaulish Colour-coated wares (not visible on Fig 147b), more common in the later 1st

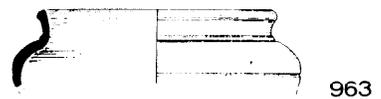
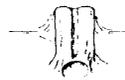
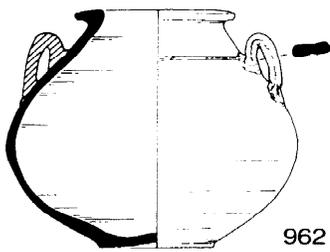
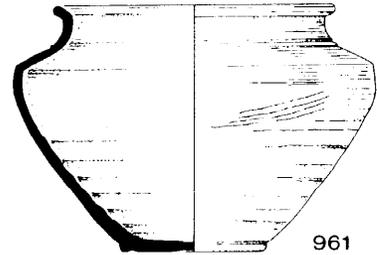
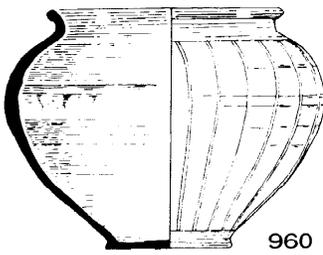
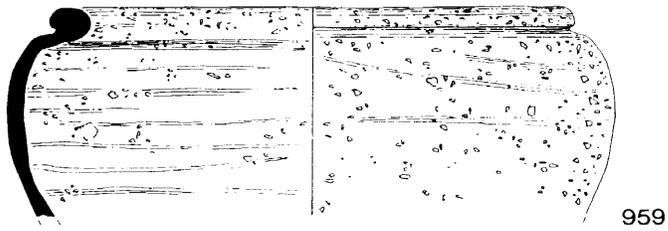
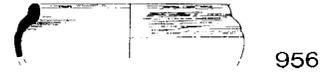
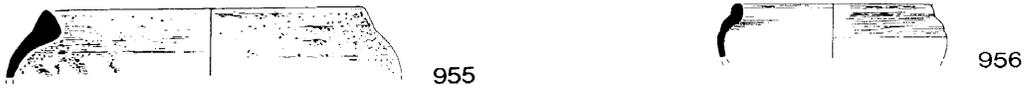


Fig 160 Roman Ceramic Phase 1B, jars, nos 955-63 (Scale 1:4)

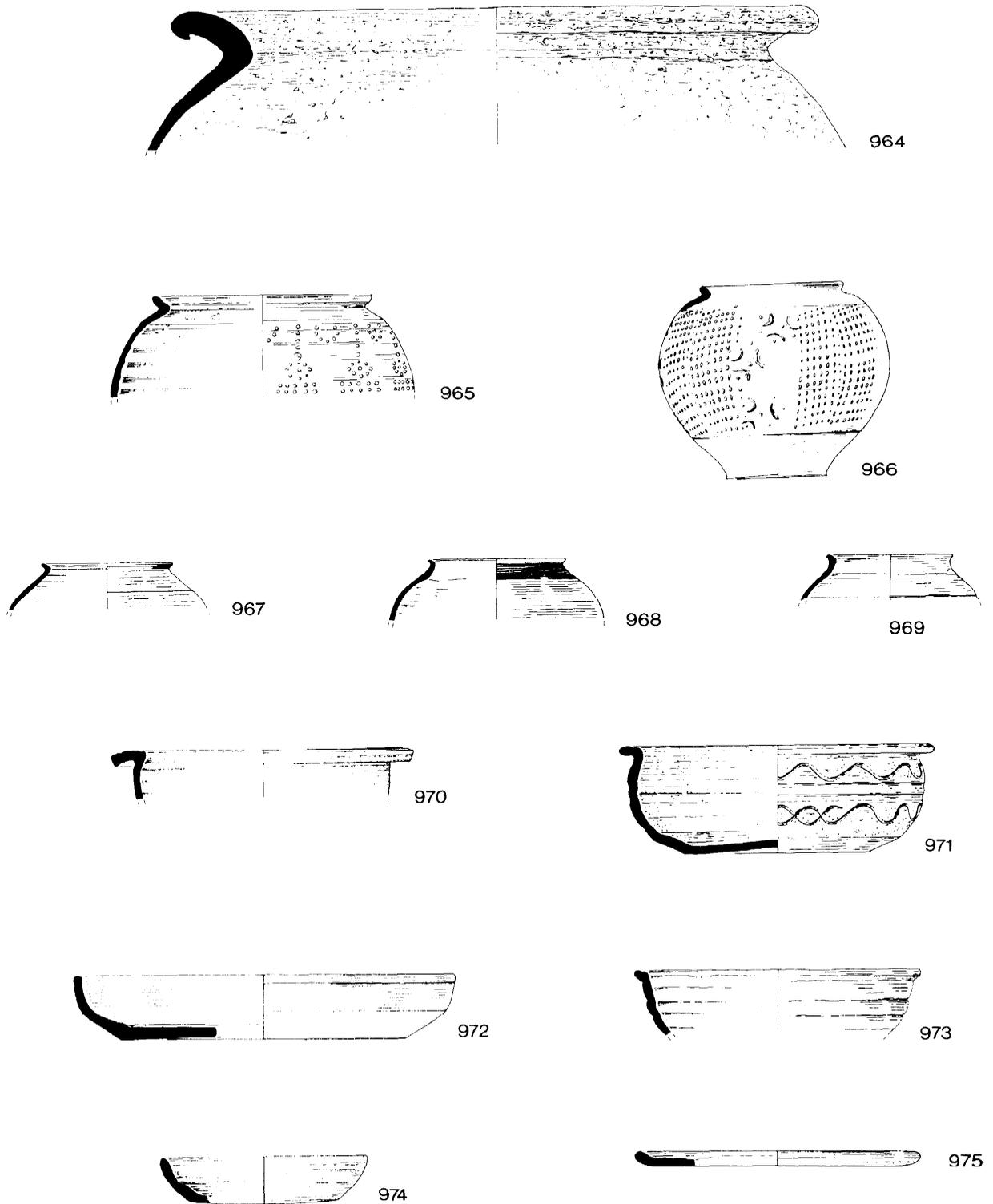


Fig 161 Roman Ceramic Phase 1B, jars, no 964; beakers, nos 965-9; bowls/dishes, nos 970-5 (Scale 1:4)

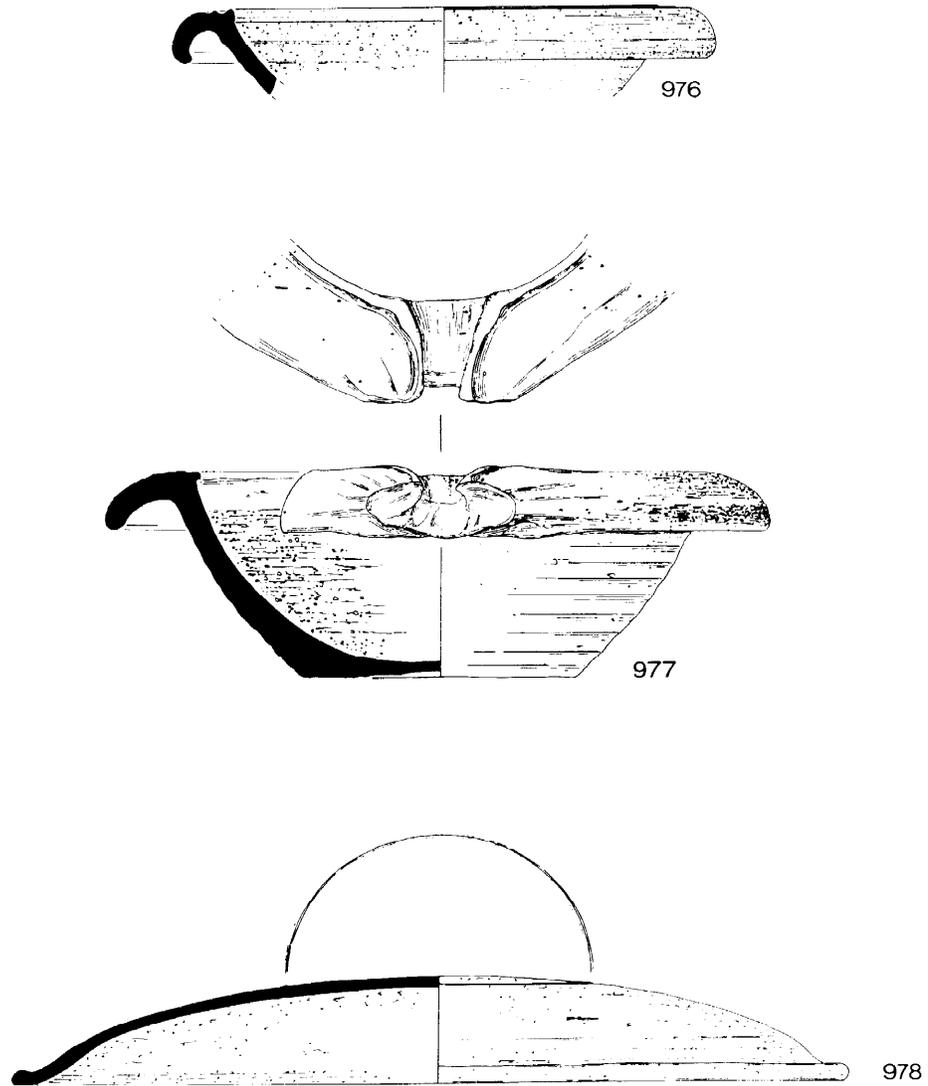


Fig 162 Roman Ceramic Phase 1B, mortaria, nos 976-7; other forms, no 978 (Scale 1:4)

and early 2nd centuries, are also present.

Of the Romano-British assemblage (Fig 147c), rare Local Eggshell, Local Mica-dusted and London wares appear for the first time. Fine Micaceous wares, primarily local, increase and continue to dominate the assemblage, but there are differences in the composition of the fabric variants between RCP 1A and 1B: FMIC-2488 is still present in some quantity, but is overtaken by FMIC-1659; to a lesser extent the Kent fabric (FMIC-2559) also increases. Another Kent product (FINE-492) is also identifiable for the first time. The Ring-and-dot fabric peaks during this phase, following FMIC in importance.

Assemblage composition

Fig 148

Jars are still the most common form type, accounting for 40%, followed by flagons. Bowls nearly double to 14%, as do lids to 6%. Dishes show the most dramatic decrease during this period.

Flagons

Fig 149; Fig 159, Nos 946-54

Flagons are all oxidized and are almost exclusively Verulamium products (84%). Collared flagons (IA,

946-9) decrease dramatically by almost one-third to 17% of the total flagon assemblage, and there is a corresponding increase in ring-neck types (IB, 950-2) which now account for approximately half of the vessels. In many assemblages IAs continue to be most common, and the increase in IBs is primarily due to the Vespasianic well group at Monument Street where they account for 62%, and IAs only 7%. A similar trend can be paralleled in contexts of 60-75 at Verulamium (Wilson 1972, fig 102, 102-9; fig 103, 112).

Other fabrics represented are similar to RCP 1A, including the North French/Southeast English collared flagons (NFSE-2667, 949). Number 948 is an unusual example in Verulamium Region Coarse White-slipped ware. Flagons in Eccles ware tend to be IBs rather than IAs (950). Vessels represented for the first time include pinch-mouth varieties (IC, 953), together with less common types represented by c 5% each and shown on Fig 149.

Jars

Fig 150; Figs 160-1, Nos 955-64

Jars are normally reduced, with rare examples of oxidized vessels comprising 10%, and represented mainly by Verulamium region products. Most of the jars are in the Highgate Grog-tempered fabric (HWB, 19%) or other local sources (ERMS, 15%) and Alice Holt ware (2 1%). The importance of RCP 1B as a transition phase to more Romanized forms is indicated by the increase in necked jars. Native bead-rim jars (IIA, 955-9), although still accounting for over one-quarter of the jars, decrease by more than 10% from RCP 1A. Those that do occur are primarily in HWB and other local fabrics, although vessels in North Kent Shelly ware (959) and Alice Holt ware (958) are increasing.

The intermediary round-bodied IIBs (960), first diagnostic of RCP 1A, are doubled here in the Early Roman Roman Micaceous Sandy ware. Other necked jars include more diagnostic forms than in RCP 1A. This is largely due to the presence of carinated jars (IIC, 961) from the Alice Holt kilns, with both bead and 'figure-7' rims, variants that are also noted together at Southwark (Marsh & Tyers 1978, 557-8). Also from Alice Holt are burnished necked jars (IID); locally produced necked (NJ, 963) and storage (SJ, 964) jars are present as well. The honey pot (IIK, 962) is an example of a rare oxidized jar.

Beakers

Fig 151; Fig 161, Nos 965-9

In contrast to pre-Boudiccan groups, very few beakers are imported: reduced micaceous fabrics (FMIC, FINE), local Highgate C and oxidized Ring-and-dot fabric predominate. Almost half of the beakers belong to the ovoid IIIB group (965-6) decorated with barbotine dots (FMIC, 7%; RDBK, 28%; HWC-1403, 12%). RDBK vessels continue at Verulamium in deposits spanning RCP 1B (Wilson 1972, fig 103, 130-2; Wilson 1984, 268). Everted-rim beakers with

low sloping shoulders (IIIC, 967-8) are also common and comprise approximately one-fifth of the assemblage. Butt beakers (IIIA) and bulbous Gallo-Belgic beakers (IIIH) are not diagnostic, as they are in RCP 1A; the carinated IIIG, however, does occur. Rare poppy beakers (IIIF) are present for the first time.

Bowls and dishes

Fig 148; Fig 152; Fig 161, Nos 970-S

In aggregate, bowls and dishes increase but fewer are in samian ware (Fig 148). Of the non-samian vessels, approximately half belong to the round-bodied IVFs (971) predominantly supplied by the local kilns at Highgate in the grog-tempered fabric, with a small number in the later sandy C fabric. Moulded-rim bowls (IVA, 970) form the next most common group, and the majority of these are in reduced fabrics, including Verulamium Region Grey ware (4%). This predominance of reduced bowls from the Verulamium industry may be typical of late Neronian groups and is paralleled at Verulamium (Wilson 1972, fig 106, 211-12). The remainder of the IVAs are in a variety of fabrics. The grooved-rim bowl (IVK, 973), apparently exclusive to the Alice Holt industry, peaks in this phase. Plain-rim dishes (IVJ, 972; V, 975) are well represented both in Early Roman Micaceous Sandy ware (4%) and the Highgate Red-slipped variant (6%); moulded-rim plates (VA, 974; VB) are also present.

cups

Fig 148

Cups occur in approximately similar proportion to RCP 1B, nearly all of them samian. Non-samian vessels are represented by a Local Eggshell ware vessel (VIC), a type which becomes more common in the later 1st century.

Mortaria and other forms

Fig 162, Nos 976-8

Wall-sided mortaria are no longer diagnostic. Instead, most have a hooked-flange rim (HOF), a style firmly adopted by the Verulamium region potters who supplied most of the City's mortaria (VRW, VRR, 976, 75%). Gillam 238 mortaria are present for the first time in small quantities (977) and are the only mortaria during this phase with external gritting on the flange.

Samian

Fig 148; Fig 153

The ratio between cups and plates varies on different sites of the same date and this may reflect functional differences between them. In contrast to RCP 1A assemblages, cups normally predominate. Another important distinction between RCP 1A and 1B is the ratio of different cup and plate forms: here the Drag 27 cup is approximately five times as common as the

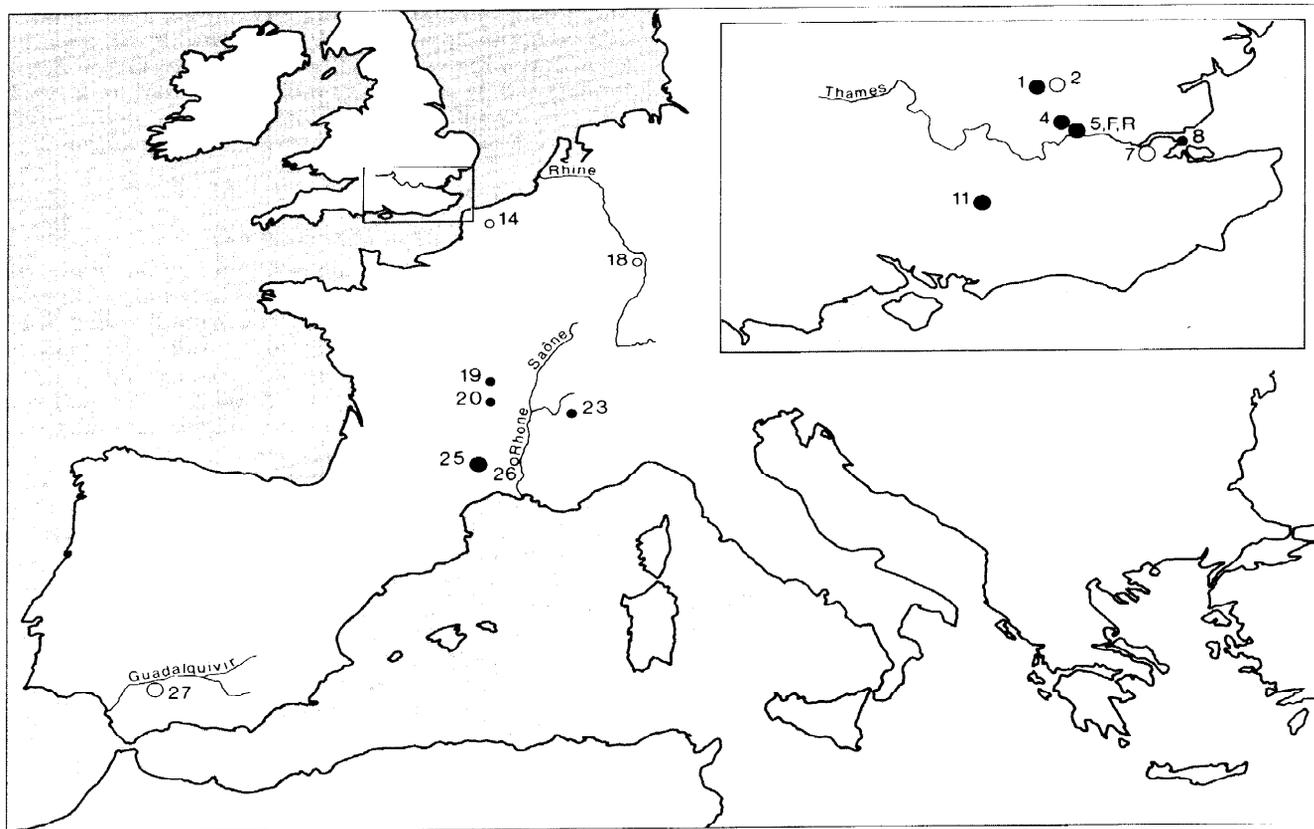


Fig 163 Location map of ceramic source areas for Roman Ceramic Phase 2

Drag 24/25, Unlike pre-Boudiccan groups, Drag 18 assumes the greatest proportion of the plates, followed by Drag 15/17. Although distinctive, decorated vessels form only a small part of the assemblage. Drag 37 appears for the first time in the Vespasianic Monument Street well group, which agrees with the established date in the 70s for the introduction of this form.

7.5 Roman Ceramic Phase 2: Flavian c 75-100

The Flavian period is one of consolidation, with most pottery supplied by a few major sources (particularly Verulamium, Alice Holt, north Kent and the local Highgate potteries). Equally, ceramic industries producing native wares (such as Highgate) were now producing more Romanized fabrics and forms. Fewer Continental sources are represented, with only the southern Spanish Dr 20 and Gauloise amphorae from southern France represented in any quantity. However, in overall quantity measured by Eves, there is little change in the number of imports from the late Neronian period (Fig 143). The marked variety of vessel types in Romano-British wares suggests a period of expansion during which manufacturers were

able to diversify to meet increased demand.

Sources and trade

Fig 163

Amphorae

Fig 144

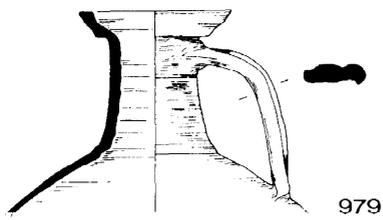
The most common amphorae are still the oil-bearing Dr 20 at over 80% of the total assemblage; numbers of south Gaulish wine amphorae remain constant from RCP 1B. The first examples of the possibly Gaulish London 555 amphorae are present from the quantified data in this phase, but elsewhere in the City Neronian examples have been identified.

Oxidized wares

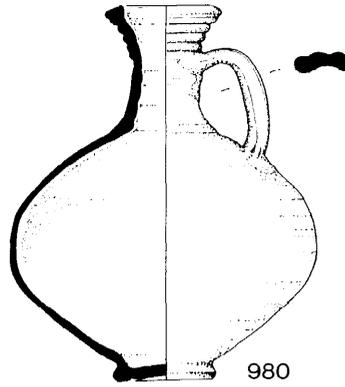
Fig 145

Continental imports are rare, comprising less than 4% of the total and mainly represented by North French/Southeast English (mostly NFSE-1298) flagons and Gillam 238 mortaria. Rarer imports include Rhineland (RHMO-2554) and Aoste mortaria.

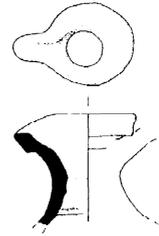
Pottery from the Verulamium region accounts for the majority of the oxidized fabrics, and consists



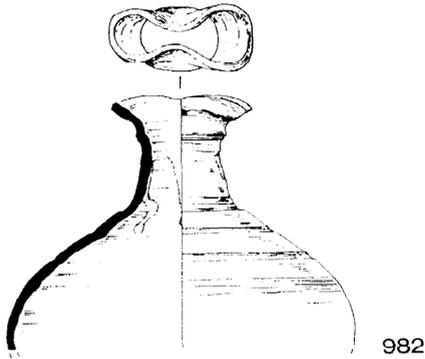
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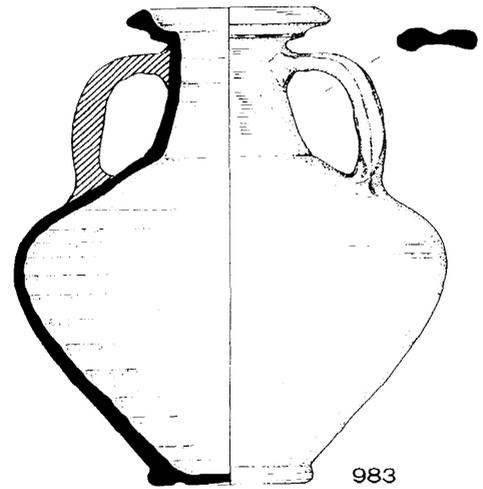
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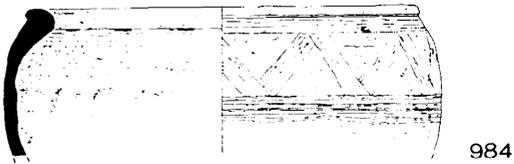
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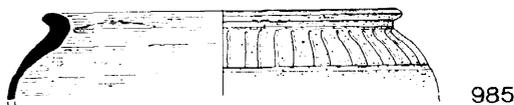
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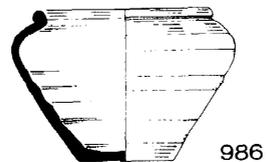
983



984



985



986

Fig 164 Roman Ceramic Phase 2, flagons, nos 979-83; jars, nos 984-6 (Scale 1:4)

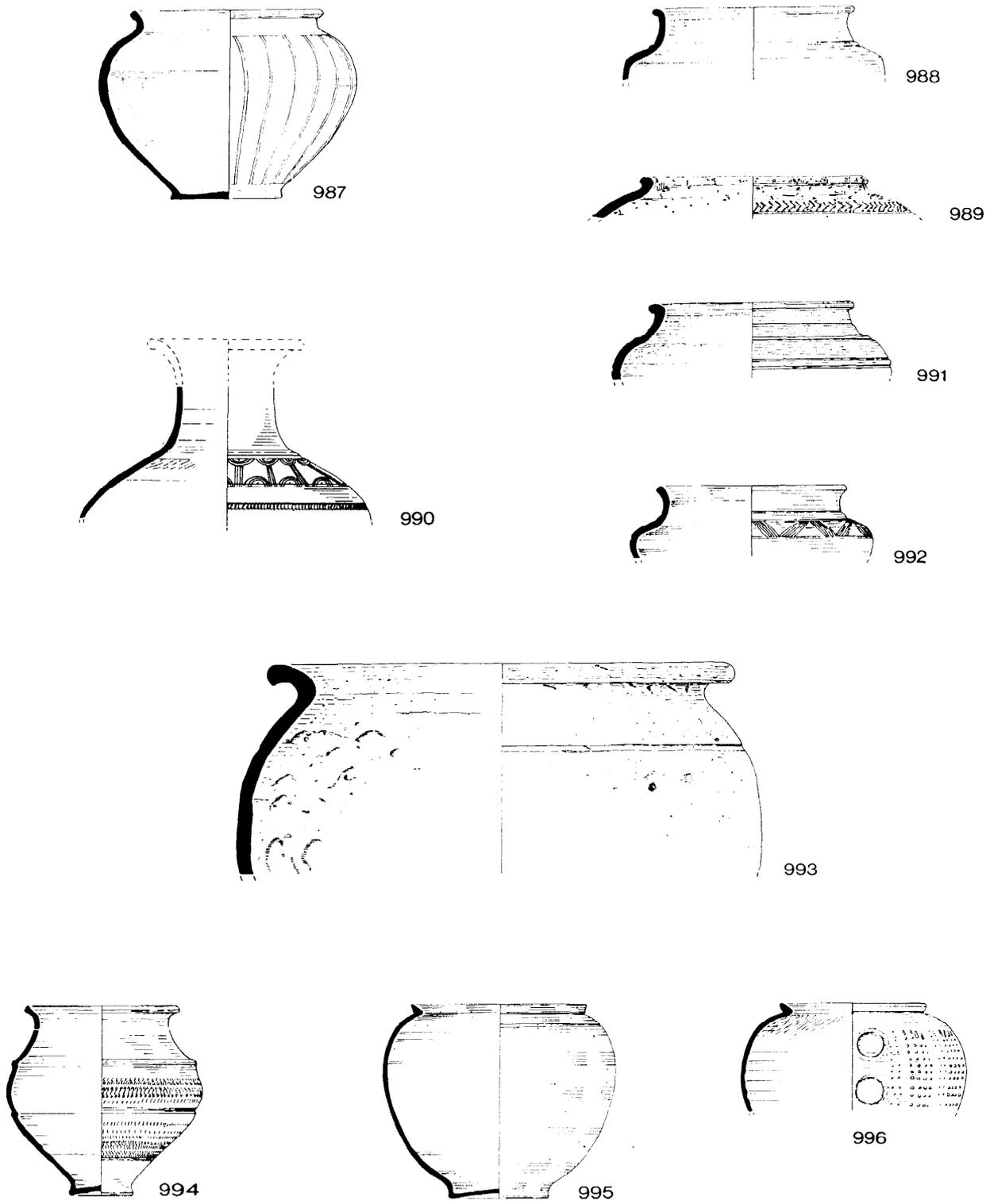


Fig 165 Roman Ceramic Phase 2, jars, nos 987-93; beakers, nos 994-6 (Scale 1:4)

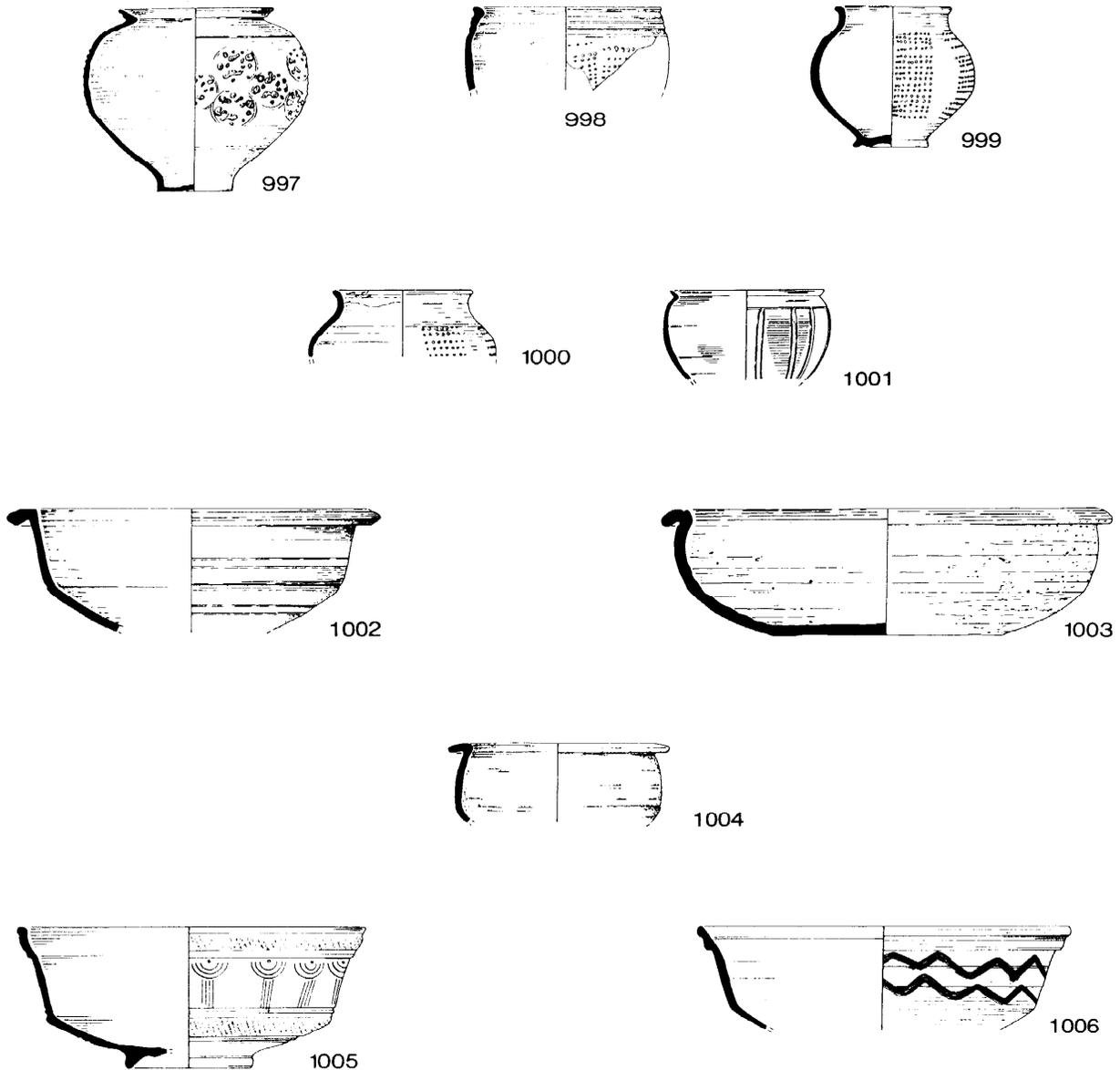


Fig 166 Roman Ceramic Phase 2, beakers, nos 997-1001; bowls/dishes, nos 1002-6 (Scale 1:4)

primarily of white wares, although Brockley Hill White-slipped ware is also diagnostic of the phase. Hoo ware is the only other fabric to be represented in any quantity; Eccles ware has declined considerably and is no longer a chronological indicator.

Reduced wares

Fig 146

In contrast to the oxidized products, dominated by one industry, a variety of sources is represented; most of the reduced wares are local, with only Alice Holt and North Kent Shelly wares occurring in large

quantities from outside London.

The early handmade products of the local kilns at Highgate Wood (HWB) are still the most common but, even so, are greatly reduced (from 42% to 30%). This shortfall is made up by the greater proportion of wheelmade Highgate C wares. Although occurring in small quantities, a similar transition from native to more Romanized types can be seen in the local sandy ware ERSA-ERSB, with the latter more Romanized variant dominating in this phase. Other potentially local wares which are typical of RCP 2 include Early Roman Micaceous Sandy ware.

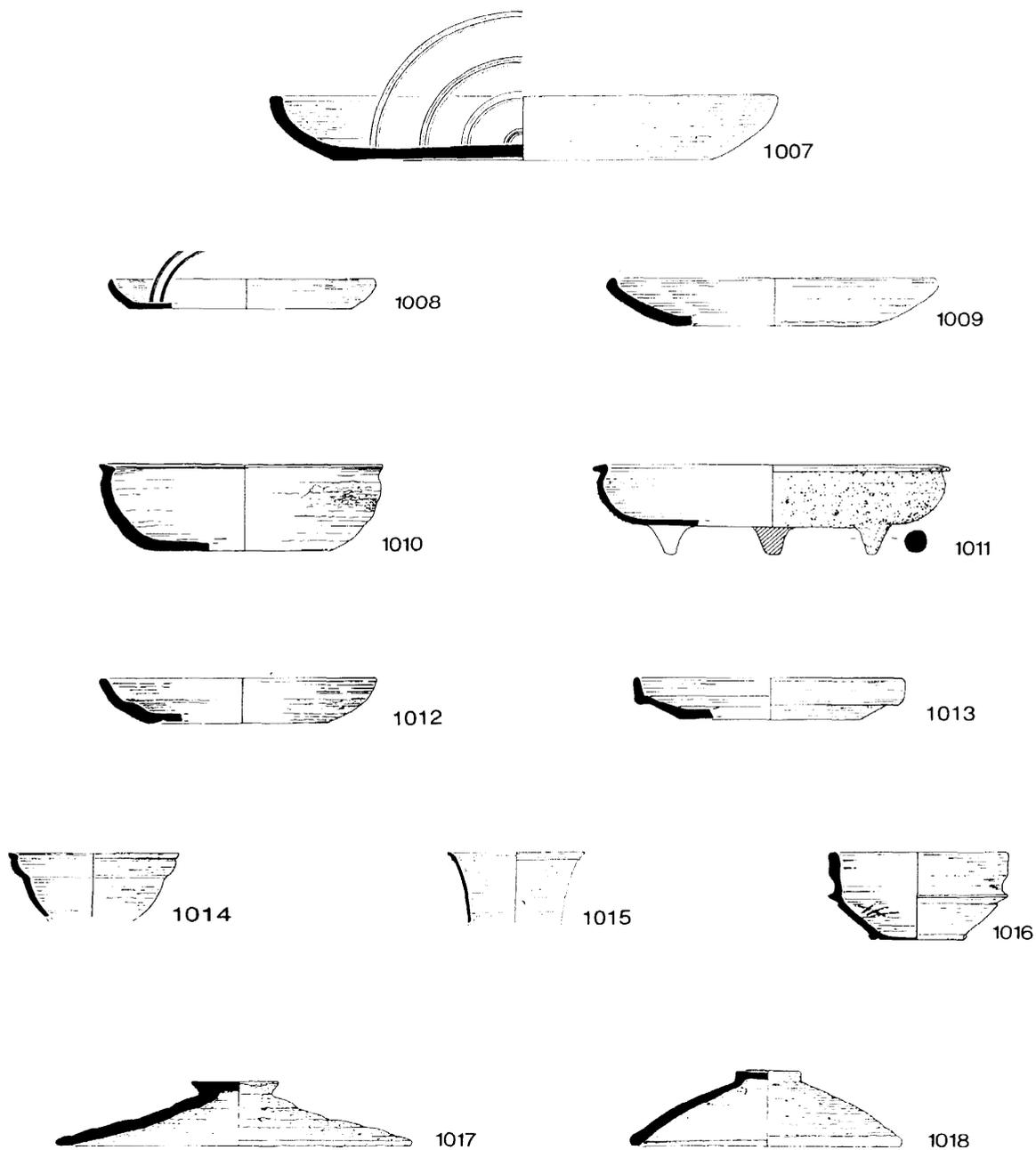


Fig 167 Roman Ceramic Phase 2, bowls/dishes, nos 1007-13; cups, nos 1014-16; other forms, nos 1017-18 (Scale 1:4)

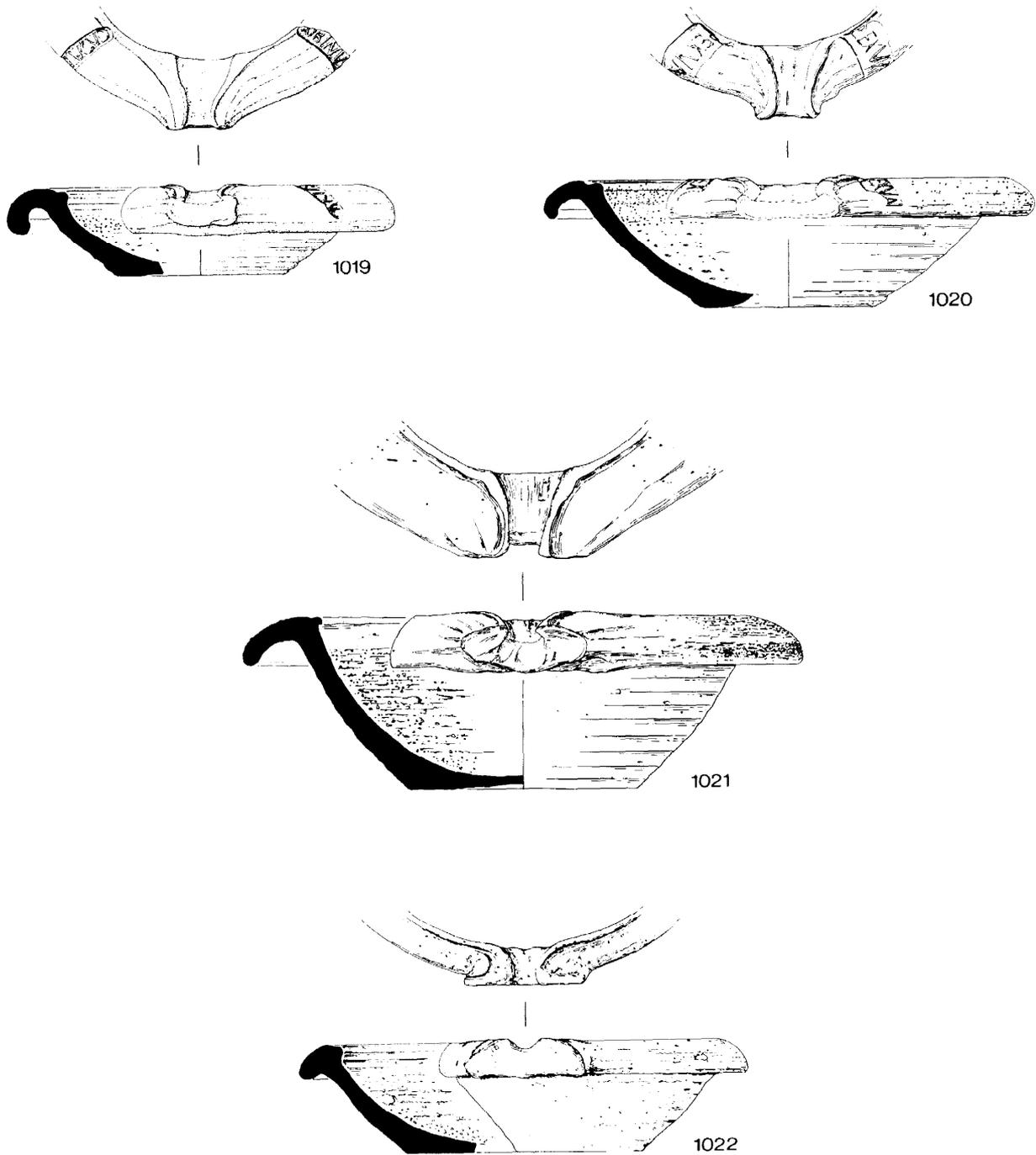


Fig 168 Roman Ceramic Phase 2, mortaria, nos 1019-22 (Scale 1:4)

Fine wares

Figs 147a-c

Samian from La Graufesenque still dominates. Imported non-samian fine wares are rare but include products from central Gaulish industries (included within CGCC on Fig 147b), with an increase in the quantity of fabrics from the Allier Valley (CGWH, CGGW) and in the variety from the Lezoux area (CGOF, CGBL, PRW3).

However, the bulk of the non-samian fine wares are Romano-British (Fig 147c) and probably local (Local Marbled, Local Eggshell and increasing quantities of London and Local Mica-dusted wares). Fine Micaceous wares again account for half of the fine wares but their composition differs from previous phases; the presumably local FMIC-1659 is now the most common.

As with the reduced wares, a number of Kent sources are represented by reduced fine wares: FINE-492, North Kent Fine ware and rare FMIC-2559. Other non-local fine wares include the Ring-and-dot fabric, possibly from Hertfordshire, which is still common in this period. Definite Verulamium products include small amounts of mica-dusted ware which suggests some diversification of the industry to include fine wares as well as the more common coarse ones.

Assemblage composition

Fig 148

Although jars are still the largest group, they continue to decrease and now account for 30% of total vessels, while flagons are still next in importance. Bowls and beakers occur in virtually equal proportions; hereafter beakers decline. During the Flavian period, the relative proportion of bowls and dishes is virtually identical to RCP 1B and it remains similar until the early Antonine period.

Flagons

Fig 149; Fig 164, Nos 979-83

Almost all the vessels are in oxidized fabrics, with small quantities (6%) of reduced coarse and fine wares represented. Most flagons are supplied by the Verulamium region kilns (81%).

Collared flagons (IA, 979) still occur but are greatly outnumbered by trumpet-mouth ring-neck IB2s (980), which comprise just over half the assemblage. Rarer flagon forms, such as pinch- and disc-mouth (IC, 981-2 and ID respectively) and two-handled types (IE; IJ, 983), are present and comprise the remainder of the identifiable flagons.

Jars

Fig 150; Figs 164-5, Nos 984-93

Jars are again primarily reduced, but during the Flavian period this includes some reduced fine ware as well as rare oxidized fabrics, Alice Holt (23%) and

local industries (24%) remain the most common producers of jars. The trend towards more Romanized forms is stable, with quantities of bead-rim jars (IIA, 984-6) the same as RCP 1B. Rare examples of Highgate C bead-rim jars appear for the first time.

A variety of necked jars (987-8, 990-2), both local and Alice Holt products, maintain their importance. These include round-bodied IIBs (987, the only single class to be well represented), carinated IICs (988), and burnished IIDs. Significantly, the IIC now appears in Highgate C (<1%). The IIE is now present but is still not considered typical. Flasks (IIR, 990), though still numerically small, are represented by a variety of sources occurring in Highgate C, London ware, Alice Holt, and SAND wares. The remaining jars are storage vessels, primarily in Highgate B ware (SJ, 993), although North Kent Shelly ware is also present (IIM, 989).

The Flavian period sees a slight diversification in oxidized jars from the Verulamium region (VRW, 3%). Honey pots (IIK) are still present, although less common than previously. The first appearance of unguent jars (IIJ, not visible on Fig 150) is chronologically significant and can be paralleled at Verulamium in groups dated c 75-105 (Wilson 1972, fig 108, 298-300).

Beakers

Fig 151; Figs 165-6, Nos 994-1001

Most of the beakers in this phase are in Romano-British fine and coarse reduced wares or Ring-and-dot Beaker fabric. As in RCP 1B, the ovoid IIB (995-7) is the most common, comprising almost half the total, with most vessels in Ring-and-dot (20%) or Fine Micaceous (17%) fabrics. However, Flavian groups show a decrease in ovoid IICs and an increase in poppy beakers (IIIF, 999-1000). Neckless beakers with everted rims (IIIE) occur for the first time in Fine Micaceous wares (FINE, FMIC), Highgate C and a variant of Highgate C ware (HWC-1403, 998). Found in assemblages from the Flavian period, but not represented among quantified assemblages, are a Central Gaulish Glazed beaker (1001) and folded beakers in mica-dusted fabrics; butt beakers (IIIA) are virtually absent apart from examples in Fine Micaceous wares (994).

Bowls and dishes

Fig 148; Fig 152; Figs 166-7, Nos 1002-13

Bowls and dishes were produced in an unusually wide variety of fabrics and forms in the Flavian period; the proportion of samian to non-samian fabrics is constant from RCP 1B (Fig 148). The round-bodied IVF (1003-4) remains the most common bowl, accounting for over one-third of the non-samian assemblage, almost entirely in Highgate fabrics. Moulded-rim IVAs are still diagnostic (1002), occurring in numerous fabrics, particularly SAND (11%). Decorated bowls in London ware and Fine Micaceous fabrics, imitating Drag 29 and Drag 37 (IVD, 1005-6; IVE) appear for

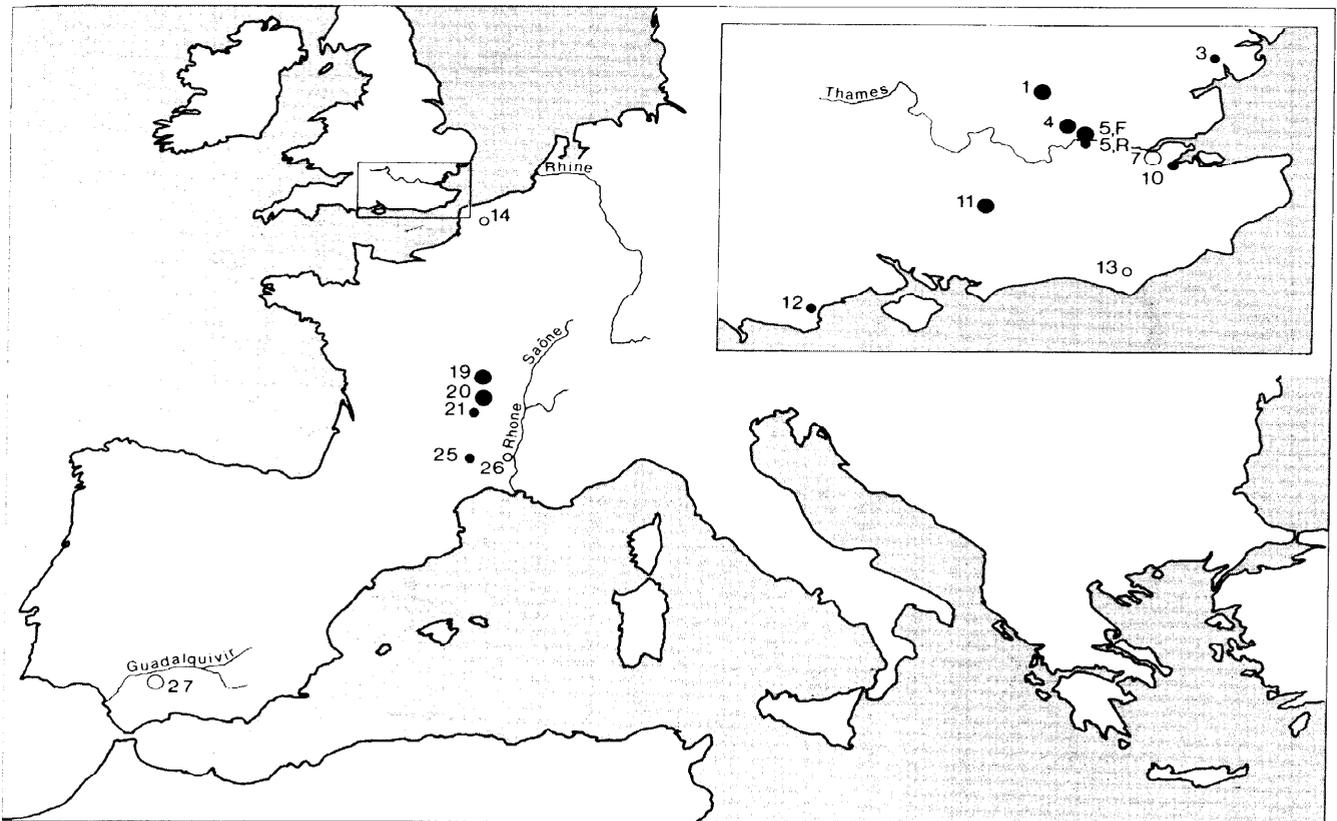


Fig 169 Location map of ceramic source areas for Roman Ceramic Phase 3

the first time, as do bowls in Central Gaulish Colour-coated wares (CGOF, 1011). Plates (IVJ, 1007-9; VA, 10 12; VB, 1013) are similar to the late Neronian period, apart from the proliferation of fine ware fabrics, which include rare examples in Fine Micaeous and Local Mica-dusted wares.

Cups

Fig 148; Fig 167, Nos 1014-16

Cups decrease during the Flavian period and this trend continues throughout the remainder of the sequence. Samian is again the major source, accounting for 93% of the vessels (Fig 148). The remainder comprise a variety of fabrics, most represented as individual vessels. These generally imitate the samian form Drag 27 (VIA, 1014) or, occasionally, terra nigra cups (Cam 59, 1016). Local Eggshell vessels are an exception, and occur in a wide-mouth carinated form which is restricted to that industry (VIC, 1015).

Mortaria and other forms

Figs 167-8, Nos 1017-22

Mortaria from Flavian assemblages have hooked-flange rims (HOF). Approximately 85% of the mor-

taria are supplied by the Verulamium region and most of these are white wares (10 19-20). Stamped vessels include the potters Albinus and Sollus who worked at Verulamium during the Flavian period.

Imports are represented by a small number of Gillam 238 (1021) from northern France/southeast England and a single vessel from the Rhineland (RHMO-2554, 1022).

Samian

Fig 148; Fig 153

The ratio of plates and cups has again fluctuated and in this ceramic phase plates are more common (47% to 36%). The decrease in cups may be related to the overall increase in beakers seen in other fabrics (Fig 148). Cups are represented mainly by Drag 27, and Drag 24/25 is decreasing. Plates maintain a similar pattern, with Drag 18 assuming the largest share. Mould-decorated types remain scarce and are composed principally of Drag 29, with Drag 37 present.

7.6 Roman Ceramic Phase 3: Trajanic c 100-20

The major industries supplying London were firmly

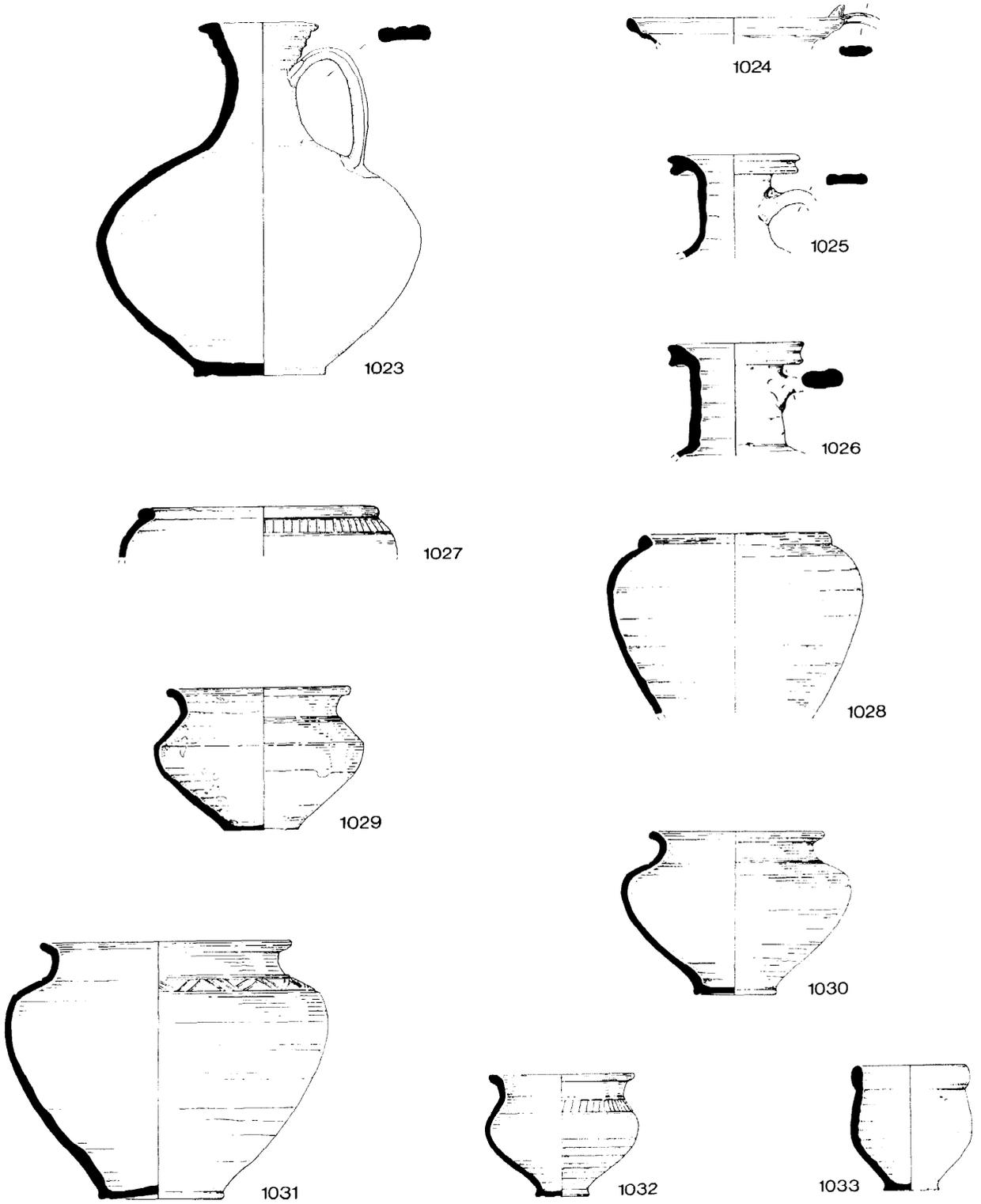


Fig 170 Roman Ceramic Phase 3, flagons, nos 1023-6; jars, nos 1027-33 (Scale 1:4)

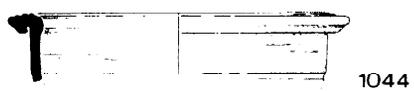
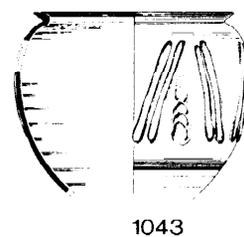
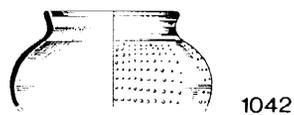
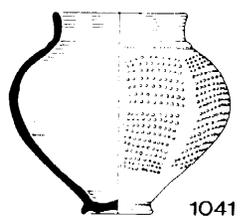
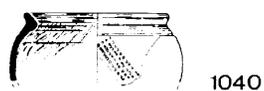
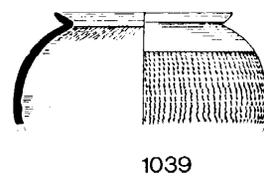
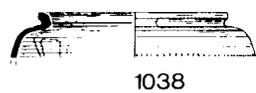
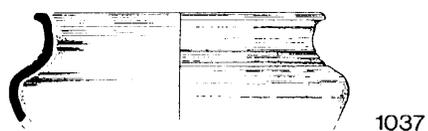
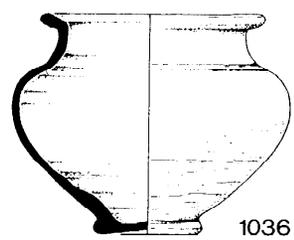
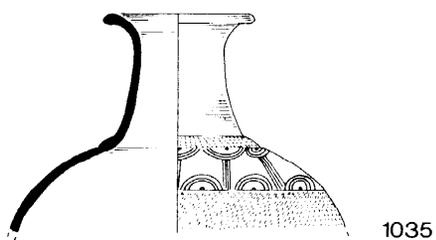
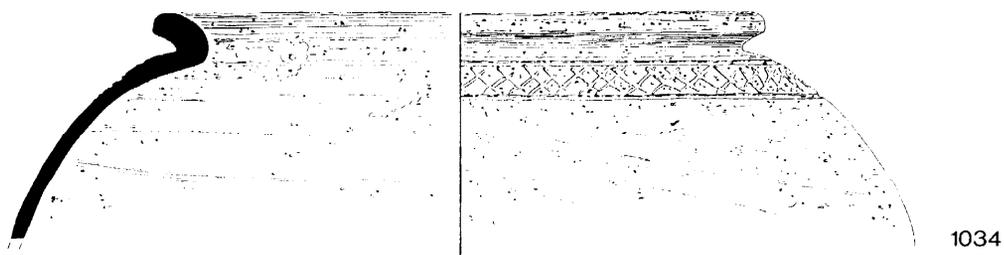


Fig 171 Roman Ceramic Phase 3, jars, nos 1034-7; beakers, nos 1038-43; bowls/dishes, nos 1044-5 (Scale 1:4)

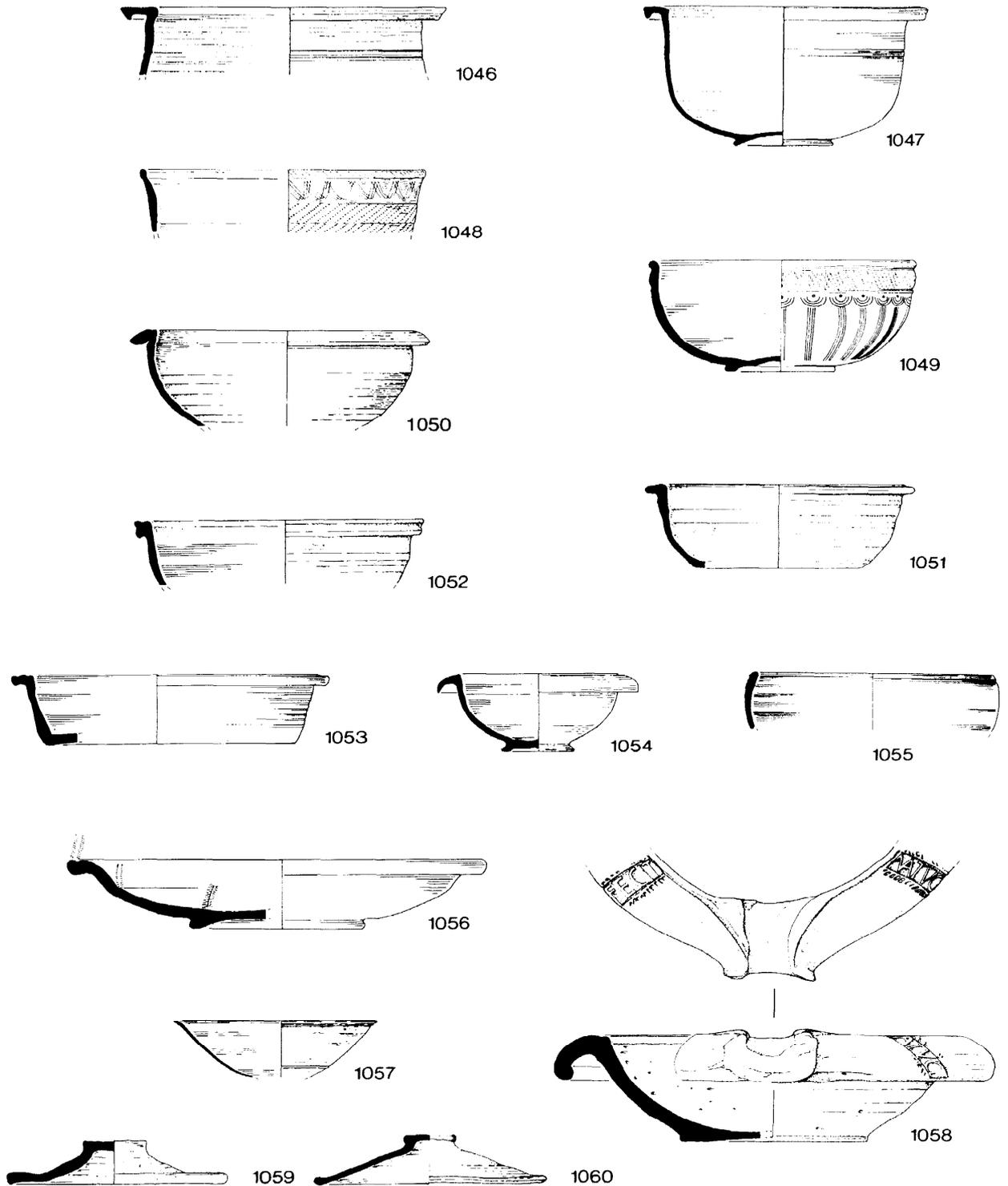


Fig 172 Roman Ceramic Phase 3, bowls/dishes, nos 1046-56; cups, no 1057; mortaria, no 1058; other forms, nos 1059-60 (Scale 1:4)

established by the end of the 1st century. Few new sources (either Romano-British or imports) are represented, and those which are become important later in the sequence. Native pottery traditions have all but disappeared and this is exemplified by the local Highgate Wood industry. In general, established industries appear to be increasing their range of products. Local fabrics predominate in reduced and fine wares, while oxidized ones are primarily from Verulamium.

Sources and trade

Fig 169

Amphorae

Fig 144

Dr 20 remains the most common amphora, while Cam 186 and Gauloise amphorae (PE47) and Dr 2-4 (KOAN) persist in quantities.

Proportions of amphorae tend to fluctuate more dramatically than other pottery types, reflecting the particular site or area. This is demonstrated by the south Gaulish amphorae: during the Trajanic period the amphora assemblage from Newgate Street is heavily dominated by Dr 20, while at other sites, for example at 66-73 Cornhill and 25-6 Lime Street, the PE47 competes more successfully with Dr 20.

Oxidized wares

Fig 145

Pottery from northern France/southeast England, represented by flagons (NFSE-1298) and Gillam 238 mortaria, is again the main import, but is rare. Verulamium is the major source for oxidized wares (88%), including white slipped wares (VCWS, VRR) together with the more common white fabric (VRW). Products from Brockley Hill are no longer considered diagnostic and quantities of pottery from Hoo in Kent have also declined.

Reduced wares

Fig 146

Imported reduced wares are represented for the first time, although negligible in quantity. North Gaulish Grey wares occur throughout the remainder of the sequence (not always visible on Fig 146) but never account for a greater share of the reduced ware total.

The local kiln at Highgate Wood continues to be the argest source of grey ware (34%), but the quantities of the Romanized HWC and the handmade HWB are now reversed with HWC dominating. Other local industries, including Early Roman Sandy B and Copthall Close wares, cumulatively account for 5%, and although CCGW never comprises more than 1% of the reduced wares, it is most diagnostic of this period.

Alice Holt ware continues to be represented in large quantities, increasing slightly from the previous phase; north Kent Shelly ware is still present. Rare sherds of

black-burnished pottery (BB1 from Dorset and BB2, primarily from Colchester) come from layers sealed immediately below Hadrianic fire deposits and become quantitatively significant in later phases. Even rarer sherds of East Sussex Grog-tempered ware - never quantitatively important - also occur.

Fine wares

Figs 147a-c

Marsh (1981, fig 11.7) recognized a slight increase in decorated samian for the period c 120/5, but this peak cannot be identified from the data collected here. Vessels from southern Gaul are diminishing and there is little evidence from Newgate Street to suggest that products from the Les Martres-de-Veyre kiln, which began operation at this time, are present in the City; elsewhere, at Leadenhall Court, they do occur at this date.

As a group, non-samian imported pottery occurs in slightly greater quantity than during the Flavian period (Figs 147a-b). Central Gaulish sources increase from RCP 2 and are represented by the entire range of colour-coated wares (CGBL, not visible on Fig 147b), together with Pompeian Red ware fabric 3 (not visible on Fig 147b). Although there is little overall change in the major source areas for imports, colour-coated pottery from the Cologne region of eastern Gaul is present for the first time.

The most distinctive feature of the Romano-British assemblage (Fig 147c) is the continuing decrease in Ring-and-dot Beakers. As in the Flavian period, Fine Micaceous wares are the largest single type (36%, cf Kent, Pollard 1988, 59), with the local FMIC-1659 still most common. Other local wares are again important and both London and Local Mica-dusted wares have at least doubled from the previous phase, to 13-14%. Other local types include rare Local Eggshell and Marbled wares. North Kent Fine ware peaks during this phase, although in absolute quantities it is uncommon.

Assemblage composition

Fig 148

Jars maintain their prominent position at a similar level to RCP 2, and the same pattern is maintained throughout the rest of the sequence. Flagons decrease and for the first time are exceeded by bowls, while lids increase in tandem with bowls. Specific flagon, jar and bowl forms which are more common in later ceramic phases first appear in contexts immediately below *in situ* deposits, sealed by the debris of a large-scale fire thought to have occurred c 120/5, and they are itemized below.

Flagons

Fig 149; Fig 170, Nos 1023-6

Some new fabrics are identified among the flagons, but the majority continue to be supplied by the

Verulamium region (86%). Over half the flagon assemblage consists of ring-neck vessels and most belong to the trumpet-mouth IB2s present in earlier phases (1023). However, ring-neck flagons with a prominent upper ring (IB5) appear in the sealed fire deposits discussed above. Many other types which were current in the 1st century persist. The lid-seat IF (1024) flagon, derived from metal prototypes, occurs for the first time in Local Mica-dusted ware. Pulley-rim flagons (1026) from northern France/southeast England (NFSE-1298) are also typical of the period and the form is paralleled in a Verulamium fabric (1025); other types are shown on Fig 149.

Jars

Fig 150; Figs 170-1, Nos 1027-37

During the Trajanic period most jars are still reduced coarse wares (94%), but occasionally examples in oxidized and fine wares also occur. The main reduced ware jar suppliers are the local Highgate (B and C) and Alice Holt ware kilns. The assemblage shows a dramatic development from the Flavian phase, with bead-rim jars (IIA, 1027-8) decreasing by 12%. An example in Highgate B/C with diagonal burnishing (1027), typical of IIEs, shows some merging of the two forms. Round-bodied jars (IIB) are virtually absent. In contrast, other necked jars (1029-32, 1036-7) are rapidly increasing, in particular burnished IIEs (1032), primarily in Highgate C ware (cf Verulamium, Wilson 1972, fig 111, 383-5, and possibly fig 112, 432-7; Wilson 1984, fig 86, 2083-97).

Although not numerically important (<2%) and not typical until RCP 4, the most chronologically significant feature is the presence of everted-rim and necked jars with burnished lattice in both black-burnished and Highgate wares (Fig 174, 1065-6, 1068-71). Restricted to layers sealed below the Hadrianic fire, it suggests that production of this form commenced just prior to c 120/5.

Most of the remaining jar forms can be found in 1st century groups (eg IIC, 1029-30; IJ, 1033; IJK; IIM 1034; IIR, 1035; SJ), although burnished jars with 'figure-7' rims (IID, 1031), principally in Alice Holt ware, have increased slightly and are more typical of the Trajanic period than others.

Beakers

Fig 151; Fig 171, Nos 1038-43

A variety of beaker fabrics are present in this phase, but Fine Micaceous (30%) and Highgate C (36%) wares predominate. By this time the most common form is the poppy beaker (IIIF, 1041-2), of which approximately three-quarters are in Highgate C ware. Ovoid IIB beakers form the second most common type (1038-9) and most of these are accounted for by fine micaceous fabrics (FMIC, FINE). IIBs are also represented, for the first time, in North Kent Fine ware (1038); other products from Kent include 'Gallo-Belgic' beakers (IIIA, IIH). These forms are

normally associated with Neronian assemblages, but Marsh (1978, fig 6.9, 19) suggests a late 1st to early 2nd century date for them, corresponding with the overall distribution of the fabric in the City. Neckless IIIEs are also present in small quantities in Highgate C ware and its variant (HWC-1403, 1040).

Imported beakers are rare. Exceptions are central Gaulish beakers, represented here by an example of an everted-rim vessel with hairpin decoration (1043). Roughcast beakers (including vessels from Cologne) are increasing and are represented by body sherds. This same trend is paralleled at Verulamium (Wilson 1972, fig 111, 396-7) and Southwark (Bird *et al* 1978, fig 149, 949).

Bowls and dishes

Fig 148; Fig 152; Figs 171-2, Nos 1044-56

The overall proportion of bowls and dishes is similar to the Flavian period (Fig 148). Among the non-samian ware, round-bodied bowls (IVF, 1050-1) are still the most common form and account for almost half of the non-samian bowls and dishes. In contrast to the previous ceramic phase, most are in Highgate C ware (rather than Highgate B); rare examples are also known in the local Cophthall Close Grey ware. Moulded-rim bowls (IVA, 1044-7) are present and comprise the second largest group. These vessels are produced in several fabrics; within the Verulamium industry, white ware bowls (as opposed to the grey fabric found earlier) dominate at 5%. This trend is also noticeable in early 2nd century deposits at Verulamium (Wilson 1972, fig 114, 508-13) and further afield at Chelmsford (Going 1987, 108). IVAs in the local Cophthall Close Grey and Highgate C wares are rare, but also increase (<2% each).

The diversification of bowls in fine ware fabrics, first noted in the Flavian period, continues here and is reflected by the illustrated sherds. It is also typical of Chelmsford, particularly in London, Local Mica-dusted and Eggshell wares (*ibid*, 108). Plain-rim dishes and forms copying decorated samian (IVJ; IVD, 1048; IVE, 1049) continue from RCP 2. Other dishes or plates are rare and the suppliers are generally the same as for the 1st century, although the flat-rim plate (VC, 1056) joins the London ware repertoire.

In common with the jars, rare black-burnished bowls and dishes (Fig 180, IVG, IVH, IVJ) occur in contexts immediately below Hadrianic fire deposits.

Cups

Fig 148; Fig 172, No 1057

Local Eggshell ware cups are the most common of the non-samian types (1057), with rare examples in Verulamium White ware, and Fine Reduced wares. However, samian remains the principal source of cups, accounting for 87% of the total.

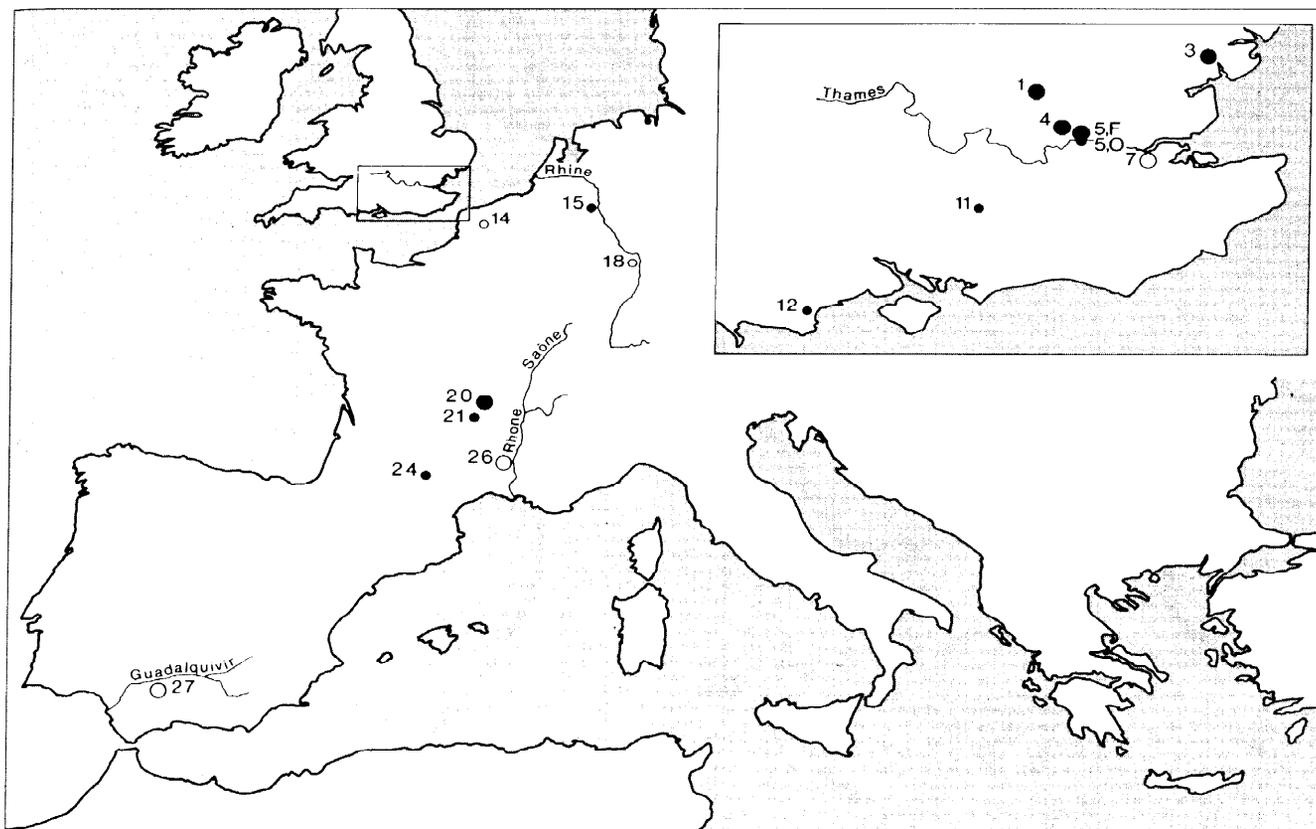


Fig 173 Location map of ceramic source areas for Roman Ceramic Phase 4

Mortaria and other forms

Fig 172, Nos 1058-60

All the mortaria here have hooked flanges (HOF). By the early 2nd century those produced in Verulamium Region White ware, which account for 92% of the mortaria, have a flaring flange (1058). This is particularly noticeable on those stamped by Matugenus and Saturninus, who operated 90-125 and 100-30 respectively. This pattern is similar to west Kent (Pollard 1988, 66), but in direct contrast to Chelmsford, where Colchester is the only supplier of mortaria (Going 1987, 108). Gillam 238 mortaria are still current (6%).

Samian

Fig 148; Fig 153

Plates continue to dominate the samian assemblage. Here, as for the remainder of the sequence, bowls and cups occur in fairly equal proportions (Fig 148). There is, however, an apparent increase in mould-decorated bowls, and Drag 29 is just exceeded by Drag 37 at 10% of the total. Cups continue to be primarily Drag 27s; Drag 33s have marginally increased, while Drag

24/25s are virtually absent. Similarly, plate forms common in the 1st century – such as Drag 15/17 – are in the minority. Drag 18 is still the most common dish form, with Drag 18/31 gaining in popularity. In the City, Drag 35/36 appears to increase dramatically at this time.

7.7 Roman Ceramic Phase 4: Hadrianic c 120-40

Considerable evidence for pottery in use during the Hadrianic period is gained from *in situ* debris, resulting from a fire throughout the City in c 120/5. The dating for this fire is based on evidence from a variety of sites throughout the City.

The Hadrianic period sees the beginning of wider regional trading patterns in southeast England. In the City there is a decline of the local coarse ware industries (Fig 143, particularly reduced types) which played an important role in the 1st and early 2nd century, and pottery now regularly comes from as far afield as Dorset. Conversely, imported fine wares, apart from Cologne ware, are virtually absent and local types become more popular. Imported amphorae can still be identified.

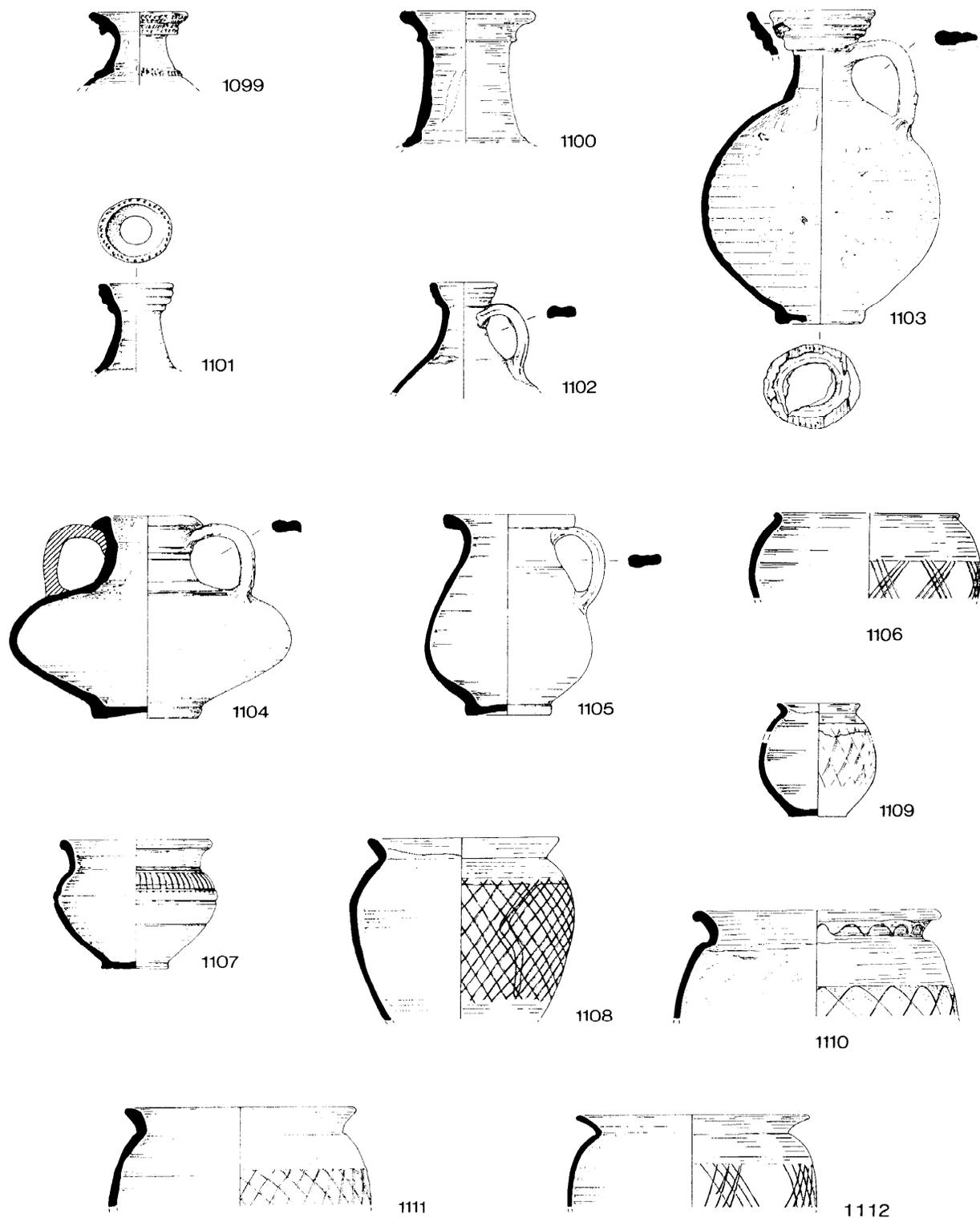


Fig 178 Roman Ceramic Phase 5, flagons, nos 1099–1105; jars, nos 1106–1112 (Scale 1:4)

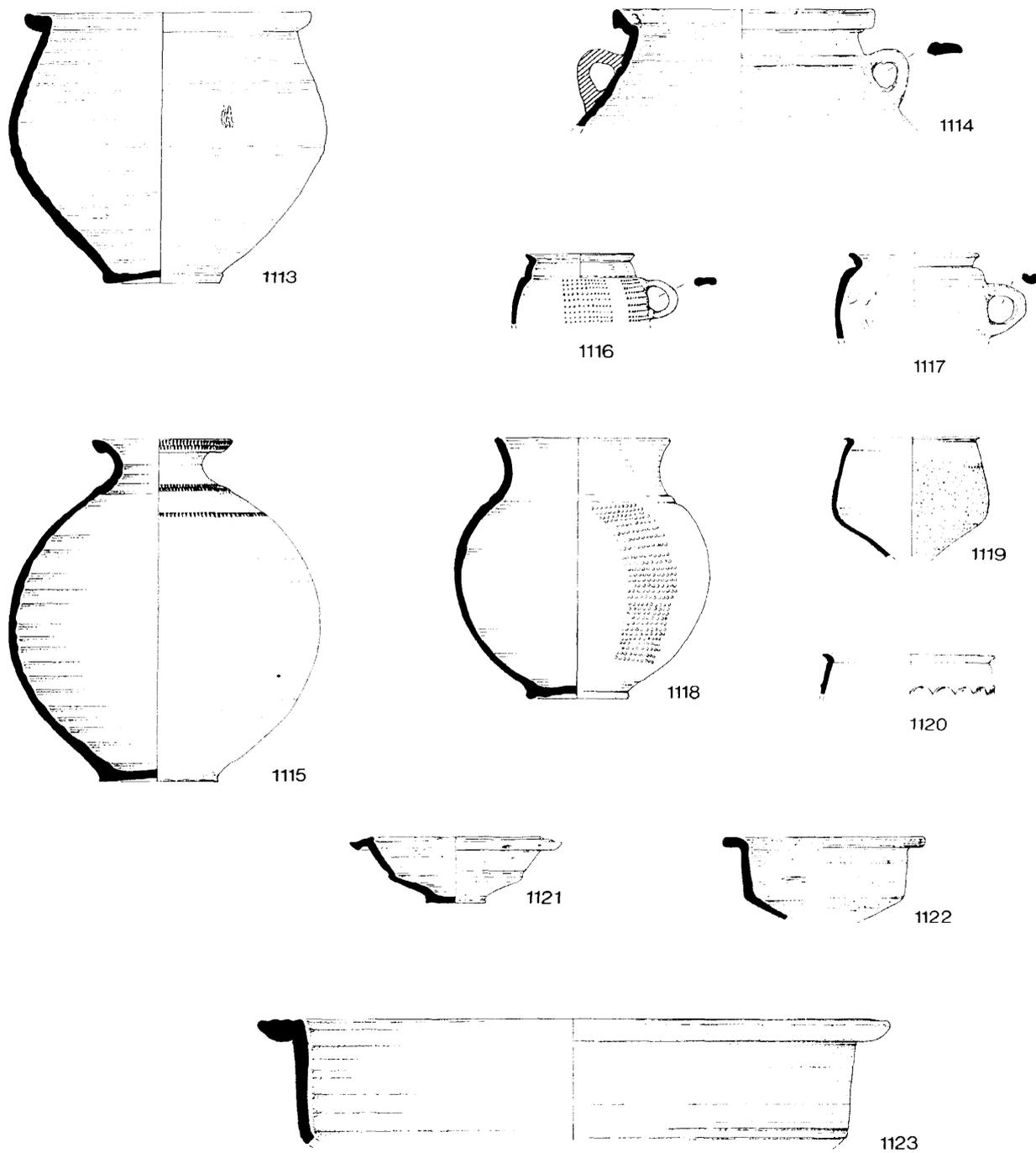


Fig 179 Roman Ceramic Phase 5, jars, nos 1113–15; beakers, nos 1116–20; bowls/dishes, nos 1121–3 (Scale 1:4)

Beakers

Fig 151; Fig 175, Nos 1074-5

Highgate C poppy beakers (IIIF, 1074) dominate the assemblage, accounting for two-thirds of the vessels; this is mirrored at Chelmsford (Going 1987, 110). Ovoid IIIBs have decreased from 30% to 11%, and may well be residual. Cologne roughcast vessels are the only typical imported ware (1075, 3%).

Bowls and dishes

Fig 148; Fig 152; Figs 175-6, Nos 1076-88

The ratio of bowls and dishes, and samian and non-samian vessels, is constant from RCP 3 (Fig 148). The most distinctive feature of groups of this date in the non-samian wares is the large increase in lattice-decorated vessels with triangular rims in BB2 (IVH, 1082) and flat rims in BB1 (IVG, 1080-1). Together they account for 19% of the group. Round-bodied IVFs (1078-9) and moulded-rim IVAs (1076-7) each comprise a similar proportion of the assemblage. For IVFs, this constitutes a decrease from 49% in the Trajanic period to 20% here and mirrors the reduction in local suppliers; for the IVAs it represents a rise, principally reflecting the increase in Verulamium Region White ware products which comprise half of the IVAs. Plain-rim dishes (IVJ, 1083-5) have increased, and this is accounted for by Local Mica-dusted, Pompeian Red ware fabric 3 and, to a lesser extent, black-burnished wares. Other vessels types can be seen on Figs 152 and 176. Decorated imitations of samian forms have declined and are no longer diagnostic.

Cups

Fig 148; Fig 176, Nos 1089-90

The rare cups which are present are almost entirely samian (Fig 148, 80%), with the remainder in Local Eggshell ware (VIC, 1090). Local Marbled vessels imitating Dr 27 (VIA, 1089) are present in unquantified assemblages.

Mortaria and other forms

Fig 176, Nos 1091-8

The Hadrianic period sees a development of the hooked-flange rim (HOF). In the Trajanic period the internal beading was normally high on the flange; it is now set lower and the flange is less hooked and more flared. An example in Verulamium Region White ware, which is still the most common mortarium source (72%), stamped by Lallaius (90-130), is illustrated here (1091). The second most common sourced group comprises mortaria from northern France/southeast England (12%). This includes the now residual Gillam 238, and more importantly the typically Hadrianic developed-rim Gillam 238 (1092); a Rhineland source is also illustrated (RHMO-2738, 1093).

Lids in local oxidized wares are diagnostic of the

period (1095). Tazze, restricted to Verulamium Region wares (1094), peak and account for one-quarter of the group.

Samian

Fig 148; Fig 153

Bowls, dishes and cups occur in generally similar proportions as in RCP 3 (Fig 148), but the most common plate is Drag 18/31, although Drag 18 is still found in some quantity. Mould-decorated bowls are also increasing, mainly represented by Drag 37 with Drag 29 and Drag 30 unrepresented by Eves. The balance in cups is changing, with slightly more Drag 33s than Drag 27s.

7.8 Roman Ceramic Phase 5: Early Antonine c 140-60

Many of the fabrics and forms present in Hadrianic groups persist into the early Antonine period, but their proportions differ. Regional coarse wares again play a major role, although local fine wares remain significant. Imports in general are uncommon, but amphorae are still represented.

At the time of publication there is an apparent dearth of well-dated mid to late Antonine groups in the City. Nevertheless, the large Severan waterfront deposits at New Fresh Wharf (Richardson 1986) provide comparative material for the early Antonine period. Without sequences definitively dating beyond c 160 it is difficult to examine the demise of the major industries, Verulamium and Highgate Wood, supplying London during the early Roman period. However, both industries were declining by the mid 2nd century (Symonds & Tomber 1991).

Sources and trade

Fig 177

Amphorae

Fig 144

By the early Antonine period, amphorae have decreased in quantity and on many sites are less varied. The Dr 20 is still the most common type, although reduced in numbers, and the Gauloise amphorae (PE47) are the second most common on most sites. Cam 186 are also present in significant quantities. Relative proportions of amphora types are again distorted by a pit group, in this case at 28-32 Bishopsgate, which contained nearly complete examples of large Rhodian style Cam 184 amphorae and a North African 'Piccolo' amphora (Tyers 1984a, 371). While North African amphorae are uncommon in London at this date, sherds can be identified from other City sites and elsewhere in the Empire.

Oxidized wares

Fig 145

Quantities of North French/Southeast English mor-

taria and flagons have fallen, while rare imports from the Rhineland (RHMO-2835) continue; this corresponds to patterns of importation seen among the fine wares. At just over three-quarters, the Verulamium region still represents the bulk of the oxidized wares. The white wares remain the most common of the Verulamium products, but their dominance is radically reduced by 20% from the Hadrianic period. In contrast, Verulamium Region Coarse White-slipped ware increases by 13% from the preceding period. Similarly, the Local Oxidized wares, which may have a source in the Verulamium region, have increased almost three-fold. North Kent may be represented by a possible continuation of the Hoo tradition, evidenced by the rare North Kent White-slipped ware.

Reduced wares

Fig 146

Rare sherds of North Gaulish Grey wares occur from RCP 3, but a fabric similar to the later material found at New Fresh Wharf (Richardson 1986, 106-9) is present for the first time. This indicates that although predominantly late Antonine or Severan in date, some may have arrived as early as the mid 2nd century. The remainder of the material is Romano-British. For the first time the local kilns at Highgate Wood fall into second place, after black-burnished wares.

The most diagnostic feature of early Antonine, as opposed to Hadrianic, groups is the proliferation of black-burnished fabrics and therefore sources (35%). Dorset supplies only a small proportion, while Colchester (BB2-1462) accounts for over one-quarter of all reduced wares. A number of the remaining black-burnished wares probably originate in northern Kent (BB2-2759, BB2-2768, BB2-2238). Most significant among these is BB2-2238, which is likely to be the precursor of the later industry noted from Severan groups at New Fresh Wharf with a proposed source in the Cliffe peninsula area (*ibid*, 127). North Kent Shelly ware is still present, although slightly reduced from RCP 4, and an Essex source is represented by small quantities of shelly pottery (SESH) which in Essex is basically restricted to the 1st century (Going 1987, 10).

Fine wares

Figs 147a-c

The principal imported fine ware is still samian (Fig 147a), which for the first time includes vessels from 2nd century production at Lezoux. Montans is well represented, due to the nearly complete vessel from 28-32 Bishopsgate. Marsh (1981, fig 11.7) identified a second influx of samian into the City during the early Antonine period; our material may be just marginally too early to reflect this pattern. Non-samian imports are again high (12% of non-samian fabrics), but apart from the Cologne beakers are individually small and probably residual (Fig 147b).

Romano-British fine wares (Fig 147c) are still dominated by mica-dusted wares, both local and non-

local, which account for over half of the non-samian fine wares. However, their distribution is uneven from site to site and some may be residual. Rare Colchester products were present in the Flavian phase and they are again represented here. Even rarer sherds of Nene Valley Colour-coated ware are also present. Although fine ware production in the Nene Valley commenced in the mid 2nd century, it rarely reaches London until the late 2nd or early 3rd century. The material here may well be intrusive in contexts at Newgate Street and therefore has not been included in the corpus, nor on Fig 147c.

Assemblage composition

Fig 148

The only significant change in vessel composition between Phases 4 and 5 is the increase in bowls by 10%, which continues a trend evidenced from RCP 1B. Rouletted decoration is diagnostic of the period and occurs on several types of vessel.

Flagons

Fig 149; Fig 178, Nos 1099-105

Verulamium maintains its monopoly of flagons, accounting for 89% of the assemblage, with rare vessels in fine and reduced fabrics. The variety in forms continues from RCP 3 and reflects trends that are found throughout southeastern England, including Verulamium, Southwark, Chelmsford and parts of Kent. The most common form is the ring-neck flagon: the short-expanding IB7s (1101-3) are well represented by at least 30% in both Verulamium Region White and Coarse White-slipped fabrics. This contrasts with Verulamium, where white examples greatly outnumber slipped vessels (Insula XIV, Wilson 1972, fig 122). The IB5s, common in RCP 4, are virtually absent. Other types present are shown on Figs 149 and 178.

Jars

Fig 150; Figs 178-9, Nos 1106-15

Most of the jars in this period are supplied by BB2 (26%) and the local Highgate C (44%) industries, although a greater proportion of Verulamium region oxidized jars are present than in previous groups (11%).

By far the most common jar type of this period is the everted-rim jar with lattice decoration (IIF, 1108-12) in BB2 (23%), Highgate C and C+ (15%) and BB1 (3%). Vessels with grouped latticing (eg IIF6, 1112) which were scarcely present in Hadrianic groups are increasing in quantity here. Other necked jars (IIC, IID) have noticeably decreased. The burnished IIEs in Highgate C ware have decreased slightly but are still diagnostic (1 107).

Additional jars are not common but include a range in Verulamium region fabrics (IIK, 1114; IIR, 1115). The neckless jar (IIH, 1113) is rare in the City but is paralleled at Verulamium (Wilson 1972, fig 125,

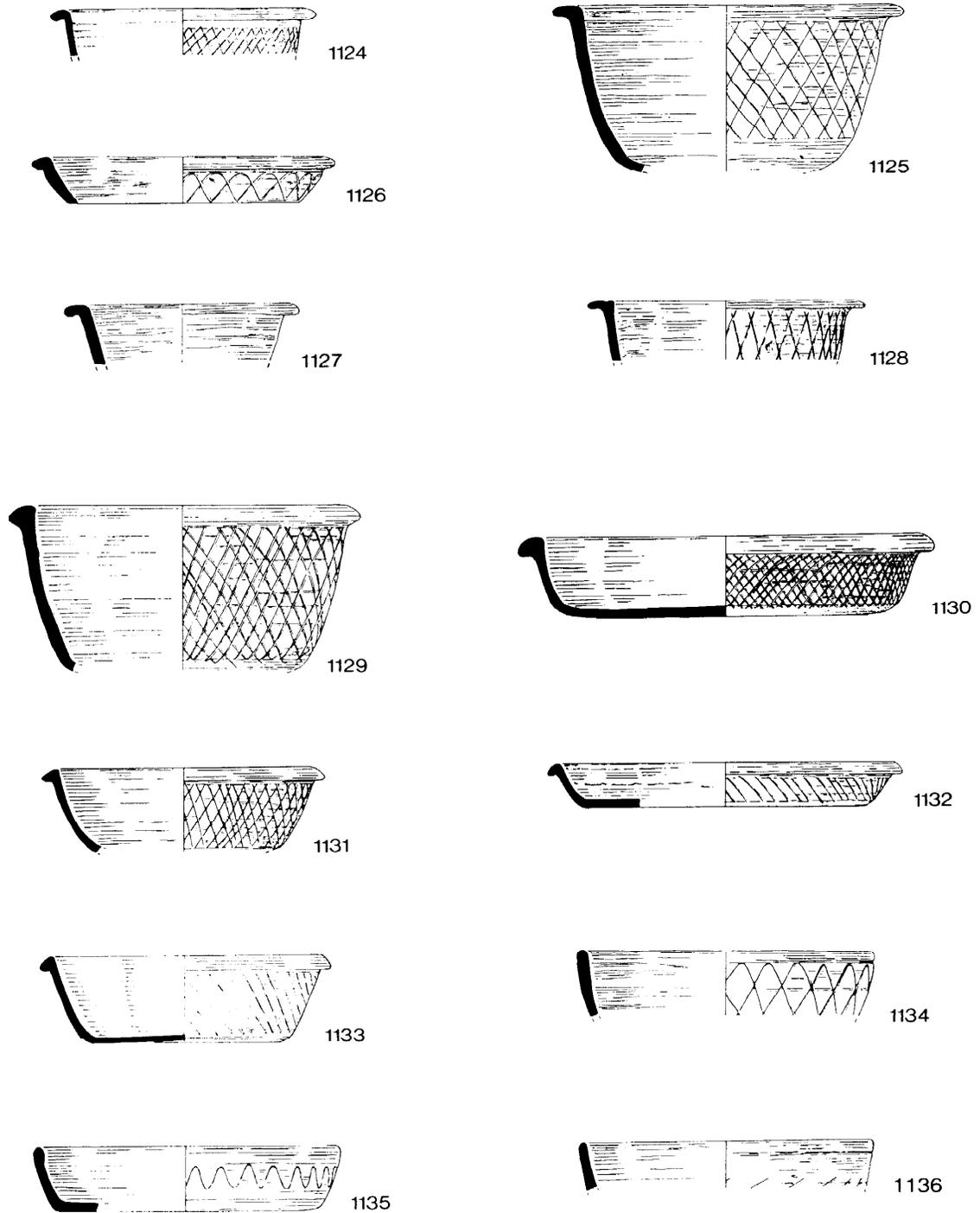


Fig 180 Roman Ceramic Phase 5, bowls/dishes, nos 1124-36 (Scale 1:4)

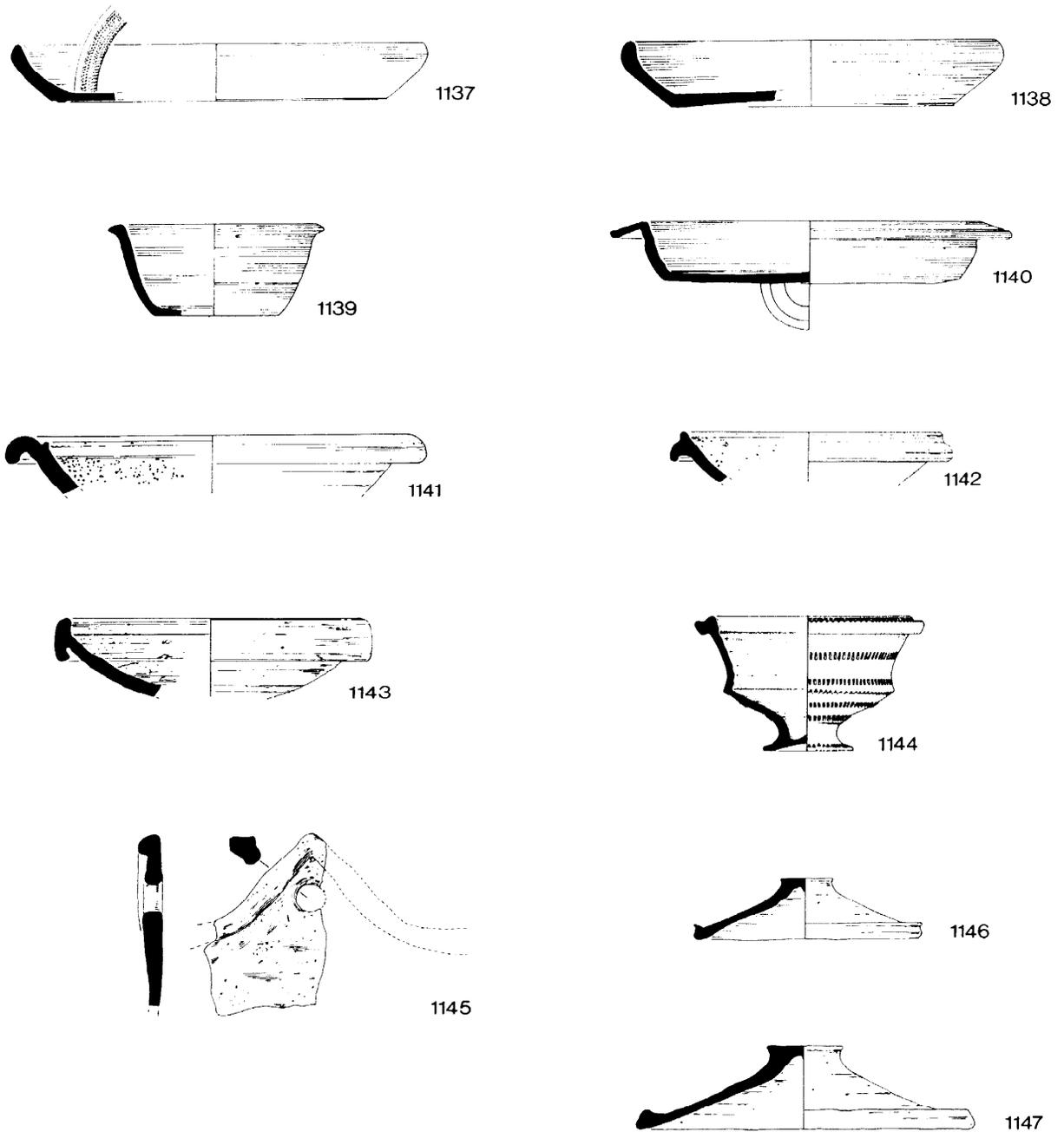


Fig 181 Roman Ceramic Phase 5, bowls/dishes, nos 1137-40; mortaria, nos 1141-3; other forms, nos 1144-7 (Scale 1:4)

897-905) and Southwark (Marsh & Tyers 1978, 562).

Beakers

Fig 151; Fig 179, Nos 1116-20

Highgate is still the main supplier of beakers and vessel forms are very similar to those of the Hadrianic phase. Highgate C poppy beakers (IIIF, 1118) continue to dominate and comprise half the group. Neckless IIIEs (sometimes with handles) are also typical (1116-17). The majority of Cologne vessels are roughcast, bag-shaped beakers (1119), occasionally folded, although barbotine decorated vessels are also present in small quantities (1120). Hunt-cups from the same sources are apparently absent from London's early Antonine deposits. However, at Verulamium similar vessels may be present in the mid 2nd century, with at least one stratified example of this date from Insula XIV (Wilson 1972, fig 122, 793). As in Chelmsford (Going 1987, 110), rare body sherds of roughcast beakers from Colchester are also present during this phase.

Bowls and dishes

Fig 148; Fig 152; Figs 179-81, Nos 1121-40

By the early Antonine period most vessels are in non-samian fabrics, continuing the decline in samian ware (Fig 148).

Bowls are dominated by black-burnished products, particularly the triangular-rim IVHs in BB2 (1129-33), which comprise almost half of the non-samian fabrics. Most still have acute lattice decoration (IVH1-4), but rare undecorated vessels (IVH5-7) appear. The majority are from Colchester; north Kent products are present and tend to be typologically distinct with thinner walls and, occasionally, decorated with single diagonal line decoration (eg 1133). Flat-rim bowls (IVG, 1125-7) in BB1 with lattice decoration are also present. The diverse range of decoration on the IVGs and IVHs is illustrated here. A rare example of an incipient-flange bowl (Gillam 226, 1128) is also present, as are imitations of IVG/H in the Highgate C fabric (1124).

Moulded-rim IVAs (112 1-3) are the second most common type and comprise just over one-quarter of the bowls. In contrast to the IVGs and IVHs they are almost entirely in oxidized fabrics, many to cater for serving rather than cooking. Most are in Verulamium Region White ware (17%) and these have distinctively larger diameters than in earlier phases; examples in Local Oxidized wares (5%) are also diagnostic.

Dishes and plates are represented by plain-rim dishes (IVJ, 1134-8), mostly in black-burnished fabrics and mica-dusted wares. A nearly complete Pompeian Red ware fabric 3 dish from the pit at 28-32 Bishopsgate is also illustrated here (1137).

cups

Fig 148

Rare cups are present, most of them in samian (83%).

Mortaria and other forms

Fig 181, Nos 1141-7

Although the Verulamium mortaria are declining in quantity (67%), typological developments provide a valuable chronological indicator. In common with the Antonine fire assemblage from Verulamium (Insula XIV, Wilson 1972, fig 129, 1011-16), the majority of the City's white ware mortaria have a hooked flange with a high rounded rim and low internal beading (HOF, 1141), but bead-and-flange types (BEF, 1142) are also present. Hammer-head mortaria from the Rhineland (RHMO-2835, HAM, 1143, 9%) are present for the first time in early Antonine groups. These can be clearly distinguished from the 1st century Rhineland products, and are more comparable to the range of Rhineland mortaria found in Severan deposits at New Fresh Wharf (Richardson 1986, 112, cf 1.78). Unsourced mortaria are more common than in previous phases. It is worth noting that mortaria from Oxford and the Nene Valley are absent from all the assemblages discussed here.

Lids in the Local Oxidized fabrics are particularly diagnostic of the period (1146-7), as are the buckets or cauldrons in South Essex Shelly ware (1145).

Samian

Fig 148; Fig 153

Plates outnumber cups, but only marginally (38% to 32%). The majority of these plates are Drag 18/31, but a relatively large number of predominantly 1st century Drag 18s still survive. Unlike Chelmsford, where cups are almost exclusively Drag 33, with occasional residual Drag 27s (Going 1987, 110), City assemblages still contain a high proportion of Drag 27s; relative proportions vary from site to site. The dip in Drag 27s during RCP 4, and their increase here, may indicate that a proportion of them are residual, but this cannot be determined with any certainty since their production centre has not been identified. Decorated bowls consist almost entirely of Drag 37s, while undecorated examples include the first occurrences of Drag 38. Other typically Antonine forms, such as Drag 45 mortaria, are absent from all of these early Antonine groups.

7.9 Conclusions

The establishment of *Londinium* in c 50, at the centre of a major road system, corresponds with the first evidence for a bridge across the Thames. For most of its history, London has been a flourishing port, and in the Roman period it was an important communication centre. This is reflected in the diversity and richness of pottery types, which encompass native and Romano-British traditions and, particularly, imports from the Continent and the Mediterranean region.

In Roman Britain, Continental and Mediterranean imports (apart from samian) were largely restricted to major ports and/or military settlements, while absent from small ports. A range of imports similar to those

found in the City can be rivalled on sites such as Richborough, Fishbourne, Colchester and Kingsholm; only the latter two may equal London in quantity, although lack of quantified data makes assessment difficult.

A relatively high proportion of samian was found in London during the 1st century, in contrast to small towns like Chelmsford (Going 1987, 106). This is presumably due to the combined effects of the ware's accessibility - which largely mirrors the productivity of the individual production centres (Marsh 1981, 206) - and the greater prosperity or degree of Romanization of much of the population. Other fine wares, such as Lyon products, which were consistently used in London during the pre-Flavian period, were imported in smaller numbers and are rarely found on low status inland sites. Rare exotica, such as *olearia*, may well have entered London as personal possessions (cf Pollard 1988, 37).

Roman London undoubtedly served as a redistribution centre for an unspecified, but presumably defined, hinterland within the southeast. In the City, this is reflected by amphora distribution. During the pre-Flavian period the distribution of amphorae was concentrated in commercial areas, firstly at the waterfront, followed by the forum area and nearby sites (Chadburn & Tyers 1984, 23, fig 12). Outside the town, a rigorous survey of the distribution of London products would clarify the geographical extent of this hinterland, and the recognition of some London products in both Kent and Chelmsford demonstrates this. Although some London products also reached Colchester, the general disparity between London and Colchester assemblages illustrates the separate provisioning of other ports in the south. Further afield, in landlocked areas and the Northern frontier, London would have also played a role in ceramic supply (Fulford 1989, 180), as shown by the identification of Highgate C poppy beakers from Lincoln.

London's location was critical for the supply not only of imports from abroad, but also of non-local Romano-British wares. With the exception of Verulamium region products, the majority of non-local pottery arrived via the port of London. For example, during the pre-Boudiccan period, both Hoo and Eccles ware were probably transported along the Medway and then to London. From a southeasterly direction, the Alice Holt Surrey wares could have come via the River Wey and then the Thames. In the 2nd century, black-burnished wares, from both Dorset and Colchester, probably reached London via a coastal route.

The importance of local industries to London's pottery supply is witnessed by a variety of grey ware producers during the 1st century, and a growing number of fine ware industries during the later 1st and 2nd centuries. Of the grey wares, Early Roman Sandy, Highgate Wood and Cophall Close wares were apparently distributed outside London, while the Local Eggshell, Mica-dusted and London wares also travelled. However, the population of London would have required large numbers of ceramics and these

local concerns arose primarily to satisfy their own needs. In contrast, white wares were exclusively supplied by industries outside the immediate vicinity of London. The history of the nearby potteries at Verulamium was largely influenced by London and they probably owed their scale of production to its requirements. The response to London's needs, at least in the case of coarse wares, with a pronounced change in form types during the initial period of Flavian growth, can also be seen in the movement from smaller to larger production centres.

Roman London appears to have been a planned city in which five main phases of development are identifiable between 50 and 160, each related to major changes in ceramic supply. This time span incorporates the period of London's maximum growth and size, for from c 150/60 the population appears to have contracted (eg Perring & Roskams 1991, 120; Sheldon 1975).

The pre-Boudiccan (RCP 1A) settlement largely clustered around the area east of the Walbrook, with the Walbrook forming a boundary, and in a ribbon development along the main east-west road (Williams 1990, 600). Although there are few preserved structural remains, the convergence of two Roman roads near the present London Bridge, and a wooden structure interpreted as a bridge pier support on the east side of Fish Street Hill, indicate the location of the first bridge, datable to c 50 (Merrifield & Sheldon 1974). This early settlement was destroyed by fire during the Boudiccan destruction of 60/1, and a distinct fire horizon marks its occurrence.

This foundation date of c 50 is supported by the lack of early fine wares and Gallo-Belgic forms found at Colchester and Fishbourne. In the City, development took place in the later 50s, as seen by the predominance of Neronian samian. However, slightly earlier occupation within the 50s may be attested by recent finds from Pinners' Hall where the earliest Highgate product (Highgate A) was identified. This was found in conjunction with early shelly wares (P Tyers, pers comm) previously unrecognised from the City but comparable to early deposits from Bow (Sheldon 1971, fig 4).

Most pre-Boudiccan assemblages are small in comparison with those from the later 1st century, indicating a smaller population. Despite this, the pre-Boudiccan period was the time of greatest ceramic importation from outside Britain. Most of these imports came from south and central Gaul (samian and Lyon ware respectively) or southern Spain. This reflects the lack of indigenous potters able to supply Romanized vessel types, particularly table wares, as well as the importation of foodstuffs in amphorae.

The local potteries at Highgate Wood were able to meet the demand for cooking pots through native grog-tempered wares, Flagons and mortaria, mostly Romano-British in origin, were predominantly supplied by producers outside London. During this period flagons were a common vessel type, second only to jars, and indicate a population whose tastes were already highly Romanized. On the basis of early

building techniques, Per-ring and Roskams (1991, 107) have suggested that much of the population of early London may have been from Gaul or Italy; the establishment of a local ceramic industry in London by a continental potter(s), probably from western Switzerland, also argues for an immigrant population.

Following the Boudiccan uprising, the provincial capital was moved from Colchester to London, a status which it maintained until 200. Structural evidence indicates a slow recovery, and it was not until the Flavian period (RCP 2) that intensive activity can be identified, although assemblages of late Neronian pottery (RCP 1B) from, for example, 25-6 Lime Street, indicate some activity in the town between 61 and 70. Pottery differs subtly from that seen in the pre-Boudiccan period, with non-sigillata fine ware imports reduced or absent, changes in beaker forms and an increase in bowls within the coarse wares. Although the same general trends are present, these groups can be seen as intermediary, incorporating trends of both pre-Boudiccan and Flavian assemblages.

Between 70 and 80 London acquired the attributes of a major town. Milne (1985, 143) argues that London's status as a *municipium* is reflected by the scale of its waterfront, which represents official planning rather than development by individual merchants. At the same time, phase one of the first forum was established by *c* 75 (Marsden 1987) and bath houses were built along the waterfront and at the edge of the Walbrook Valley (Hall & Merrifield 1986, 19; Per-ring & Roskams 1991, 118). Occupation also spread west of the Walbrook, and an amphitheatre dating to the late 1st century was constructed (Frere 1988, 461). Plans for future expansion continued during the Flavian period, for between *c* 80/5 and 100 the adjoining site at Leadenhall, south of the forum, was cleared in preparation for the basilica and second forum (Milne 1992) and the waterfront was enlarged (Milne 1985, 27).

This expansion is reflected by the growing number of contexts and the larger size of assemblages which can be ceramically dated to the Flavian period. During this time imports continued, primarily samian ware and amphorae, with the major change being a greater dependence on larger industries such as Alice Holt and the urban potteries at Verulamium. By this time the population would have been composed of second generation inhabitants, and this growing degree of Romanization is seen in the cooking-pot forms.

Expansion and town planning continued throughout the Trajanic period (RCP 3). The basilica and second forum were completed at Leadenhall, and subsequent repairs were made to the structure (Milne 1992); the bath houses were enlarged and occupation was more intensive both east and west of the Walbrook (Hall &

Merrifield 1986, 19, 25); the Upper Walbrook was developed for the first time (Maloney 1990, 119) and the waterfront again advanced (Milne 1985, 29). Pottery sources exhibit continuity from the Flavian period, but local products clearly dominate. By this time Britain had achieved a certain degree of economic independence in terms of ceramic production, and this is particularly evident from the diversification in the fine wares. Native traditions of grog tempering, previously dominant within the Highgate Wood industry, were replaced by Romanized sandy wares, and this is mirrored in the rise of bowls and jar forms.

A second wide-scale conflagration in London has been proposed for the beginning of the Hadrianic period (RCP 4), although on many sites fire debris cannot be tied to this event with the same precision as for the Boudiccan destruction. A second fire at the waterfront resulted in major reorganisation of the area in the mid to late 2nd century (Milne 1985, 29). Building activity continued and, with construction of the fort, the northern limits of the city were established (Hall & Merrifield 1986, 25). The pottery of this period shows a marked change that continued into the early Antonine period (RCP 5). In common with the rest of Britain, London was now receiving regional wares, such as BB1 and BB2, which were widely distributed throughout the Province. Britain's self-sufficiency was reflected in the small number of wares imported from abroad. However, the occurrence of pottery from Cologne heralded the importance of east Gaul and patterns of importation seen in the later Roman period.

In the western part of the City, the Hadrianic period was the last main phase of construction, for by the end of the Antonine period buildings had either been dismantled or allowed to decay, and in many areas dumps covered earlier occupation (Merrifield 1965, 46). Nearby bath houses in the middle Walbrook were dismantled in the late 2nd/early 3rd century, but may have been abandoned earlier (Perring & Roskams 1991, 120). Occupation continued into the 3rd century in the Upper Walbrook Valley (Maloney 1990, 122). The cumulative decrease in material from Highgate Wood and, to a lesser extent, Verulamium during the early Antonine era, which became more apparent in the period 160-80, presaged this decline. While the decline in these types may have been due, in part, to the influx of regional wares, the comparative rarity of assemblages dating to the later 2nd century also indicates a contraction in the population. The study of London's late Roman pottery, in relation to subsequent town development (Symonds & Tomber 1991), provides an important continuation of the trends seen here, and complements our understanding of early Roman London.

Appendix 1: Site Summaries

Whenever available, dating from samian and coins is not restricted to the particular features/layers included in the corpus, but includes all material from the phase in general. Site locations are indicated on Fig 182 (p 231). The samian stamps were identified by Brenda Dickinson; the coins by Jenny Hall of the Museum of London.

76-80 Newgate Street, EC1 (GPO75)

Supervisors: A Thompson and S Roskams
Funded by the Department of Environment and British Telecom

The site is situated on the north side of Newgate Street and excavations concentrated on an area c 16 x 20m associated with a major Roman street frontage to the south. Ten Roman periods were identified and the corpus draws upon the first eight, dating from c 50/55-160. Their summaries here are based on *The Early Development of Roman London West of the Walbrook* (Perring & Roskams 1991, 3-26). The periods follow a chronological sequence from I to VIII, sub-divided into phases which do not necessarily follow a strict progression (eg I.2 need not be later than I. 1).

The eight periods are distinct and two fire horizons provide important stratigraphic landmarks. Dating relies upon evidence from both the coins and stamped samian and this is summarized below. Periods I-III are pre-Boudiccan and most, but not all, of the contexts are sealed by a fire horizon. Periods IV to VII post-date the Boudiccan fire and the Hadrianic fire terminates Period VII; therefore a phase of reclamation, two periods of construction and three of modification span a period of 60 years. As can be seen from the summary of dating evidence below, much of the site suffered from slumping, which resulted in what were interpreted as intrusive finds. The treatment of the intrusive contexts and pottery has already been discussed (p 1). As can be seen from Table 2, the number of intrusive coins is relatively much higher than either coarse wares or samian stamps, the latter obviously relevant only to the earlier ceramic phases.

Building activity commences in *period I* with remains of a circular hut cut into the natural brick-earth. No associated floors survived, but there was a contemporary ditch to the north, probably serving as a boundary. The alignment of the hut and ditch suggests that they predated the road. *Period II* (II.1) is marked by the cutting of a gully into the earlier pits. It was aligned at right angles to Roman Newgate Street and marked the first influence of that thoroughfare

upon site activity. Building activity may be represented by stake-holes. During *Period III* parts of two rectangular timber buildings were constructed in the extreme south, near the street. Further north were found remains of two near-circular wattle and daub buildings, together with possible foundations of a third. All the buildings were destroyed by the fire and their spacing was such that the fire marking their demise seems unlikely to have been accidental. This, together with its date, suggests a correlation with the Boudiccan destruction of London in 60/1.

Periods I-III, considered here as one group, are terminated by this fire level. There are no identifiable coins from them, but seven potters' stamps support a date between 50 and 60 that is complemented by the dates of the unstamped samian. Three stamps from Period III contexts (those dated 60?-90) are all from dies not otherwise recorded from Boudiccan groups, but this is not sufficient evidence for dating the horizon later than c 60. All the contexts, including those not sealed by this fire, are included in RCP 1A.

In *Period IV* there was a hiatus in the structural sequence. Brickearth was laid over many areas of the site, and most activity consisted of stake- and post-holes, gullies and pits. Property boundaries were established that were respected by later developments on the site, and show that formalized planning along the street frontage to the south had reached this area by c 70. The Boudiccan fire horizon provides the *terminus post quem* for Period IV and a coin of 64-6 dates the period after 64. Most of the stamps fall within this date range but one of Peregrinus I suggests a slightly later starting date of c 75. Pottery from Period IV is included with RCP 1B.

Period V is one of intense structural activity. Two adjacent buildings with complex histories, possibly united on their southern boundary, were constructed on the south of the site, aligned east-west along the street frontage; Building F is to the west, Building H to the east. A possible third structure was found to the north of Building F. A large quarry pit was found to the north of Building H, and was subsequently used for the disposal of organic waste. It is this latter area of the site that was prone to subsidence and slumping throughout the sequence, and responsible for the varying amounts of intrusive pottery. Alterations and repairs were made to the buildings during this period.

The three buildings were demolished and buried at the start of *Period VI*. Building H was replaced and went through numerous alterations before being taken down. The area was then given over to apparently patternless occupation represented by features and surfaces, although there are some indications that

more coherent activities were still being carried on to the west of the site.

The early phases of Period V produced two residual coins, but no samian stamps. Later contexts contained several coins with dates up to 78 and 79, but a samian vessel stamped by Calvus I dated c 80-90 probably defines the end of the sequence in this area. Three coins of Vespasian and a stamp of Pontus come from the earliest phases of Period VI and point to a broad date of c 75/85 for this primary level. A coin of Domitian dated to 87 from latest levels, together with two stamps of Severus, demonstrate that occupation in this area began after 87 and probably lasted until the end of the 1st century. Periods V and VI are combined as RCP 2.

Period VII marks the construction of two new timber-framed buildings, extending over the whole of the excavation. Though there was an alleyway between them, they may have presented a continuous facade at the street frontage. A lane was set out bounding them in the east and giving access from the street. The plan of these strip structures suggests shops or commercial premises with selling taking place at the frontage. Just behind these were large rooms, some of which contained substantial hearths, which indicate that these rooms had an industrial function. At the rear were smaller rooms, containing well preserved domestic hearths. Both buildings went through several modifications and restructuring during this period, and were destroyed by a fire in the early 2nd century.

The primary layers for Period VII contained few datable finds apart from a stamp of Rufinus and a coin of Domitian. However these, together with a mortarium stamped by Saturninus, suggest a late 1st to early 2nd century date for its inception. A coin of Trajan, from a later phase of construction, places occupation in the period between 98 and 117. Mater-

ial from Period VII is included in RCP 3. The period was then sealed by fire debris, associated with the Hadrianic fire and separated as VIIF (RCP 4, VII. 49-50). This debris contains three stamps from Les Martres-de-Veyre which support an early Hadrianic date for the fire.

In *Period VIII* the previous fire debris was levelled off and redeposited to prepare for rebuilding. Two new buildings were constructed, reproducing the main previous structures and property boundaries. Before the end of the 2nd century they were dismantled and the site levelled. This truncation marks the end of the Roman structural sequence, after which much of the site is overlain by dark earth. Although some features were identified in Periods IX-X, there was no definite evidence for the construction, occupation or destruction of buildings succeeding those of Period VIII. The Period VIII destruction horizon was widely disturbed by Period IX features and directly sealed by the Period X dark earth.

The dating of Period VIII (RCP 5) is somewhat unclear since the later levels were disturbed by intrusive material. The Hadrianic fire provides a *terminus post quem* for the start of Period VIII, and a coin of Hadrian from the modification of one of the buildings places the occupation in the north of the trench later than 119. The earliest date of deposition for levels overlying this structure at the end of the sequence (VIII. 14) is provided by a stamp of Ianvarius II (130-60), which is the only Lezoux stamp at Newgate Street. This, in conjunction with the other samian from the end of the sequence, suggests a date c 160. The absence of later samian and obviously later coarse ware forms indicates that occupation ceased some time before 180, probably c 160, although some of the black-burnished ware jars may indicate a slightly later end date.

Table 3: Newgate Street samian stamps

* =intrusive

RCP	Phase	Stamp	Source	Form	Date
1A	I.2	MARINUS I	La Graufesenque	Drag 29	50-70
1A	I.2	PRIMUS III	La Graufesenque	Drag 24	55-70
1A	I.2	-	La Graufesenque	Drag 24	40-70
1A	II.3	CELER II	La Graufesenque	Drag 18	40-65
1A	III.4	MOMMO	La Graufesenque	Drag 27g	60?-90
1A	III. 13	SECUNDUS II	La Graufesenque	Drag 15/17 or 18	60?-90
1A	III.21	SECUNDUS II	La Graufesenque	Drag 15/17	60?-90
1B	IV.2	MODESTUS I	La Graufesenque	Drag 24	45-60
1B	IV.5	ARDACUS	La Graufesenque	Drag 27g	45-65
1B	IV.12	BASSUS I	La Graufesenque	Drag 27g	50-65
1B	IV.14	LENTU-	La Graufesenque?	Drag 15/17 or 18	55-80
1B	IV.14	MASC(U)LUS I	La Graufesenque	Drag 27g	50-70
1B	IV.15	PEREGRINUS I	La Graufesenque	Drag 18	75-100
1B	IV.15	Illiterate	La Graufesenque?	Drag 24	40-70
1B	IV.15	-	La Graufesenque?	Drag 29	55-80
1B	IV.16	Illiterate	La Graufesenque	Drag 27g	55-80
1B	IV.17	MOMMO	La Graufesenque	Drag 15/17 or 18	60-80
1B	IV.17	-	La Graufesenque?	Drag 15/17 or 18	40-70
1B	IV.19	PATFUCIUS I	La Graufesenque	Drag 27	65-90

RCP	Phase	Stamp	Source	Form	Date
2	V.1	APER I	La Graufesenque	Drag 15/17 or 18	50-65
2	V.1	Illiterate	La Graufesenque?	Drag 24	40-70
2	V.10		La Graufesenque?	Drag 15/17 or 18	55-80
2	V.24	IULLINUS I	La Graufesenque	Drag 27g	70-100
2	V.24	PASS(I)ENUS	La Graufesenque	Drag 27g	50-65
2	V.24	PATRICIUS I?	La Graufesenque	Drag 27g	65-90
2	V.24	SILVANUS I	La Graufesenque	Drag 15/17R or 18R	50-70
2	V.24	Illiterate	La Graufesenque?	Drag 27	55-80
2	V.25	BACCINUS	La Graufesenque?	Drag 27g	40-100
2	V.27	PONTUS	La Graufesenque	Drag 24	65-90
2	V.30	CALVUS I	La Graufesenque	Drag 18	80-90
2	V.33	Illiterate	La Graufesenque	Drag 27g	55-80
2	V.36	MURRANUS	La Graufesenque	Drag 15/17 or 18	50-75
2	V.36	VIRTHUS	La Graufesenque	Drag 27	50-70
2	V.37	-	La Graufesenque?	Drag 15/17 or 18	40-100
2	V.38	IANUA	La Graufesenque	Drag 29	50-70
2	V.38	IUSTUS I	La Graufesenque	Drag 30	70-90
2	V.38	MACCARUS	La Graufesenque	Drag 27	40-60
2	V.38	MODESTUS I	La Graufesenque	Drag 15/17 or 18	45-65
2	V.38	MODESTUS I	La Graufesenque	Drag 27	60-75
2	V.38	MOMMO	La Graufesenque	Drag 15/17 or 18	60-80
2	V.38	MOMMO	La Graufesenque	Drag 15/17 or 18	60-80
2	V.38	NEQURES	La Graufesenque	Drag 27g	55-65
2	V.38	SECUNDUS II	La Graufesenque	Drag 15/17R or 18R	60?-90
2	V.38	VANDERIO	La Graufesenque	Drag 29	65-85
2	V.38	VERECUNDUS II	La Graufesenque	Drag 18	50-80
2	V.38	Illiterate	La Graufesenque?	Drag 27g	55-80
2	V.47	FELIX I	La Graufesenque	Drag 18	50-70
2	V.49	RUTAENUS	La Graufesenque	Drag 27g	50-65
2	VI.1	PASS(I)ENUS	La Graufesenque	Drag 29	60-75
2	VI.1	Illiterate	La Graufesenque?	Drag 24	40-70
2	VI.2	AQUITANUS	La Graufesenque	Drag 24	50-65
2	VI.5	PONTUS	La Graufesenque	Drag 27g	65-80
2	VI.9	MODESTUS I	La Graufesenque	Drag 27g	60-75
2	VI.12		La Graufesenque	Drag 27g	40-70?
2	VI.15	FELIX I	La Graufesenque	Drag 27g	55-70
2	VI.15	GERMANUS I	La Graufesenque	Drag 29	70-85
2	VI.15	-	La Graufesenque?	Drag 27	40-70
2	VI.18	CALVUS I	La Graufesenque	Drag 15/17 or 18	70-95
2	VI.18	Illiterate?	La Graufesenque	Drag 27	55-80
2	VI.20	PATERCLUS II	Les Martres	Drag 18/31	110-25*
2	VI.20	PATRICIUS I	La Graufesenque	Drag 33a	70-90
2	VI.20	T.RA MASCUUS	La Graufesenque	Drag 15/17 or 18	80-110
2	VI.21	FELICIO I	La Graufesenque?	Drag 15/17 or 18	55-80
2	VI.21	Illiterate	La Graufesenque?	Drag 27g	55-80
2	VI.21	Illiterate?	La Graufesenque?	Drag 27	55-80
2	VI.21	Illiterate?	La Graufesenque?	Drag 27g	70-100
2	VI.21	Illiterate?	La Graufesenque?	Drag 27g	70-100
2	VI.21	-	La Graufesenque?	Drag 15/17 or 18	70-100
2	VI.21		La Graufesenque	Drag 27g	55-80
2	VI.23	SEVERUS I	La Graufesenque	Drag 15/17 or 18	65-95
2	VI.24	CALVUS I	La Graufesenque	Drag 15/17 or 18	65-85
2	VI.24	QUINTIO I	La Graufesenque	Drag 15/17R or 18R	65-80
2	VI.25	PASS(I)ENUS	La Graufesenque	Drag 15/17 or 18	60-5
2	VI.26	CRESTIO	La Graufesenque	Drag 15/17 or 18	50-70
2	VI.26	IUSTUS I	La Graufesenque	Drag 18	70-95
2	VI.27	IOVIS	La Graufesenque?	Drag 27	55-80
2	VI.28	-	La Graufesenque?	Drag 27g	55-80
2	VI.28	-	La Graufesenque?	Drag 27g	55-80
2	VI.32	MARTIALIS I	La Graufesenque	Drag 15/17 or 18	50-65
2	VI.38	Illiterate	La Graufesenque?	Drag 27g	40-70

RCP	Phase	Stamp	Source	Form	Date
2	VI.39	PRIMULUS I	La Graufesenque	Drag 15/17	65-90
2	VI.39	SEVERUS I	La Graufesenque	Drag 18	75-95
2	VI.40	BIO	La Graufesenque	Drag 24	40-65
2	VI.40	MODESTUS I	La Graufesenque	Drag 18	45-70
2	VI.40	SEVERUS I	La Graufesenque	Drag 18	75-95
3	VII.4	RUFINUS II	La Graufesenque	Drag 15/17 or 18	70-90
3	VII. 10	CRESTUS	La Graufesenque	Drag 15/17 or 18	70-95
3	VII. 10	FRONTINUS	La Graufesenque	Drag 15/17 or 18	70-90
3	VII. 10	PATRICIUS I	La Graufesenque	Drag 15/17 or 18	65-90
3	VII. 10	Illiterate	La Graufesenque?	Drag 33	55-80
3	VII. 16	CALVUS I	La Graufesenque	Drag 15/17 or 18	65-85
3	VII. 17	-	-	Drag 15/17R or 18R	
3	VII.20	CENSOR I	La Graufesenque	Drag 27g	75-100
3	VII.20	LOGIRNUS	La Graufesenque	Drag 18	70-85
3	VII.20	-	La Graufesenque	Drag 15/17 or 18	55-80
3	VII.23	CALVUS I	La Graufesenque	Drag 27g	70-95
3	VII.24	PRIMUS III	La Graufesenque	Drag 15/17 or 18	60-75
3	VII.24	-	-	Drag 18	
3	VII.27	VERECUNDUS II	La Graufesenque	Drag 27g	70-85
3	VII.29	Illiterate	La Graufesenque?	Drag 27g	55-80
3	VII.32	RUFINUS II	La Graufesenque	Drag 27g	65-90
3	VII.32	SABINUS III	La Graufesenque	Drag 18	50-90
3	VII.41	SECUNDUS II	La Graufesenque	Drag 15/17 or 18	70-90
3	VII.41	-	La Graufesenque?	Drag 27g	55-80
3	VII.43	VIRILIS I	La Graufesenque	Drag 18R	75-95
3	VII.44	PASS(I)ENUS	La Graufesenque	Drag 15/17 or 18	60-75
3	VII.46	-	La Graufesenque	Drag 27g	40-70
4	VII.49	ROPPUS II- RUTUS	Les Martres	Drag 18/31 R	100-20
4	VII.49	SILVINUS III	Les Martres	Drag 27	100-20
4	VII.49	VITALIS III	Les Martres	Drag 18/31	110-30
4	VII.49	Illiterate	La Graufesenque?	Drag 27	70-100
4	VII. 50	CREST10	La Graufesenque	Drag 15/17R or 18R	55-70
4	VII. 50	MASC(U)LUS I	La Graufesenque	Drag 15/17 or 18	60-70
5	VIII.2	BALBINUS	Les Martres	Drag 18/31	100-20
5	VIII. 13	SECUNDINUS II	Les Martres	Drag 27g	100-25
5	VIII. 13	TUTTABILLUS?	La Graufesenque?	Drag 27	60-80
5	VIII. 14	IANVARIUS II	Lezoux	Drag 18/31	130-60
5	VIII. 14	Q. V - C -	Montans?	Drag 46	110-45
5	VIII. 14	-	-	Drag 15/17R or 18R	

Table 4: Newgate Street coins

*=intrusive

RCP	Phase	Denomination	Emperor	Date
1A	III. 24	—	—	E1?-L3RD
1B	Iv.7	as or dupondius	—	E1-L2ND
1B	IV.10	as	Claudius 1 (copy)	44-64
1B	IV.16	as	Claudius 1 (copy)	44-64
1B	IV.19	as	Domitian RIG 351	87*
1B	Iv.19	as	Nero RIC 329	64-6
2	V.1	as	Claudius 1 (copy)	41-54
2	V.8	as	Claudius 1? (copy)	41-54
2	V.17	radiate		L3RD *
2	V.21	as or dupondius		E1-L2ND
2	V.25	dupondius	Nero RIG 304	64-6
2	V.25	as	Titus	77-8
2	V.38	as	Claudius 1 (copy)	41-54
2	V.38	as	Vespasian RIC 486	71

RCP	Phase	Denomination	Emperor	Date
2	V.38	as	Vespasian	69-79
2	V.38	<i>dupondius</i>	Vespasian RIC 479 or 744	71-2
2	VI.1	as	Nero RIC 329	64-6
2	VI.2	as	Vespasian	69-79
2	VI.5	as	Vespasian	69-79
2	VI.5	as	Vespasian	69-79
2	VI.5	—	—	L1 -E3RD
2	VI.7	—	—	L3-L4TH*
2	VI.9	as	Vespasian	71
			RIC 550 (temp Vespasiani)	
2	VI.15	as	Claudius 1 (copy?) RIC 66	41-54
2	VI.15	as	Domitian	73-81
2	VI.18	<i>dupondius</i>	Vespasian RIC 479	71
2	VI.18	<i>dupondius</i>	Vespasian RIC 473 or 739	71-3
2	VI.19	as	Nero?	54?-68?
2	VI.21	as	Domitian RIC 724 or 791A	77-8
2	VI.21	as	Hadrian	117-38*
2	VI.21	as	M Aurelius	161-92*
2	VI.21	radiate	-	L3RD*
2	VI.27	as	Titus RIC Vesp 785	77-8
2	VI.28	as	-	E1-E2ND
2	VI.37	as	Domitian	87
2	VI.38	as	Claudius 1 (copy?)	44-64
3	VII.4		-	E3-L4TH?*
3	VII.6	<i>sestertius</i>	Domitian	86-9
3	VII.6	as	-	L1-E2ND
3	VII.6		-	L1-E3RD
3	VII.8	<i>semis</i>	Nero RIC 396	64-6
3	VII.10	as	Nero?	LIST?
3	VII.11	<i>denarius</i>	Nero RIC 55	63-8
3	VII.14	<i>as or dupondius</i>	Vespasian	69-79
3	VII.14	-	—	E3-L4TH?*
3	VII.15	as	Claudius 1 (copy) RIC 66	41-54
3	VII.15	as	Vespasian?	69?-79?
3	VII.20	as	Claudius 1 (copy?)	M1ST
3	VII.20	as	Domitian RIC 351	87
3	VII.20	as	Domitian	84-96
3	VII.20	as	Domitian	84-96
3	VII.20	as	Vespasian BMC 820	72
3	VII.29	as	Trajan	98-117
3	VII.29	as	Vespasian RIC 399	70-1
3	VII.33	as	Domitian	84-96
3	VII.37	<i>as or dupondius</i>	Vespasian RIC 470 or 500	71
4	VII.49	<i>dupondius</i>	Domitian	81-96
4	VII.49	<i>quadrans</i>	Domitian RIC 434	81-96
4	VII.49	as		E1-L2ND
5	VIII.2	as	Vespasian RIC 764B	77-8
5	VIII.3	<i>antoninianus</i>	Carausius	286-93*
5	VIII.3	<i>dupondius</i>	Domitian RIC 404 or 406	88-9
5	VIII.4	as	Claudius 1 ?	M1ST?
5	VIII.7	as	Vespasian RIC 497	71-3
5	VIII.7	as	Vespasian/Titus	71-3
5	VIII.9	<i>antoninianus</i>	Carausius	286-93*
5	VIII.11	as	Hadrian RIC 577B	119
5	VIII.13	<i>sestertius</i>	M Aurelius RIC 922	170-1*
5	VIII.13	<i>denarius</i>	Plautilla RIC Caracalla 367	202-5*
5	VIII.13	as?	Vespasian?	69?-79?
5	VIII.13	radiate		L3RD*
5	VIII.14	<i>antoninianus</i>	Claudius 2 (copy?) FUC 30	268-70*

18 Birchin Lane, EC3 (BIR83)

Supervisor: L Miller
Funded by Speyhawk and Scottish Equitable

A watching brief and small-scale excavation resulted in much of the site being recorded in section, although a large area was disturbed. Initial occupation was covered with dumping on which five buildings of clay and timber construction were noted; most were subsequently burnt down by a fire attributed to the Boudiccan destruction. At this point the site was truncated by modern activity, although Saxon, medieval and post-medieval pits could be identified. The

Roman sequence will be published by Williams (forthcoming). The material studied here comes from the construction and use of Building 2 and its associated open area. The building was constructed on brickearth slabs which overlaid the previous dumping; it was destroyed by fire.

A single corroded and worn coin was associated with the construction of Building 2. It was difficult to identify and date, but fell between the 1st to early 3rd centuries. The pottery associated with these features was exclusively pre-Boudiccan and is included with RCP 1A. Two samian stamps came from the pre-Boudiccan levels, although not associated with Building 2.

Table 5: Birchin Lane samian stamps

** unquantified feature

Stamp	Source	Form	Date
**BASSUS I	La Graufesenque	Drag 18	45-65
**MURRANUS	La Graufesenque	Drag 29	50-65

Table 6: Birchin Lane coins

Denomination	Emperor	Date
<i>sestertius</i>	Claudius 1 (copy)	1-E3RD

28-32 Bishopsgate, EC3 (BOP82)

Supervisor: C Evans
Funded by the Standard Charter Bank

The area was subjected to an open plan excavation, which revealed a sequence of buildings (timber and brickearth), earthen banks and a street dating from the Neronian or earlier to the early Antonine period. Rare late Roman features were identified, as well as others up to the post-medieval period. The Roman sequence will be published by Williams (forthcoming).

The material included here with RCP 5 derives from a large pit (Pit 345) which may have been initially dug as a gravel quarry and was subsequently backfilled with substantial amounts of diverse rubbish (glass, animal bone, mortar, wall plaster, *opus signinum*, dressed marble, bone objects, metal objects), as well as large amounts of pottery. Many of the sherds were from near-complete vessels, with a particularly large proportion of amphorae, suggesting that much of the

assemblage was dumped in one operation. Tyers (1984a, 374) has suggested that due to the size and functional composition of the assemblage 'it is not the debris of a small household; rather it could be from the kitchens of a more substantial private dwelling or perhaps even a "cookshop" of some type'.

The assemblage contained only a single coin, a worn (*as* of Trajan (98?-102)). The dating, therefore, is largely dependent on the samian, which includes seven legible stamps including early Antonine ones from Les Martres-de-Veyre and Lezoux. Unstamped samian includes an almost complete example of an early Walters type 81 bowl, a form little known before the Antonine period which points towards a date c 140-50, and a complete decorated Drag 37 bowl from Montans dated to the Hadrianic and very early Antonine period, not later than 150 (Simpson 1984, 368). The samian clearly points to a date of c 125-50 for deposition of the group and this is not contradicted by the coarse wares.

Table 7: Bishopsgate samian stamps

Stamp	Source	Form	Date
ARCANUS	Lezoux	Drag 18/31	125-40
CARANTUS I	La Graufesenque	Drag 27g	70-100

Stamp	Source	Form	Date
DONNAUCUS	Les Martres	Drag 27	100-20
L COSIUS VIRILIS	La Graufesenque	Drag 18R or 18/31R	80-110
MATERNUS II	La Graufesenque	Drag 18	75-100
MODESTUS I	La Graufesenque	Drag 15/17 or 18	50-70
REGINUS II	Les Martres	Drag 18/31	115-35
Illiterate	Lezoux?	-	120-40 or 140-60
	La Graufesenque?	Drag 27g	40-70
	Lezoux?	Drag 27	120-40 or 140-60

Table 8: Bishopsgate coins

Denomination	Emperor	Date
as	Trajan	98?-102

66-73 Cornhill, EC3 (CNL81)

Supervisor: P A James
Funded by J.L.W. Project Services on behalf of the owners, The Worshipful Company of Grocers

The site was adjacent to the north side of the second Hadrianic basilica. Archaeological investigation along the northern frontage of Cornhill was divided into six trenches; one trench was excavated in plan and watching briefs were carried out on the others. Earliest activity was represented by a sequence comprising a pit, redeposited brickearth and a ditch. This was followed by a structural sequence of four buildings (timber and brickearth) and a road, with associated

drainage ditches. Final late Roman deposits were truncated by Victorian basements and several other undated features. The Roman sequence will be published by Williams (forthcoming).

Included among the quantified data was Trajanic (RCP 3) material from the construction of Road 1 and an associated pit, south of and most likely contemporary with Building 1, and the disuse of a drainage ditch (117) filled with Hadrianic pottery (RCP 4). Coins and samian stamps were absent from the road, although a stamp dated 65-95 is associated with the same phase as Road 1. The Hadrianic ditch contained two 1st century residual samian stamps from La Graufesenque, although only one is legible.

Table 9: Cornhill samian stamps

** unquantified feature

RCP	Stamp	Source	Form	Date
**3	PRIMULUS I	La Graufesenque	Drag 15/17 or 18	65-95
4	CALVUS I	La Graufesenque	Drag 18	70-85
4	-	La Graufesenque	Drag 36	1ST

5-12 Fenchurch Street, EC3 (FEN83)

Supervisor: F Hammer
Funded by Land Securities Ltd

Excavation took place in seven areas and numerous sections were recorded across unexcavated areas. A complex Roman building sequence, including both timber- and masonry-founded buildings, dated from the pre-Boudiccan period through the Hadrianic fire. After this Roman occupation continued to c 350, represented by three additional buildings and several late Roman wells and pits. The site was then covered in dark earth, above which seven successive road surfaces were recorded. The Roman sequence will be published by Williams (forthcoming). Material incorporated here is from the pre-Boudiccan sequence

(RCP 1A) and Hadrianic fire debris (RCP 4).

The pre-Boudiccan period was one of intense building activity, and the quantified pottery is from selected buildings (6, 11, 12, 37, 41) and open areas (3, 5, 7, 8, 10, 11), none of which represent the very earliest activity on site. Building 6 was a post-built one-room structure, with an entrance on the east leading into Open Area 3, which contained several hearths. This building, together with three other contemporary ones, respected property divisions which stayed in use for much of the sequence. Following this, Building 37, with brickearth sills, was constructed over Building 6. This was a multi-phase structure, involving alterations in internal divisions. The building was probably open-sided on the east, to Open Area 5 (OA5), which was shared with two other buildings. Bronze fragments deposited in a pit may indicate an industrial use of the

area. Building 37 was then abandoned and Building 12 (phase 1), with masonry foundations, was subsequently constructed in OA5 and over Building 37. Dumping covered much of the remaining surfaces of OA5, and these later deposits are referred to as OA7. East of Building 12, brickearth slabs were laid for the construction of Building 11, also over OA5. Later it was extended almost as far as Building 12, although a small external area (OA8) of dumping and at least one hearth existed between the two buildings. Building 12 (phase 2) was then extended to the north, over much of OA7. A small, temporary lean-to, perhaps associated with the expansion of Building 12, and designated Building 41, was soon abandoned. Building 11 was then completely sealed by dumping, and two additional open areas (10 and 11) were associated with Building 12. After further building activity, some of the site was destroyed by a fire, interpreted as the Boudiccan destruction. Because of subsequent clearing for Flavian activity there was little overall evidence of its debris on site.

Eight coins came from quantified deposits: six were Claudian, the other two were poorly identified, one from OA7 dated 40-270, and an intrusive *antoninianus*

(270) from OA11. Two additional intrusive 3rd century coins came from unquantified deposits. Nine samian stamps, seven from quantified deposits, are summarized below. These conform to the pre-Boudiccan date, apart from an intrusive one dated 120-60 from unquantified Building 40. The pre-Flavian pottery from Fenchurch Street is exceptional in its quality, containing a high proportion of imported fine wares; it has been discussed separately elsewhere (Chadburn & Tyers 1984).

Intense building activity continued in the Flavian and Trajanic periods, including the continuation of Building 12, although pottery from those groups is not included here. However, the destruction of three of these buildings (22, 24, 49), associated with the Hadrianic fire, are presented with RCP 4. Of these, Building 22 is exceptional, having some masonry walls and a thick *opus signinum* floor in one room. It is from this building, possibly the kitchen, that the unusually complete amphorae and the Pompeian Red ware fabric 3 vessels derive. Two samian stamps from Les Martres-de-Veyre, with an end date of 120/30, provide good evidence for the Hadrianic fire; the only coin cannot be precisely identified.

Table 10: Fenchurch Street samian stamps

** unquantified feature

* intrusive

RCP	Stamp	Source	Form	Date
1A	BASSUS I	La Graufesenque	Drag 24	45-65
1A	DAMONUS	La Graufesenque	Drag 24	35-65
**1A	GALLICANUS	La Graufesenque	Drag 24/25	45-65
1A	PASS(I)ENUS	La Graufesenque	Drag 27	50-65
1A	PASS(I)ENUS	La Graufesenque	Drag 29	50-65
1A	SENICIO	La Graufesenque	Drag 29	45-65
1A	-	La Graufesenque?	Drag 15/17 or 18	55-70
1A	-	La Graufesenque?	Drag 24	55-70
**1A	-	Lezoux?	Drag 18/31R	120-60
4	DAGOMARUS	Les Martres	Drag 18/31?	100-30
**4	SACER VASIL-	Les Martres	Drag 18/31	100-20

Table 11: Fenchurch Street coins

RCP	Denomination	Emperor	Date
1A	<i>sestertius</i>	Claudius 1	41-3
1A	<i>as</i>	Claudius 1 (copy)	50
1A	<i>as</i>	Claudius 1? (copy)	50
1A	<i>as</i>	Claudius 1 (copy)	50
1A	<i>as</i>	Claudius 1 (copy)	50
1A	<i>antoninianus</i>		270*
**1A	<i>denarius</i>	Caracalla/Elagabalus	211-22"
**1A	<i>antoninianus</i>		c 250*
1A			40-270
4			El -L3RD

25-6 Lime Street, EC3 (LIM83)

Supervisor: T Williams

Funded by Hunting Gate Developments Ltd for the Worshipful Company of Clothworkers

An excavation and watching brief provided a stratified sequence. The site included a series of clay and timber domestic/commercial buildings and their associated open areas. In the late Roman period these were replaced by more substantial buildings with stone foundations. Various Saxon, medieval and later features were also recorded. The Roman sequence will be published by Williams (forthcoming).

The earliest activity, represented by Open Area 1 (OA1), consisted of redeposited brickearth with a north-south linear cut, possibly a drainage ditch or boundary. Other features included stake- or post-holes, a pit, a possible quarry pit and a cremation urn. These features were backfilled and make-up dumps of gravel and brickearth were laid in preparation for the construction (most likely with wattle and daub walls) of the east-west aligned brickearth Building 1. A small portion of a second building, Building 2, was present in the excavated area and may have been part of the same structure as Building 1. An open area (OA2) may have served as a yard to Building 1 or provided access to both buildings, which were subsequently destroyed by a fire. This has been interpreted as the Boudiccan fire and its debris extended over OA2. The entire sequence is pre-Boudiccan (RCP 1A), and includes a samian stamp dated 45-65.

Material assigned to RCP 1B and 2 is associated with OA3 (phases 1-5, 7-9), an area which had a long life with successive phases of pits. In its first phases, it served as a yard for rubbish disposal, although during the Flavian period (phase 7) it seems to have been a courtyard, featuring a pillar base composed of bonded tiles. Still within the Flavian period the feature was sealed by dumping, and a further sequence of cuts and dumps followed (phases

8-9). Features from RCP 1B include a mid 1st century as of Claudius 1, and four samian stamps of which the latest dates from 55-80. The other stamps support the earlier range within this period.

During the Trajanic period the building sequence resumed, represented by a brickearth-silled strip building and an alleyway. Material included in RCP 3 belongs to the construction and use of Building 3, together with associated open areas. Its layout was similar to that of Building 1, suggesting that the same thoroughfare was used, although the actual placement of the building had moved. This was probably due to the protracted use of OA3. The open areas associated with RCP 3 are a pit (phase 4, Pit 674), and external dumping (phase 9) from OA3, together with Pit 892 and the use of Ditch 895 from OA4. Five coins, generally corroded, were recovered from these features, of which three could be positively identified. These include a *denarius* of Vespasian (77-8), a *sestertius* of Trajan (104-111), a mid 1st century as of Claudius 1; an as? (early 1st-late 3rd century) was tentatively identified. A total of twelve samian stamps came from these features, and apart from Roppus II-Rutus (11 O-30) are Flavian or earlier.

The Hadrianic period (RCP 4) saw the destruction of the buildings by fire, including Buildings 3 and 5, the latter a masonry-founded structure located across the alleyway from Building 3 and associated with external surfaces and dumps and the disuse of Ditch 895 from OA4. A single *dupondius* (98-1 17) was associated with these features, together with two residual samian stamps.

The destruction of the buildings was followed by varied activity, including robbing and cutting, which was sealed by extensive dumps of redeposited fire debris included with RCP 5. A single residual samian stamp was identified from these features.

During the Antonine period there was continued structural activity, involving substantial masonry buildings which may have continued in use until the mid-late 4th century.

Table 12: Lime Street samian stamps

RCP	Stamp	Source	Form	Date
1A	BASSUS I	La Graufesenque	Drag 24	45-65
1B	ARDACUS	La Graufesenque	Drag 15/17 or 18	40-60
1B	MODESTUS I	La Graufesenque	Rt 9	45-65
1B	NIGER II	La Graufesenque	Drag 15/17 or 18	Neronian-early Flavian
1B	-	La Graufesenque?	Drag 27g	55-80
	CENSOR I	La Graufesenque	Drag 18	65-90
3	CENSOR I	La Graufesenque	Drag 18	65-90
3	CESTIO	La Graufesenque	Drag 15/17 or 18	55-70
3	C. SILVIUS PATRICIUS	La Graufesenque	Drag 29	70-85
3	LOGIRNUS	La Graufesenque	Drag 18	70-90
3	MOMMO	La Graufesenque	Drag 27g	60-80
3	ROPPUS II-RUTUS	Les Martres	Drag 18/31R	110-30
3	VITALIS II	La Graufesenque	Drag 29	70-85

RCP	Stamp	Source	Form	Date
3	-	La Graufesenque?	Drag 15/17 or 18	pre-Flavian
3	-	La Graufesenque?	Drag 18	pre-Flavian
3	-	La Graufesenque?	Drag 27	Neronian- early Flavian
3	-	La Graufesenque?	Drag 27g	pre-Flavian
4	PONTUS? (cursive from mould)	La Graufesenque	Drag 37	75-90
4	SABINUS III	La Graufesenque	Drag 33	70-90
5	SECUNDUS II	La Graufesenque	Drag 15/17 or 18	70-90

Table 13: Lime Street coins

RCP	Denomination	Emperor	Date
1B	<i>as</i>	Claudius 1	M 1 S T
3	<i>denarius</i>	Vespasian	77-8
3	<i>sestertius</i>	Trajan	104-11
3	<i>as</i>	Claudius 1	M 1 S T
3	<i>as?</i>	-	E 1 - L 3 R D
3		-	
4	<i>dupondius</i>	Trajan Dec	98-117

4-12 Monument Street, 17 Fish Street Hill, EC4 (MF187)

Supervisors: P Rowsome and M Burch
Funded by Olympia and York

Excavation of a small open area took place on this site, and revealed a 1st century Roman structural sequence, followed by isolated medieval and post-medieval features, all of which were truncated by 19th century activity. Evidence for initial activity on the site was provided by a large quarry pit which was then filled with a brickearth platform. This was followed by the structural sequence, represented by two Roman buildings, both reflecting the alignment of the main

Roman street to the east, which ran from the bridge to the forum. A timber-lined well, and two features of similar dimension which may have been intended as wells, were associated with this occupation-

The material included here with RCP 1B derives from use of the well, associated with the later building, Building 2. After the collapse of the well lining the feature was reused as a domestic refuse pit, and contained large amounts of glass, bones and organic material, as well as a homogeneous pottery assemblage suggestive of a single deposition. The lowest fill of the well contained a *sestertius* dated to 71. Eleven samian stamps were recovered, and, taking evidence of wear into consideration, date between 71 and 75; this is additionally supported by the decorated bowl stamped by Peregrinus I suggesting a date range of 65-75/80 (Dickinson 1992).

Table 14: Monument Street samian stamps

Stamp	Source	Form	Date
BIO	La Graufesenque	Drag 27g	45-65
COTTO II	La Graufesenque	Rt 8	60-5
LAB10	La Graufesenque	Rt 8	55-65
PEREGRINUS I	La Graufesenque	Drag 29	65-80
PONTUS	La Graufesenque	Drag 15/17R or 18R	70-95
PONTUS	La Graufesenque	Drag 27g	65-90
RUFINUS III	La Graufesenque	Drag 27g	70-90
	La Graufesenque	Rt 8	pre-Flavian
	La Graufesenque	Drag 27	Flavian
	La Graufesenque	Drag 27g	Flavian
	La Graufesenque	Drag 27g	Flavian

Table 15: Monument Street coins

Denomination	Emperor	Date
<i>sestertius</i>	Vespasian RIC 427	71

Pudding Lane, 118-27 Lower Thames Street, EC3 (PDN81)

Supervisor: G Milne
Funded by the English Property Corporation, National Provident Institution, Land Securities (Management) Ltd; Verronworth and Vitiglade Ltd; Department of the Environment

A large-scale excavation in six areas and a subsequent watching brief took place on this waterfront site (Bateman & Milne 1983). The Roman piled embankment, timber landing stage and late 1st century timber quay were identified, in association with two warehouse buildings. Remnants of a possible timber bridge

pier was also recorded on the foreshore. In addition, a large mid to late Roman masonry building and mud-brick buildings were present on site. Post-Roman occupation included Saxon pits and wells and some structural evidence, as well as stone foundations of later medieval buildings.

The material included in the corpus all derives from dumps behind Quay 3 (amalgamated with E Quay in Milne 1985, 35) and contains exceptionally high proportions of amphorae, presumably due to its waterfront location. It is grouped here with RCP 2. A single, unidentifiable copper coin was retrieved, dated to the 2nd-3rd century, and fourteen samian stamps, the latest of which dated 75-100. The dendrochronology places this quay after 96 and before 106 (*ibid*).

Table 16: Pudding Lane samian stamps

Stamp	Source	Form	Date
CREST10	La Graufesenque	Drag 18	50-70
MURRANUS	La Graufesenque	Drag 24	50-65
NEQUIRES	La Graufesenque	Drag 27g	70-85
PEREGRINUS I	I-a Graufesenque	Drag 18	75-100
VIRTUS I	La Graufesenque	Drag 15/17 or 18	70-90
VITALIS I	La Graufesenque	Drag 24	50-65
Illiterate	La Graufesenque?	Drag 27g	55-80
	La Graufesenque	Drag 29	55-80
	La Graufesenque	Drag 27g	55-70
	La Graufesenque?	Drag 15/17R or 18R	55-80
	La Graufesenque?	Drag 18	55-80
	La Graufesenque?	Drag 27	55-80
	La Graufesenque?	Drag 29	55-70
-	La Graufesenque?	Drag 29	55-80

Table 17: Pudding Lane coins

Denomination	Emperor	Date
-	-	2-3RD?

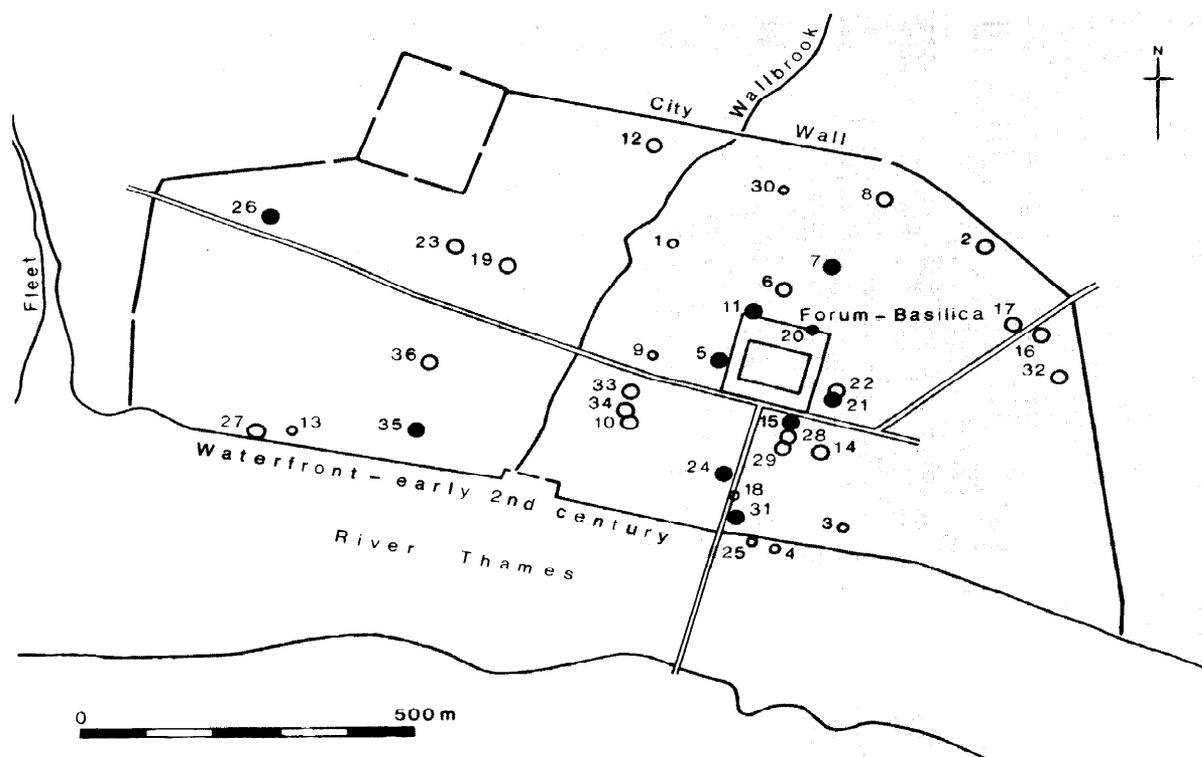


Fig 182 Location map of London sites in text. Key: ● quantified sites ○ sites systematically searched ○ other sites mentioned in text (p 2)

- | | | | |
|----|--|----|--|
| 1 | Angel Court , 30-5 Throgmorton Street EC2 (ACW74) | 21 | Avenue EC3 (LCT84) |
| 2 | 5-9 and 13-16 Bevis Marks EC3 (BEV80) | 22 | 25-6 Lime Street EC3 (LIM83) |
| 3 | Billingsgate Buildings 'Triangle', 101-10 Lower Thames Street EC3 (TR74) | 23 | 27-30 Lime Street EC3 (IME83) |
| 4 | Billingsgate Market Lorry Park, Lower Thames Street EC3 (BIG82) | 24 | 1-6 Milk Street EC2 (MLK76) |
| 5 | 18 Birchin Lane EC3 (BIR83) | 24 | 4-12 Monument Street , 17 Fish Street Hill EC4 (MF187) |
| 6 | 3-5 Bishopsgate EC2 (HOP83) | 25 | New Fresh Wharf , Lower Thames Street EC3 (NFW74) |
| 7 | 28-32 Bishopsgate EC2 (BOP82) | 26 | 76-80 Newgate Street , now British Telecom Headquarters, 81 Newgate Street EC1 (GP075) |
| 8 | 76-86 Bishopsgate EC3 (BIS82) | 27 | Peter's Hill , 223-5 Upper Thames Street EC4 (PET81) |
| 9 | Bucklersbury (Docklands Light Railway Shaft) EC4 (BUC87) | 28 | 7-8 Philpot Lane EC3 (HIL84) |
| 10 | 119-21 Cannon Street , 1-3 Abchurch Yard, 1 Sherbourne Lane EC4 (LIB82) | 29 | 9-10 Philpot Lane EC3 (POT82) |
| 11 | 66-73 Cornhill EC3 (CNL81) | 30 | Pinner's Hall , Great Winchester Street, 8 Austin Friars Square, 105 Old Broad Street EC2 (GWS89) |
| 12 | 2-3 Cross Keys Court , Copthall Avenue EC2 (OPT81) | 31 | Pudding Lane , 118-27 Lower Thames Street EC3 (PDN8 1) |
| 13 | Dominant House , 85 Queen Victoria Street EC4 (DMT88) | 32 | 1-12 Rangoon Street , 61-5 Cruched Friars EC3 (RAG82) |
| 14 | 27-9 Eastcheap EC3 (EST83) | 33 | 19 St Swithin's Lane EC4 (SSL84) |
| 15 | 5-12 Fenchurch Street EC3 (FEN83) | 34 | 18-23 St Swithin's Lane , 113-14 Cannon Street EC4 (WIT83) |
| 16 | 86 Fenchurch Street (George Public House) EC3 (PUB80) | 35 | Sugar Loaf Court , 14 Garlick Hill EC4 (SL082) |
| 17 | 94-7 Fenchurch Street EC3 (FST85) | 36 | Watling Court , 41-53 Cannon Street EC4 (WAT78) |
| 18 | 37-40 Fish Street Hill , 16-20 Monument Street EC3 (FM085) | | |
| 19 | 24-5 Ironmonger Lane EC2 (IR080) | | |
| 20 | Leadenhall Court , 91- 100 Gracechurch Street, 1-6 Leadenhall Street, 2-12 Whitting | | |

Sugar Loaf Court, 14 Garlick Hill, EC4 (SL082)

Supervisor: M Baker
Funded by the Royal Bank of Canada

A two-stage excavation revealed pre-Boudiccan through post-medieval features. Much of the site was taken up by a medieval undercroft; also notable were some Saxon/early medieval features. The site was excavated in five areas and ten chronological phases

were identified; the pottery here relates to the first three phases in areas A-D. The majority of Roman occupation was 1st century, but in some areas the structural sequence appears to have continued into the 2nd century.

The material here comes from early timber building sequences in Phases I and II and associated features of pre-Boudiccan date (RCP 1 A), overlain by late Neronian demolition and dumps (Phase III, RCP 1B). No coins were associated with the groups, but four stamps, none later than 65, were from quantified deposits or their associated phases.

Table 18: Sugar Loaf Court samian stamps

** unquantified feature

RCP	Stamp	Source	Form	Date
**1A	ALBUS I	La Graufesenque	Drag 27g	50-65
**1A	MACCARUS	La Graufesenque	Drag 15/17 or 18	40-65
**1A	PRIMUS III	La Graufesenque	Drag 15/17 or 18	45-60
1B	MASC(U)LUS I	La Graufesenque	Drag 15/17 or 18	45-65

Appendix 2: Concordance of common name codes

Code	Expansion	Code	Expansion
AHSU	Alice Holt Surrey ware	LOEG	Local Eggshell ware
AMVPH	Unclassified amphorae	LOMA	Local Marbled ware
AOMO	Aoste mortaria	LOMI	Local Mica-dusted wares
BB1	Dorset Black-burnished ware	LONW	London ware
BB2	(Wheelmade) Black-burnished wares	LONW-STD	Stamped London ware
BBS	Black-burnished Style wares	LOX1	Local Oxidized wares
BHWS	Brockley Hill White-slipped ware	LYON	Lyon ware
BLEG	Black Eggshell ware	MICA	Other Mica-dusted wares
C186	Camulodunum 186 amphorae	MISC	Miscellaneous wares
C189	Camulodunum 189 amphorae	MLEZ	Micaceous Lezoux samian ware
CCGW	Cophall Close Grey ware	MONT	Montans samian ware
CGBL	Central Gaulish Black ware	MORT	Mortaria
CGCC	Central Gaulish Colour-coated wares	NACA	North African Cylindrical amphorae
CGGW	Central Gaulish Glazed wares	NFSE	North French/Southeast English wares
CGOF	Central Gaulish Other fabric	NGGW	North Gaulish Grey wares
CGWH	Central Gaulish White ware	NKFW	North Kent Fine ware
COLC	Colchester Colour-coated ware	NKSH	North Kent Shelly ware
DR20	Dressel 20 amphorae	NKWS	North Kent White-slipped ware
DR28	Dressel 28 amphorae	OXID	Oxidized wares
ECCW	Eccles ware	PE47	Gauloise amphorae
ERMS	Early Roman Micaceous Sandy ware	PRW 1	Pompeian Red ware, fabric 1
ERS	Early Roman Sandy wares	PRW2	Pompeian Red ware, fabric 2
ERSA	Early Roman Sandy ware A	PRW3	Pompeian Red ware, fabric 3
ERSA/B	Early Roman Sandy ware A/B	R527	Richborough 527 amphorae
ERSB	Early Roman Sandy ware B	RBGW	Romano-British Glazed ware
ERSI	Early Roman Sandy Iron-rich ware	RBMA	Romano-British Marbled ware
ERSS	Early Roman Sand and Shell ware	RDBK	Ring-and-dot Beaker fabrics
FINE	Other Fine Reduced wares	RHMO	Rhineland mortaria
FMIC	Fine Micaceous wares	RHOD	Rhodian and Rhodian-type amphorae
G 236	Atisii-type or Gillam 236 mortaria	RUST	Rusticated ware
G 238	Hartley Group II or Gillam 238 mortaria	RVMO	Rhone Valley mortaria
GBWW	Gallo-Belgic White wares	SAM	Samian ware
GLMO	Gloucester mortaria	SAND	Unsourcesd Sandy Grey wares
GROG	Grog-tempered wares	SESH	South Essex Shelly ware
H70	Haltern 70 amphorae	SGCC	South Gaulish Colour-coated ware
HOO	Hoo ware	SHEL	Shelly wares
HWA	Highgate Wood A ware	SLOW	Sugar Loaf Court ware
HWB	Highgate Wood B ware	SPAN	Spanish Colour-coated ware
HWB/C	Highgate Wood B/C ware	SUG	East Sussex Grog-tempered ware
HWBR	Highgate Wood Red-slipped ware	TN	Terra Nigra
HWC	Highgate Wood C ware	TNIM	Imitation Terra Nigra
HWC+	Highgate Wood C+ ware	VCWS	Verulamium Region Coarse White-slipped ware
ITMO	Italian mortaria	VRG	Verulamium Region Grey ware
K117	Kingsholm 117 amphorae	VRMA	Verulamium Region Marbled ware
KOAN	Dressel 2-4 amphorae	VRMI	Verulamium Region Mica-dusted ware
KOLN	Cologne ware	VRR	Verulamium Region Red ware
Is 55	'London 555' amphorae	VRW	Verulamium Region White ware

Appendix 3: Summary of illustrated sherds

The following concordance provides dating evidence for the illustrated sherds (numbers 1-909, 948, 970); dating of the type, where it can be provided, is in the text. The phase date incorporates available information from other classes of finds and site stratigraphy, and wherever available supersedes the date derived from pottery alone. Entries with an accession number (acc), but no site or context, are from the Museum of London Reserve Collection; those denoted by an ER number under context are from pre-DUA excavations. Numbers 1-909 refer to illustrations used in the corpora presented in Chapters 2-6; numbers 910-1147 refer to the phase groups in Chapter 7 and in most cases are the same drawings as 1-909. Phase dates rely either on broad date ranges or the following codes:

PREB	Pre-Boudiccan
PREF	Pre-Flavian
NERO	Neronian
NEEF	Neronian-Early Flavian
LINEF	Late Neronian - Early Flavian
FLAV	Flavian
FLTR	Flavian-Trajanic
TRAJ	Trajanic
TRHA	Trajanic-Hadrianic
HADR	Hadrianic
HEAN	Hadrianic - Early Antonine
EANT	Early Antonine
ANTO	Antonine
PR	Post-Roman
*	Intrusive
+	Unstratified

No	Fabric	Form	Site	Context	Acc	Pottery Date	Phase Date	Previous Publication
1	DR20	—	FMO85	5 1 4	—	—	NEEF	
2	DR20	—	FMO85	3 0 7	—	—	NEEF	
3	DR20	—	—	—	11293/ 13200	—	—	
4	H70	—	LCT84	9819	—	—	FLAV	
5	H70	—	—	ER173	—	—	—	
6	H70	—	FEN83	1951	—	—	NEEF	
7	H70	—	FEN83	2482	—	—	FLAV	
8	H70	—	FEN83	2288	—	—	HADR	
9	H70	—	PDN81	1869, 1984, 2350	—	—	FLAV/FLAV/ NERO	
10	DR28	—	FMO85	406	—	—	NEEF	
11	DR28	—	FMO85	406	—	—	NEEF	
12	DR28	—	FMO85	406	—	—	NEEF	
13	C 186-1176	—	—	—	A23584	—	—	
14	C 186-1176	—	PDN81	1812?	—	—	M/L4TH	
15	C 186-1176	—	PDN81	1869	—	—	FLAV	
16	C 186-2848	—	BIR83	111	—	—	NERO	
17	C 186-2848	—	KNG86	586	—	50-70	—	
18	L555	—	—	—	A 14699	—	—	Sealey & Tyers 1989, fig 2, 2
19	L555	—	FEN83	2288	—	—	HADR	
20	L555	—	PDN81	2350	—	—	NERO	
21	L555	—	FMO85	406	—	—	NEEF	
22	L555	—	PDN81	2305	—	—	NERO	
23	PE47	G4	—	—	83,461/85	—	—	
24	PE47	G4	LCT84	9915	—	—	FLAV	
25	PE47	G5	—	—	86.36/27	—	—	
26	PE47	G5	PDN81	1338	—	—	FLAV	
27	PE47	G1	TR74	430	—	—	FLAV	Green 1980b, fig 21, 38
28	PE47	GE	TR 74	—	—	—	—	

No	Fabric	Form	Site	Context	Acc	Pottery Date	Phase Date	Previous Publication
29	PE47	G1	PDN81	+	—	—	—	
30	PE47	G1VAR	—	—	A23548	—	—	
31	PE47	G3	—	—	25/094	—	—	Green 1980b, fig 20
32	PE47	G3	—	—	42.55/3	—	—	
33	PE47	G3	PDN81	1894	—	—	FLAV	
34	PE47	G3	FM085	538	—	—	NERO	
35	KOAN-2385	—	—	—	21110	—	—	
36	KOAN-2385	—	—	—	93.185	—	—	
37	KOAN-3786	—	WIV88	2157	—	70-85	—	
38	KOAN-3488	—	PDN81	+	—	—	+	
39	KOAN-3786	—	WIV88	2157	—	70-85	—	
40	KOAN-4127	—	LCT84	9944	—	—	FLAV	
41	R527	—	—	—	17416	—	—	Green 1980b, fig 21
42	RHOD- 1522	DR43	—	—	35.134	—	—	
43	RHOD- 1894	C184	TR74	430	—	—	FLAV	Green 1980b, fig 20, 32
44	RHOD-1894	C184	—	ER639	—	50-70	—	
45	RHOD-3745	C184	—	—	A14700	—	—	Peacock 1977e, fig 3, 8
46	RHOD-2592	C184	BOP82	140	—	—	EANT	Tyers 1984a, fig 2, 2
47	RHOD-2592	C184	BOP82	1091	—	—	EANT	
48	C189	—	—	—	P129	—	—	
49	C189	—	FEN83	2325	—	—	PREF	
50	K117	—	—	ER639	—	50-70	—	
51	NACA	—	BOP82	1091	—	—	EANT	Tyers 1984a, fig 2, 3
52	SLOW-2563	IA	SLO82	81	—	—	NEEF	
53	SLOW-2565	IA	SLO82	86, 92, 115	—	—	NEEF/PREB/PREB	
54	SLOW-2565	IA	SLO82	92	—	—	NEEF	
55	SLOW-2565	IA	FEN83	3388	—	—	PREB	
56	SLOW-2626	IA	GPO75	10858	—	—	FLAV	
57	SLOW-2565	IEVAR	ORG86	1086	—	50-80	—	
58	SLOW-2566	IJ	QNV86	50	—	50-80	—	
59	SLOW-2563	I	SLO82	305	—	—	PREB	
60	SLOW-2565	IIA	SLO82	205	—	50-80	—	
61	SLOW-2565	IIK	FEN83	3380	—	—	PREB	
62	SLOW-2566	IINJ	FEN83	3468	—	—	PREB	
63	SLOW-2566/ 2626	IINJ	FEN83	3145	—	—	PREB	
64	SLOW-2566	IINJ	FEN83	3356	—	—	PREB	
65	SLOW-2626	IINJ	ORG86	933	—	50-80	—	
66	SLOW-2626	IINJ	SLO82	81, 98	—	—	NEEF	
67	SLOW-2565	II	FEN83	3145	—	—	PREB	
68	SLOW-2565	IT	FEN83	3380, 3356	—	—	PREB	
69	SLOW-2563	II	CS75	265	—	—	FLTR	Green 1979, fig 10, 44
70	SLOW-2565	IIIB	ORG86	1034	—	50-80	—	
71	SLOW-2565	IIIB	FEN83	3357, 3388	—	—	PREB	
72	SLOW-2563	IIIB	FEN83	3388	—	—	PREB	
73	SLOW-2563	III	FEN83	3388	—	—	PREB	
74	SLOW-2563	IIIB	—	—	94.91	—	—	
75	SLOW-2565	III	SLO82	243	—	—	PREB	
76	SLOW-2565	III	ORG86	1046	—	50-80	—	
77	SLOW-2563	III	GPO75	5883	—	—	FLAV	
78	SLOW-2566	IVA	FEN83	3388	—	—	PREB	
79	SLOW-2566	IVA	FEN83	3388	—	—	PREB	
80	SLOW-2565	IV	SLO82	111	—	—	PREB	
81	SLOW-2566	IV	SLO82	92	—	—	PREB	
82	SLOW-2566	IVK	FEN83	1951	—	—	NEEF	
83	SLOW-2566	IV	SLO82	305	—	—	PREB	
84	SLOW-2626	VA	BIR83	115	—	—	PREB	
85	SLOW-2565	VI	FEN83	3325	—	—	PREB	
86	SLOW-2565	VI	FEN83	3353	—	—	PREB	
87	SLOW-2565	VI	FEN83	3353	—	—	PREB	
88	SLOW-2565	VI	FEN83	3356	—	—	PREB	
89	SLOW-2566	VIIWAL	FSE76	11	—	—	NERO	
90	SLOW-2566	VIIHOF	SLO82	98, 100, 132, 166	—	—	NEEF/NEEF/ NEEF/PREB	
91	SLOW-2566	VIIHOF	FS68	2061	—	—	—	
92	SLOW-2566	VIIHOF	SLO82	169	—	—	PREB	

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93	SLOW-2566	VIIHOF	FMO85	574	-	-	NERO	
94	SLOW-2566	VIIHOF	FMO85	574	-	-	NERO	
95	SLOW-2566	VII	SLO82	152	-	-	PREB	
96	SLOW-2565	IXLID	FEN83	3356	-	-	PREB	
97	SLOW-2565	IXLID	FEN83	3156	-	-	LNEF	
98	SLOW-2565	IXLID	FEN83	3152	-	-	PREB	
99	SLOW-2565	IXLID	SLO82	81	-	-	NEEF	
100	SLOW-2566	IXLID	SLO82	305	-	-	PREB	
101	LOXI-2600	IF	GPO75	7382	-	-	EANT	
102	LOXI-2603	IF/G	BOP82	140	-	-	EANT	
103	LOXI-2599	IJ	GPO75	6925	-	-	EANT	
104	LOXI-2599	IVA	BOP82	140	-	-	EANT	
105	LOXI-2600	IVA	GPO75	7382	-	-	EANT	
106	LOXI-2599	IVA	GPO75	4934	-	-	HADR	
107	LOXI-2599	IVJ	GPO75	7382	-	-	EANT	
108	LOXI-2599	IXLID	GPO75	7382	-	-	EANT	
109	LOXI-2599	IXLID	BOP82	140	-	-	EANT	
110	LOXI-2603	IXLID	GPO75	7403	-	-	EANT	
111	LOXI-2603	IXLID	GPO75	4890, 4934	-	-	HADR	
112	LOXI-2599	IXLID	GPO75	5694, 7473	-	-	TRAJ	
113	LOXI-2600	IXLID	BOP82	140	-	-	EANT	
114	LOXI-2600	IXLID	BOP82	140, 1091	-	-	EANT	
115	LOXI-2604	IXLID	GPO75	5694	-	-	TRAJ	
116	LOXI-2600	IXLID	GPO75	7326	-	-	EANT	
117	ECCW	IA	GPO75	10415	-	-	PREB	
118	ECCW-2560	IA	GPO75	9859	-	-	FLAV	
119	ECCW	IB	GPO75	10817	-	-	LNEF	
120	ECCW	ID	GPO75	10866	-	-	PREB	
121	ECCW	I	FMO85	406	-	-	NEEF	
122	ECCW	IIVAR	-	-	10640	-	-	
123	ECCW	IJK	FSE76	56	-	-	NERO	
124	ECCW	III	ORG86	807	-	50-80	-	
125	ECCW	VIIWAL	ORG86	812	-	70-100	-	
126	ECCW	VIIWAL	PDN81	1897	-	-	FLAV	
127	ECCW	VIIWAL	GPO75	10817	-	-	LNEF	
128	ECCW	VIIHOF	GPO75	7600	-	-	TRAJ	
129	ECCW	VIIHOF	FEN83	2832	-	-	PREB	
130	HOO	IA	-	-	18510	-	-	
131	HOO	IA	-	-	89.20	-	-	
132	HOO	IIVAR	ORG86	997	-	50-80	-	
133	HOO	IA	GPO75	10858	-	-	FLAV	
134	HOO	IBVAR	-	-	17661	-	-	
135	HOO	IBVAR	GPO75	10592	-	-	PREB	
136	HOO	I	GPO75	10106	-	-	FLAV	
137	HOO	IIIA	GPO75	11721	-	-	PREB	
138	HOO	IIIC	ORG86	829	-	50-80	-	
139	HOO	III	KNG85	587	-	50-70	-	
140	HOO	VIA	LSO88	308	-	70-100	-	
141	NKWS	IIVAR	BOP82	140	-	-	EANT	
142	NKWS	I	BEV80	442	-	160-200	-	
143	VRW	IA	-	-	2744	-	-	
144	VRW	IA	-	-	20529	-	-	
145	VRW	IA	GPO75	11670	-	-	PREB	
146	VRW	IA	ORG86	953	-	50-80	-	
147	VRW	IB1	TR74	412	-	-	L1/2ND	Green 1980b, fig 24, 67
148	VRW	IB2	-	-	A27744	-	-	
149	VRW	IB2	-	-	81.3504/24	-	-	
150	VRW	IB3	GPO75	9880	-	-	FLAV	
151	VRW	IB5	GPO75	4934	-	-	HADR	
152	VRW	IB5	FEN83	2267	-	-	HADR	
153	VRW	IB5	ILA79	1141	-	-	EANT	
154	VRW	IB5	FEN83	2288	-	-	HADR	
155	VRW	IB5	FEN83	2288	-	-	HADR	
156	VRW	IB7	BOP82	140	-	-	EANT	
157	VRW	IB7	BOP82	140	-	-	EANT	
158	VRW	IB7	BOP82	1091	-	-	EANT	

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159	VRW	IB	ILA79	362	—	—	EANT	
160	VRW	IC	—	—	2774	—	—	
161	VRW	IC	ORG86	997	—	—	—	
162	VRW	ID	—	—	A1130	—	—	
163	VRW	ID	LCT84	9640	—	—	—	
164	VRW	IE	—	—	12107	—	—	
165	VRW	IE	GPO75	11220	—	—	LNEF	
166	VRW	IH	GPO75	5421	—	—	HADR	
167	VRW	IH	—	—	81.350/3	—	—	
168	VRW	IJ	COA86	16	—	—	—	
169	VRW	IJ	GPO75	7067	—	—	HADR	
170	VRW	IJ	TR74	423	—	—	FLAV	Green 1980b, fig 24, 56
171	VRW	I	PDN81	1897	—	—	FLAV	
172	VRW	I	ILA79	687	—	—	EANT	
173	VRW	IIH	—	—	A11699	—	—	
174	VRW	IIJ	ILA79	513	—	—	EANT	
175	VRW	IIJ	KEY83	+	—	—	+	
176	VRW	IIK	—	—	A20936	—	—	
177	VRW	IIK	—	—	A11202	—	—	
178	VRW	IIR	RIV87	215	—	50-160	—	
179	VRW	IINJ	—	—	15.472	—	—	
180	VRW	IINJ	LIM83	971	—	—	LNEF	
181	VRW	IINJ	BOP82	1091	—	—	EANT	
182	VRW	IIFACE	ILA79	1120	—	—	EANT	
183	VRW	IIFACE	—	—	18302	—	—	
184	VRW	IIIA	GPO75	11678	—	—	PREB	
185	VRW	IIIB	ML73	P1	—	70-100	—	
186	VRW	III	ORG86	970	—	50-80	—	
187	VRW	IVA	GPO75	7176	—	—	EANT	
188	VRW	IVA	—	—	18623	—	—	
189	VRW	IVA	GPO75	7527	—	—	TRAJ	
190	VRW	IVA	BOP82	140	—	—	EANT	
191	VRW	IVA	BOP82	1091	—	—	EANT	
192	VRW	IVA	FEN83	2432	—	120-40	—	
193	VRW	IVA	BOP82	140	—	—	EANT	
194	VRW	IVA	BOP82	140	—	—	EANT	
195	VRW	IVA	GPO75	11256	—	—	FLAV	
196	VRW	IVA	BOP82	140	—	—	EANT	
197	VRW	IVA	BOP82	140	—	—	EANT	
198	VRW	IVA	BOP82	140	—	—	EANT	
199	VRW	IVD	GPO75	6925	—	—	EANT	
200	VRW	IVJ	ILA79	283, 307, 356	—	—	EANT	
201	VRW	IVJ	LIM83	771	—	—	HADR	
202	VRW	IVK	ORG86	1031	—	50-80	—	
203	VRW	IV	LCT84	4495	—	—	FLAV	
204	VRW	VIA	—	—	11599	—	—	
205	VRW	VIIHOF	GPO75	12163	4775	—	PREB	
206	VRW	VIIHOF	GPO75	10300	—	—	LNEF	
207	VRW	VIIHOF	GPO75	9360	3750	—	FLAV	
208	VRW	VIIHOF	—	—	14576	—	—	
209	VRW	VIIHOF	GPO75	7922	2939	—	TRAJ	
210	VRW	VIIHOF	GPO75	7067	2452	—	HADR	
211	VRW	VIIHOFVAR	GPO75	7326	—	—	EANT	
212	VRW	VIIHOF	GPO75	3925	3206	—	PR	
213	VRW	VIIIBEF	GPO75	7400	—	—	EANT	
214	VRW	VIIIBEF	GPO75	4830	—	—	EANT	
215	VRW	IXTAZZA	TR74	408	—	—	HEAN	Green 1980b, fig 25, 89
216	VRW	IXTAZZA	FEN83	1942	—	—	HADR	
217	VRW	IXTAZZA	GPO75	7766	—	—	TRAJ	
218	VRW	IXTAZZA	GPO75	10880	—	—	LNEF	
219	VRW	IXTAZZA	—	—	2900	—	—	
220	VRW	IXUJ	GPO75	5648	—	—	TRAJ	
221	VRW	IXTETTINA	—	—	A27352	—	—	
222	VRW	IXSJ	GPO75	9595	—	—	3RD	
223	VRW	IXLID	IIA79	1500	—	—	TRAJ	
224	VRW	IXLID	GPO75	9817	—	—	FLAV	

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225	VRW	IXCRUC	OPT81	229	1315	-	HADR	
226	VRW	IXCRUC	OPT81	440	1312	-	HADR	
227	VRW	IXCRUC	OPT81	42	1481	-	+	
228	VRW	IXCRUC	OPT81	193	1314	-	3RD	
229	VRW	IXCRUC	OPT81	183	1500	-	M/L4TH	
230	VRW	IXCRUC/ IIR	OPT81	155	1504	-	M/L4TH	
231	VRW	IXCRUC	OPT81	180	1496	-	3RD	
232	VRG	IINJ	LIM83	663	-	-	TRAJ	
233	VRG	IINJ	ORG86	1350	-	50-80	-	
234	VRG	IINJ	LCT84	9941	-	-	FLAV	
235	VRG	IVA	GPO75	12193	-	-	LNEF	
236	VRG	IXLID	GPO75	8445	-	-	TRAJ	
237	VRG	IXLID	GPO75	7673	-	-	TRAJ	
238	VRMI	IF/MT3	GPO75	7461	-	-	HADR	
239	VRMI	I/MT2	-	-	2862	-	-	Marsh 1978, fig 6.6, 2.4
240	VRMI	IIIB/MT20	LCT84	9641	-	-	FLAV	
241	VRMI	IIIB/MT20	LCT84	9577	-	70-100	-	
242	VRMI	IIIB/MT20	LCT84	4385	-	-	FLAV	
243	VRMI	IIIC/MT22	LCT84	3236	-	-	PR	
244	VRMI	III/MT21	-	-	15004H	-	-	
245	VRMI	IVB/MT34	GPO75	9381, 9493	-	-	TRAJ/FLAV	
246	VRMI	IV/MT36	GPO75	5941	-	-	TRAJ	
247	VRMA	IVE	KEY83	1304	-	120-60	-	
248	VRMA	IV	ABS86	737	-	-	HEAN	
249	VRR	VIIHOF	ORM88	1.58	46	70-100	-	
250	VCWS	IAVAR	GPO75	7282	-	-	EANT	
251	vcws	IB7	-	-	2882	-	-	
252	VCWS	IB7	-	-	A20667	-	-	
253	VCWS	IB7	BOP82	1091	-	-	EANT	
254	VCWS	IB7	-	-	25281	-	-	
255	VCWS	IB7	-	-	A11534	-	-	
256	VCWS	IB7VAR	-	-	25065	-	-	
257	VCWS	IC	-	-	A1218	-	-	
258	VCWS	IE	-	ER947	-	70-120	-	
259	VCWS	IE	-	-	2776	-	-	
260	VCWS	IE	ML73	P1	-	70-100	-	
261	VCWS	IH	-	ER546	-	70-140	-	
262	VCWS	IIK	GPO75	7166	-	-	EANT	
263	VCWS	IIK	-	ER477	-	120-200	-	
264	VCWS	IINJ	BOP82	140	-	-	EANT	
265	VCWS	IINJ	LEA84	1080	-	120-40	-	
266	VCWS	IIFACE	-	-	73.68	-	-	
267	VCWS	IIFACE	BAA87	187	-	100-200	-	
268	VCWS	IIFACE	-	-	A1739	-	-	
269	VCWS	IIFACE	BWB83	107	-	-	PR	
270	VCWS	IIFACE	BWB83	189	-	-	3/4TH	
271	VCWS	II	BAA87	221	-	100-200	-	
272	VCWS	IVA	-	-	94.88	-	-	
273	VCWS	IV	-	ER908	-	80-120	-	
274	VCWS	VIIHOF	-	ER477	-	120-200	-	
275	VCWS	VIIHOF	OPT81	180	-	-	3RD	
276	VCWS	IXTAZZA	-	-	A2331	-	-	
277	VCWS	IXTRIPLE VASE	-	-	2972	-	-	
278	VCWS	IXUJ	-	-	2728	-	-	
279	VCWS	IXTETTINA	-	-	2860	-	-	
280	BHWS	IAVAR	GPO75	10002	-	-	FLAV	
281	BHWS	IB	GPO75	10150	-	-	FLAV	
282	BHWS	IC	GPO75	9796	-	-	FLAV	
283	BHWS	IINJ	GPO75	10855	-	-	LNEF	
284	BHWS	VIIHOF	-	-	25057, A22354	-	-	
285	OXID-2486	I	GPO75	11719	-	-	PREB	
286	OXID-2486	IV	GPO75	9880	-	-	FLAV	
287	OXID-2486	IIK	GPO75	10432	-	-	LNEF	
288	NFSE-2667	IA	-	ER632	-	50-70	-	

Appendix 4: Concordance of illustrated sherds in phase groups

This provides a concordance between drawings (numbers 910-1147) used to illustrate the phase groups in Chapter 7 and the more detailed information provided in Appendix 3. Apart from Numbers 948 and 970, the drawings in Chapter 7 are duplicates of those used in Chapters 2-6.

Phase illustration number		Equivalent corpus number	Phase illustration number		Equivalent corpus number
910	=	55	951	=	147
911	=	117	952	=	150
912	=	143	953	=	160
913	=	120	954	=	162
914	=	285	955	=	341
915	=	60	956	=	486
916	=	329	957	=	494
917	=	481	958	=	534
918	=	483	959	=	573
919	=	535	960	=	467
920	=	68	961	=	540
921	=	63	962	=	177
922	=	354	963	=	501
923	=	137	964	=	352
924	=	184	965	=	414
925	=	789	966	=	776
926	=	886	967	=	853
927	=	889	968	=	882
928	=	75	969	=	902
929	=	691	970	=	970
930	=	78	971	=	373
931	=	559	972	=	391
932	=	84	973	=	558
933	=	471	974	=	563
934	=	88	975	=	474
935	=	685	976	=	206
936	=	694	977	=	309
937	=	695	978	=	716
938	=	89	979	=	131
939	=	125	980	=	148
940	=	296	981	=	161
941	=	327	982	=	282
942	=	90	983	=	168
943	=	129	984	=	345
944	=	205	985	=	343
945	=	321	986	=	529
946	=	130	987	=	467
947	=	146	988	=	542
948	=	948	989	=	581
949	=	289	990	=	815
950	=	119	991	=	351
			992	=	503
			993	=	353
			994	=	894
			995	=	727
			996	=	777
			997	=	839
			998	=	419
			999	=	424
			1000	=	901

Phase illustration number		Equivalent corpus number	Phase illustration number		Equivalent corpus number
1001	=	699	1060	=	454
1002	=	430	1061	=	151
1003	=	364	1062	=	164
1004	=	438	1063	=	169
1005	=	817	1064	=	545
1006	=	891	1065	=	402
10137	=	390	1066	=	405
1008	=	717	1067	=	827
1009	=	863	1068	=	408
1010	=	384	1069	=	409
1011	=	708	1070	=	602
1012	=	565	1071	=	629
1013	=	869	1072	=	580
1014	=	872	1073	=	554
1015	=	802	1074	=	426
1016	=	873	1075	=	714
1017	=	388	1076	=	192
1018	=	387	1077	=	428
1019	=	208	1078	=	441
1020	=	284	1079	=	446
1021	=	309	1080	=	609
1022	=	323	1081	=	660
1023	=	149	1082	=	643
1024	=	724	1083	=	201
1025	=	172	1084	=	719
1026	=	301	1085	=	740
1027	=	396	1086	=	748
1028	=	530	1087	=	761
1029	=	400	1088	=	798
1030	=	541	1089	=	682
1031	=	544	1090	=	801
1032	=	403	1091	=	275
1033	=	175	1092	=	312
1034	=	576	1093	=	324
1035	=	816	1094	=	216
1036	=	179	1095	=	111
1037	=	504	1096	=	621
1038	=	829	1097	=	722
1039	=	843	1098	=	807
1040	=	420	1099	=	250
1041	=	427	1100	=	141
1042	=	856	1101	=	158
1043	=	706	1102	=	157
1044	=	193	1103	=	253
1045	=	432	1104	=	259
1046	=	462	1105	=	166
1047	=	734	1106	=	627
1048	=	892	1107	=	404
1049	=	820	1108	=	408
1050	=	442	1109	=	409
1051	=	463	1110	=	604
1052	=	246	1111	=	630
1053	=	749	1112	=	648
1054	=	783	1113	=	173
1055	=	794	1114	=	262
1056	=	825	1115	=	178
1057	=	803	1116	=	422
1058	=	209	1117	=	607
1059	=	115	1118	=	425

Phase illustration number	=	Equivalent corpus number	Phase illustration number	=	Equivalent corpus number
1119	=	710	1135	=	645
1120	=	713	1136	=	667
1121	=	104	1137	=	718
1122	=	106	1138	=	755
1123	=	198	1139	=	747
1124	=	447	1140	=	762
1125	=	608	1141	=	211
1126	=	615	1142	=	213
1127	=	616	1143	=	326
1128	=	624	1144	=	219
1129	=	635	1145	=	589
1130	=	642	1146	=	113
1131	=	649	1147	=	114
1132	=	658			
1133	=	664			
1134	=	618			

Appendix 5: Raw data by site phase (Eves/weights)

Fabric	RCP 1A	RCP 1B	RCP 2	RCP 3	RCP 4	RCP 5
AHSU	72/1082	21380/10484	2202/16469	2581/21477	526/4947	155/3288
AMPH	40/3575	9/3680	51/8348	347/2478	0/1650	0/3873
AOMO	-	-	10/46	-	-	-
BBI	-	-	-	106/819	156/1134	551/2943
BBZ-1462	-	-	-	45/294	372/2495	2822/23222
BB2-2238	-	-	-	0/4	0/41	448/2074
BB2-2759	-	-	-	-	157/721	101/357
BB2-2768	-	-	-	-	-	12/61
BBS	-	-	-	13/104	11/23	0/68
BBS-1547	-	-	-	-	-	13/36
BBS-2764	-	-	-	8/139	22/70	0/4
BBS-718	-	-	-	-	-	26/225
BHWS	0/148	34/699	266/3429	20/410	20/37	24/341
BLEG	-	55/60	-	17/37	0/1	0/1
CI86	7/1830	13/8811	15/1497	20/3539	40/3324	0/3612
CI89	0/142	0/115	6/87	0/13	0/23	2/9
CCGW	-	14/19	12/65	219/979	34/74	0/7
CGBL	-	-	0/9	0/2	-	3/1
CGGW	-	-	0/28	0/8	-	-
CGOF	-	5/1	16/61	10/27	0/11	0/29
CGWH	-	0/1	0/17	69/187	-	0/12
COLC	-	-	0/8	0/1	-	0/94
DR20	195/28467	0/31397	341/113448	128/71411	1261/26384	208/17757
DR28	-	-	0/603	-	-	-
ECCW	145/924	107/1973	74/742	37/258	0/67	0/97
ERMS	229/957	1136/5592	1401/7287	267/1593	10/71	0/161
ERSA	40/141	182/2212	30/949	0/4	9/28	-
ERSA/B	40/168	221/926	17/192	14/113	27/98	-
ERSB	0/30	145/1584	688/4418	836/3990	5/40	22/25
ERSI	147/1040	64/620	5/62	-	-	-
ERSS	-	68/223	16/28	-	-	-
FINE	27/62	16/211	130/499	321/724	79/194	111/249
FINE-1546	-	-	28/51	-	-	-
FINE-2859	-	-	25/28	-	-	-
FINE-2866	-	-	-	32/93	-	-
FINE-492	-	17/21	148/314	163/619	0/30	0/25
FINE, MISC	0/4	15/60	70/123	0/59	-	45/135
FMIC	15/71	14/33	139/765	229/645	5/125	24/258
FMIC-1659	0/45	229/956	1126/3219	1012/3007	35/145	134/173
FMIC-1746	10/54	30/270	261/647	49/356	0/39	17/46
FMIC-2488	30/248	87/366	69/327	12/81	13/33	0/20
FMIC-2559	0/2	15197	176/368	19/66	-	-
GBWW	0/47	0/2	0/9	-	-	-
GROG	348/6730	220/3104	83/2114	105/1958	148/3413	53/877
H70	16/2361	0/323	0/619	0/275	160/15398	-
HOO	14/146	37/1499	128/3030	157/1265	0/97	0/14
HWB	537/11894	2519/27178	2984/30925	583/7121	102/869	21/216
HWB/C	-	110/941	41/246	76/493	0/7	0/21
HWBR	-	55/657	28/348	9/17	-	-
HWC	5/43	208/719	2007/9830	5805/29746	1857/11121	4238/18952
HWC+	-	-	13/132	8169	161/652	158/333
ITMO	0/650	-	-	-	-	-

Fabric	RCP 1A	RCP 1B	RCP 2	RCP 3	RCP 4	RCP 5
KOAN	0/373	12/2575	0/827	0/452	0/438	0/1500
KOAN-2385	0/1209	27/4678	0/740	0/1232	37/2984	-
KOAN-3786	-	-	0/715	-	-	-
KOAN-844	0/56	0/108	0/350	0/643	0/35	-
KOLN	-	-	-	0/18	13/17	94/244
L555	-	-	0/750	-	50/7100	-
LOEG	-	20/29	6/19	84/118	101/178	54/87
LOMA	-	-	2/16	0/16	55/56	-
LOMI	-	4/31	121/585	314/1650	264/1184	347/1 777
LONW	-	0/9	79/609	204/1464	89/227	5169
LONW-STD	-	-	-	0/16	-	20/50
LOXI	-	-	51/445	218/625	234/1253	1042/5249
LYON	113/307	0/1	60/47	20/22	-	-
MICA	-	0/6	4/110	121/370	33/196	18/328
MICA-1242	-	-	0/2	0/4	-	-
MICA-1245	-	-	-	0/12	-	56/245
MICA-2577	10/18	-	-	-	-	-
MICA-376	-	22/27	7/11	-	68/315	13/149
MICA-383	-	-	50/49	0/17	-	15/7
MLEZ	0/4	-	12/48	2/9	0/8	0/34
MONT	15/64	7/19	-	12/126	8/10	100/807
MORT-2625	0/260	-	-	-	-	-
MORT-2669	-	7/84	-	-	-	-
NACA	-	-	-	-	-	47/3578
NFSE-1298	-	0/244	0/950	24/349	0/145	0/136
NFSE-2667	27/28	-	45/104	-	-	-
NFSE-2838	-	-	-	-	-	25/626
NFSE-G238	-	4/135	16/556	42/920	28/1083	0/59
NGGW	-	-	-	17/35	0/6	20/25
NKFW	-	10/46	21/57	107/668	17/30	16/100
NKSH	3/196	35/615	122/12192	139/8362	85/12373	220/18057
NKWS	-	-	-	-	-	35/85
OXID	283/6832	272/2620	515/3421	340/3610	138/3139	355/6097
OXID-1861	-	17/27	0/47	6/15	-	-
OXID-2486	100/418	-	0/5	-	-	-
PE47	0/2049	0/4201	134/9048	0/4739	284/9003	125/4287
PRW	11/42	0/6	-	5/103	-	-
PRW1	0/7	65/451	-	0/5	-	0/8
PRW2	-	0/5	7/13	-	-	-
PRW3	0/15	-	20/61	0/16	54/1105	33/209
R527	-	0/24	-	0/107	0/34	-
RBMA	-	-	-	0/15	-	-
RDBK-1606	0/60	50/1123	621/1903	186/672	12/29	70/157
RDBK-2635	-	-	52/46	-	-	-
REDU,MISC	0/220	49/1466	03/279	0/323	32/106	0/194
RHMO-2554	0/262	-	38/909	-	-	-
RHMO-2738	-	-	-	-	7/290	-
RHMO-2835	-	-	-	-	-	37/288
RHOD	0/940	-	0/813	0/55	0/188	-
RHOD-1894	0/52	-	0/170	21/206	15/419	-
RHOD-2592	-	-	-	-	-	116/15845
RUST	0/19	-	-	0/81	-	-
RVMO	23/640	8/247	10/333	0/226	-	5/145
SAM	926/3228	1772/4674	3117/14068	2894/11445	896/3801	1025/4605
SAND	605/7851	886/8195	2311/17509	3213/29751	776/7068	582/10694
SAND-2862	0/5	27/56	44/285	-	19/47	-
SESH	-	-	-	-	-	3/241
SGCC	19/21	-	-	-	-	-
SHEL	163/1567	19/423	25/990	0/441	10/217	47/1011
SHEL-2809	-	-	7/44	11/46	-	-
SHEL-2810	-	-	64/347	22/94	-	-

Fabric	RCP 1A	RCP 1B	RCP 2	RCP 3	RCP 4	RCP 5
SLOW	820/9199	217/3598	133/531	40/289	0/43	0/2
SUG		-		29/502	0/75	-
TN		5/24	0/8	15/27	-	5/18
TNIM	-		0/11	31/46		-
VCWS	0/9	42/174	217/1825	81/608	40/660	1595/8270
VRG	19/126	137/952	328/1068	334/1347	27/461	
VRMA		-			-	3/3
VRMI			69/456	76/437	24/70	0/5
VRR	-	32/350	0/550	0/78	0/8	0/88
VRW	485/5399	2452/26007	4046/55246	4528/58718	2752/28890	3125/33572
TOTAL	5539/ 102337	13403/ 168064	24973/ 340555	26453/ 285611	11378/ 156653	18441/ 198567

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