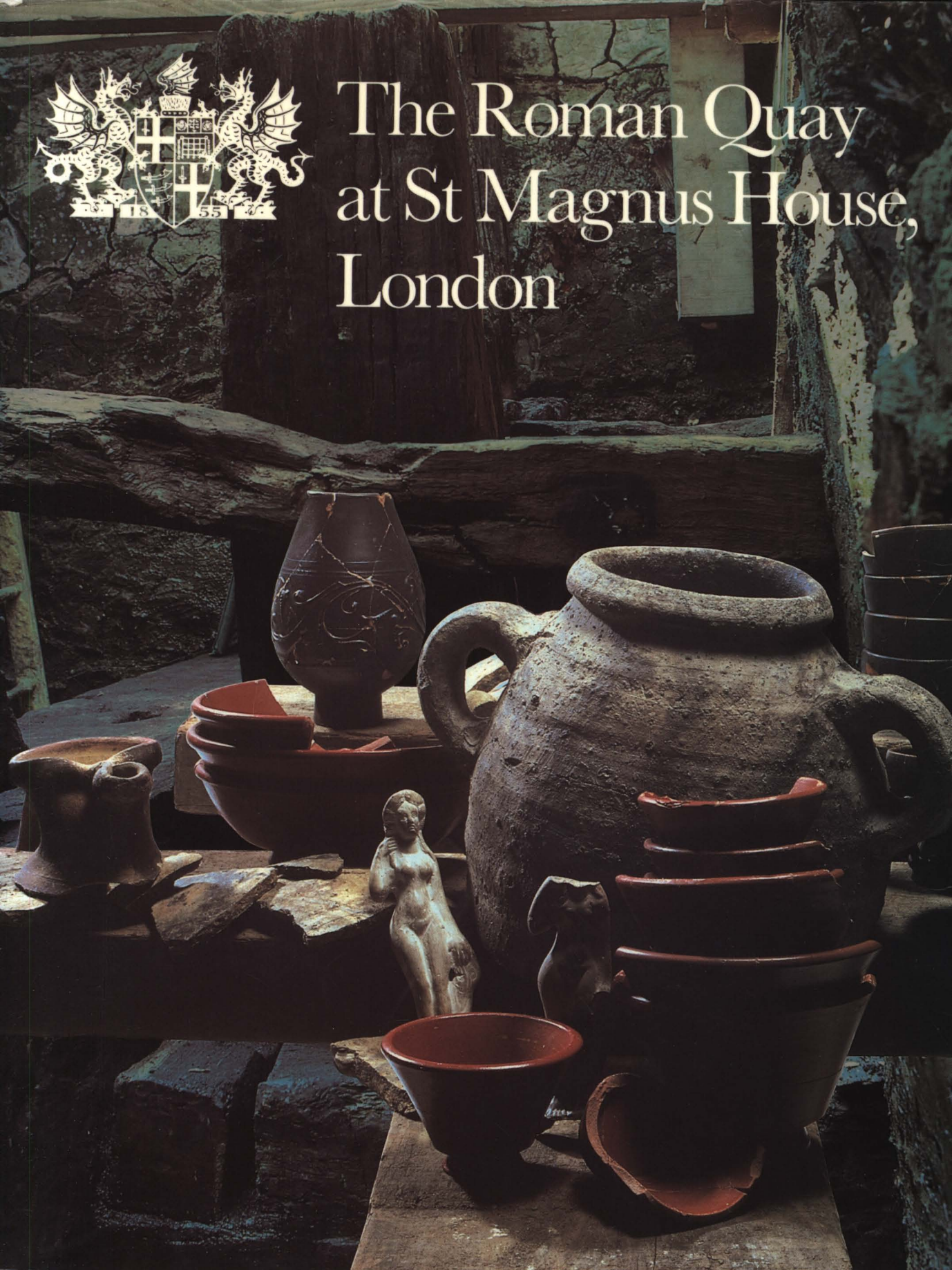


The Roman Quay at St Magnus House, London

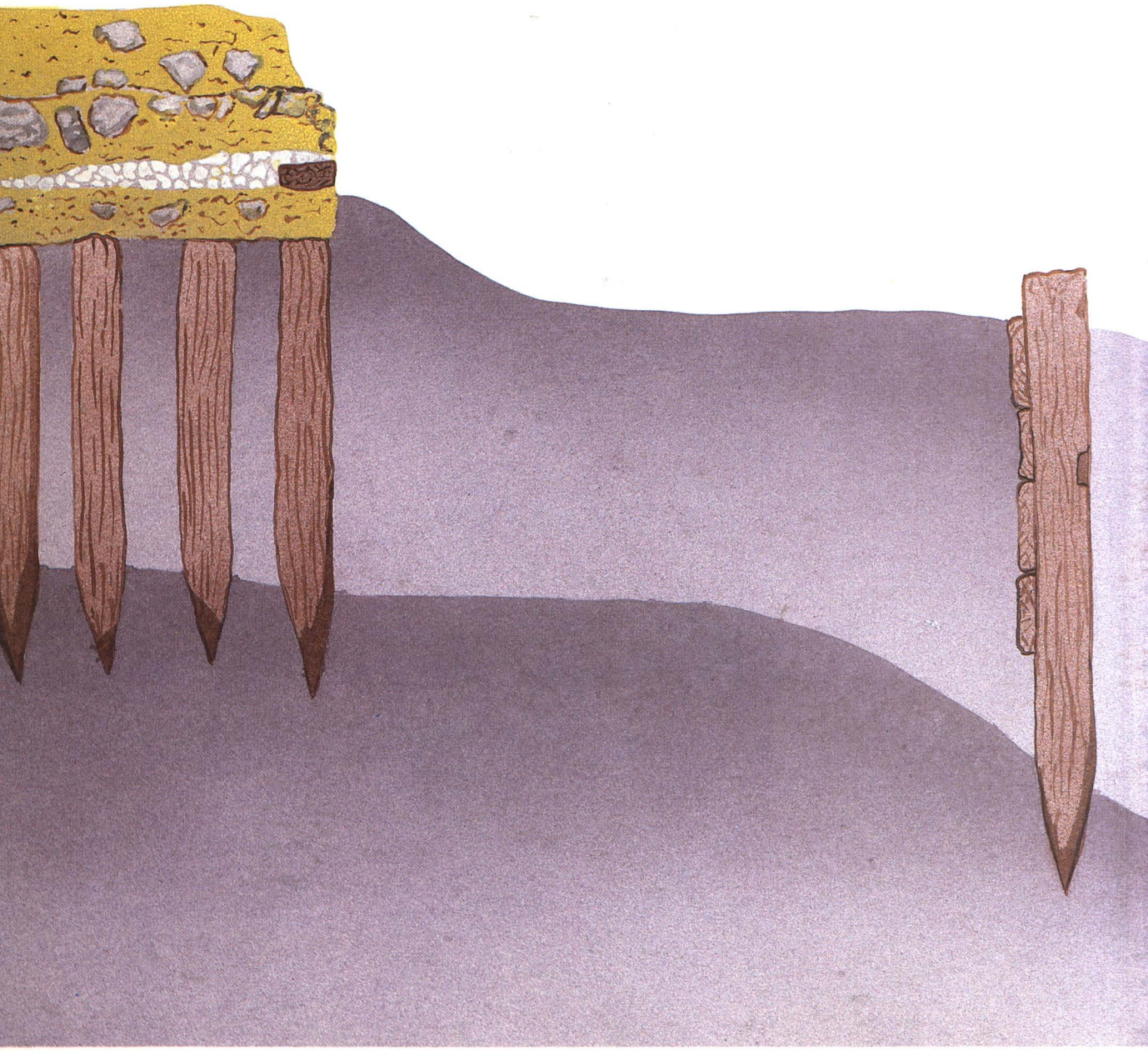
This Special Paper of the London & Middlesex Archaeological Society describes excavations on the site of what is now St Magnus House, Thames Street, London, in 1974–8. These were carried out by the Museum of London ahead of redevelopment of the site, then known as New Fresh Wharf. The report deals with the Roman discoveries: units of land reclamation culminating in an imposing quay of timber, dated to the years 225–245 by tree-ring dating and by the hundreds of artefacts incorporated into its structure or lying in the surrounding silt. This is the most detailed picture of 3rd-century Londinium so far achieved: the nature of its waterfront zone and trading links, and the lifestyle of its inhabitants.

Front cover: a selection of the finds from the St Magnus House excavations, against a background of the structure of the Roman quay.
Back cover: an early third century copper-alloy Roman key for a rotary lock, cast in one with a finger-ring; from the St Magnus House site.

The Roman Quay at St Magnus House, London

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The Roman Quay at St Magnus House, London

Excavations at New Fresh Wharf, Lower Thames Street, London 1974–78

Louise Miller, John Schofield and Michael Rhodes

Edited by Tony Dyson

Special Paper No. 8 of the London and Middlesex Archaeological Society 1986



The Society is grateful to English Heritage and to Midland Bank International for grants towards the publication of this report

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Designed by David Challis and Richard Lea

The photography for this report was produced by Trevor Hurst, Jon Bailey, Jan Scrivener and Maggie Cox

Printed by BAS Printers Limited, Over Wallop, Hampshire

ISBN 0 903290 32 9

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FOREWORD

The City of London is the historic core of a metropolis which today extends over 600 square miles. Its function as a port and market, and soon after as a centre for administration, began soon after the arrival of the Romans in this country in AD 43. In the absence of detailed written records, the evidence for the Roman city must come from archaeological excavation.

During the Second World War many areas of the City, particularly around St Paul's, were bombed and thus many office blocks date from the immediately post-War years. Archaeological work on these sites, often in cramped circumstances and with minimal resources, produced exciting results such as the discoveries of the Temple of Mithras and the Roman fort at Cripplegate, and yet only hinted at the amount of information which was being lost in the ever-increasing pace of post-War development. Modern office blocks, with their deep pile foundations, very largely destroy the archaeological layers beneath their more modest predecessors. It became painfully clear, by the early 1970s, that unless something radical was done, knowledge of London's Roman and medieval past would be unattainable by the end of the century.

Government and City authorities combined to support the establishment of an archaeological rescue unit in the city. This coincided with the sudden availability of several sites along the historic waterfront of London, as the docks moved downstream and away from the City itself. Excavations on the waterfront sites from 1972 have revealed spectacular and important evidence of the Roman bridge and riverside city wall, Roman, Saxon and medieval waterfront installations and the Tudor Baynard's Castle. At the same time the Museum of London's Department of Urban Archaeology has established itself as a necessary and professional component of the development process on City sites.

The excavations reported in this Special Paper were funded by the Department of Environment, the predecessor of English Heritage. The publication has been funded jointly by English Heritage and Midland Bank plc, the occupiers of St Magnus House, which now stands on the site of New Fresh Wharf on the bank of the Thames.

This is our heritage. It is up to us all to support this vital work while there is still time.

Hervé de Carmoy
Chief Executive
International Division
Midland Bank

Lord Montagu of Beaulieu
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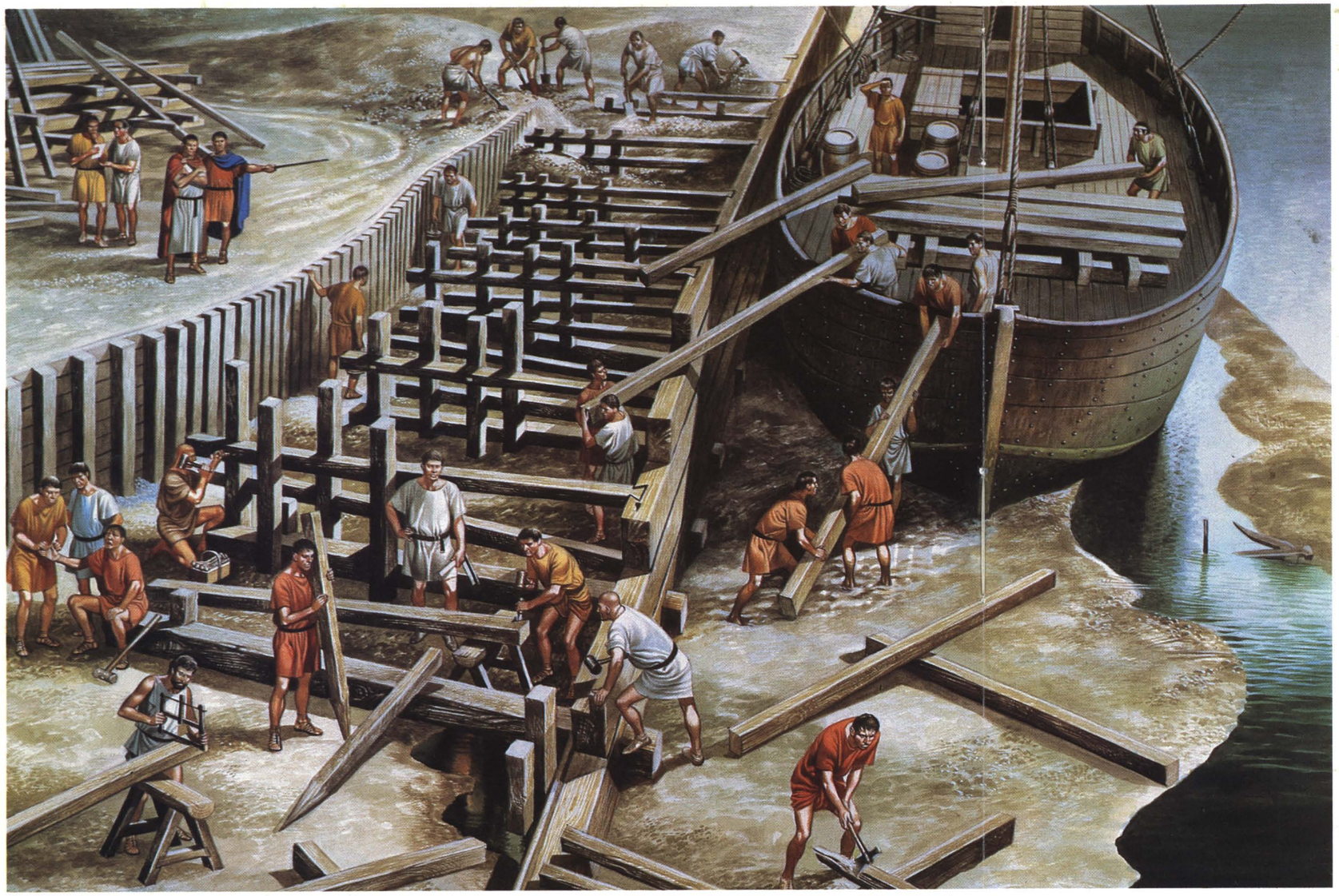
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Construction of the 3rd century Roman quay excavated on the site of the present St Magnus House; an artist's impression by Ronald Embleton.

The discoveries at St Magnus House

Roman London up to the early third century

Though archaeological excavation builds up our picture of the past day by day, the origins of London are still partly wrapped in mystery. Despite occasional prehistoric finds from the pre-Roman centuries, there is no direct evidence of any settlement within what is now the City of London before the arrival of the Romans. We know that the Romans made causeways through boggy ground on the south side of the river Thames, then perhaps a tribal and political boundary, and threw a bridge over the river to the eastern of the two hills on which they founded Londinium. They removed so much of the topsoil in their levelling and clearance schemes for buildings that we are not even sure about the likely numbers and types of trees in the landscape they surveyed.

If we are ignorant about what the Romans saw when they arrived, we have an increasing amount of knowledge about what they did next. It used to be supposed that London began life as a military base in AD 43, the date of the Roman invasion of Britain; but this theory has been considerably modified in light of recent findings. Archaeological work, both in the City and Southwark, suggests that the city was not founded until about 50–55; and that it was largely civilian in character. Major streets had been laid out and buildings were beginning to appear over an ambitiously large area when the new settlement was destroyed by the rebellion of Boudica (Boadicea) in AD 60. The rebellion was quickly put down and the city was rebuilt, filling out the streets with shops and houses, a forum (town hall and civic complex) and a palace of the governor of the province of Britannia, still partly surviving beneath Cannon Street railway station. On the steep southern slope of the eastern hill, along the Thames shoreline, prestigious port buildings and timber quays of this period have been found in nineteenth and twentieth century excavations. By the end of the first century, London was one of the most important towns in the new province.

During the second half of the second century, however, there were great changes in the nature of Roman London which are only partly understood. On many sites buildings of the second century were overlain by the largely sterile 'dark earth' which signifies large open spaces, perhaps used for small-scale agriculture or horticulture. Some buildings were deliberately dismantled, evidently as an act of public policy. The reasons for this apparent decline are not known; the basic cause seems to have been a reduction in the population both of London and in the wider area. This may have been exacerbated by imported epidemic diseases, which would be especially virulent at the major port of entry to the province.



Construction of the 3rd century Roman quay excavated on the site of the present St Magnus House; an artist's impression by Ronald Embleton.

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Great changes were however soon to take place. In contrast to the stagnation on private and domestic sites, the comparatively short period of the years 190–250 produced public building works on a grand scale: a city wall over 2 miles long, and what may have been a religious and recreational complex of temples and other constructions in the south-west of the city, on the slope above the Thames now below St Paul's; displaced sculptured stones found nearby in 1975 included parts of a monumental arch. Sculptures from tombstones in the cemeteries outside the wall show that the patronage which built these monuments was probably to be found among government officials rather than rich merchants. In the 240s one house-owner, probably a high-ranking member of the military or official class, built a private temple to Mithras as an extension to his house alongside the Walbrook stream in the centre of the city; this was the famous Mithraeum discovered in 1954. Other courtyard houses, with rich mosaics, were built around the forum on Cornhill. It seems reasonable to suggest that in the first half of the third century London was turned into an administrative centre of special character within the province.



The riverfront of the modern City of London, showing the location of the St Magnus House site.

Excavations in the Roman harbour

The fortunes of the port area in Roman London are of special importance in reconstructing this third century scene. Most of the materials for the new wave of building would have arrived by river. The range of imports to a city and a province – the distance each has travelled, the quality of workmanship and value, the purpose (military, commercial, religious, recreational) for which it was imported – can tell us much about the character of the place and of the intentions of its rulers. Many commodities would be stored in the waterfront area, awaiting distribution throughout the province; and some would be used in the city itself.

Front of the third century quay, uncovered in the excavations. It was originally higher; the Roman river lay to the right. The accumulations against the timber quay wall are largely of post-Roman date.

The riverside area of the City of London, south of Thames Street, has undergone great change in the post-War years, as the early modern port of London, still based partly on its medieval site, moved downstream. The Museum of London, through its predecessor, the Guildhall Museum, set up the Department of Urban Archaeology in 1973 to excavate on all development sites within the City and was able to conduct investigations of many waterfront sites during redevelopment. This volume, which describes the excavations at the former site of New Fresh Wharf, Lower Thames Street – now the site of St Magnus house – in 1974–8, and presents a selection of the finds from them, is the first study of the third century harbour installations which lay south of what is now Thames Street. It thus complements the recently published account of the excavations of 1976–80 north of Thames Street, which found not only the late first century quay and a nearby bridge pier, but also contemporary buildings. These were modified in the third century to fit in with new roles as the wharf extended to the line excavated on the present site [1].

Although the excavations at St Magnus House (the name of the new building will be used in this introduction, but the former name

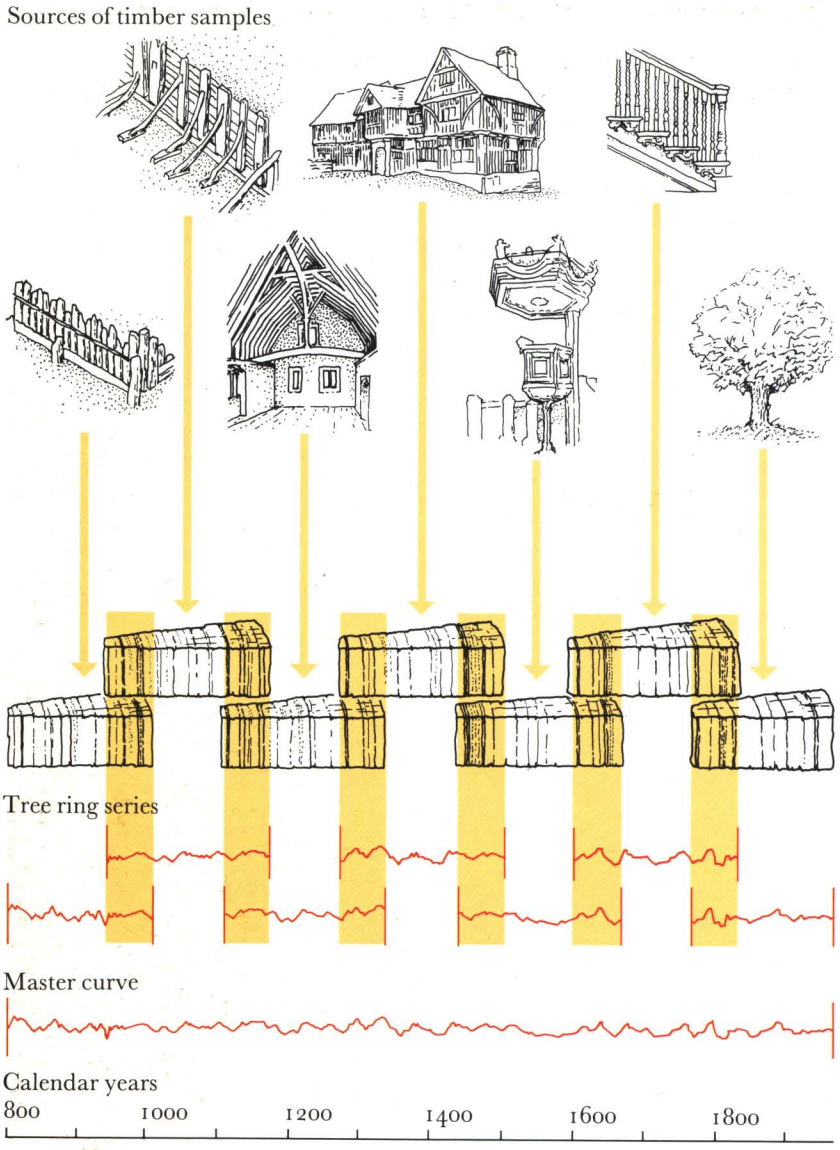


Copper-alloy coins were exceptionally well-preserved in the waterlogged dumps and silts. After very minimal cleaning they are restored to their original bright condition, and display clearly a degree of wear which they acquired during circulation. They date from the late 1st to early 2nd centuries.

of New Fresh Wharf is quite correctly used in the excavation report) were made necessary by modern economic forces redeveloping the port, they happened to coincide with one of the most significant developments in recent years in archaeology itself. This was the development of dendrochronology or tree-ring dating. Traditionally, archaeologists rely on several semi-independent methods of dating the structures, strata and finds which they uncover – coins (especially numerous and useful in the Roman period), pottery (where the production of distinctive styles can be dated at the sources of manufacture, or pottery finds have been dated by other means) and Carbon 14 dating (the level of accuracy of which is acceptable in prehistoric periods but becomes less useful in the Roman period, when time-intervals which can be identified by other means are comparatively small). These dating methods have also been used in this report. The 1970s saw the application of dendrochronological analysis to timbers excavated on waterlogged sites throughout Britain; and the result has been that we now possess a dating method which, if certain circumstances are favourable, is more accurate than the others. Because dendrochronology plays a very important part in the analysis of the findings at St Magnus House, we should briefly explain how it works.

As well as growing taller, a tree grows radially by the addition of annual tree-rings. These rings vary in width due to several influences, but trees growing under similar environmental





The principle of dating by dendrochronology (tree-ring dating). Samples are taken from timber of different ages, and the chronology is extended back into history by study of the tree-rings.

conditions over the same period of time share similar tree-ring patterns. These can be compared, and when samples overlap (the earlier rings of one tree are statistically similar to the later rings of another), long chronologies can be constructed. The St Magnus House Roman timbers have made contributions to a British chronology which now stretches from 252 BC to AD 294. By comparison with such a 'master chronology' the last ring on a timber from an archaeological site can be dated. If the outer sapwood of the original tree is present, the date of felling can be calculated.

The excavations at the St Magnus House site 1974–8

The excavations conducted here by the Museum of London comprised three parts – two area excavations in 1974 and 1975, and a watching brief on the wider site during construction of the new building in 1978. Although the site stretches from Thames Street to the present river, only the northern third contained surviving archaeological strata, and here the investigations were carried out. In 1974, when the excavations started, many basic questions were to be attempted. The site lay roughly on the Roman waterfront, yet the line or indeed presence of any quay on the site was not known. The spectacular survival of the Roman quay had recently been



Inside the Roman quay, looking west; the front of the quay is to the left. The timbers of the quay were very well preserved in waterlogged conditions.

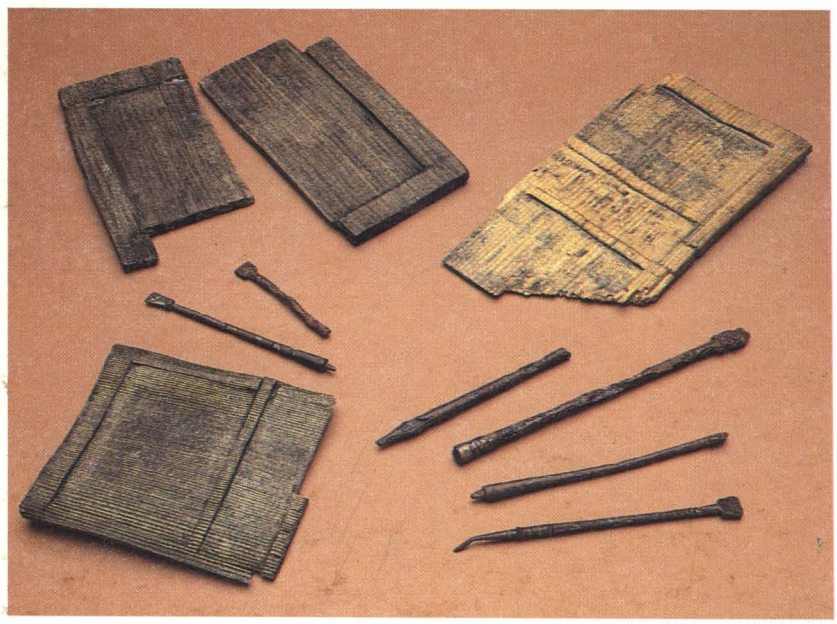
shown at an excavation a short distance to the east at the Custom House site, also immediately south of Thames Street. The medieval London bridge had lain along the west side of the present site (where the tower of Wren's St Magnus still arches over what used to be its eastern pedestrian pavement) but the line of the Roman bridge was uncertain; archaeological and historical opinion differed widely as to its alignment, and indeed it was not impossible that it crossed this site. There were many other questions concerning the Saxon, medieval and early modern waterfront area which were also investigated, but which will form the basis of other publications. This report is concerned with the findings of the Roman period, from the first to the fourth centuries AD.

To summarise most briefly, the excavations uncovered structures of three successive periods:
(a) fragmentary traces of a second century river embankment wall, showing the limit of land reclamation at the end of the second century;
(b) an ambitious two-part quay installation, dated principally by dendrochronology to the decades 225–245;
(c) a riverside city wall running along the back of the quay, probably built in the years 255–70, less than two generations later, and possibly with grave consequences for the useful life of the quay.

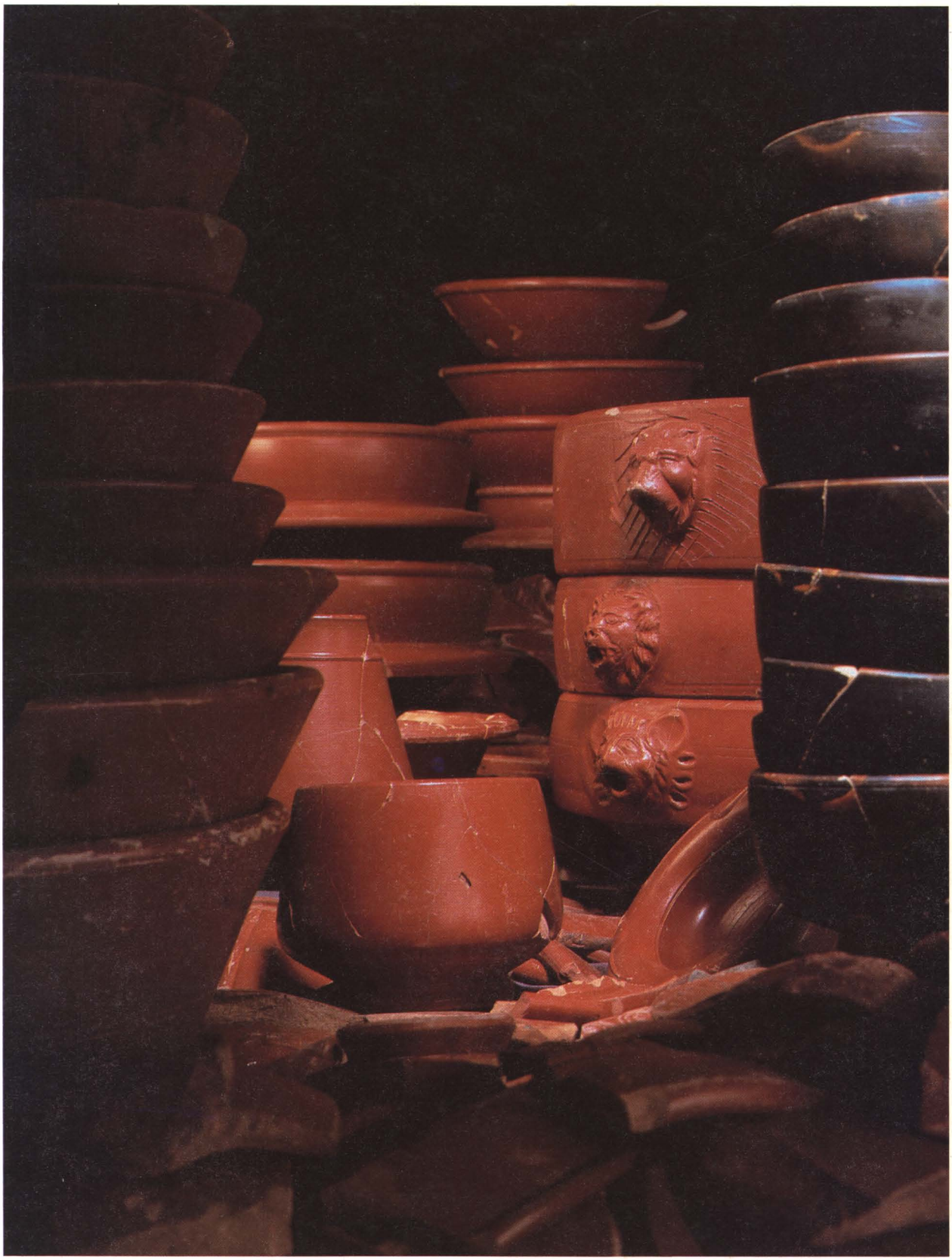
In addition many finds recovered from the strata, especially in and around the early third century quay, have considerably advanced our knowledge of many aspects of public, private and commercial life in Roman London.

Red samian and black Lezoux vessels: nearly 400 of these vessels dating from the late second to early third century were found at St Magnus House. Most of them were broken, but many could be wholly or partially reconstructed. They are unused, and probably represent shipments of pottery which were unsold, stored in warehouses and dumped as hardcore inside the timber quay. The single vessel in the foreground is an inkwell. The other vessels are cups and bowls and lion-head spouted *mortaria* for mixing food.





Writing tablets and iron styli: each tablet is recessed to receive a thin layer of wax. The message would have been scratched onto the surface of the wax with the stylus point and could have been erased using the spatulate end. The large number of writing tablets and styli probably reflects lively commercial activity in the waterfront region.



The first revetment *(2nd century)*

In the northernmost part of the site, actually under the southern pavement of Thames Street, traces of an embankment wall or revetment of timber, made of piles and planks, were recorded during the construction work. It was erected sometime during the second century, and must have functioned as the boundary of land reclamation pushing out from the earlier Roman quays which have been found in 1976–80 north of Thames Street. The buildings and other signs of waterside activity which will place this revetment in its wider context are still sealed beneath Thames Street itself.

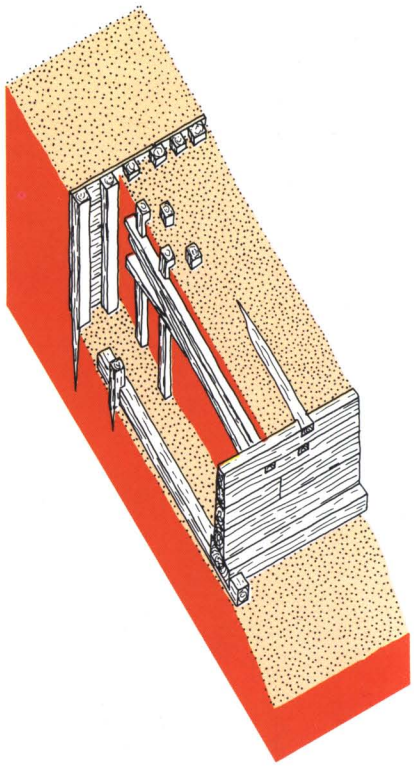
The second revetment and the Roman quay *(c. 225–245)*

Four metres to the south lay a second revetment. Though both revetments were of similar construction, river silts lay against the first but not the second. This suggests that the first formed a river embankment, but that the second was in preparation for another phase of embankment further out into the river. The construction of both revetments is parallelled in second century embankments at Custom House, downstream, and elsewhere in Britain and the Low Countries from the late first to the late third century. They should be seen as one type of a variety of simple embankment structures now found at several points on the north bank of the Thames within the city.

The quay itself was built out from this second revetment, a further 5 m into the contemporary river. The quaywall consisted of five tiers of large oak beams held in position by a framework of braces and piles. Sufficient of the structure remained in position to suggest at least fourteen stages of construction from the initial driving of piles along the line of the quayfront to the fifth tier of beams. The first stages of construction were intended to secure the sill beam on which the quaywall was based, and comprised piles beneath the massive beams, a firm platform of earth and rubble and horizontal timbers to brace the sill beams. Various arrangements of piles were then driven into the consolidated foreshore on the landward side of the quaywall and the upper tiers of the quaywall were anchored to these piles by numerous horizontal braces. The working surface of the new quay was probably formed by clay and rubbish from the city, topped with sand or gravel, which was dumped inside the quay framework shortly after its construction.

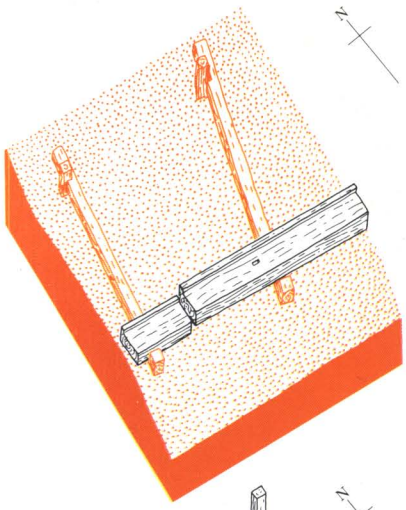
The process of dating the quay involves a combination of several arguments and parallels both in this country and abroad. Although some analogies are provided by structures in Roman ports elsewhere, the best evidence for the date of the structure resides in the evidence from St Magnus House itself – from the quay timbers, dated by dendrochronology, and from the considered dates of the finds used as part of the consolidation rubble in its foundation layer and infill.

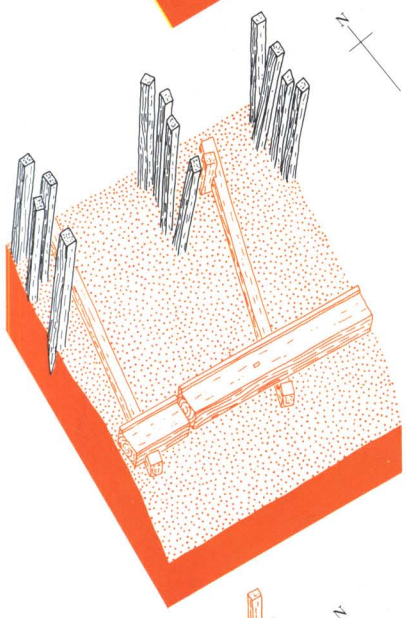
Put simply, the tree-ring dating of the quay timbers asserts that the latest of them were cut down after AD 209, and probably before 244. We think it likely, from Roman building practice, that such large timbers were used soon after felling. The date of felling of the

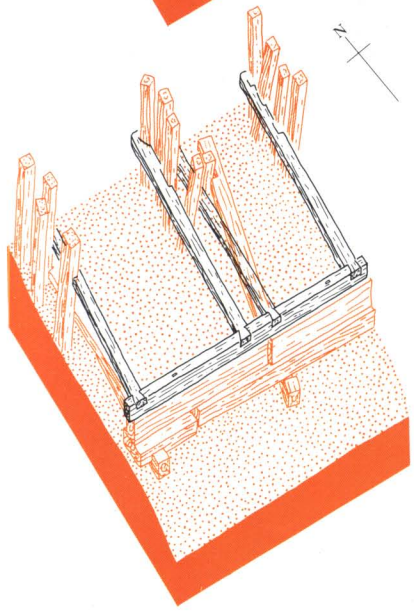


The quay was built out from the second revetment, and infilled with earth and contemporary rubbish from the Roman city.

Opposite: some of the stages of construction, worked out from analysis of the timbers. The quay wall was established; groups of piles driven in behind the quay wall; and a structure built up of braces and further horizontal timbers to form the front.







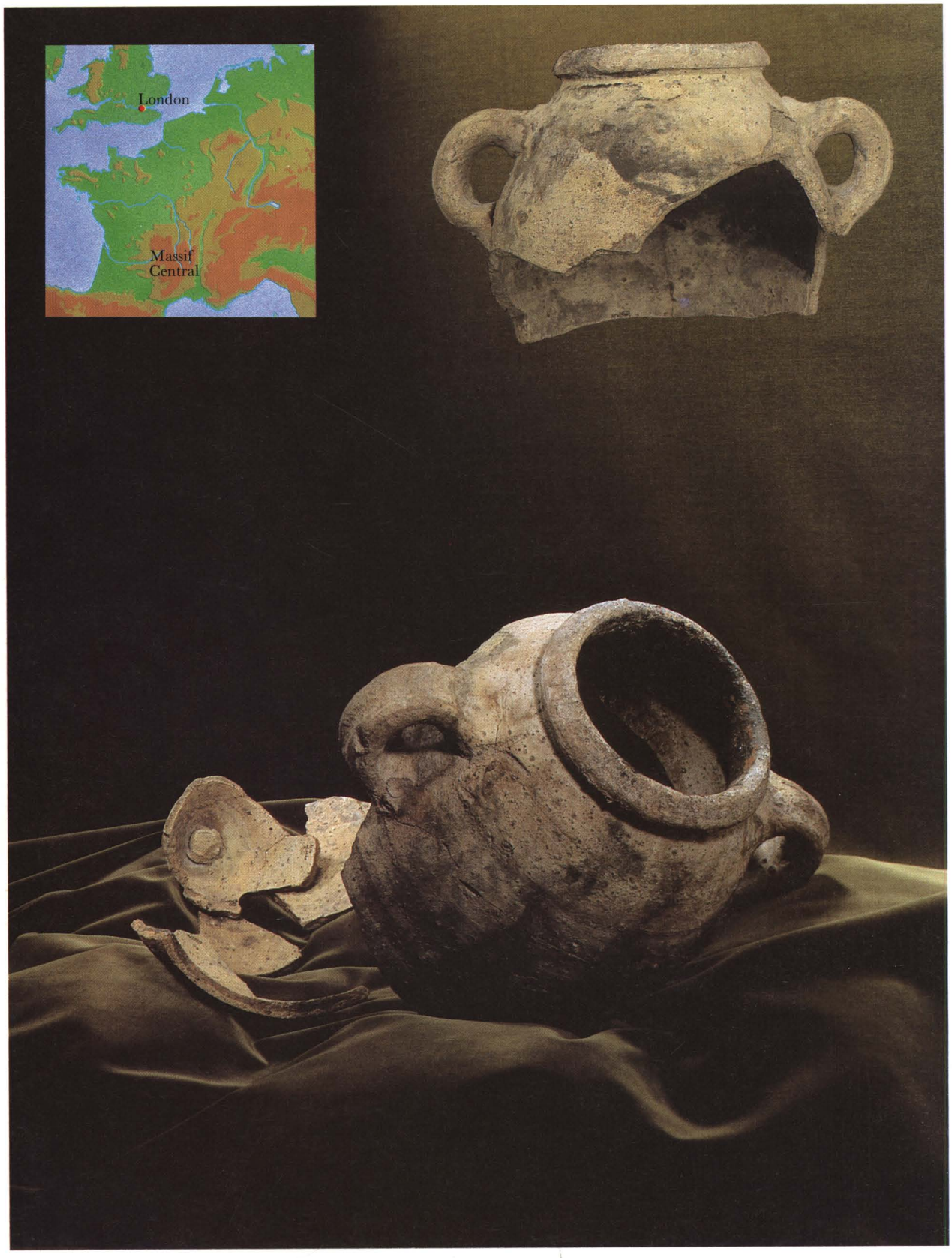
trees should therefore be close to the date of construction of the quay. But a considered date for the latest pottery in the infill, red samian pottery from Rheinzabern in Germany, is '235–45'. Various options concerning the possible delay in building, or the infilling occurring some time after the construction in timber, can be considered and rejected. We think it most likely that the quay was built and infilled in the years 225–245.

The type of construction of the quay, relying on piles and tieback braces, is found upstream of London Bridge at the same time (late second/early third century) and at the east part of the Custom House in the late second century. The closest parallel is however the second century quay at Xanten on the Rhine; the arrangement and size of timbers, details of jointing, and the use of consolidation material around at least the lower beams are very similar. This first type of quay is dated elsewhere to the late first and second centuries; the St Magnus House structure is the latest known of this type.

A second and contrasting type of quay construction based on beams arranged in boxes is found at the first century quays north of Upper and Lower Thames Street, at the west end of Custom House in the second century, and elsewhere, e.g. at Dover also in the second century. The two types existed side by side and there is no general development of structural technique from one to the other, but differences in the stability of the underlying strata may have governed the design: stable London Clay largely underlay the box-construction of the quay at Custom House, whereas potentially unstable river silts and gravels were to be found beneath the St Magnus House structure, further out into the Roman river at a point near the bridgehead where reclamation was more intense.

Small differences in construction between quays on different sites and between parts of the St Magnus House structure may however be attributable to different groups of engineers or to the source and quality of the timber used.

The wooden framework of the quay structure was further stabilised by tons of earth and rubble, together with discarded rubbish from the Roman city, tipped around the timbers. The dumped material, which included other debris besides imports, was evidently culled from the immediate area, perhaps warehouses. The richness of this dumping contrasts with other Roman waterfront sites in London and suggests that the bridgehead area was of high commercial significance. Moreover, despite the apparent importance of this particular sector of the waterfront, it seems likely that the St Magnus House quay was part of much larger late second early third century harbour works which stretched at least 640 m from Custom House in the east to Seal House (now the extension to Fishmongers' Hall), and possibly to a site east of Swan Lane (now Ebbgate House), both west of the Roman bridge. This enormous construction was on the scale of the landward city wall, and seems to date initially from about the same period, possibly an imperial restoration of the city. The quay may have been built partly to land building material for the prestigious early third century public and private buildings which have been excavated on a number of sites.


London
Massif
Central

Amphorae (*left*) were used for the transportation of wine, oil and other non-perishable commodities. This Roman amphora, known as a 'Richborough 527', is the most complete example of its type yet to have been found in Britain. As the clay that it is made from is full of large pieces of lava, pumice and volcanic glass it is thought to originate from an area of recent volcanic activity such as Le Puy in the Massif Central of France or (less likely on distributional grounds) from the Aegean.

The revetment and quay together created a 9 m extension into the river. The wrecks of small river-going and coastal craft which would have used such a quay have been found at County Hall, Westminster and nearer the port at Blackfriars. At this stage in our research, however, it seems likely that larger sea-going ships, if they ever came to London at all, would have stayed further out in the river and would have been serviced by smaller boats.

The finds

The objects found around a quay are of two general kinds: debris from the city at various times from the first to the third centuries, either thrown into the water as rubbish or intentionally incorporated into land reclamation; and objects which show how the waterfront area was used, especially while the quay was being built in the decades 225–245.

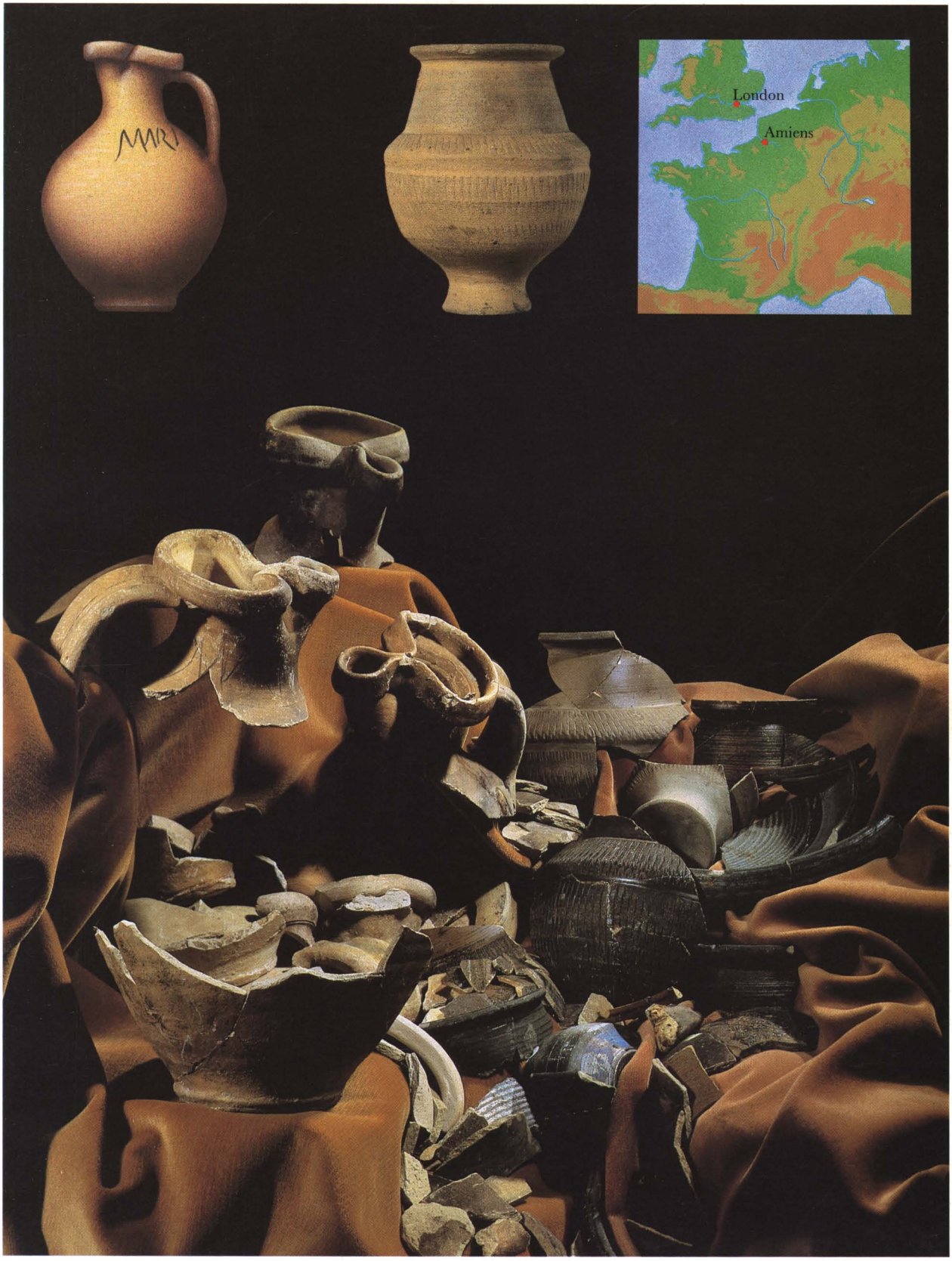
Fragments derived from the Roman city before the building of the main quay in the early third century were found in small quantities in the early river silts. These were however enough to confirm further evidence from other sites, particularly those in the bridgehead area to the north, that the first and second century city comprised substantial buildings; some had tessellated floors, painted wall plaster and window-glass. London already had the leather-working industry whose products and offcuts were to figure so largely around the third-century quay. Scrap from a bronzesmith's workshop and waste from boneworking illustrate the crafts also to be found in this service centre for the province. The function of London as a port is shown by the nature of the second century imports. A large proportion of the pottery from these levels was formed by fragments of amphorae, the large vessels used to store and transport liquids in the Roman world, some of which were used to import fish products, wine and olive oil.

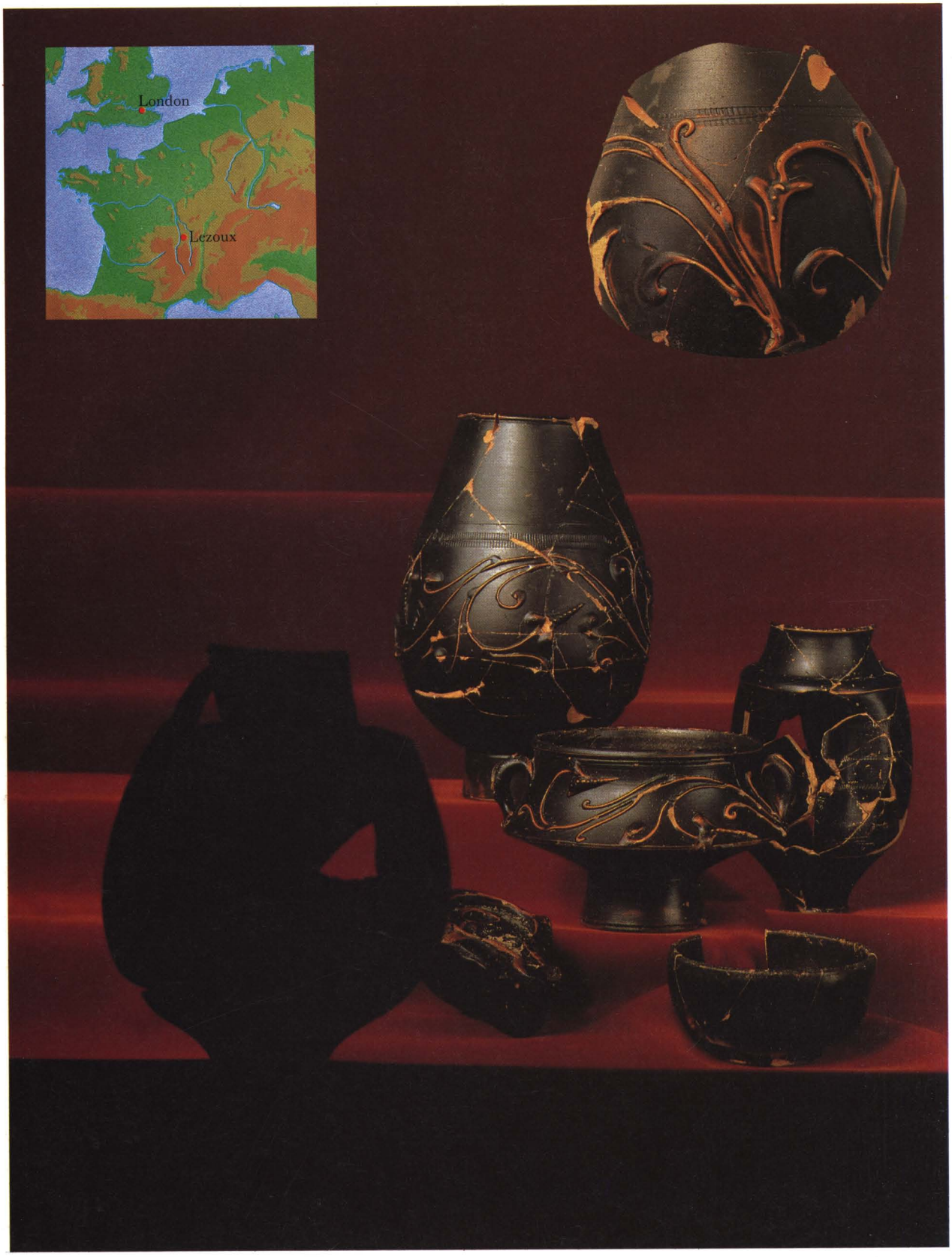
Pottery from Picardy and the Pas-de-Calais regions of northern France (*on following pages*). It is the first time that such large quantities of pottery from this source have been recognised in this country. The vessels are (*left*) amphorae or large flagons, bowls and dishes and (*right*) flagons with pinched spouts, dishes and plain and 'pentice decorated' beakers (*see detail*). The thin burnished stripes on the necks of the beakers and the insides of the dishes are particularly characteristic of these newly-christened 'North French wares'.



Later Roman shoes (*right*): a large and important collection was recovered which includes three rare examples of gilded uppers from stitched shoes, a nailed shoe (*top right*) and two broad sandals. One is a child's single-layer sandal, the other, an adult's, is multi-layered with studs.




London
Amiens


London
Lezoux

Cups and beakers: this group from the late second to early mid third century represents part of a Lezoux shipment from Central Gaul. They are decorated to an extremely high standard with fine 'ivy scroll' trailed barbotine and rouletting (*see detail*). The vessel in the central foreground is an oil lamp with a hole at the front for a cloth or rush wick.

The majority of the finds, however, came from the infilling of the quay in the early third century and the silts outside it; these layers had become mixed together in the post-Roman centuries through the action of the river and disturbance by subsequent modifications to the waterfront structures. The finds in the infill seemed to reflect different cartloads – different types of pottery and roof tile, for instance, lay grouped together within the backfill layers; this grouping of the tiles, though smallish quantities were involved, suggests that they had come from the demolition rubble of different buildings. Crateloads of high-class imported pottery had been brought down to the quay, unused, and tipped in around the quayfront beams. Evidence from other bridgehead sites suggests that the bridgehead area was a part of Roman London used for storage and perhaps selling of the imported pottery. A number of unused pots could be reconstructed from the excavated fragments, suggesting that a warehouse or shop was cleared of a large amount of stock.

The third century harbour-works, possibly the most extensive of all, were however part of a much larger building programme which transformed the appearance of Roman London and gave it the shape it was to present to the outside world for the next fourteen centuries; apart from small extensions associated with the Blackfriars and royal building at the Tower in the thirteenth century, the city wall built around AD 200 constituted the main defensive outline of the city until the sixteenth century. Today the route of the wall can still be traced, by following the fragments (some inside modern cellars) and crossing the streets whose names bear witness to their Roman origins as leading to the medieval and Roman gates: Aldgate, Bishopsgate, Cripplegate, Aldersgate, Newgate and Ludgate.

Pipe-clay figurines of Venus were made in Central Gaul during the early-mid second century. Cheap idols of this nature were commonly used in temple and household shrines. The frequency of Venus statuettes at this and other City sites demonstrates the popularity of her cult in 2nd century London.



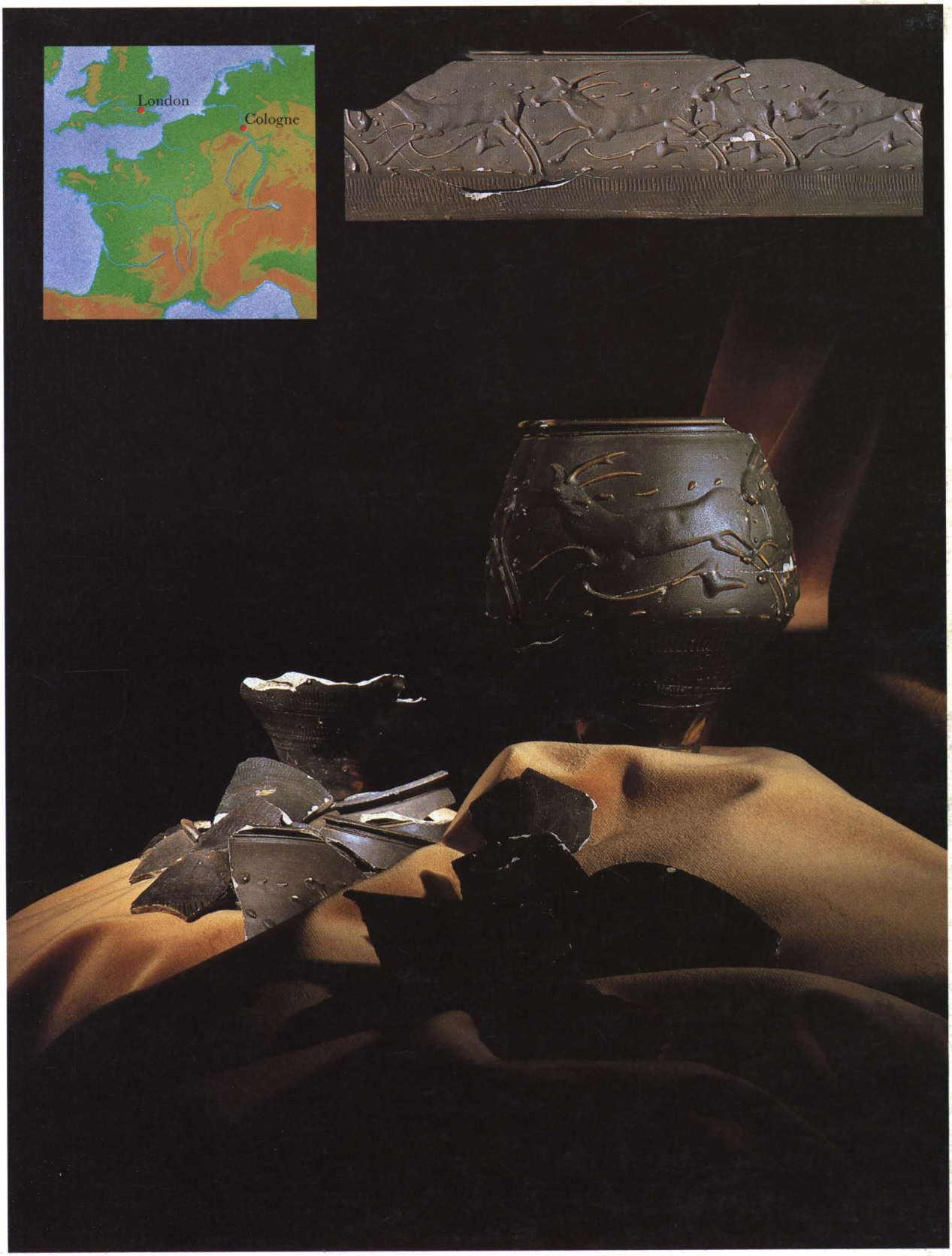
Our knowledge of the appearance of the city within the great half-circle of wall in the early third century, as the quay neared completion, is at present fragmentary; the remains of this period have been widely destroyed by early modern cellars and foundations. New public buildings or religious complexes, with monuments and statuary, such as that now thought to have occupied the area south of Queen Victoria Street, were constructed largely of stone imported from Kent and from places much farther afield, such as the Mediterranean stones found at St Magnus House. Many new building works seem to be indicated by the sudden appearance of several new types of clay roof-tile; in addition some buildings were now roofed with stone slabs. Fragments of Carrara marble, veneers of onyx marble, and fragments of several different wall-paintings show that both public and private buildings were of a high standard. A luxurious life-style for some of the inhabitants is indicated by decorated beakers for the imported wine, jewellery and cosmetics; and, most of all, women's gilded indoor shoes. The inhabitants of Roman London had to make some adjustment, however, to the British climate, though it may have been warmer then than it is now; fragments of leather clothing found on the site include parts of jackets, and possibly of breeches.

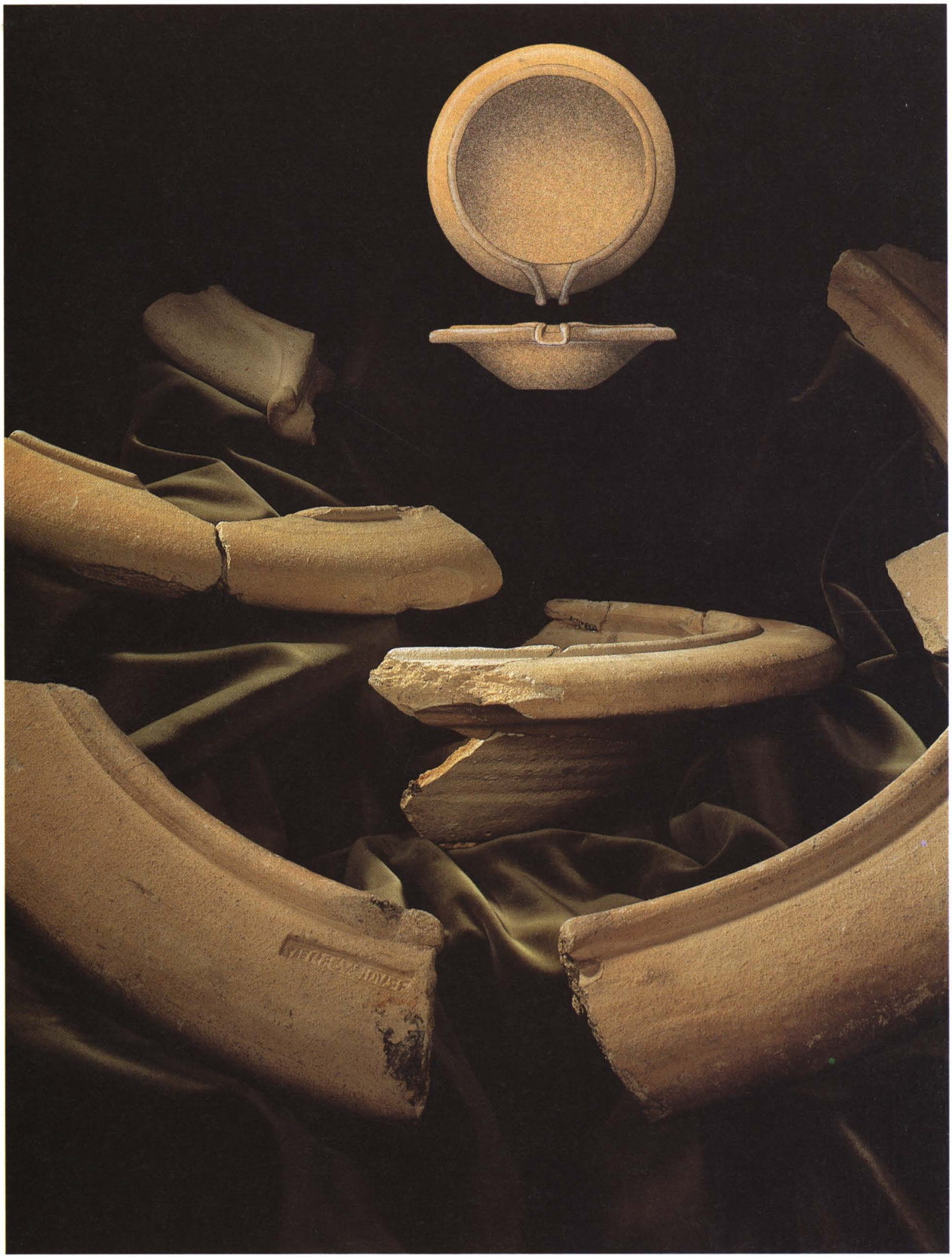
The waterfront excavations of the last ten years have established beyond doubt that one service industry in Roman London was the working of leather, presumably as a byproduct of slaughter-houses for cattle; the meat would go to feed the expanding urban population, the hides and bones to the leatherworking and boneworking industries. St Magnus House has produced evidence that London was served by large tanneries, presumably somewhere in the region, as shown by inscriptions on the leather, and a large

A beaker and broken sherds from Cologne (*right*), decorated with trailed barbotine hunt scenes and rouletting (*see detail*) dating from the late second to early mid third century. The fluidity and freedom of style of these figures, and of similar motifs on cups, beakers and flagons made in the Roman Empire, suggest Celtic rather than Classical influences.

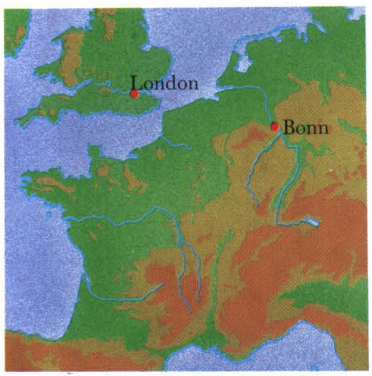


Jewellery evoking the comfortable life-style enjoyed by some Roman Londoners. The enamelled copper-alloy brooch, the gold-in-glass bead, and the gold finger-ring are probably all of early to mid third century date. The ring bears its owner's initials in retrograde so that it could be used as a seal. Another ring of iron, with inlaid copper strips and an incised star in each quadrant, comes from a second century deposit. The inscription, which may be a love charm or a prayer, reads *DA MI VITA*, short for *Da mihi vitam*, 'Give me life'.


London
Cologne



Large spouted mortars or *mortaria* made near Bonn, in the workshops of the potter Verecundus, date from the second to mid third century. The stamp on the rim in the foreground says VERECVNDUS F(ECIT): 'Verecundus made this'. Mortaria were commonly used in the Roman period for mixing and grinding food. These examples are particularly hard and heavy, and as they are usually found singly on British sites it is thought that they may have had a specific culinary use.



amount of waste from the making of shoes and the repair of other leather objects such as clothing. Such industrial waste has also been found in the Upper Walbrook valley (most recently at Copthall Avenue in 1982) and it is clear that London produced footwear on a moderately large scale. At the same time the frugal re-use of leather for repairs are also shown in the St Magnus House finds.

But London's prime purpose, at least up to the early third century, was as a port, a place of trans-shipment of goods. Some objects would have come by sea from other parts of Britain: roofing slates from North Wales and the Bristol region, bowls and jars from Devon and Dorset, jet pins from Whitby in Yorkshire, and coal from either South Wales or the Durham coalfield. Pottery for use at the table came from other provinces of the Empire, notably what is now eastern France and the Rhine valley. A pilaster capital may have come from Northern France, wine jars both from the Eastern Mediterranean and from north Africa – presumably full of their original contents – and olive oil from southern Spain. The business of the port was partly recorded, as letters, bills of account or transactions, on wooden writing tablets made from woods such as cedar (then a foreign tree), silver fir and Norway spruce. Other objects such as a fish-hook and pieces of barrels, lost in the silt or thrown away, illustrate the maritime activities one might expect in the waterfront zone of a large port. We should imagine also that across the quay flowed a traffic in goods which are not shown in the archaeological findings, such as livestock, slaves, and goods, especially foodstuffs, in containers which did not break or leak their contents.



Small metal implements including a copper-alloy finger-ring with a rotary key, an iron binding for a box or cabinet, a copper-alloy spoon, an iron fish-hook, a cosmetic implement in copper-alloy, and an iron slide key with four teeth. All of these items probably date from the early to mid third century, although only the spoon and cosmetic implement were securely stratified.



Hones: the unusually high number (thirteen in all) from the site may represent some activity specific to the locality. Leather-working is one possibility, but several show no signs of wear and could be unused goods which were discarded because they had been broken in transit. The majority have distinctive score-marks on their edges, and belong to a recently-identified Kentish Rag hone industry, which is dated to the mid second to fourth centuries.

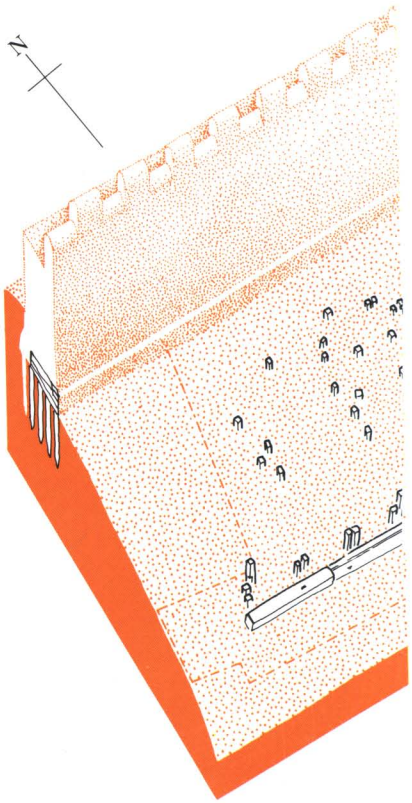
The riverside wall

The prospects for London in the 240s must have looked extremely encouraging; the newly embellished city had a wall, a substantial quay, temples and private houses of some luxury. But within fifty years this had changed dramatically. Political and economic changes in the Roman Empire brought about the collapse of the main north European markets which supplied London and the province with many goods. From about 250 Saxon pirates disrupted the trade routes. The level of the river may also have been dropping in relation to the land, causing silting and difficulties of access in the ports of south-east England.

This process was very evident at St Magnus House. The period of use of the quay was short, as foreign trade did not maintain its impetus. There is no evidence for use of the quay after about 260, barely twenty years after its construction.

At about this time, moreover, a large wall was built to run from east to west along the quayside, about 8 m behind the front of the quay. The riverside wall at St Magnus House resembles other lengths found in previous years on sites at Blackfriars and the Tower, and it is dated by dendrochronology, as on the other sites, to 255–70. It seems to have formed a fairly continuous wall 1700 m long running behind the third century shoreline, incorporating earlier walls and terraces and with later additions and modifications (for example, the fourth century wall which can be seen at the Tower). This was the time of the Saxon shore forts, with a new type of military architecture: substantial high walls with projecting interval towers or bastions. The London riverside wall belonged more clearly to an earlier type of architecture, having a slighter construction and an internal bank, similar to the landward city wall and to other,

The site in the later 3rd and 4th centuries, showing the riverside city wall at the back of the quay, which was now silted over and possibly dismantled. The wall is reconstructed from work on this and other sites.



mid-third century defensive town walls in Britain and on the Continent; but the reasons for its building, along with outposts suggested by the third century signal tower found in 1974 at Shadwell in East London, can be found in the same period of imperial and economic unrest and misfortunes in the later third century. The quay was partially dismantled or robbed of some of its timbers either at this time or during the following centuries; this may have been a piecemeal process. The quay was probably no longer required on the same scale as before; and with its superstructure removed, it would form an obstacle in any attack on the high wall behind it. We can assume that some of the timbers of the quay were removed for use elsewhere in the city; the lower parts were left to decay and become enveloped by the silts of the rising river.

The site in the post-Roman period

The first post-Roman structures on the site were rubble banks and stakes of the tenth century, laid against the decayed and eroded base of the riverside wall. The wall may have been a formidable obstacle as late as 1014, when the bridge afforded the only real access into the town for an attacking force approaching by river. The wall finally disappeared piecemeal as medieval buildings, the successors to the tenth century banks, reused it as the frontage to Thames Street in the twelfth and thirteenth centuries. Their wharves pushed out from Thames Street in a southerly direction, over the submerged and forgotten Roman quay, towards their present limit about 80 m south of the street.

Our changing view of Roman London

The third century quay excavated before and during the building of St Magnus House was the latest in a series of quays and embankments which formalised the north bank of the Thames into impressive terraces for some distance on either side of the Roman bridge; a process which had begun almost two hundred years previously when the Romans first occupied the site of Londinium. The quay was evidently part of a scheme of urban renewal which changed the Roman city of London into an administrative capital with new defences, new or restored temples, new styles in housing and lifestyle concomitant with a redefined status in the late Roman empire.

The excavation has also provided, through its finds, the most detailed picture of third century London yet achieved. The lifestyle of the inhabitants, their homes and workplaces, are brought to life by study of the many objects found in and around the quay. But ultimately it provides only a sideways glance at third century London, derived from objects thrown away and reused in the infill of the quay. There must be more archaeological excavation of other parts of Roman London to fill out the picture.

Our view of what third century London looked like, and what then happened to it, is extremely fragmentary and partial. While

On next page: **reconstruction of London in the later 3rd century** by Alan Sorrell. The position of the St Magnus House/New Fresh Wharf site can be made out just downstream of the bridge (compare with Figure 1 on page 26). The building of the riverside wall must have cut off much of the harbour from the inland areas such as the forum; though, as Sorrell shows, certain watergates may have allowed shipping to approach.







it is clear that London was a port of some kind up to the middle of the third century, it is by no means certain what sort of place it was during the later third century and all of the fourth century, up to the time of withdrawal of Roman official rule and support in the years around 400. New trends in trade networks meant that less and less trade came to London. But there was also change in the character of trade as well as in its patterns and commodities. Small towns developed, large villa estates became more self-sufficient, and imported luxuries became scarce. These changes were felt in the other Roman provinces besides Britain.

London may well have become a specialised city dedicated to provincial administration and its related ceremonial functions – a city of few, large, well-spaced building complexes. The buildings of the third and fourth century which have been found seem to have comprised large courtyard houses, often lavishly appointed, but implying less density of occupation than in the growing port of the first and second centuries. It was this later rather specialised 'administrative village' which faded into obscurity as Roman rule lapsed.

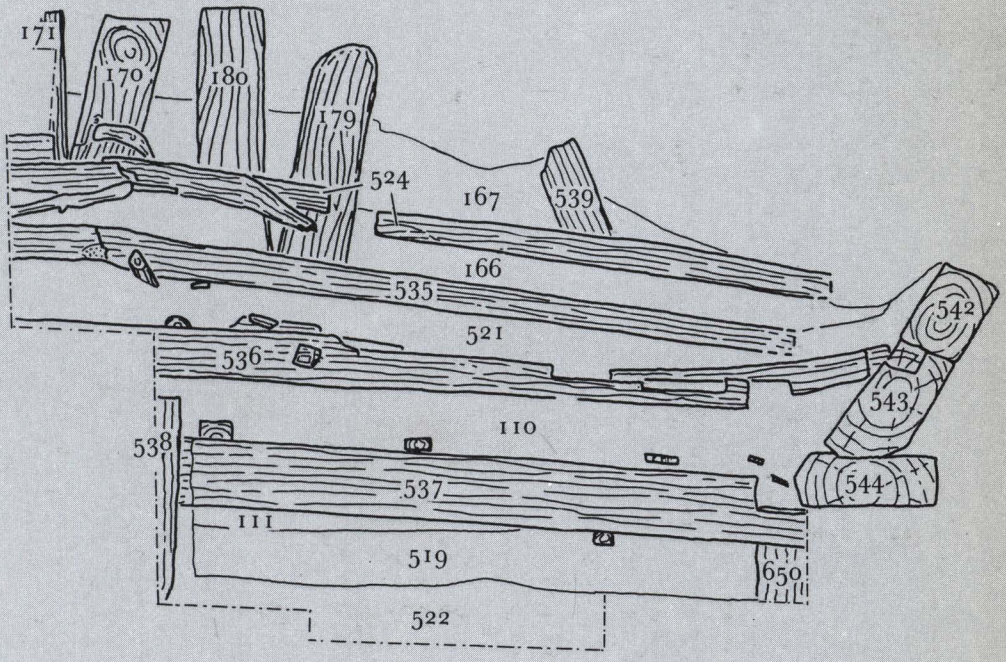
The site at St Magnus House had fallen into decay long before this happened. In the late third century the riverside defensive wall was built at the back of the quay, perhaps as a reaction to the uncertainty of the times. The site, now part of the foreshore in front of the wall, lost its importance. A further six hundred years were to elapse before the Saxon king Alfred and his successors began another policy of urban renewal which in effect created the medieval and modern City of London.

NOTE

1. G. Milne (ed) *The Port of Roman London* (1985).

The Excavations at New Fresh Wharf, 1974–1978

Louise Miller and John Schofield



INTRODUCTION

The wealth of the City of London throughout its history has stemmed largely from waterborne trade, yet until the early 1970s no controlled archaeological excavation had taken place to investigate the development of the port from the Roman period to the present day. It was in fact the recent decline in the maritime character of the City which brought new building activity and consequent threats to the archaeological deposits of the waterfront sites. In 1972, the first controlled rescue excavation of the London waterfront at Baynard's Castle demonstrated the potential of such sites south of Thames Street, producing well-preserved medieval buildings, structures and artefacts [1]. This opened up a new field of research in the City's archaeology, and influenced the Guildhall Museum's attitude to the many redevelopment schemes of the area south of Thames Street [2]. A discussion document placed the waterfront among the 'Areas of Key Importance' in the City's archaeology [3] and this was given a national priority in *Rescue*'s publication, *The Future of London's Past* (1973) [4].

The Guildhall Museum drew public attention in particular to the proposed redevelopment of the Billingsgate Market and adjacent New Fresh Wharf sites, originally proposed as a single development [5] (Figures 1, 2). The south side of [Lower] Thames Street was thought to represent the original line of the river bank [6] and the discovery of Roman, Saxon and medieval wharves or docks was expected. There was in particular the question of the alignment(s) of the pre-medieval bridge. The line of the medieval bridge (finished 1209) lay at the west end of the church of St Magnus, and formed the western limit of the New Fresh Wharf site (Figure 2). A suggestion that the earlier bridges lay further east at the foot of Pudding Lane on the line of the boundary between Bridge and Billingsgate Wards was then current [7], though the large quantities of Roman coins and other objects found in the river seemed to suggest that the Roman bridge may have coincided more closely with that of the medieval bridge, a proximity also suggested by the alignment of Roman approach roads in Southwark [8]. In fact, the suggested Pudding Lane alignment of the pre-medieval bridge was refuted in its own terms in 1975 [9], but the New Fresh Wharf site offered an additional archaeological test as well as an insight into the general character of the bridgehead area where commercial activity was likely to have been intense in the Roman period. In addition the date of Thames Street might be inferred from the excavations and its possible origin as an element of late Saxon town planning examined. Documentary references hinted at development of the bridgehead area as a centre for maritime trade from at least the end of the 10th century, the date of the first mention of Billingsgate in the laws of Ethelred II (*c.* 1000) [10].

Five main periods of activity were recorded on the site: 1, Roman: 2, Saxon (to *c.* 1000); 3, Early medieval (11th to mid-13th century); 4, Later medieval (mid-13th century to the Great Fire of 1666); 5, post-Fire and early modern. The present report describes the findings in Period 1 [11].

Archaeological background for the Roman period

In 1972 knowledge of the Roman waterfront in the bridgehead area was limited. During building works in the 1920s extensive remains of timber staging and Roman buildings had been found on the river terrace to the north of Thames Street, on either side of the

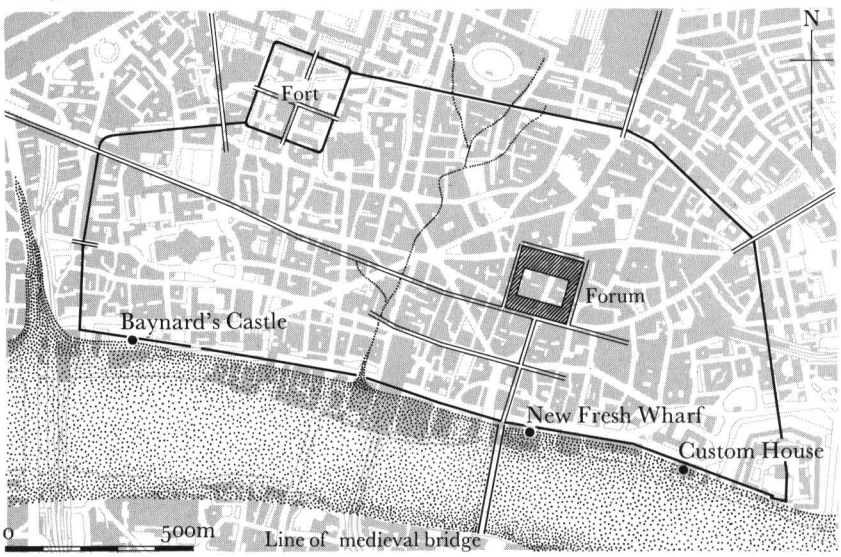
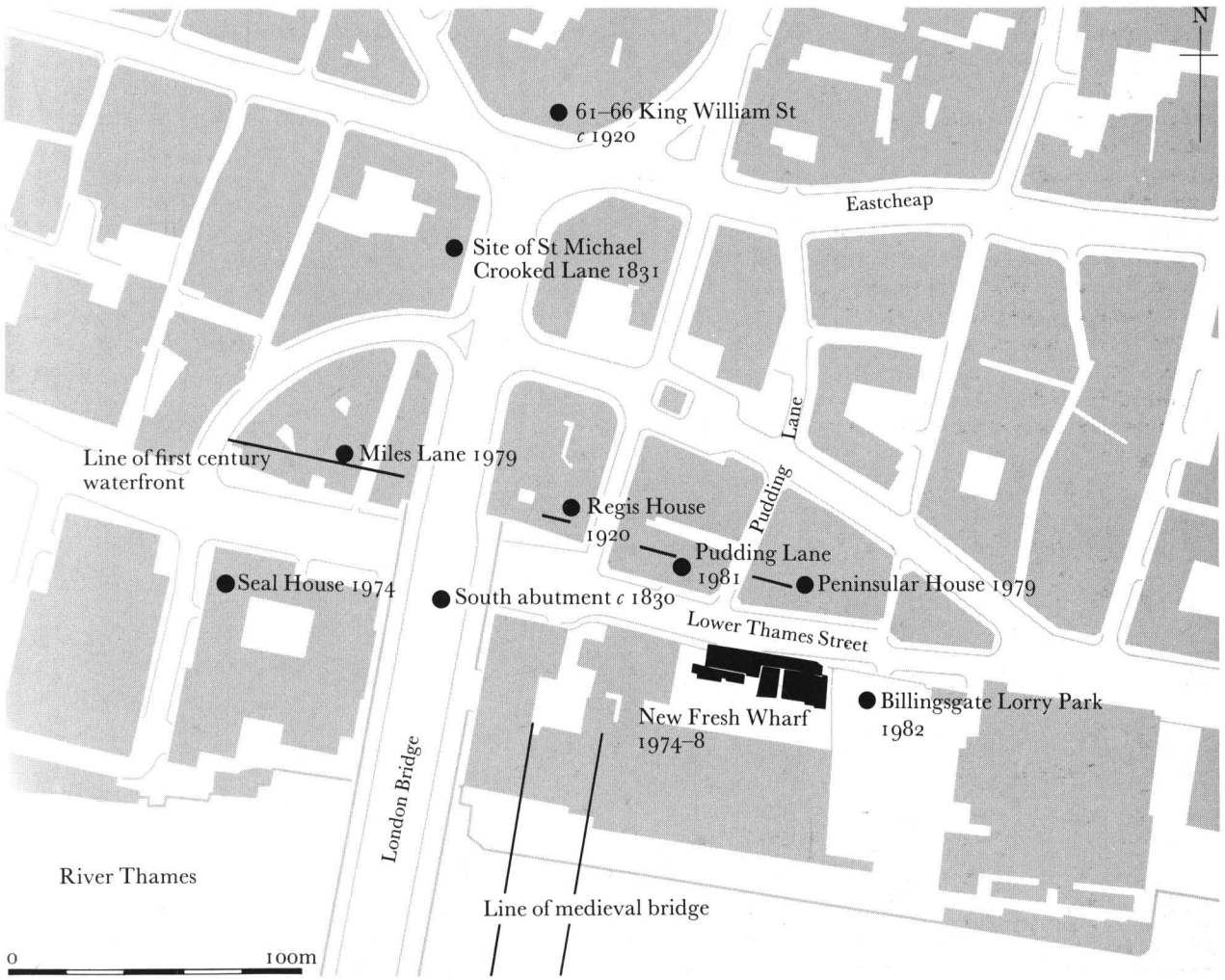


FIGURE 1 Location of the site in the City of London.

present bridge, at Miles Lane and Regis House (Figure 2) [12]. While these were interpreted at the time as wharves [13] their true nature was not understood. There was no discussion of the waterfront in Merrifield's *Roman City of London* of 1965 [14] and in 1968 Grimes was reluctant to interpret such remains as wharves until the position of the Roman river and contemporary river levels was firmly established [15]. The line of the 1st century river bank has only been established beyond doubt since the New Fresh Wharf excavations by the investigations at Miles Lane, Pudding Lane and Peninsular House in 1979–82 [16]. Previously the south side of Thames Street was thought to represent the line of the Roman river bank, and remains of massive masonry foundations and piles found in sewer and cable trenches along the length of the street [17] were interpreted as river embankment walls or as a series of stone quays. Excavations in 1974–6 at Baynard's Castle were seen to reveal that in part at least the line of Thames Street was determined by the position of the late Roman riverside wall (now dated to the third quarter of the 3rd century) and which would account for some of these masonry fragments [18].

While the potential of the New Fresh Wharf site was under consideration, the Custom House site, in a similar position south of Thames Street and 310 m to the east, was excavated in 1973. This revealed a box-framed quay, subsequently dated to AD 137–42 [19], about 7 m south of the street and about 6 m below modern street level. The depth reflected the change in sea-level since the Roman period; High Water today is at about 3.9 m above Ordnance Datum, and high water at the time of the Roman quay was proposed at Ordnance Datum (hereafter abbreviated OD) itself [20]. Other types of Roman quay were exposed on the site, and thought at the time to be late 1st or early 2nd century; pottery in the silts around the quays was of great variety and included a quantity of rare imports [21]. The fate of the quays in the late Roman or Saxon periods was not ascertained because of the absence of dateable layers between the 4th and late 13th centuries.

FIGURE 2 Position of the site in relation to the bridgehead and Billingsgate, showing main Roman waterfront alignments.



The Custom House excavations located the position and depth of a Roman quay but posed further questions. It was necessary to find out more about Roman river levels and tidal range; to investigate the possible significance of different types of quay construction; to find quays of earlier and later dates; and to elucidate what happened to the quays in the late Roman period.

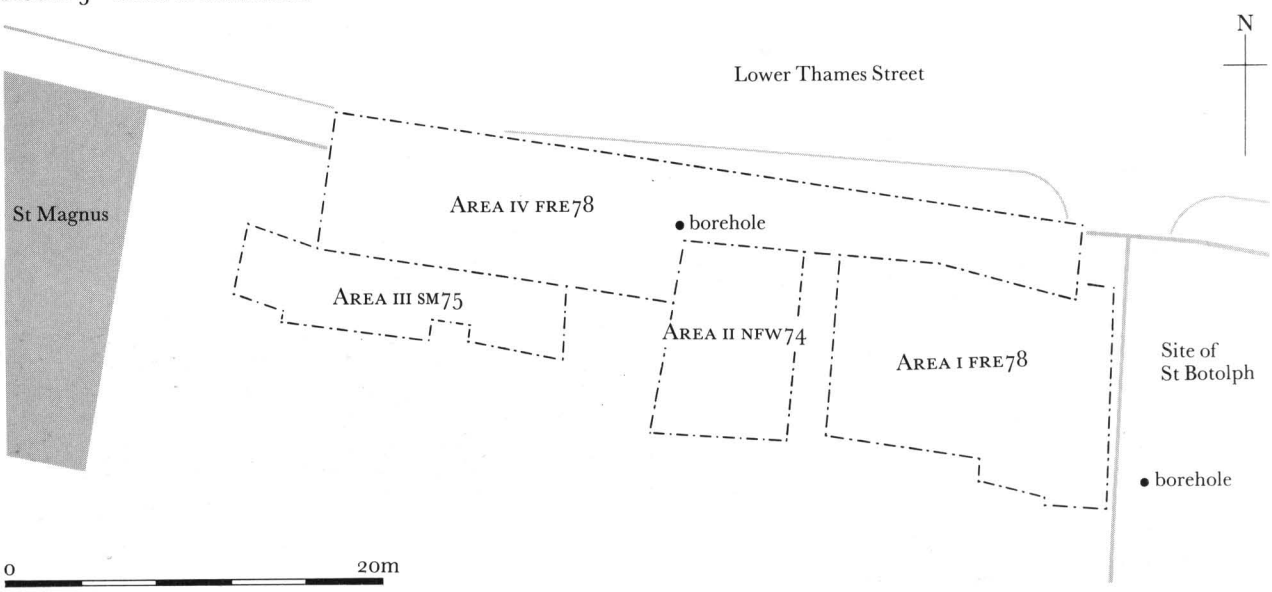
The Site

The area available for excavation lay between St Magnus the Martyr church on the west, Billingsgate Market lorry park to the east, Thames Street to the north and the river to the south (Figure 2); by 1974 redevelopment of Billingsgate Market had become a separate issue. The building of the New Fresh Wharf warehouse on the southern part of the site in 1952 had destroyed all archaeological deposits for a distance of 40 m north of the present waterfront, leaving an area of 1285 sq m for investigation at the north end of the site. In 1974 three buildings still occupied the north-west corner of this area next to the church, and initial excavation therefore took place on the east side of the site, in two trenches 15 m × 9 m and 9.5 m × 6.5 m (AREAS I and II, Figure 3; site code NFW74, supervised by G. Clewley). In AREA I little was excavated below the numerous walls of medieval buildings, but AREA II, which disclosed few medieval walls, was excavated down to Roman levels. The north part of the trench was excavated down to −1.5 m OD behind the Roman quayfront, and a sondage excavated to −2.9 m OD (Figure 4). As no shoring was used, the sides of the trench were stepped inwards as excavation progressed, reducing the area to 4 m × 4 m at the base, 8 m below street level. Safety considerations led to the closure of the excavations after 3 months without satisfactory examination of the lower timbers of the Roman waterfront.

This incomplete record of the main Roman structures uncovered in AREA II was one of the reasons for opening AREA III (site code SM75, supervised by John Schofield) in April 1975, the buildings in the north-west corner of the site having by now been demolished. The trench, 18 m × 3 m, was cut in an east-west direction 6 m west of AREA II to pick up the Roman quayfront, extending to within 6 m of the east end of St Magnus' church. The trench was deliberately kept to this narrow width with the intention of using timber shoring to allow an investigation over an area of the same size of the Roman quay. In addition the contention that the pre-13th century bridge had lain on the boundary between Bridge and Billingsgate wards could be tested since the boundary would be crossed by the trench. More intensive collection of finds than in the previous year's excavation was possible because of the improved access to the Roman layers. After the removal of dense silts at −3 m OD, however, the flow of ground water increased and persistent flooding eventually led to the closure of the excavation after $4\frac{1}{2}$ months.

In 1975 redevelopment plans apparently ensured the safety of the remaining strata, and research started on the finds so far recovered from the site. In 1977, however, finalised plans required the bulk excavation of all the archaeological deposits and a watching brief was carried out at intervals between January and September 1978 (sitecode FRE78, supervised by L. Miller). The ground was to be stripped down to 0.75 m OD in preparation for the basement slab of the future St Magnus House. With the co-operation of Higgs and Hill Building Ltd and their sub-contractor J. Dolan it

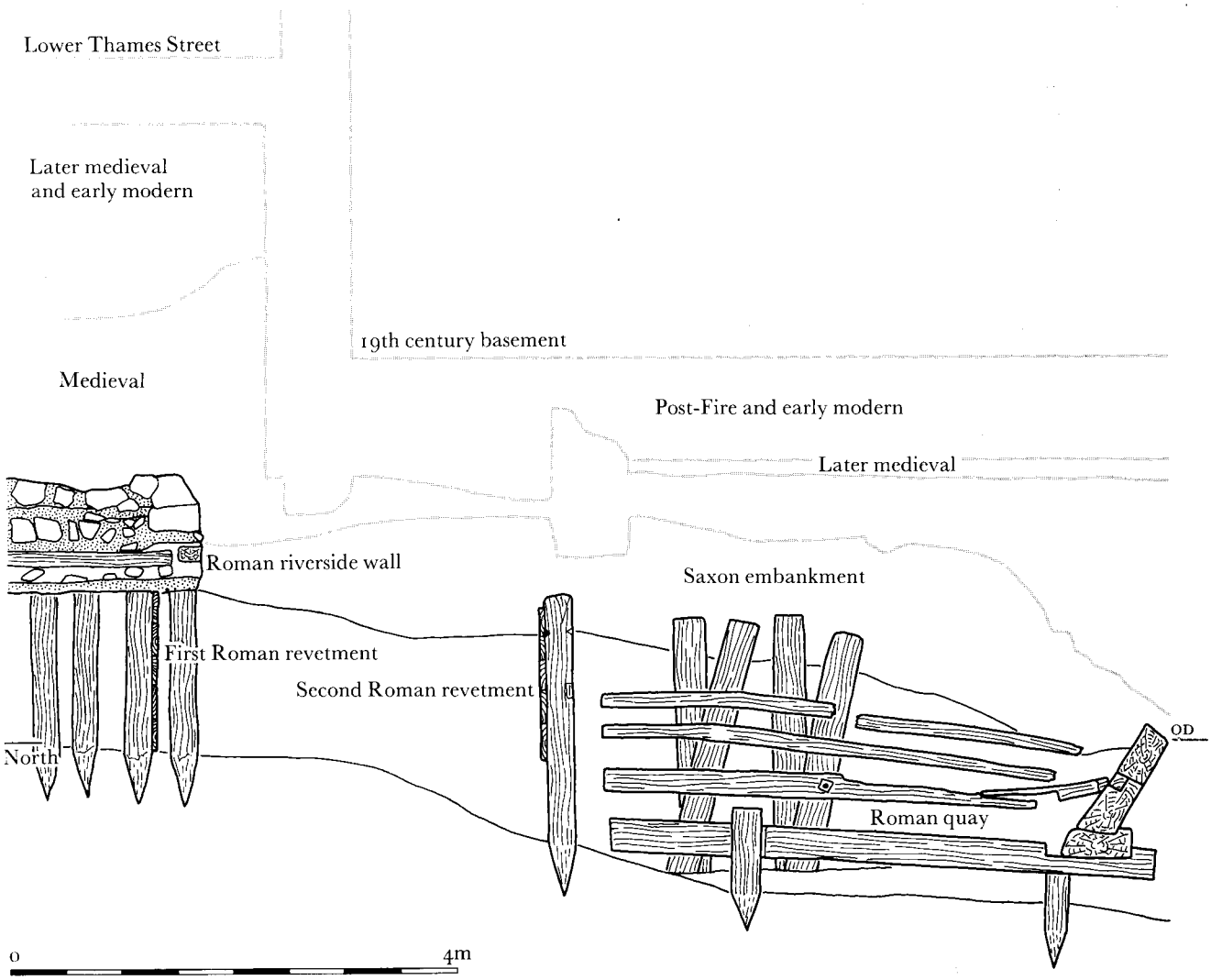
FIGURE 3 Areas of excavation.



was possible to record and sample Roman timbers projecting above 0.74 m OD and a further 8.5 m of waterfront was recorded on the site of AREA I, below the level excavated in 1974. The watching brief resulted in the creation of AREA IV, to the north of AREAS I–III, and of AREA V to the south of them (Figure 3).

The artefacts, site books, plans and drawings of the excavation are kept in the archive of the Museum of London, under the site codes NFW74 (AREA II only), SM75 (AREA III) and FRE78 (AREAS I, IV and V). In general in the following report a context number will be preceded by its area number (eg. I.5003, II.544, III.378). While each context was given a separate number during excavation, some of the timbers have been grouped together for descriptive purposes in this report: eg. II.178 refers to a group of four piles in AREA II. More detailed descriptions of the timbers and other contexts will be found in the archive reports (see list on p. 267).

FIGURE 4 North–south section showing depth of deposits.



The site (TQ 3294 8067) lies on the south side of [Lower] Thames Street about 70 m downstream of the present London Bridge. Since the excavations reported here, the line of the early Roman river bank has been established 25 m to the north on the other side of Thames Street [22]. The London Clay forming the lower stratum of this bank slopes downwards towards the river [23] and was found in boreholes on the present site (Figure 3) at between −5 m and −8 m OD. The natural clay also fell away from east to west, as at Custom House [24]. Gravels and silt above the Clay also sloped down from north to south and from east to west, though the distinction betweeen natural gravel and re-worked gravels containing archaeological material was not clear. The main Roman quay was built on these gravels at about −1.5 m OD (Figure 4). A general plan of the Roman features is given in Figure 5.

Summary of Period 1 phases

1. Early timber structures in AREA IV (Figure 6) and gravel deposits in AREAS II (Figure 52) and III, early 2nd century, both sealed by:
2. Silting in AREAS I–IV, late 2nd/early 3rd century (Figures 7, 8, 52).
3. A revetment of piles and planks infilled with dumps of material, cutting the phase 2 silts in AREA IV, *c.* 225–45 (Figures 9–11).
4. Timber quay, cutting the phase 2 silts in AREAS I–IV, *c.* 225–45 (Figures 12–37, 45–52)
5. Deposits infilling the phase 4 quay in AREAS I–III, *c.* 225–45 (Figures 38–39)
6. Silting against the phase 4 quay in AREAS I–II, underlying collapsed timbers (shown in sections, Figures 46–51), *c.* 225–260.
7. Silting or dumps in AREA III, slumped and disturbed (Figures 39, 43, 50–53), late 3rd/early 4th century.
8. Riverside wall, cutting phase 3 (Figures 39–43), 2nd half of 3rd century, probably in the period 255–70.

FIGURE 5 Overall plan of Roman structures and positions of sections.



The site (TQ 3294 8067) lies on the south side of [Lower] Thames Street about 70 m downstream of the present London Bridge. Since the excavations reported here, the line of the early Roman river bank has been established 25 m to the north on the other side of Thames Street [22]. The London Clay forming the lower stratum of this bank slopes downwards towards the river [23] and was found in boreholes on the present site (Figure 3) at between −5 m and −8 m OD. The natural clay also fell away from east to west, as at Custom House [24]. Gravels and silt above the Clay also sloped down from north to south and from east to west, though the distinction betweeen natural gravel and re-worked gravels containing archaeological material was not clear. The main Roman quay was built on these gravels at about −1.5 m OD (Figure 4). A general plan of the Roman features is given in Figure 5.

FIGURE 5 Overall plan of Roman structures and positions of sections.

Summary of Period 1 phases

1. Early timber structures in AREA IV (Figure 6) and gravel deposits in AREAS II (Figure 52) and III, early 2nd century, both sealed by:
2. Silting in AREAS I–IV, late 2nd/early 3rd century (Figures 7, 8, 52).
3. A revetment of piles and planks infilled with dumps of material, cutting the phase 2 silts in AREA IV, *c.* 225–45 (Figures 9–11).
4. Timber quay, cutting the phase 2 silts in AREAS I–IV, *c.* 225–45 (Figures 12–37, 45–52)
5. Deposits infilling the phase 4 quay in AREAS I–III, *c.* 225–45 (Figures 38–39)
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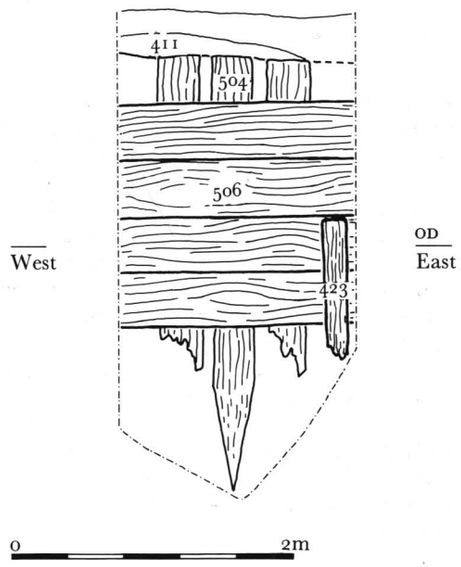
Period 1, Phase 1 *Early timber structures in* AREA IV *and lowest gravel deposits in* AREAS II *and* III

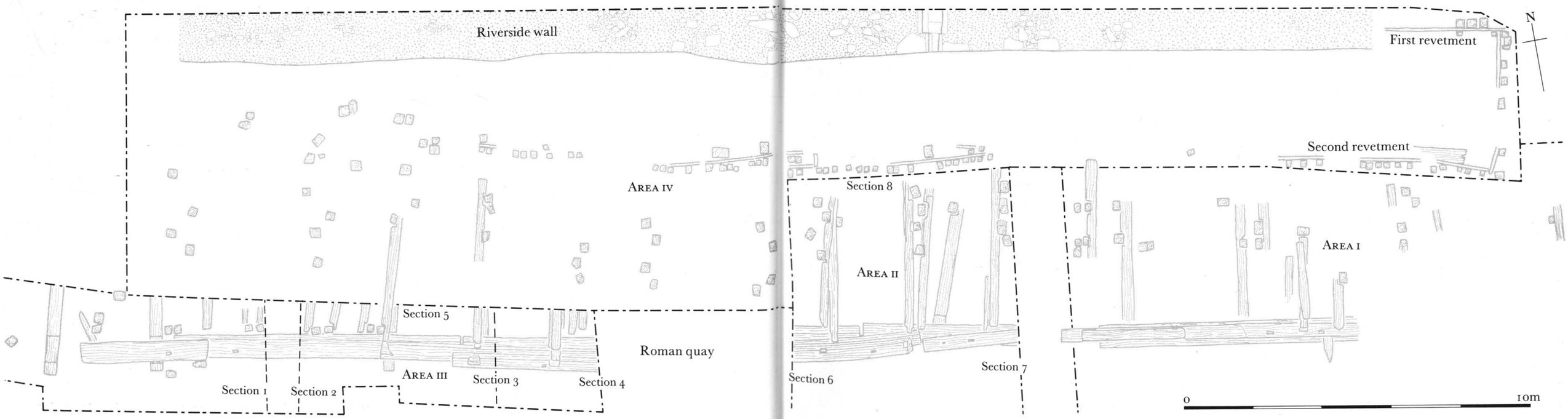
(Figures 6, 52)

Traces of a structure predating the 3rd century Roman quay were found in AREA IV during the watching brief. In the north-east corner of the excavation were three piles (IV.504, Figure 6) of greater cross-section and length (up to 3.11 m) than others in this area. The tops of the piles were at about 1.3 m OD. Against the south face of the piles were four horizontal edge-set planks (IV.506) held in position by occasional smaller piles to the south (IV.423). This revetment was largely obliterated by the later Roman riverside wall (Phase 8) but it was perhaps further represented to the west by small piles (IV.474, Figure 40).

No direct relationship was established between these timbers and the earliest deposits reached during the previous excavations of AREAS II and III, but the silts overlying the AREA IV timbers also overlay fine grey river silts (II.534, Figure 52; III.357, Figure 49) excavated in AREA III to −3.5 m OD, which contained large quantities of butchered animal bone and pottery dating to the 1st and early 2nd centuries. No pre-Roman river bed was identified.

FIGURE 6 Elevation of first revetment.





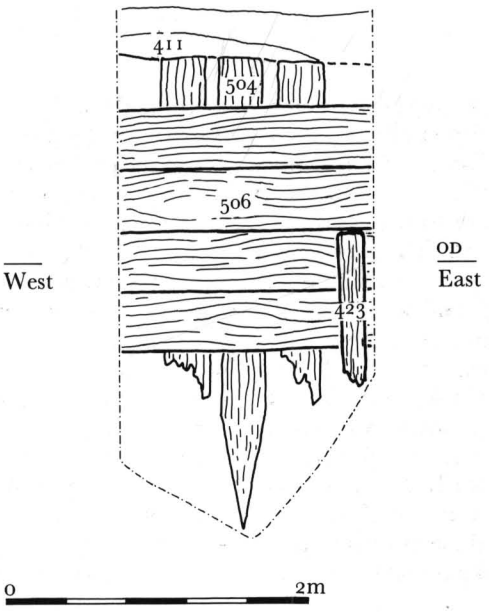
Period 1, Phase 1 *Early timber structures in* AREA IV *and lowest gravel deposits in* AREAS II *and* III

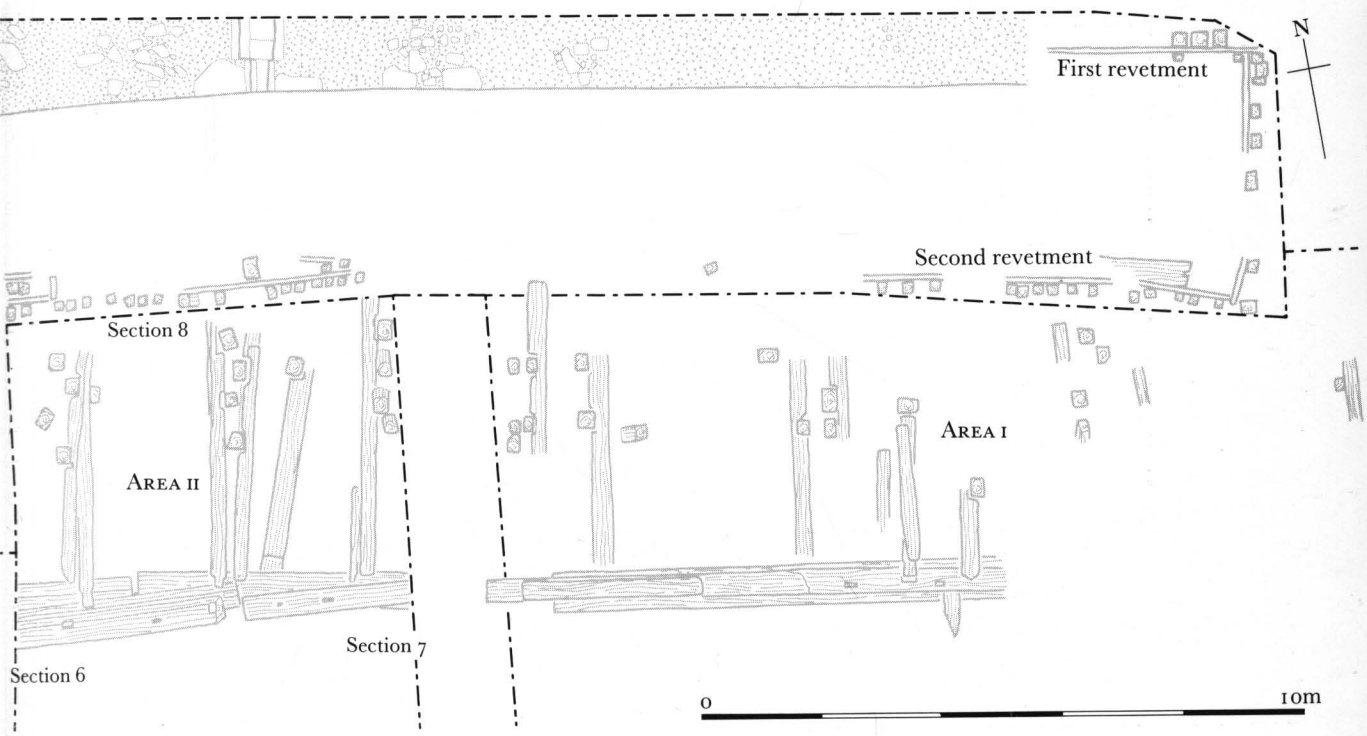
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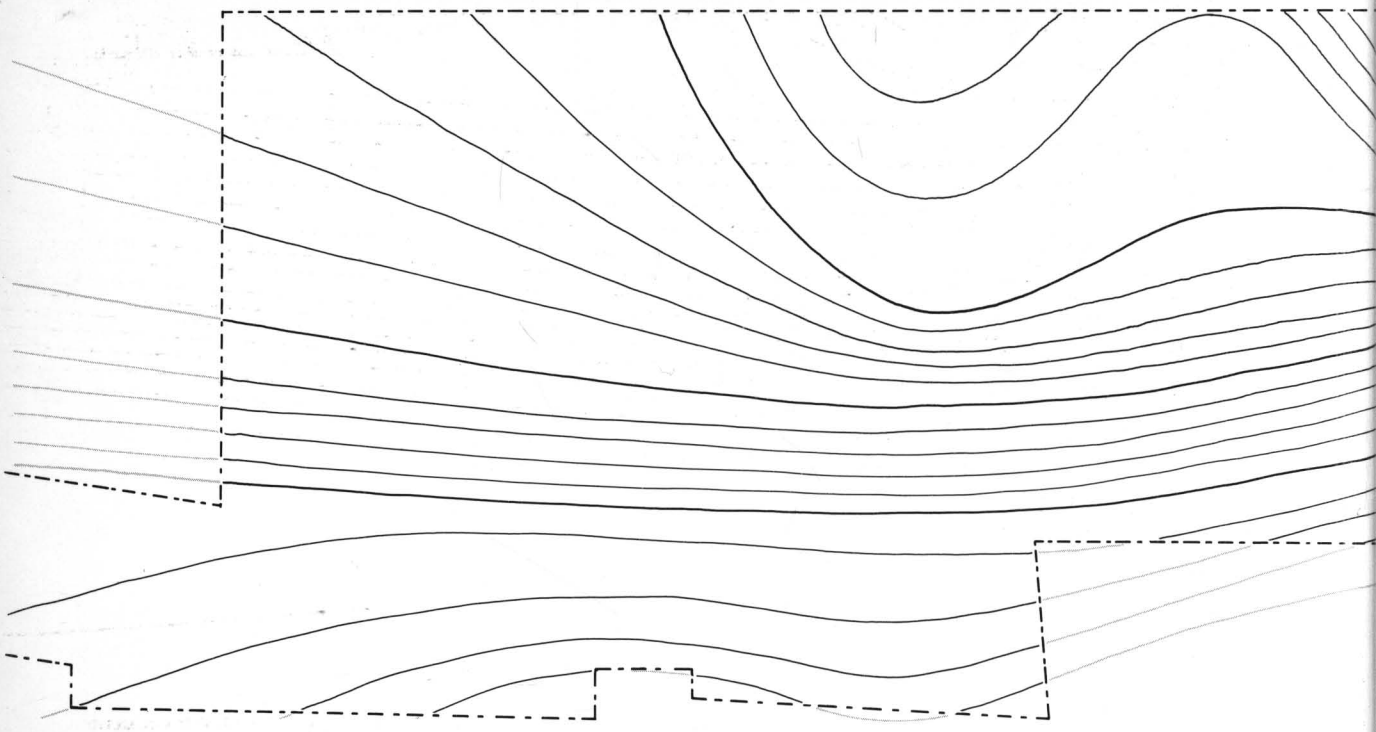
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Period 1, Phase 2 *Silting in* AREAS I, II, III *and* IV

(Figures 7–8, 49, 52–3)

Grey sand, fine gravel and grey silts, with inclusions of shell, bone, wood fragments and large pieces of Roman tile lay against the Phase 1 revetment (Figures 7–8) and eventually covered it (IV.367, Figure 53). In AREA II to the south fine grey sand and gravels (II.533, 529, 527; Figure 52) interwove to form a group of layers 1.3 m thick. These were sealed by a thin layer of organic material (II.570) which formed a foreshore surface at −1.6 m OD (Figure 52). In AREA III to the west the lowest part of the silting excavated at the west end of the trench (III.350) contained twigs and occasional timbers, while the upper part (III.286) comprised interleaving sands and silts with fine grey silt (III.342; Figure 49) at the surface spreading over the whole trench at −1.6 m OD, sloping down to −1.9 m OD at the south. In both areas this thick silt layer produced pottery dating from the late 1st to the early 2nd century, with a small amount of late 2nd/early 3rd century pottery which may have been intrusive from the succeeding phases. It formed the foreshore at the time of construction of the following Phase 3 revetment.

Period 1, Phase 3 *Timber revetment running east-west in* AREA IV, *with a north-south return north of* AREA I

(Figures 9–11)

Two sections of an east-west revetment were recorded 4 m south of the Phase 1 revetment. Most of the timbers were found during the watching brief in AREA IV, but part of the front was exposed in the excavation of AREA II. The structure is described from east to west.

The eastern limit was distinctly marked by a north-south return timber wall (IV.780; Figure 9), about 4 m long. It consisted of eight piles with at least three horizontal edge-set planks placed against their west side. The first three piles in this line were contiguous but thereafter piles were spaced at intervals of about 0.3 m. The planks were held in place by dumping on their west side (IV.470, 467, 444; Figure 9) and similar dumping continued to the east of the revetment, but its significance could not be established. The piles (one completely excavated was 1.77 m long) reached a height of 1.32 m OD, and both structure and dumping were sealed by the Phase 8 riverside wall.

The east-west section of revetment was recorded in two places. The first length consisted of eighteen piles in an east-west line 12 m long north of AREA I (IV.654, 680, 681, 666). The piles were driven into the Phase 2 silting, were 2.1 m long and survived to 1.0 m OD. At the east end of this group two horizontal beams had been placed on the north side of the piles, the lower resting on the foreshore (IV. 677); the upper beam had an unused mortice cut in one side. As they were not connected to other beams east or west, they must have

Period 1, Phase 2 *Silting in* AREAS I, II, III *and* IV

(Figures 7–8, 49, 52–3)

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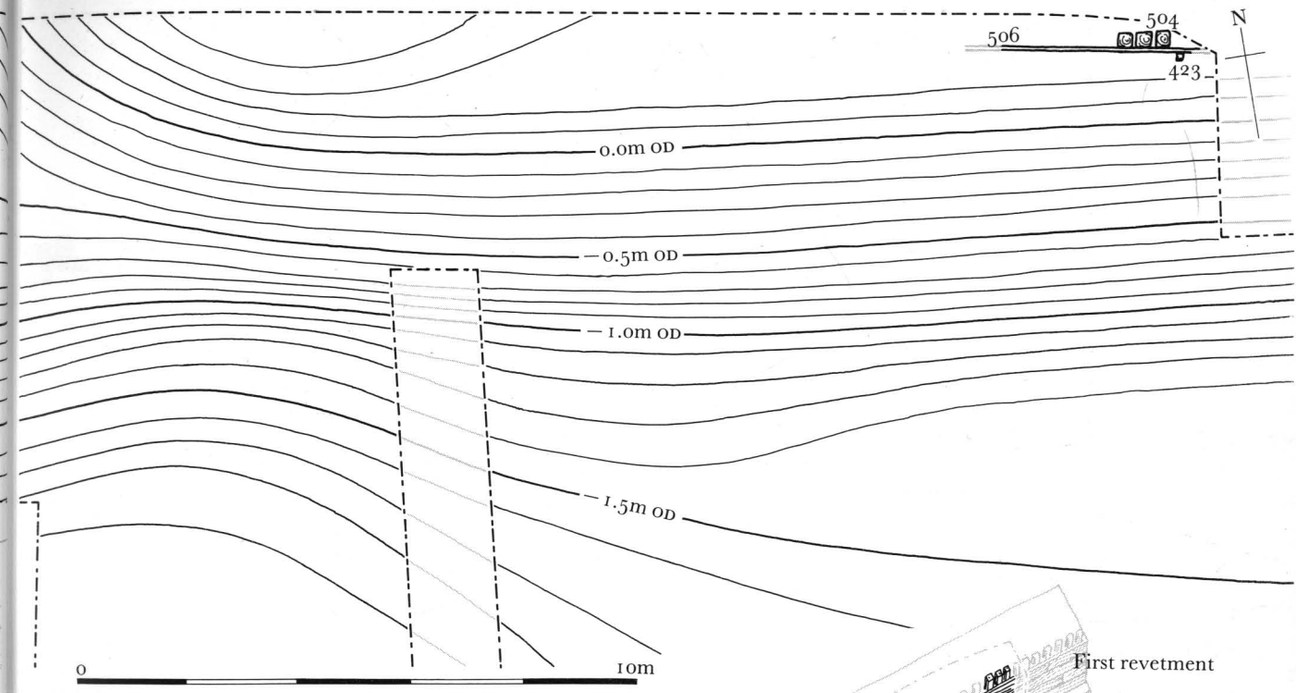


FIGURE 7 Contour plan of Phase 2 silting and the first revetment.

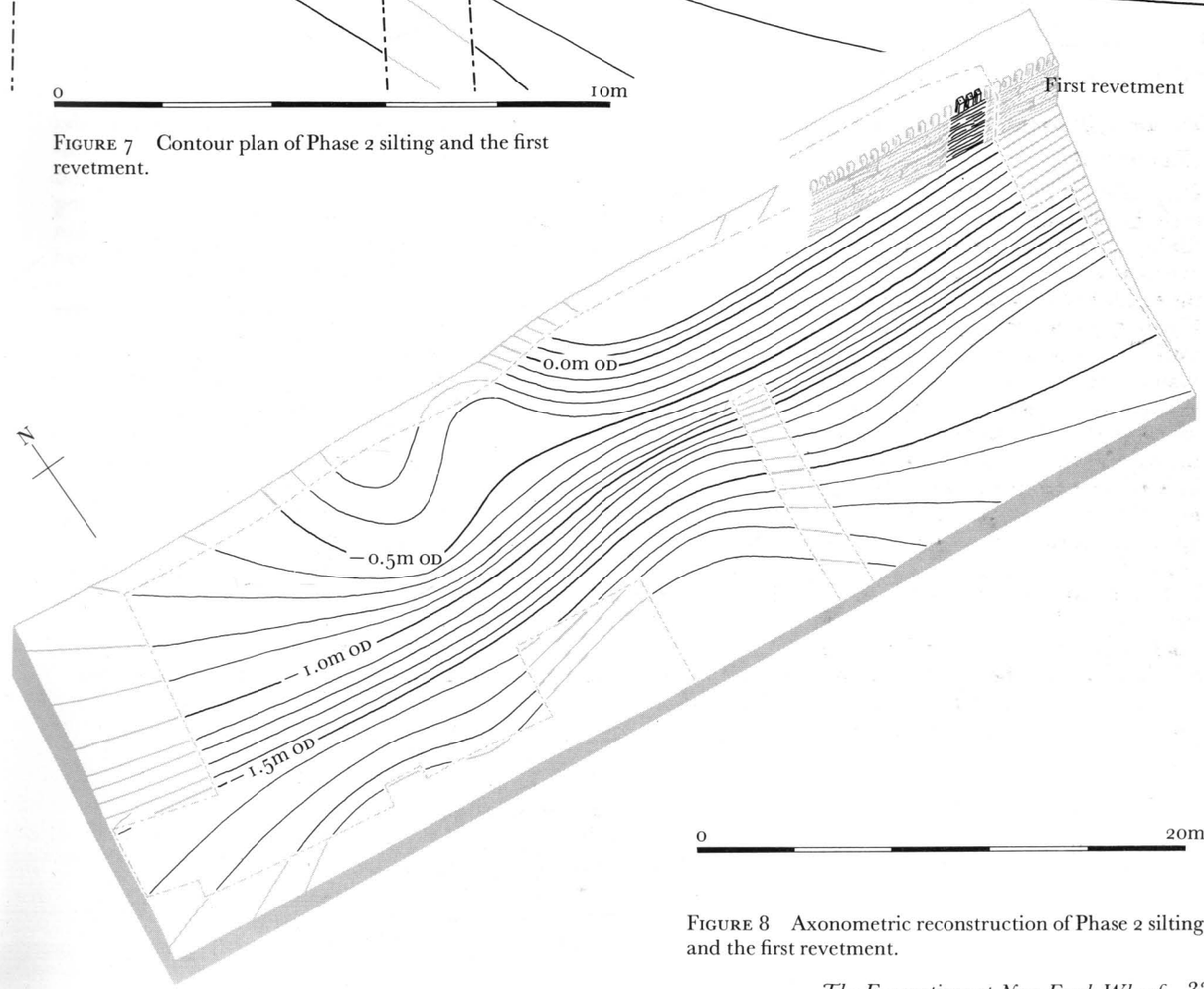


FIGURE 8 Axonometric reconstruction of Phase 2 silting and the first revetment.

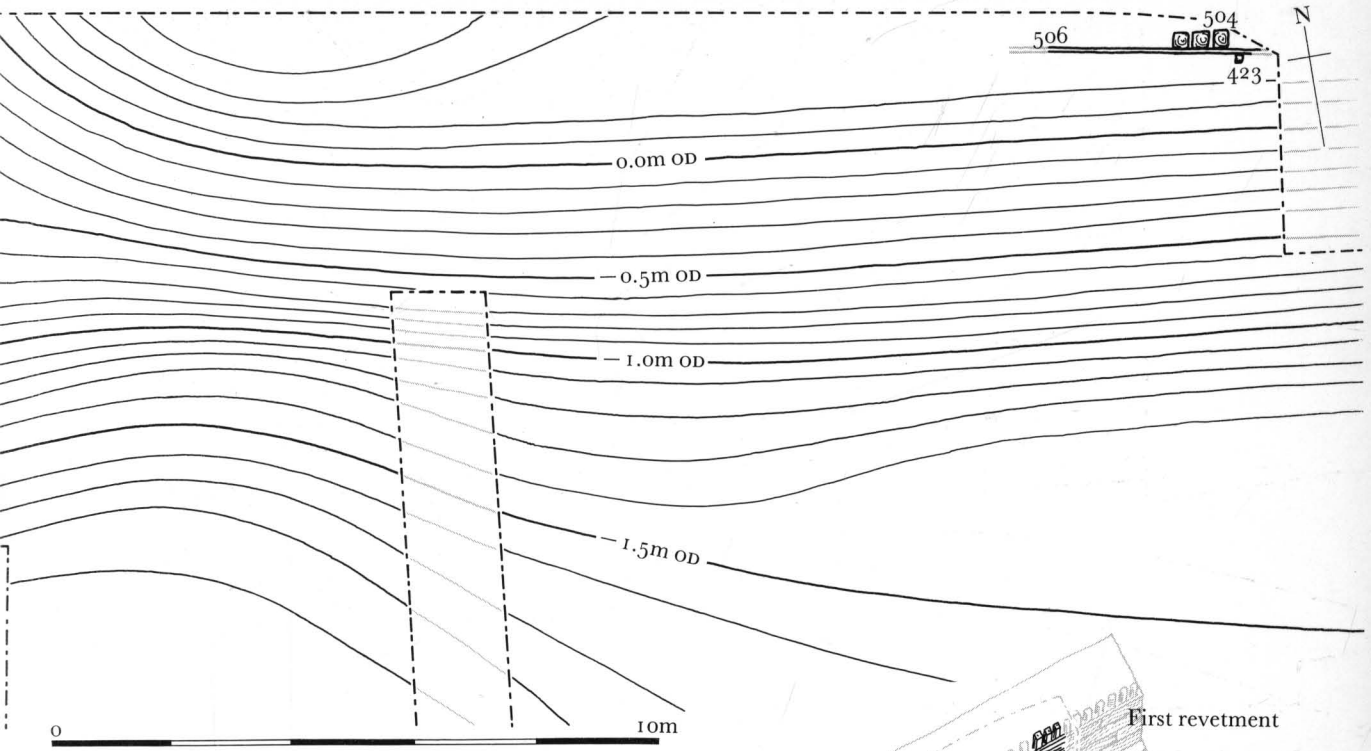


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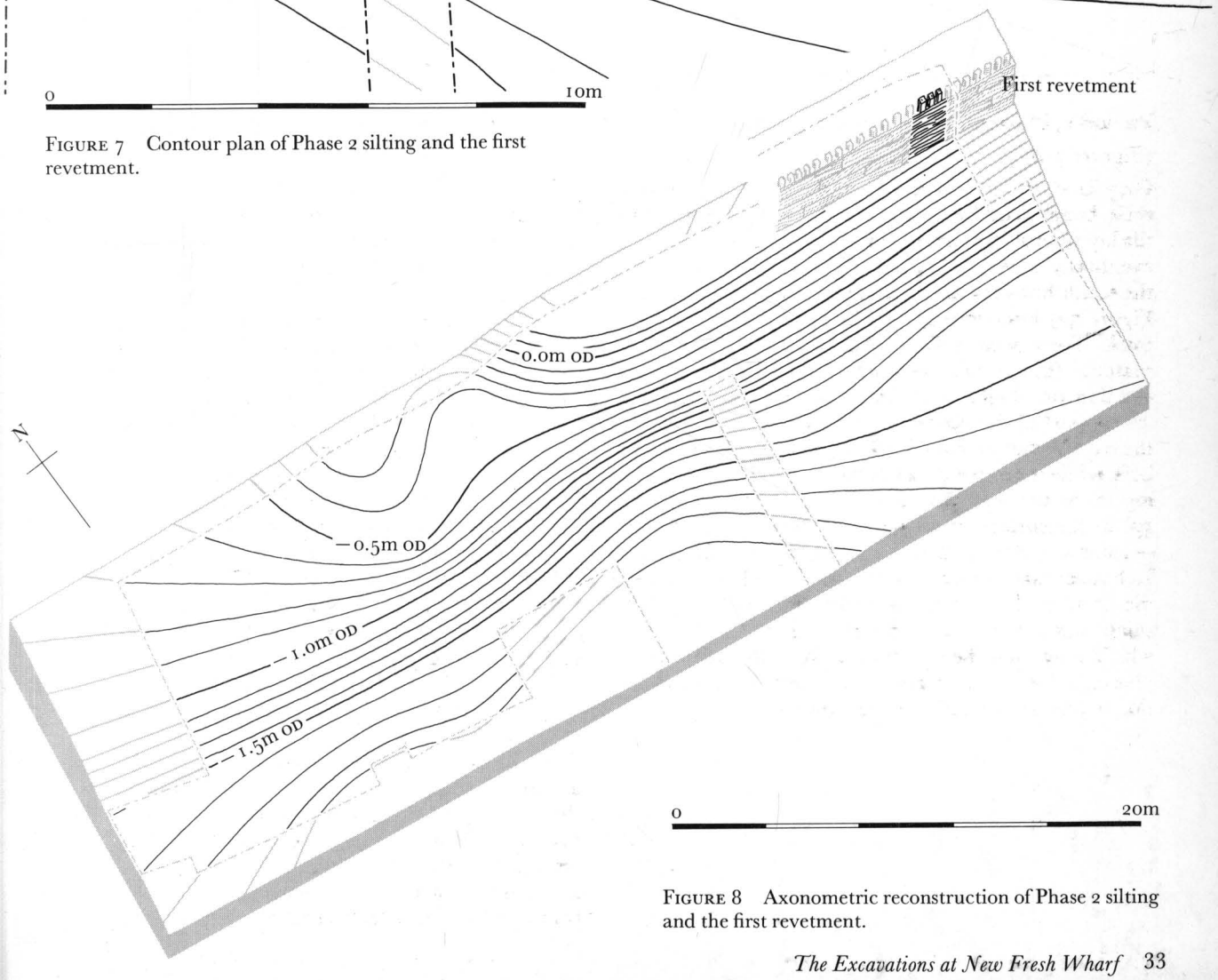
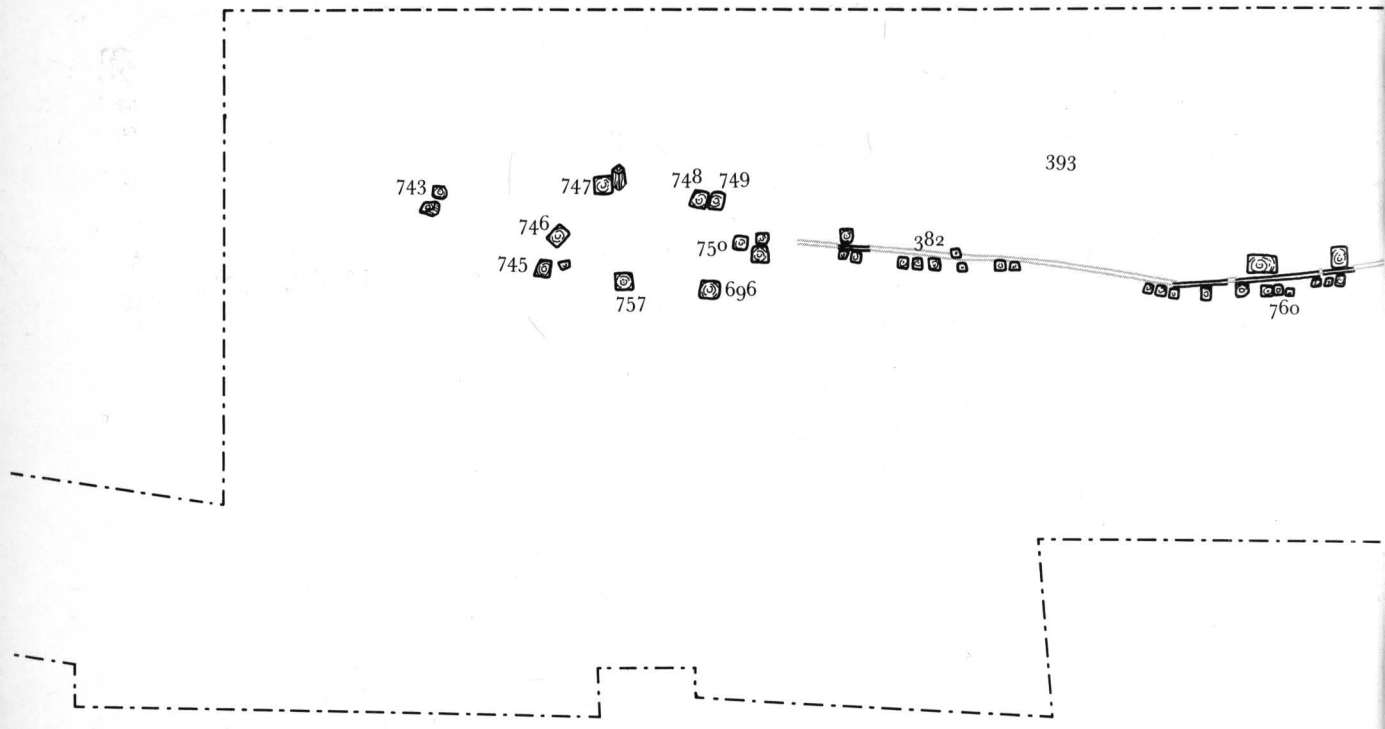


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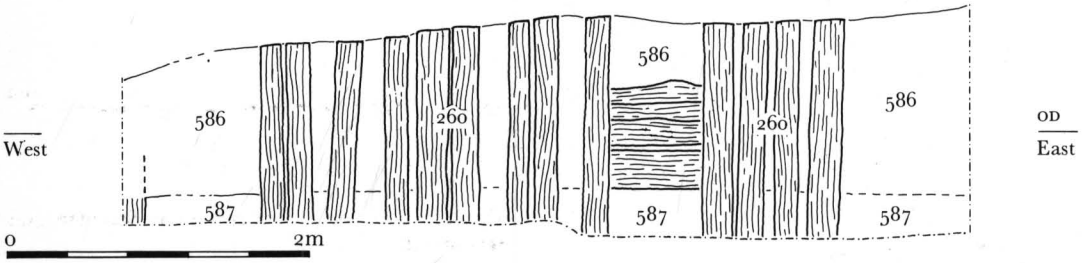


been used as stabilisation within the dumping. Horizontal edge-set planks were placed above them and to the west, forming a timber wall on the north side of the piles. They were joined end to end with simple scarf joints (no nails were used in any length of this revetment). The wall of planks was held in position by brown peaty silt, mortar, plaster and sandstone fragments with black highly humic silt, dumped behind (IV.470, 467, 444; Figure 9).

Breaks in the recorded line of the revetment to the west were caused by modern disturbances, but beyond these disturbances the revetment was of a different character. The second east-west section, about 15 m long, consisted of 38 piles (IV.369, II.260, IV.760, 382, 750) with a wall of horizontal edge-set planks (Figures 9, 10) and groups of piles and planks to the north. The piles here were longer, up to 2.71 m long, and the planks merely butted each other at the ends. Against the north face of the plank wall further piles and adjacent short planks were placed. The plank wall also staggered 0.7 m to the north in its alignment halfway along the section (Figure 9). The revetment probably ended at a south-west corner formed by a group of three piles (IV.750). The dumping behind this length was of a similar character to that to the east (IV.350, 393), and included a very organic cess-like deposit interleaving with blue-grey clay containing hundreds of samian sherds (IV.380; Figure 9). The maximum thickness of the dumping was 2 m above the Phase 2 river silts.

At the west end of the revetment a group of piles forming a rough semi-circle (IV.696, 745–750, 757) indicated a somewhat different structure (Figure 9). They were more substantial in section than those used in the revetment, and more akin to the piles used in the later Phase 4 quay. Two additional piles with smaller cross-sections showed carrying on their flat sawn tops. This group of piles projected about 1.8 m out of the contemporary foreshore, separate from the revetment itself (Figure 11). Their function is not clear, but they occurred where there was a contour change in the underlying silts (Figures 8, 11). Three other piles (IV.743; Figure 9) lay to the west.

FIGURE 10 Elevation of part of second revetment, context 260.

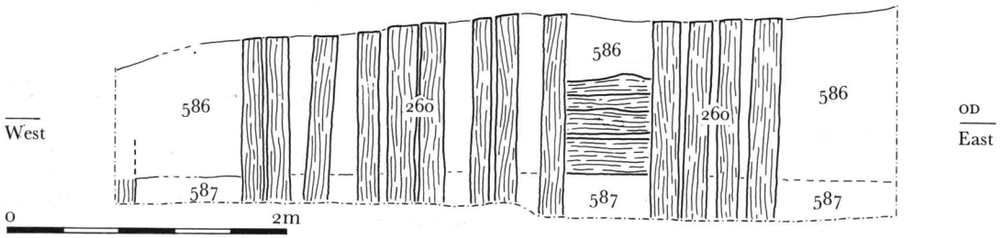


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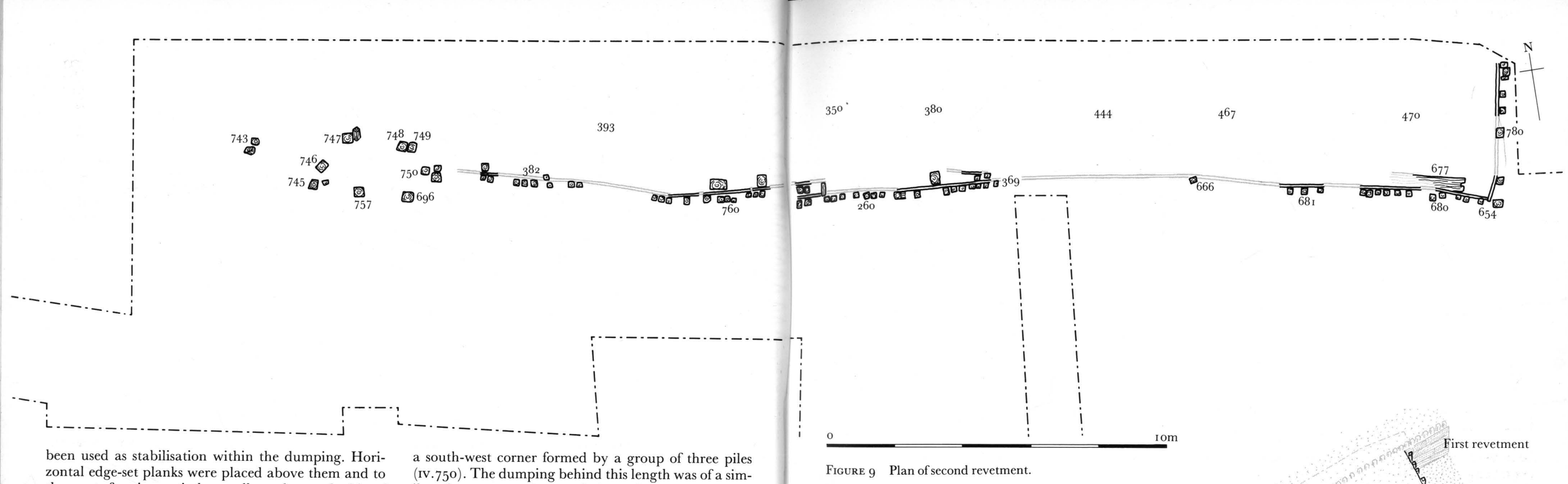


FIGURE 9 Plan of second revetment.

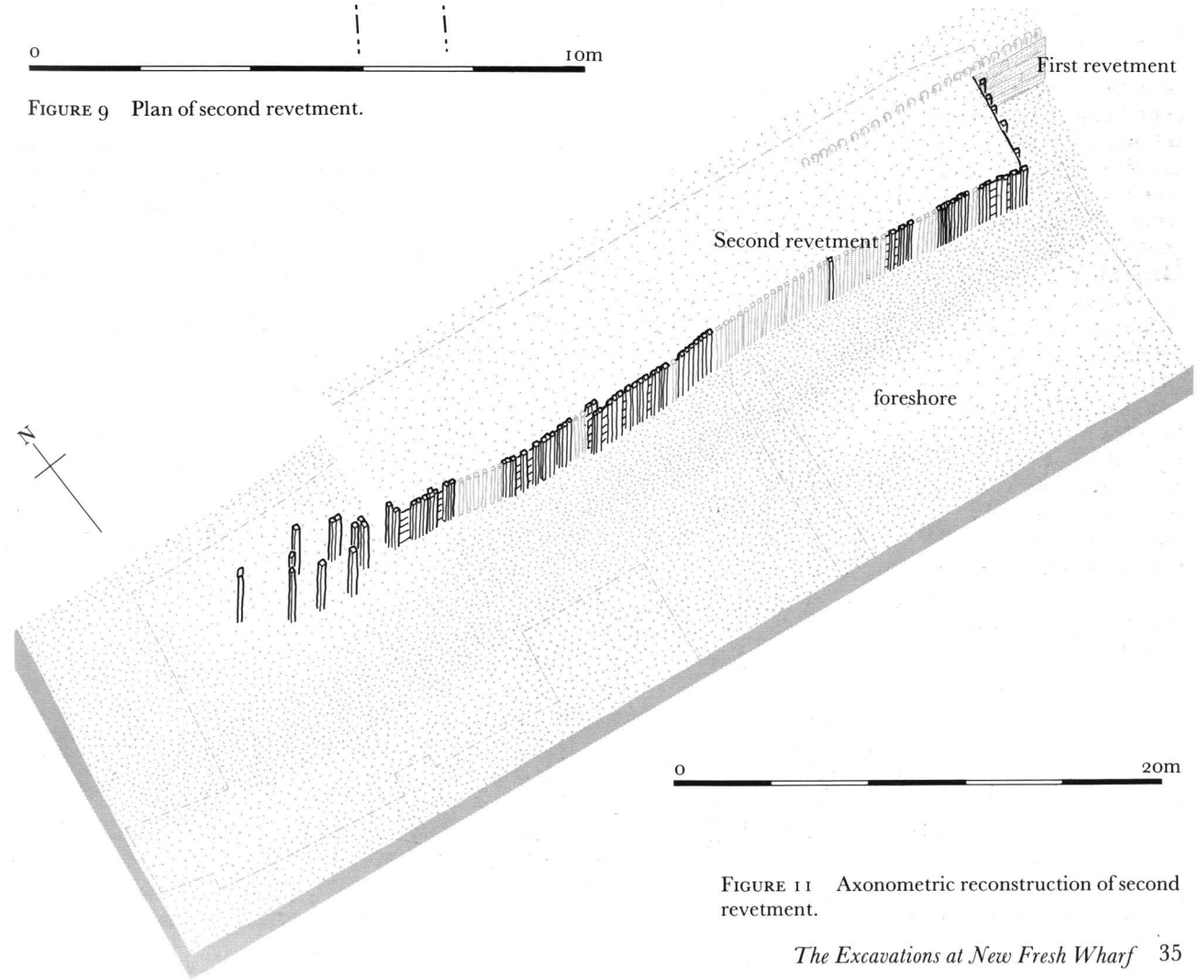


FIGURE 11 Axonometric reconstruction of second revetment.

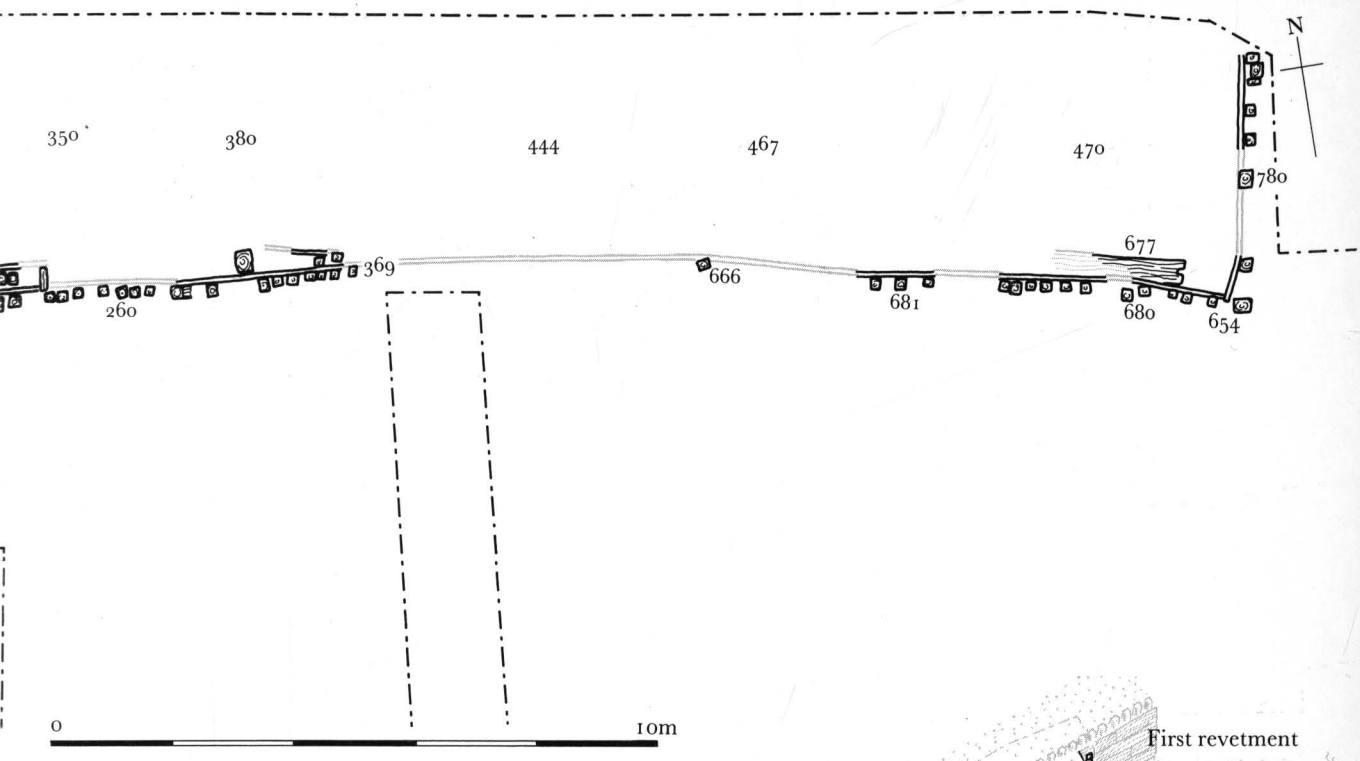


FIGURE 9 Plan of second revetment.

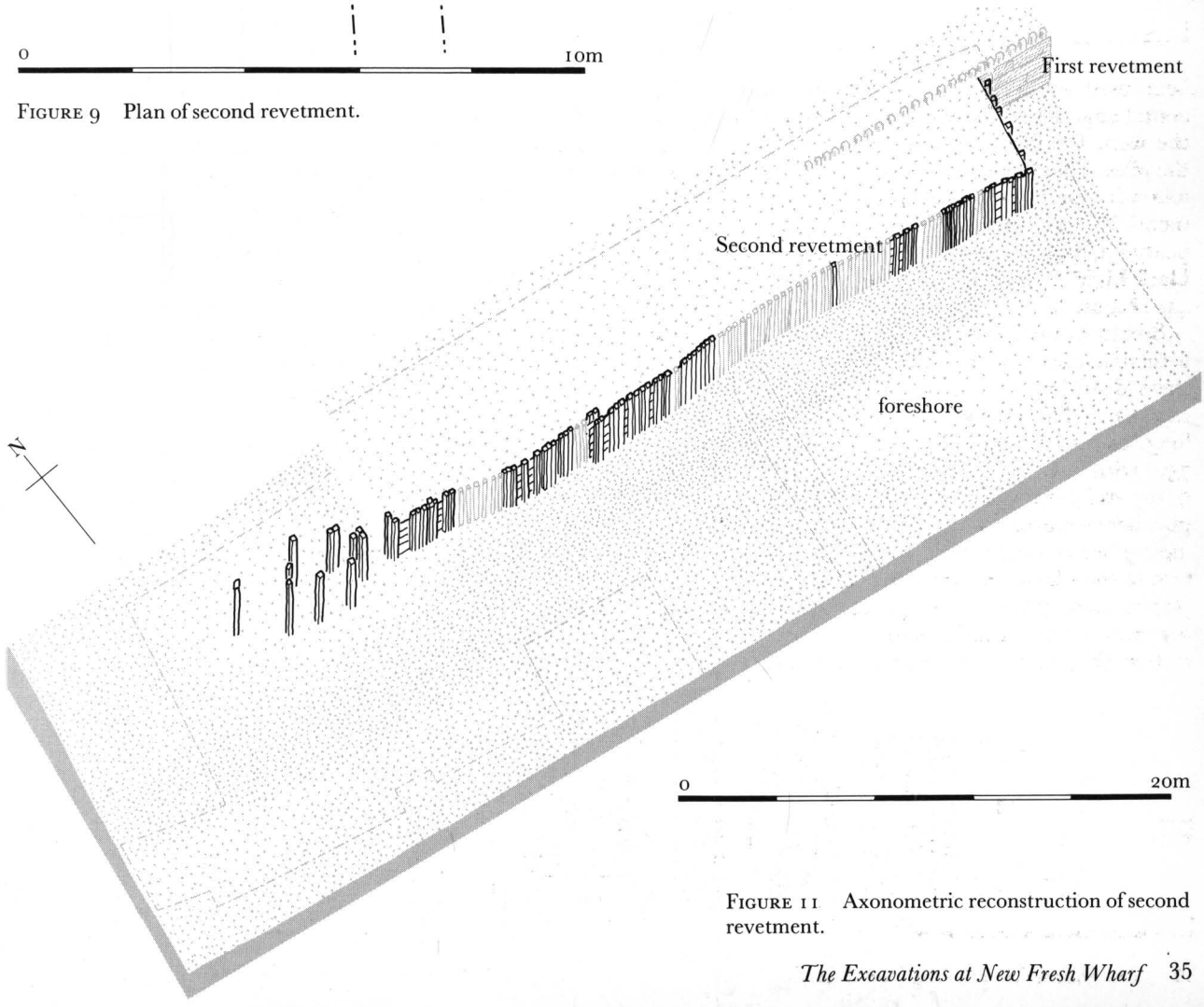


FIGURE 11 Axonometric reconstruction of second revetment.

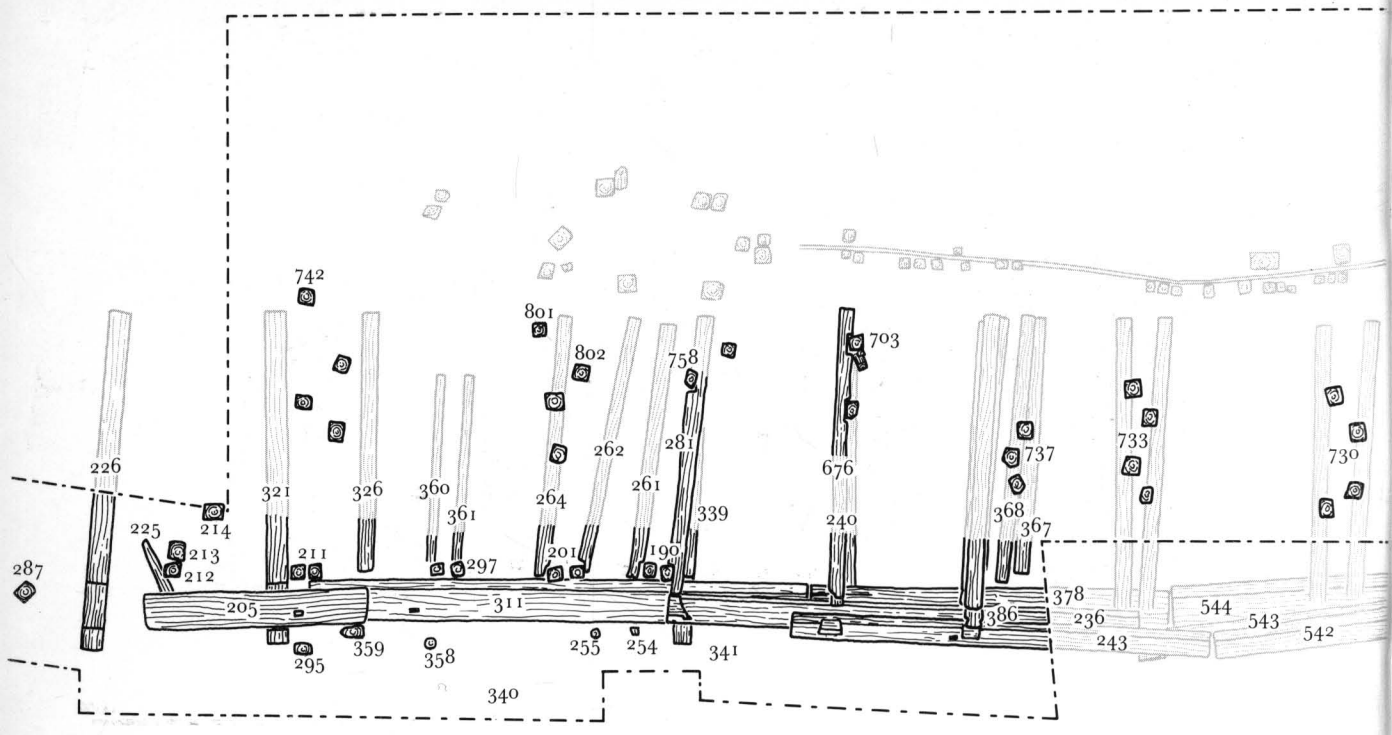


FIGURE 12 Plan of Phase 4 quay.

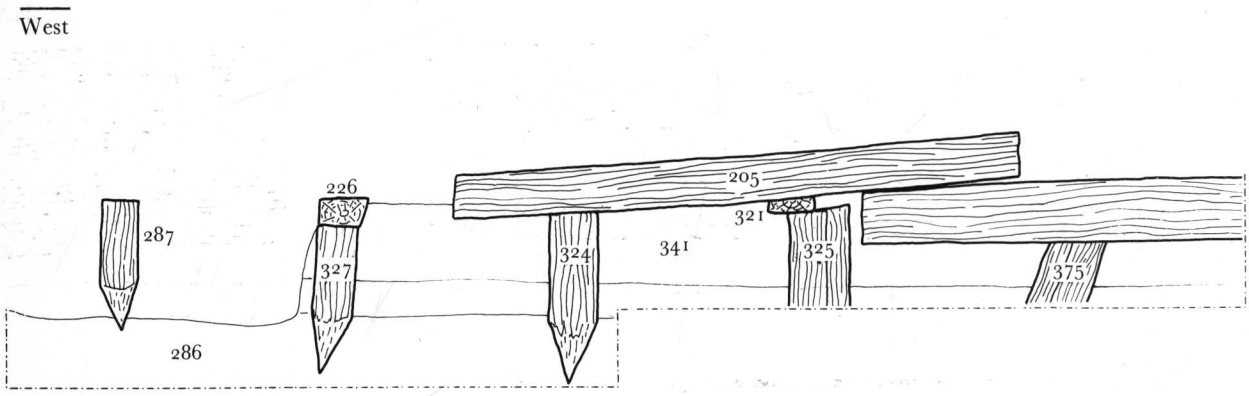
Period 1, Phase 4 *The Roman quay*

(Figures 12–37, 45–52)

The Phase 4 quayfront lay between 4.4 m and 5.2 m south of the Phase 3 revetment (Figure 12) and had no stratigraphic relationship to the Phase 3 structure; both cut into the Phase 2 silts and were sealed by the Phase 5 infill of the quay. In total 22 m of the quay was excavated in AREAS II and III, with a further 2 m indicated, but robbed out, at the west end of AREA III. A further 8 m of quayfront was recorded to the east in the watching brief in AREA I. Taking into account the gaps between the observed sections, the quay was therefore traced over a length of 45 m east-west.

The quayfront was a substantial structure of oak beams forming a wall of timber supported on piles and cradling timbers, with slighter braces connecting the timbers of the quaywall to structural piles at varying distances behind the quayfront. Fourteen stages of construction (Figures 15–37) were established:

1. Ground piles to support the quayfront sill beams or the cradling timbers.
2. Consolidation dumps.
3. Cradling timbers.
4. Sill beams.
5. Structural piles, in two groups: 5a, immediately north of the quayfront; 5b, 2–3 m north of the quayfront.
6. First layer of quayfront beams.
7. First layer of tieback braces.
8. Second layer of quayfront beams.
9. Second layer of tieback braces.
10. Third layer of quayfront beams, not *in situ*.
11. Third layer of tieback braces.



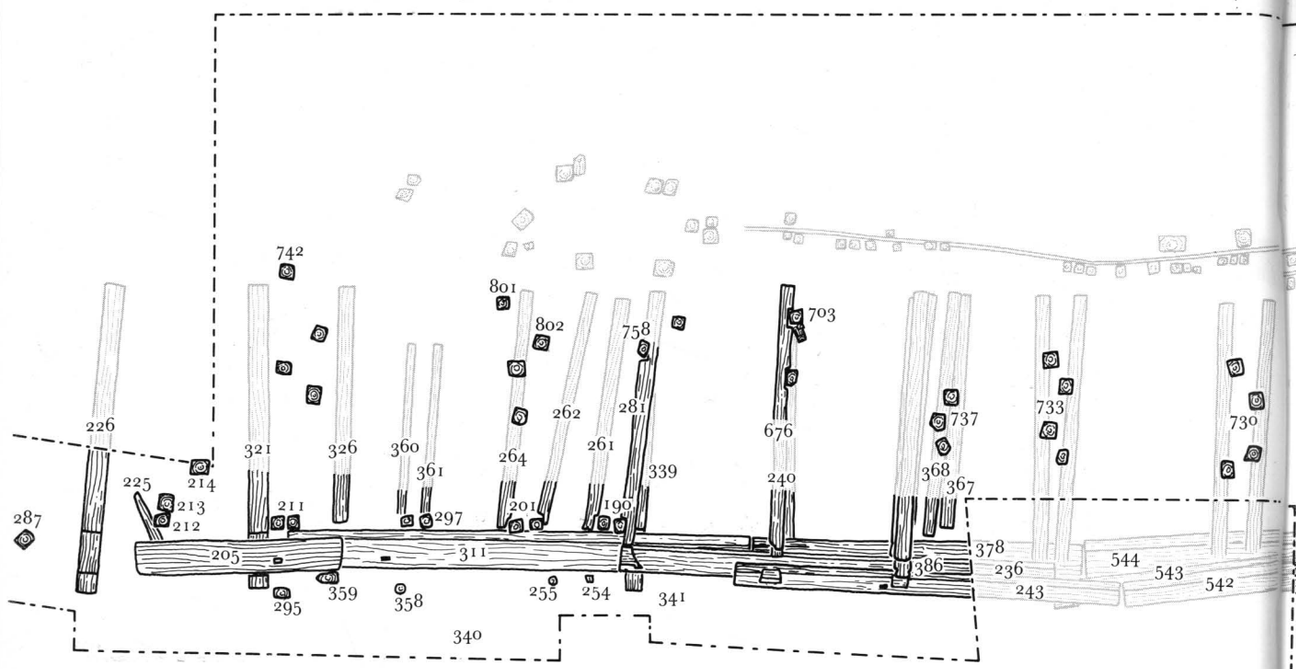


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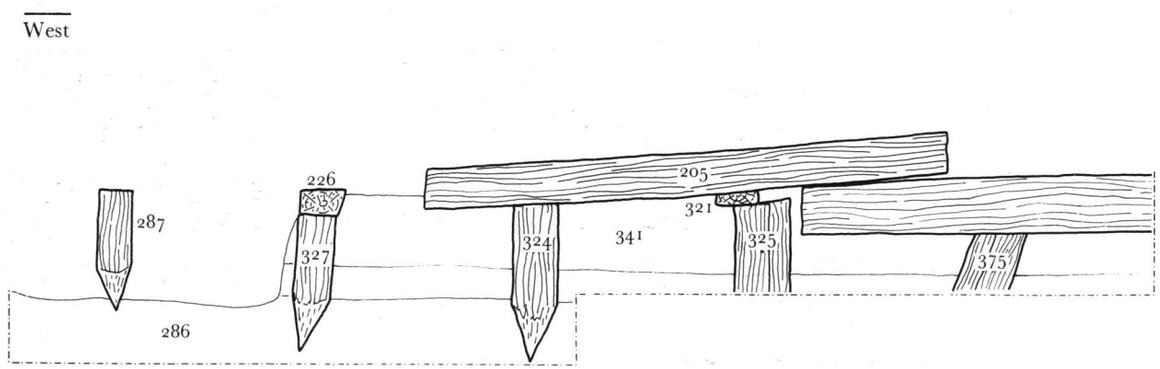
Period 1, Phase 4 *The Roman quay*

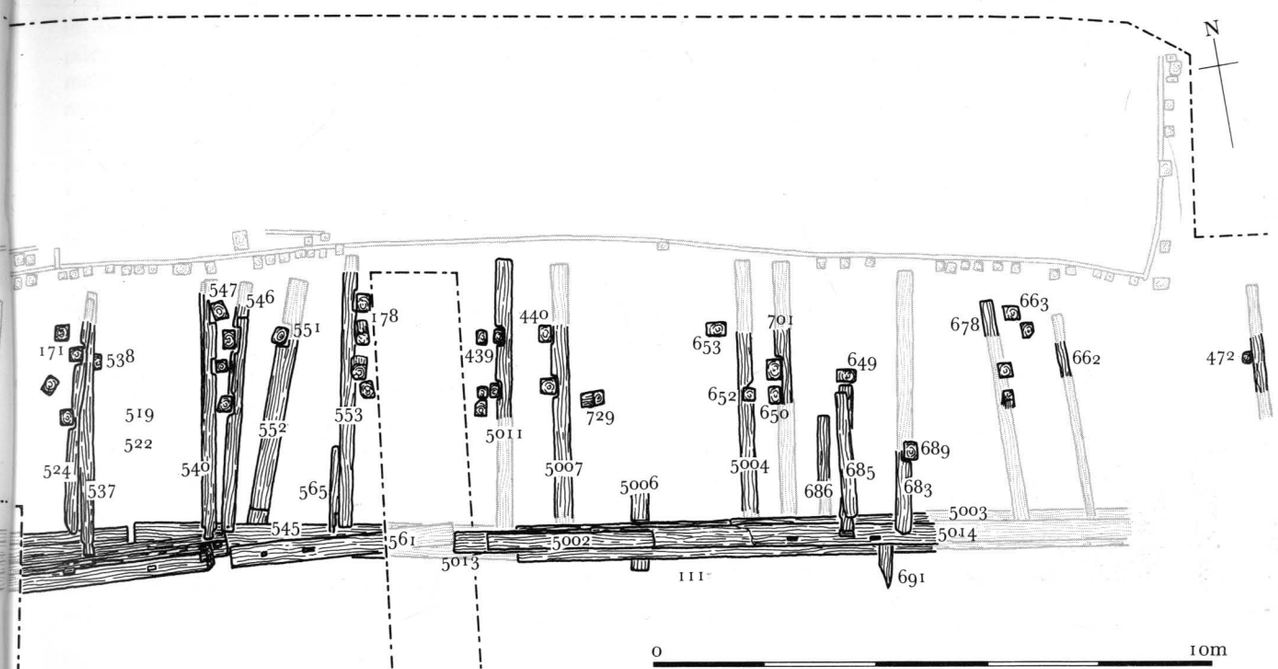
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12. Fourth layer of quayfront beams. The timbers of this layer had collapsed and/or had been removed in antiquity and were presumed from the existence of corresponding tieback braces (Stage 13).
13. Fourth layer of tieback braces.
14. Other timbers forming part of the quay, including posts on the south side of the quayfront and timbers whose function could not be identified [25].

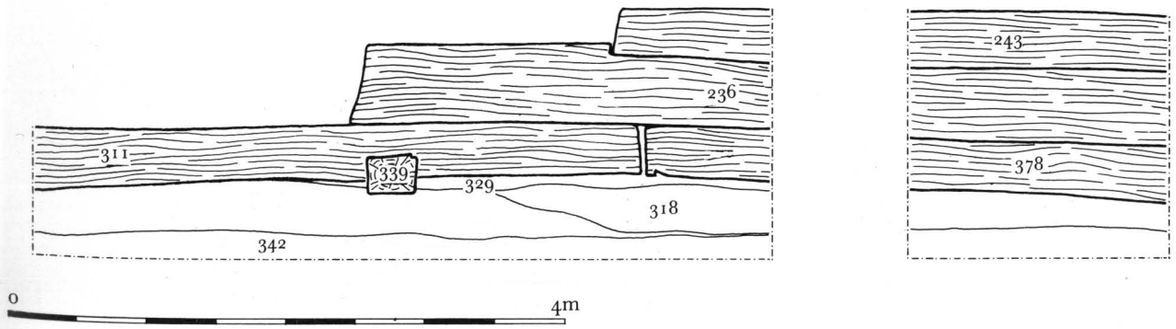
Stage 1 Ground piles

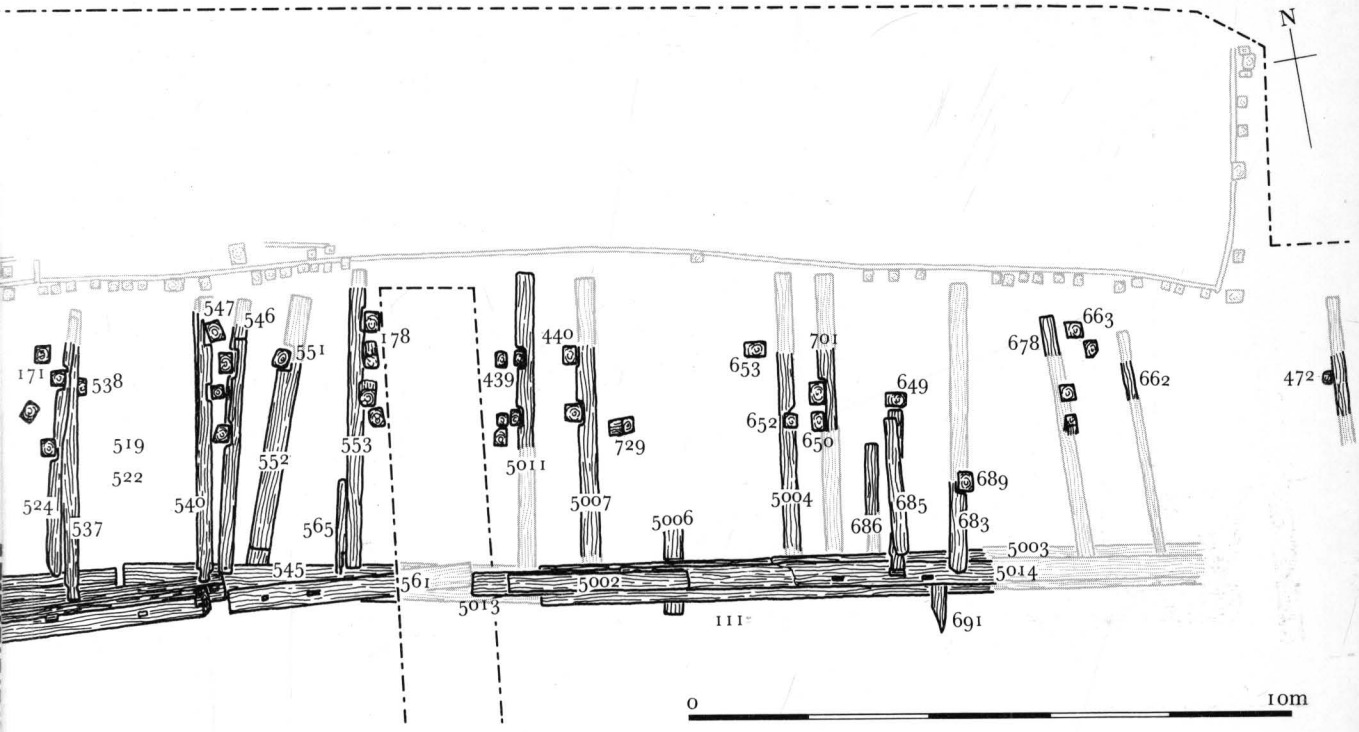
(Figures 13, 15–16, 21–23, 50)

Ground piles were driven into the foreshore formed by the Phase 2 silts. They supported either the sill beams or cradling timbers. Two at the east end of AREA III supported the ends of two butting sill beams (III.311, 378, Figures 22–23); five more (III.375, 325, 324, 327, 287), excavated towards the west, were 1.55 m apart and supported sill beams and cradling timbers alternately (Figure 13). The piles were usually 0.28–0.3 m square in cross-section, but occasionally 0.23 × 0.3 m. Their length varied from 0.83 to 1.14 m. They projected 0.4 to 0.6 m above the Phase 2 silts and their tops were sawn flat at between −1 m OD and −1.4 m OD, depending upon the level of the timber to be laid on them (Figure 13).

Two short piles in AREA II (II.550, 574) may also have been inserted at this stage. They were 1.16 m and 2.6 m north of the line of the quayfront respectively, were of slighter cross-section (0.21 × 0.16 m) but of similar length to the other piles, were not connected to any other timber and were at a slightly higher level (−0.69

FIGURE 13 Elevation of Phase 4 quay, western part.





12. Fourth layer of quayfront beams. The timbers of this layer had collapsed and/or had been removed in antiquity and were presumed from the existence of corresponding tieback braces (Stage 13).
13. Fourth layer of tieback braces.
14. Other timbers forming part of the quay, including posts on the south side of the quayfront and timbers whose function could not be identified [25].

Stage 1 Ground piles

(Figures 13, 15–16, 21–23, 50)

Ground piles were driven into the foreshore formed by the Phase 2 silts. They supported either the sill beams or cradling timbers. Two at the east end of AREA III supported the ends of two butting sill beams (III.311, 378, Figures 22–23); five more (III.375, 325, 324, 327, 287), excavated towards the west, were 1.55 m apart and supported sill beams and cradling timbers alternately (Figure 13). The piles were usually 0.28–0.3 m square in cross-section, but occasionally 0.23 × 0.3 m. Their length varied from 0.83 to 1.14 m. They projected 0.4 to 0.6 m above the Phase 2 silts and their tops were sawn flat at between −1 m OD and −1.4 m OD, depending upon the level of the timber to be laid on them (Figure 13).

Two short piles in AREA II (II.550, 574) may also have been inserted at this stage. They were 1.16 m and 2.6 m north of the line of the quayfront respectively, were of slighter cross-section (0.21 × 0.16 m) but of similar length to the other piles, were not connected to any other timber and were at a slightly higher level (−0.69

FIGURE 13 Elevation of Phase 4 quay, western part.

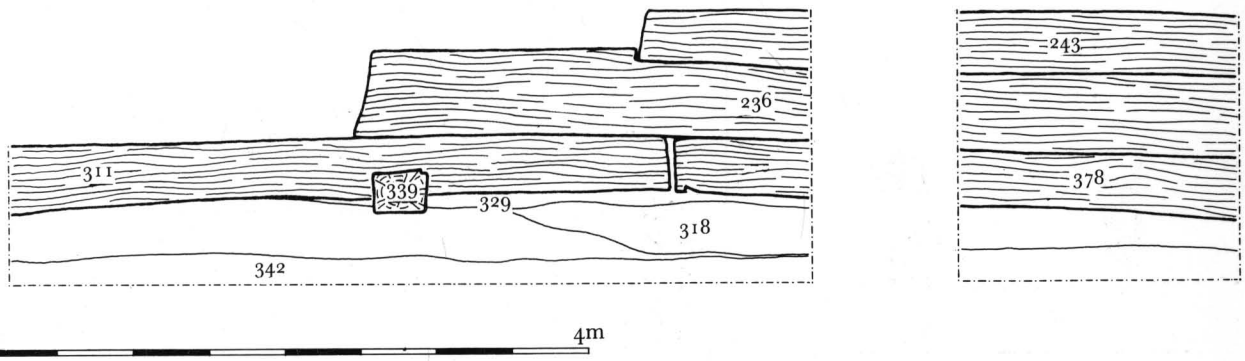
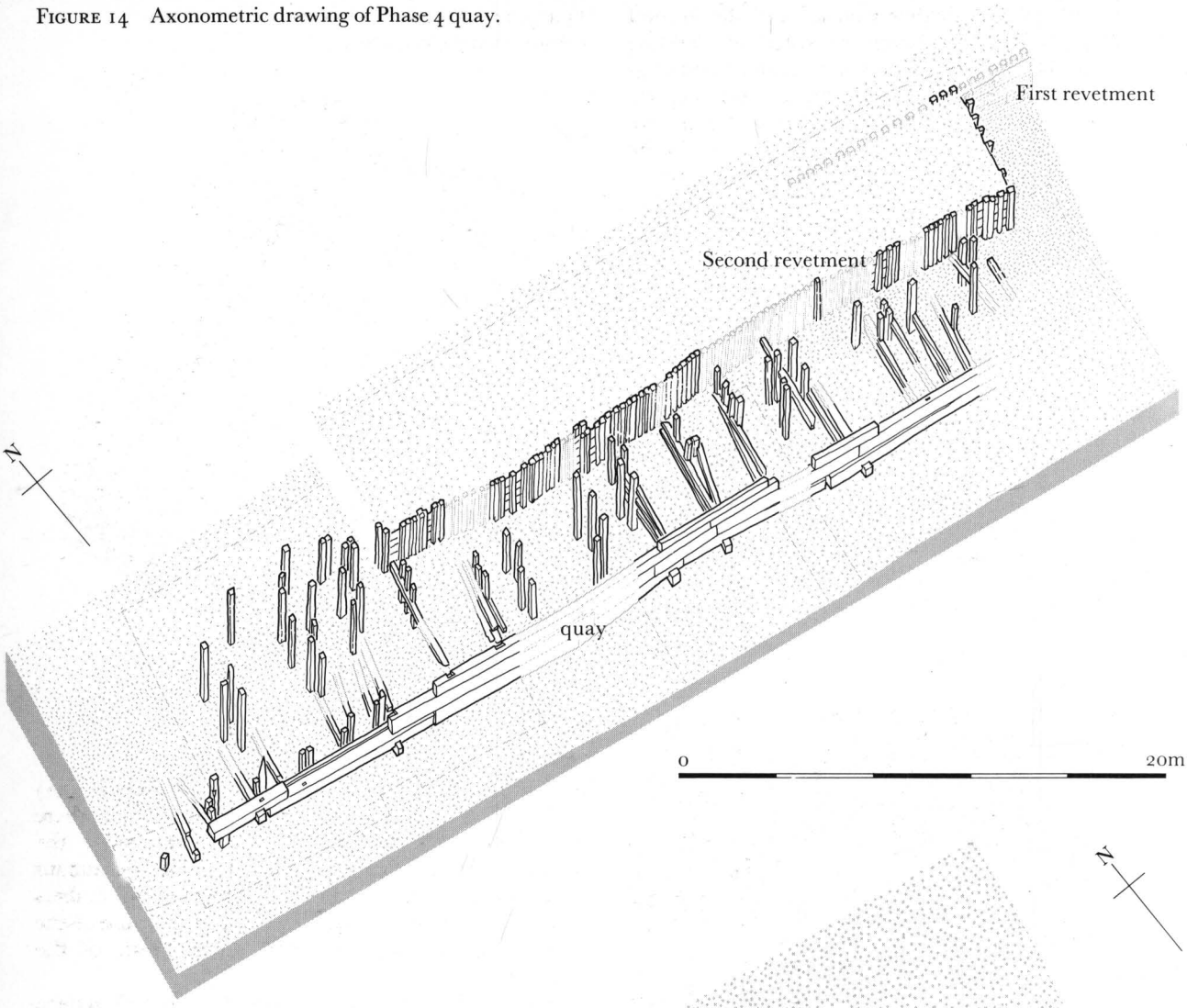


FIGURE 14 Axonometric drawing of Phase 4 quay.



and −0.8 m OD) (Figure 51). They may have been marker posts of some kind.

Stage 2 Consolidation dumps

(Figures 12, 13, 16, 45–46, 50–2)

In AREA I a layer of grey sandy gravel with pebbles, large stones and Roman tile fragments 0.15–0.2 m thick (I.111, Figure 12) sealed the Phase 2 silts, spreading to the north of the future line of the quayfront and for 0.5 m to the south of it. Similar dumps of gravel and building material were found in AREA II (II.519, 522, Figures 50–52), up to 0.5 m thick where the Phase 2 silts were comparatively lower. These dumps were not found immediately to the west, at the east end of AREA

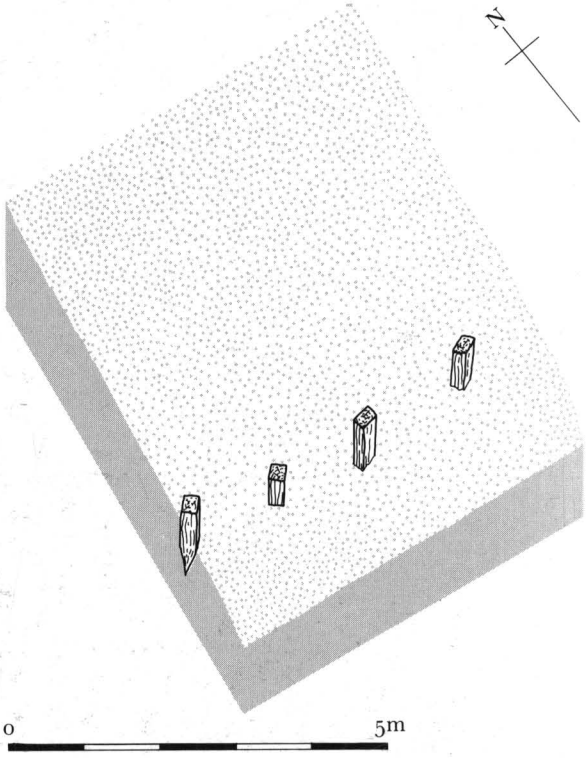


FIGURE 15 Axonometric reconstruction of quay construction, stage 1.

III, but were present further west around the ground piles of AREA III; the dumps consisted of building material rubble, plaster, *opus signinum*, tesserae and fragments of daub mixed with sand (III.340, 341, Figures 12, 13, 45–46). These dumps of building material were probably laid down to smooth out irregularities in the foreshore and provide a hard standing for the construction of the quay as well as for the consolidation of its lowest members.

Stage 3 Cradling timbers

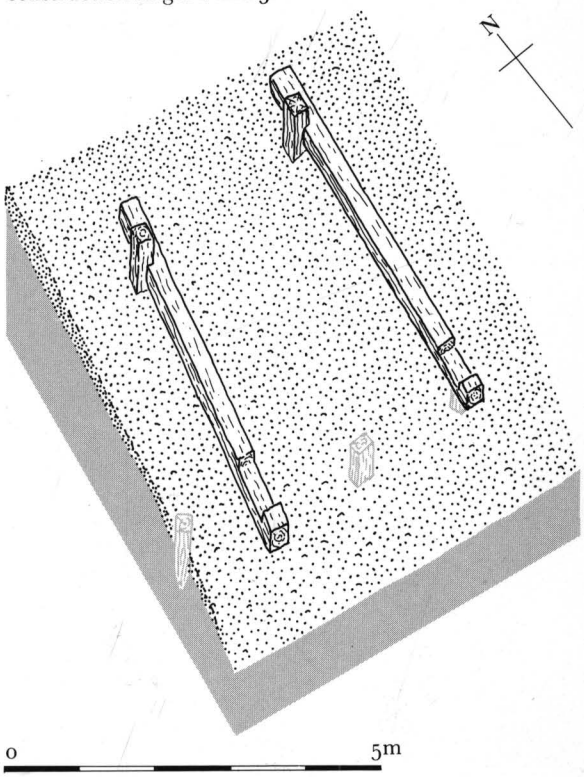
(Figures 12–14, 16–20, 49, 50)

These horizontal timbers, running generally at right angles to the quayfront, overlay the ground piles and the consolidation dumping. At their northern ends they were attached to short piles which had been driven into the consolidation dumps (II.538, Figure 50). Their south ends supported and braced the sill beams. The cradling timbers occurred at fairly regular intervals of about 3 m. The single example recorded in AREA I (I.5006, Figure 12) was 6 m east of two excavated in AREA II (II.537, 552) which were 3 m apart; in AREA III two of the timbers were 2.5 m apart (III.226, 321) and a third (III.339) was 6.2 m to the east, while there was probably another unexcavated example in the intervening baulk. None was fully excavated but details from AREAS II and III suggest that the cradling timbers were generally at least 4.4 m long and, because of the method of jointing, projected 0.3 m south of the quayfront.

FIGURE 16 Quay construction stage 1, groundpile at west end of AREA III.



FIGURE 17 Axonometric reconstruction of quay construction stages 2 and 3.



Each cradling timber had a trench joint 0.18 m deep cut in its upper surface near the south end to hold a sill beam. The joint was always wider than the sill beam, with small blocks of timber filling the gaps on either side (Figure 18). The cradling timbers were anchored to short structural piles at their north ends (recorded only in AREA II), at 2.65–2.8 m north of the quayfront, by means of rebated joints cut in the sides of the horizontal timbers. The anchoring piles had cross-sections of 0.22 × 0.2 m and 0.28 × 0.3 m, and were at least 0.8 m long (II.551, 538, Figure 12).

Stage 4 The sill beams

(Figures 12–14, 19–23, 45–8, 50–1)

These massive horizontal beams, the basis of the quay wall, were laid in the trench joints of the Stage 3 cradling timbers and on the Stage 1 groundpiles. Five beams butted each other end to end for a distance of 34 m, and a sixth, overlapping its neighbour, continued

FIGURE 18 Quay construction stage 3: detail of cradling timber.

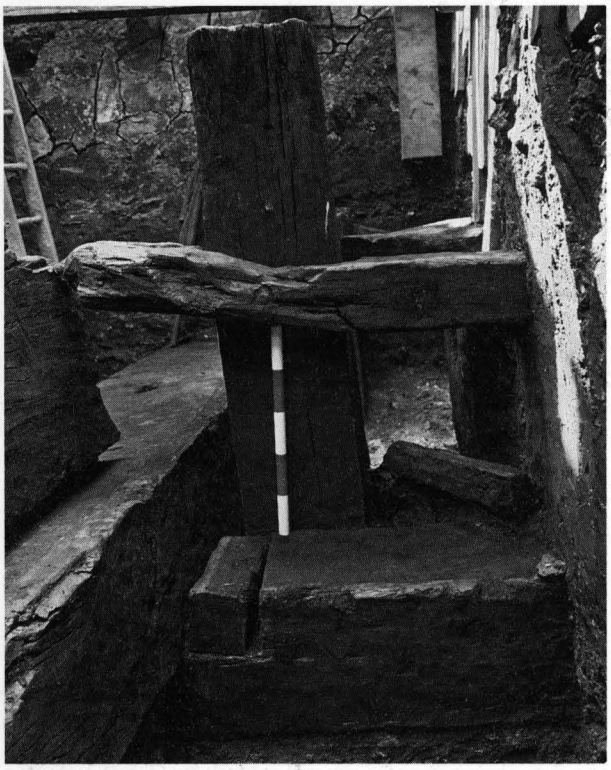
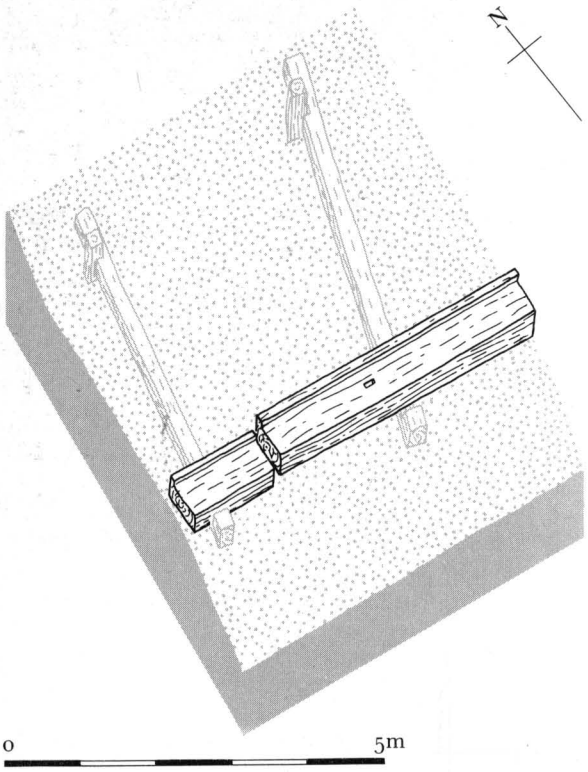


FIGURE 19 Axonometric reconstruction of quay construction stage 4, sillbeam.



the line for a further 2.7 m to the west before the line was robbed (Figures 20–21). The known length of excavated beams (7.18 and 7.95 m) suggests that the unexcavated baulks between AREAS I and II and between AREAS II and III contained the junctions of beams (I.5003 and II.545; II.544 and III.378; Figure 12).

The sill beams consisted of either halved (I.5003, III.311) or whole (III.378) trunks from mature oaks up to 0.9 m in diameter (dendrochronological report, below, p. 79), trimmed to rectangular cross-sections of between 0.62 × 0.25 m and 0.74 × 0.37 m. The base of the beams lay generally at −1.4 m OD, except at the west end of AREA III where the sill beam (III.205) overlapped its neighbour (III.311) by 1.1 m (Figures 13, 20–21). The raised beam was 3.75 m long but may have been damaged by robbing at its west end; it perhaps originally fitted into the empty trench joint in the cradling timber (III.226) 1 m to its west (Figure 12). Similarity in levels also suggests that this higher sill beam, or one abutting it, was carried over a solitary ground pile 1.2 m further to the west (III.287, Figure 13).

Two of the six sill beams (III.311, 378) were distinguished by a raised lip 20 mm high and 0.1 − 0.15 m wide on the upper north edge (shown in Figures 26–27). This was possibly meant to stop the upper beams from sliding backwards, as there was no corresponding lip on the southern, riverwards edge. The first layer of quayfront beams, laid on these sill beams, were also held

FIGURE 20 Axonometric reconstruction of raised sillbeam, AREA III.

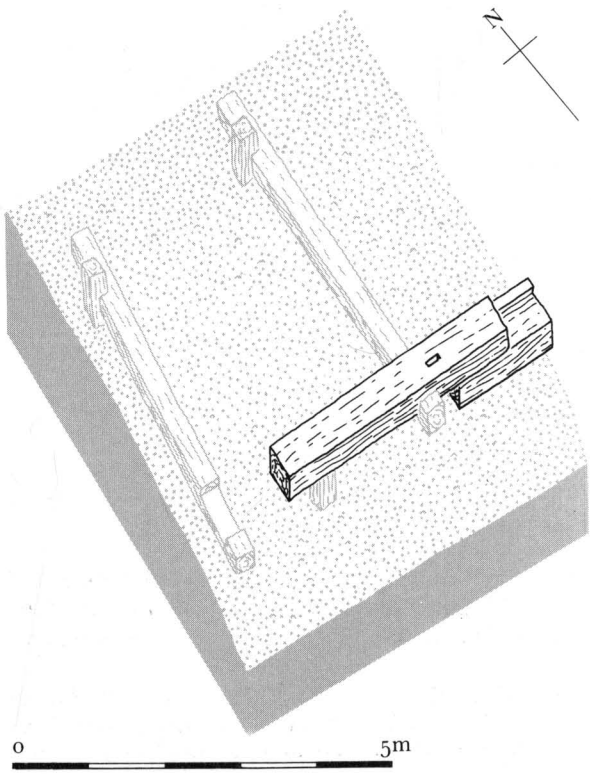




FIGURE 21 Raised sillbeam at west end of AREA III.

FIGURE 22 Illustration of mark on sillbeam in AREA III.

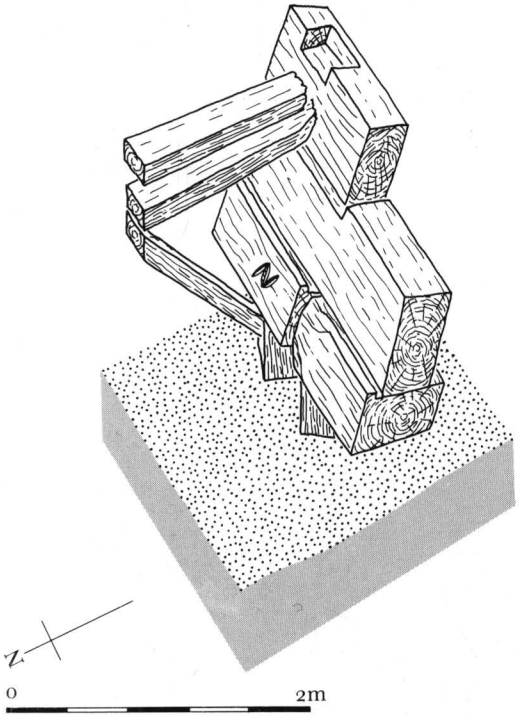
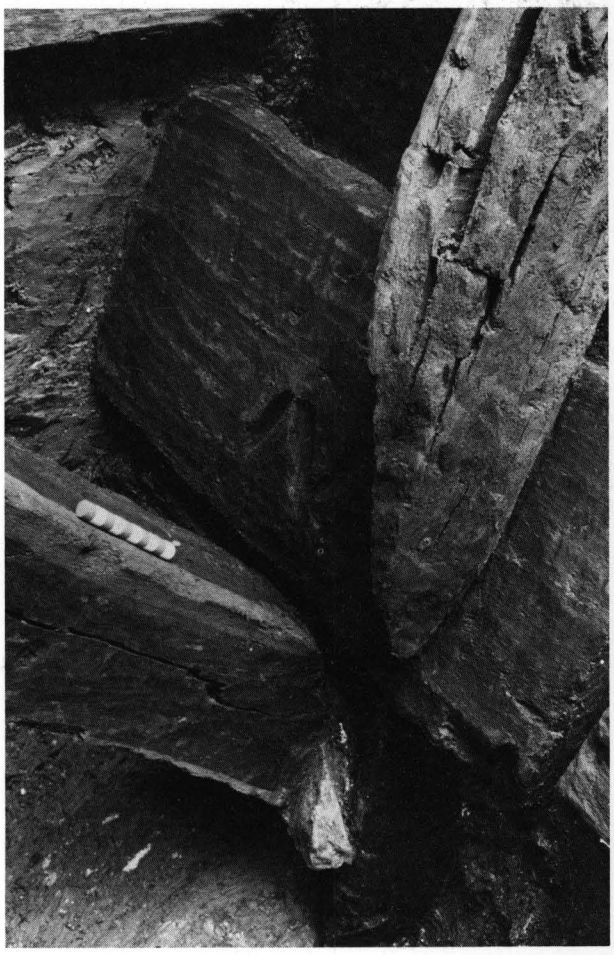


FIGURE 23 Detail of mark on sillbeam in AREA III.



in place by false tenons, small rectangular blocks of wood which fitted in mortices cut in the surfaces of the beams at irregular intervals. These were the only joints cut in the sill beams themselves.

One of the sill beams (III.378) was notable for an incised Roman numeral IV cut in the north face of the timber 0.3 m from its west end (Figures 22–23). This

was in slightly sloping script 100 mm high, v-cut as in stone inscriptions [26]. Marks of this type were not found on any other quayfront timber, precluding the possibility that it was a carpenter's mark on a prefabricated structure; and although it occurred at a point where a brace was to be attached there were no similar marks at corresponding points were braces joined the quayfront. The purpose of the number is not known.

Stage 5a Structural piles immediately north of the quayfront
(Figures 12, 14, 18, 24, 26–30, 46)

Two general groups of structural piles were identified in the area north of (behind) the quaywall as established by the line of the sill beams; a group immediately behind the quaywall (5a) and a larger group at varying positions some distance to the north of it (5b). The function of the majority of all the piles was to engage with the first and subsequent layers of tieback braces which in turn joined with and held back the quayfront beams.

The piles of Stage 5a occurred in AREA III. Five pairs of piles were driven into the consolidation dumps of Stage 2, immediately north of the sill beams. Four pairs were arranged in couples aligned west-east (III.190; 201, 203; 297; 211; Figures 12, 26–29, 46), the pairs 0.9 to 1.7 m apart. The fifth pair, 1.6 m to the west (III.212, 213, Figures 12, 30) were arranged north-south with a further single pile (III.214) 0.4 m to the north-east. The four west-east pairs acted as supports for the first level of tieback braces which were rebated and nailed around them just before their joints with the quaywall beams (Figures 18, 26).

The piles were whole trunks trimmed to a cross-section 0.26 m square or 0.26 m × 0.22 m. Only the westernmost pair was completely excavated, and they had lengths of 1.6 m (III.212) and 2.5 m (III.213) respectively. Five of the piles (III.213, 214, and the western of each of the other pairs except III.211) had a triangular notch cut out in a southern corner, at a level within the narrow range of −0.9 m to −1.0 m OD, though the level of their surviving tops varied considerably between −0.53 m OD and +0.43 m OD. Similar marks have been noted on Roman timbers at Swan Lane [27] and on piles of the Roman bridge at Aldwinckle, Northants, interpreted as cuts for the attachment of lifting ropes [28]; but they were not found on the other piles at New Fresh Wharf. They may have been piling marks, to ensure that a uniform final height above the contemporary shore was reached when driving piles of different lengths. Whatever the purpose, the distribution of these marks only on this group of piles suggests that they were different in some way from the others.

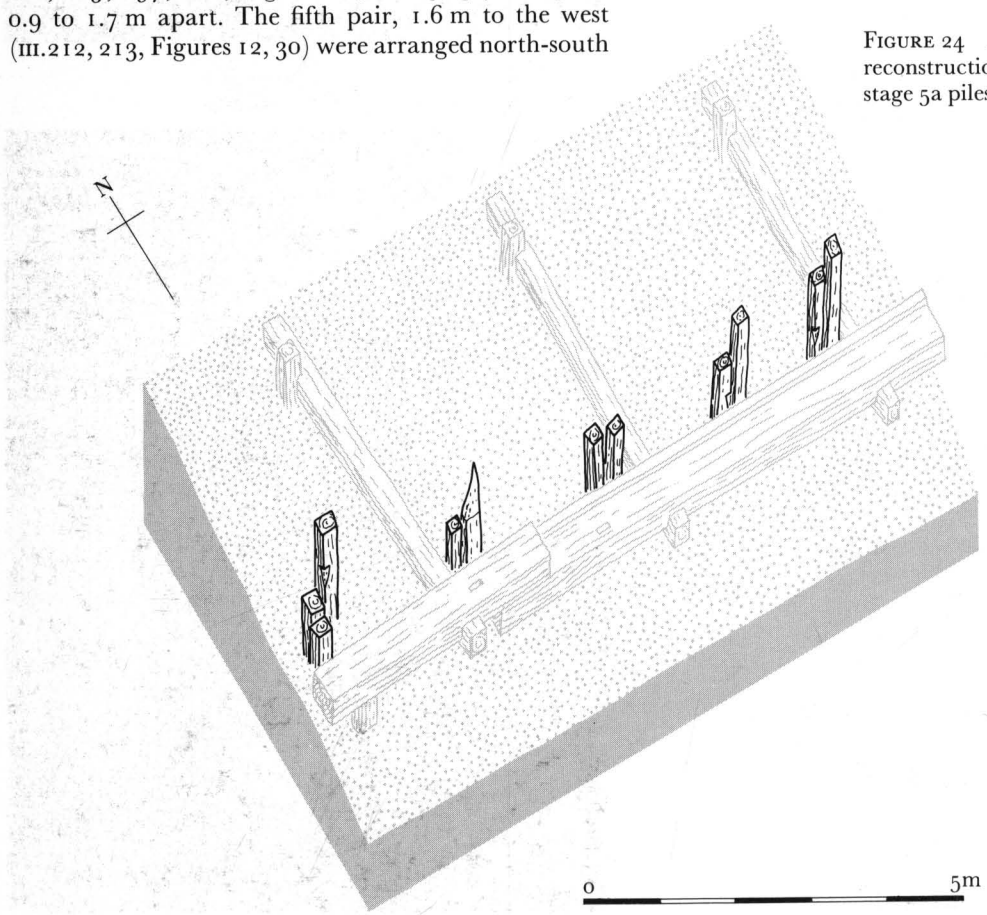


FIGURE 24 Axonometric reconstruction of quay construction stage 5a piles, AREA III.

Stage 5b Structural piles to the north of the quayfront

(Figures 12, 14, 25, 50–3)

Fifty-two further piles were recorded in AREAS I, II and IV north of the quayfront. Most of these were recorded during the watching brief in AREAS I and IV where the general limit of excavation imposed by the contractors was at a depth of +0.75 m OD. There were clearly further piles below this level, for one was found in a deeper area of excavation at +0.53 m OD (I.689; Figure 12). There must also have been more piles below the nominal limit of excavation in AREA IV to which the twelve tiebacks of AREA III, to the south, would be anchored. Only six (IV.737, 703, 758, 801, 802, 742) were exposed above +0.75 m OD.

In AREA I, the piles were closely spaced, some arranged in east-west pairs (I.439, 652). Where unaffected by modern disturbance, others were found in north-south lines with tiebacks jointed and nailed to one side. There were at least nine of these lines commencing from points between 1 and 2 m north of the quayfront (I.472, 663, 689, 649, 650, 652, 653, 440, 439, Figure 12).

In AREA II, where there was no modern disturbance, all the structural piles survived (Figures 50–2). They

FIGURE 25 Axonometric reconstruction of quay construction stage 5b piles, AREA II.

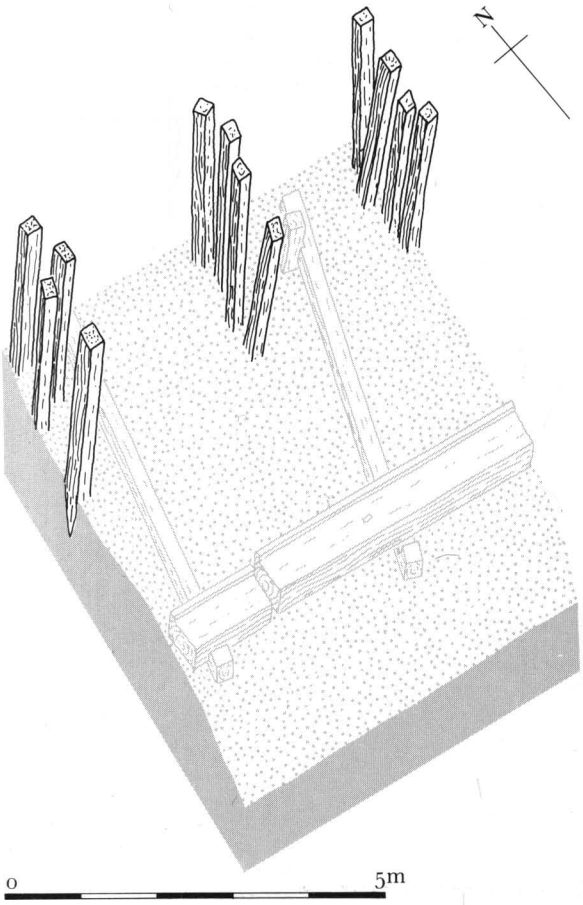


FIGURE 26 AREA III, piles 190 and 191.

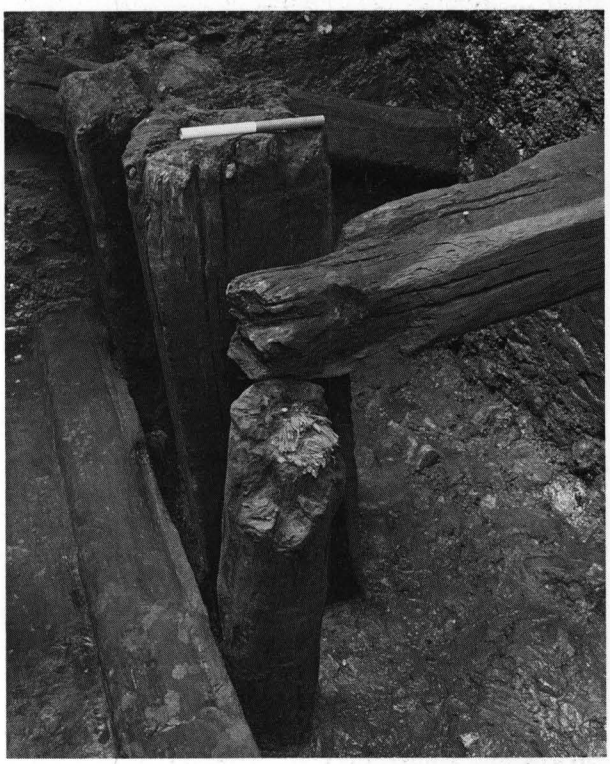


FIGURE 27 AREA III, piles 201 and 203.

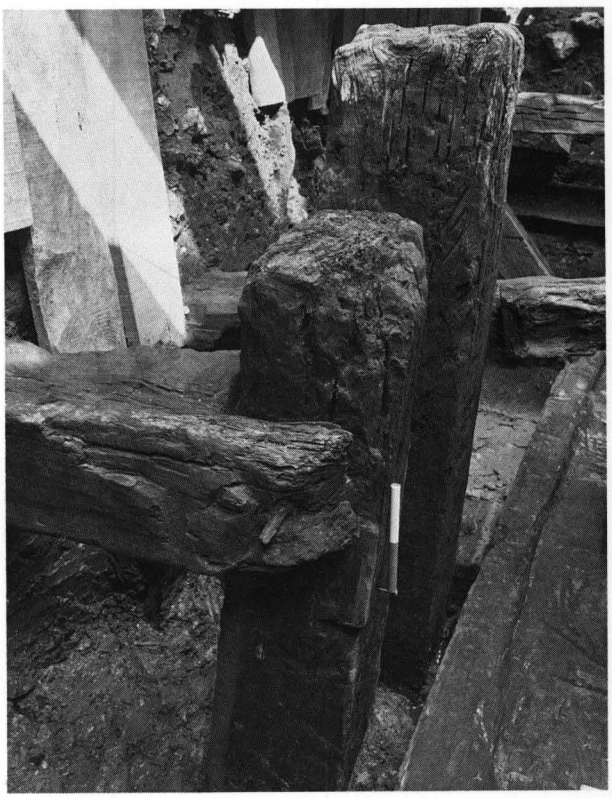


FIGURE 28 AREA III, piles 296 and 297.

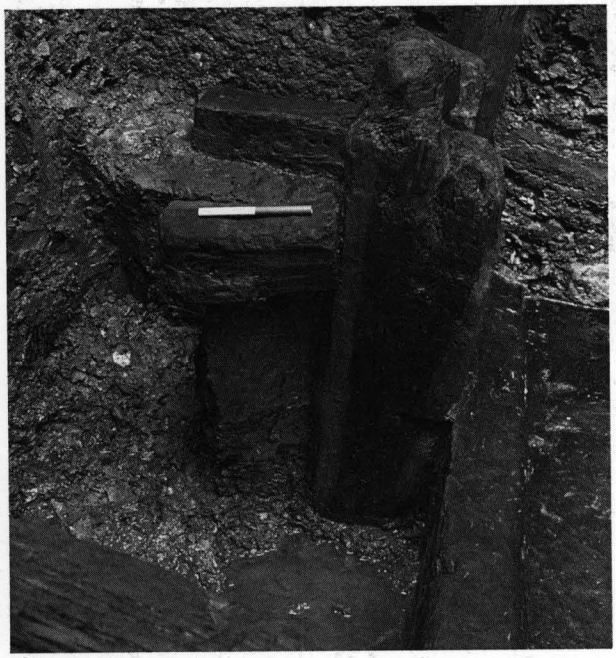


FIGURE 29 AREA III, piles 323 and 211 (behind the raised sillbeam 205).



FIGURE 30 AREA III, piles 212 and 213.



were between 2 m and 3 m north of the quayfront and arranged in north-south lines of up to four piles (e.g. II.179, 180, 170, 171, Figure 50; II.532, 531, 530, 178, Figure 51), each line about 2 m apart, with tiebacks joined and nailed on both sides by staggering the piles slightly out of line (II.178, 547, 171; Figure 12). This arrangement continued to the west of AREA II with three lines between 1 m and 2.7 m apart (IV.730, 733, 737). Only two piles were employed where tiebacks were attached to one side only (IV.703). To the north of AREA III were at least four further lines of piles in similar staggered north-south pairs (IV.758, 802, 801, 742), lining up with the Stage 5a piles at the quayfront wall.

Seven piles which were completely excavated had lengths between 2.43 m and 4 m. Most survived to a height between +1 m and +1.3 m OD, and had flat sawn tops; others with decayed and rounded tops reached +0.6 m to +0.9 m OD.

The possibilities that some or all of the piles supported a plank floor for the quay, or that some (particularly the 5a group and those to the north of the group) rose higher to form part of a quayside building or structure, are discussed below (p. 68).

FIGURE 31 Axonometric reconstruction of quay construction stages 6 and 7, 1st layer of quayfront beams and 1st layer of tieback braces.

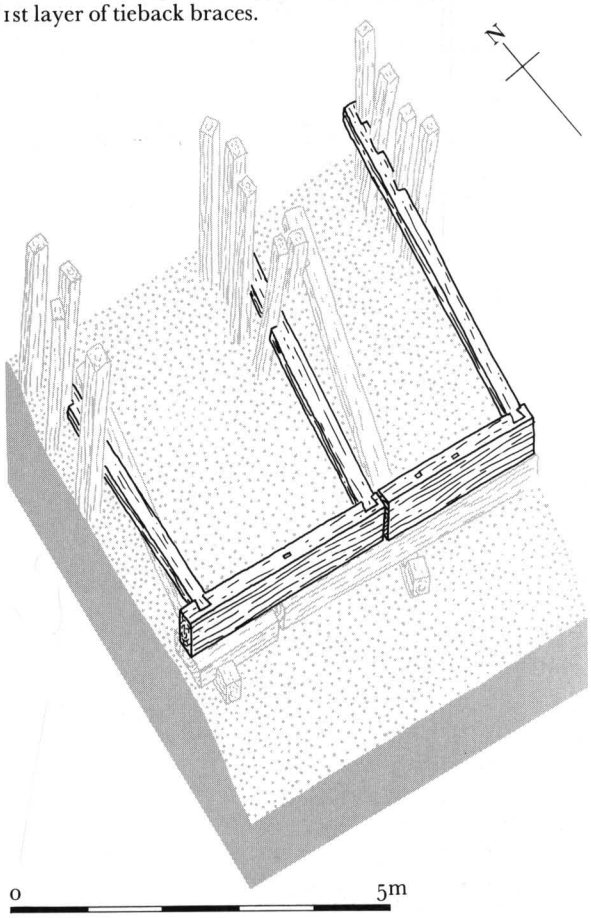
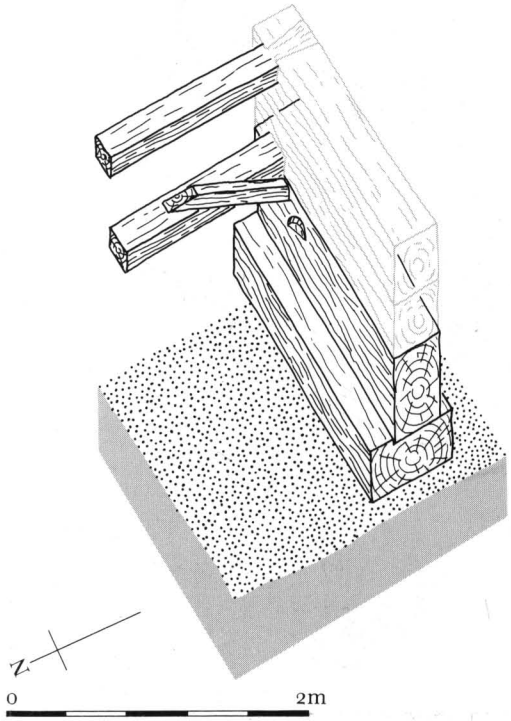




FIGURE 32 AREA III, detail of sillbeam and 1st layer of quayfront beams.

FIGURE 33 AREA III, axonometric reconstruction of mark on 2nd layer quayfront beam.

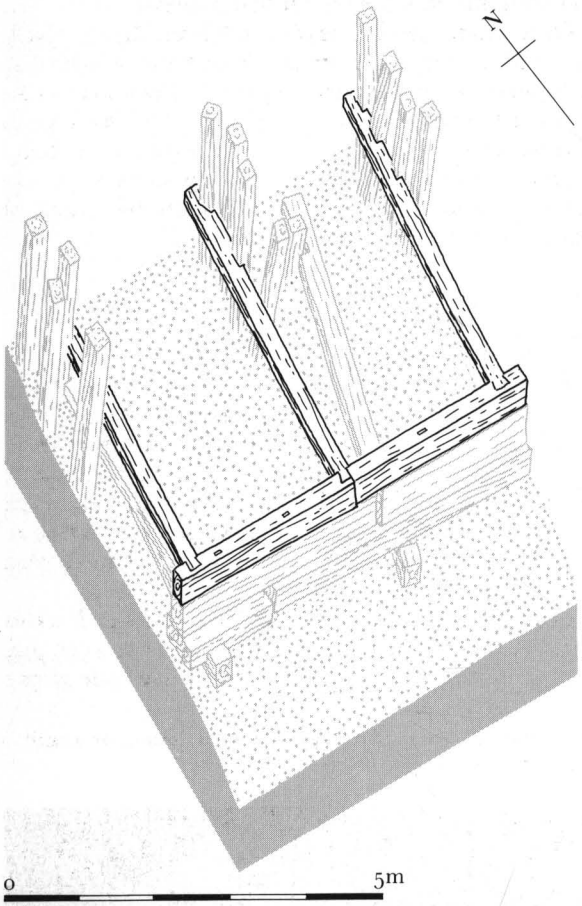


Stage 6 First layer of quayfront beams

(Figures 12–14, 31–33, 35, 47–51)

These horizontal timbers were placed above the quayfront sill beams and were held vertically in position by false tenons which connected both with the underlying and overlying timbers. Their tops were also braced by the first layer of tieback braces. Four beams were partially excavated in AREAS I, II and III; one beam continuing from AREA I into AREA II (I.5013/II.561) had a total length of 6.5 m. The cross-sections of the beams (I.5014, I.5013/II.561, II.543, III.236, Figure 12) were 0.3 m–0.42 m × 0.43 m–0.6 m, and although they were only slightly smaller in section and length than the sill beams, being also fashioned from complete trunks trimmed to a rectangular section, these timbers were set on their narrow face so that the sill beam beneath projected on both sides.

Dovetail mortices for the first layer of tieback braces were cut into the top face of this layer of beams. The distances between the joints varied between 4.56 m in AREA I (I.5014 and I.5013/II.561), 2 m in AREA II (two mortices in the beam II.543) and 2.4 m in AREA III (three mortices in the beam III.236), with a fourth only 0.3 m to the east, but only two of these were directly associated with tiebacks. The joints may have been cut beforehand and not used on site, or the timbers in them may have slipped out. There were timbers with squared ends in this area which could have fitted into the mortices (III.368, Figure 12, 35).



On the north side of the eastern beam at this level in AREA II (II.561) was a semi-circular incision 140 mm in diameter and 70 mm deep (Figure 33) which may have been a carpenter's mark, but was more likely to be the trace of an imperfection in the timber removed while dressing the wood.

Stage 7 First layer of tiebacks to first layer of quayfront beams (Figures 12, 18, 31, 35–6, 50, 52)

These horizontal timbers, like the succeeding levels of tieback braces, were jointed by dovetail tenons at their south ends to the corresponding quayfront beams, and rebated and sometimes nailed around piles behind the quayfront.

The spacing of the tiebacks corresponded to the rough module of 2 m–2.3 m dictated by the structural piles. In three instances they were attached either to the east or to the west ends of the first quayfront beam; otherwise they joined the beams at random. They had cross-sections of 0.23 m square or 0.23 × 0.13 m, and were at least 4 m long (I.5007, II.549, 536, III.281, Figures 12, 52). The strain imposed on these relatively slender braces caused at least one of them (II.536, Figure 50) to split.

FIGURE 34 Axonometric reconstruction of quay construction stages 8 and 9, 2nd quayfront beam and 2nd layer of tieback braces.

FIGURE 35 The quay at the east end of AREA III, showing quayfront beams and 3rd beam fallen to south.



Details of the joints of tiebacks around the piles could only be observed in AREA II. Here rebates 0.12 m deep and 0.44 m long were cut in the west side of the tieback (e.g. II.549) to fit round the structural piles. The joint in each case was larger than the pile by 0.13 m and the tieback was nailed to the pile with nails sunk in rectangular countersinking recesses; one was 100 mm square (II.536 and pile II.179, Figure 50). in AREA III rebates 100 mm deep were cut in opposing sides of the tiebacks as they jointed with pairs of Stage 5a piles immediately north of the quayfront (III.281, 262, 264, 261, 361, 360, Figure 12). The best surviving example of the rebate here was only 40 mm larger than the pile, but was further secured with a nail (II.281, Figure 18).

The dovetail tenons at the south ends of the tiebacks had decayed considerably, and had slipped out of the quayfront beams as the latter fell forward, despite being nailed in some cases (II.546, III.387, Figure 35).

Stage 8 Second layer of quayfront beams

(Figures 12, 34–36)

By this stage the main constructional elements of the quay were in position and from this point onwards the quay could rise as each layer of quayfront beams was followed by a layer of tiebacks. For this reason description of Stages 8–11 can be kept brief and concentrate on variations from the established patterns.

Only three second layer quayfront beams were recorded (I.5002, II.542, III.243, Figure 12), in each case the uppermost timber surviving *in situ*. They were smaller than the beams below, 0.23–0.28 m × 0.36–0.39 m in cross-section, and between 2.6 m and over 4 m long. Mortices for false tenons on the top surfaces of two beams showed that there had originally been at least a third layer of beams above (Figure 35).

Stage 9 Second layer of tiebacks

(Figures 12, 30, 34–36, 49–52)

Three braces were recorded at this level in AREA I (I.683, 5004, 5007, Figure 12) and three in AREA II (II.554, 541, 535, Figure 52), the latter levelled at 0 m OD at their northern ends. When two layers of tiebacks rebated round the same pile, they were about 0.28 m apart (Figure 50). Triangular countersinking notches were cut for large-headed nails in the west side of the eastern tiebacks (Figure 51).

In AREA III two tiebacks (III.386, 291) survived at this level. Both were supported by diagonal braces (III.390, 292, Figure 49) running up from a ground pile at the

FIGURE 36 East end of AREA III, detail of braces and 2nd layer of tieback braces.



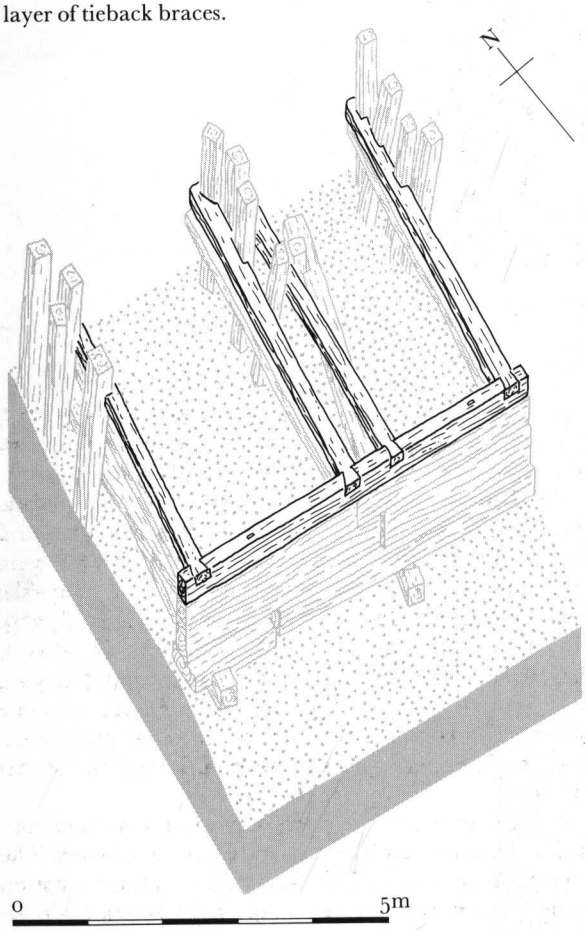
foot of the sill beam at a 45 degree angle (Figure 36). At the west end of AREA III was a similar diagonal brace (III.225), jointed to the ground pile but lacking the tieback it once supported (Figures 12, 30).

Stage 10 Third layer of quayfront beams

(Figures 37, 39, 48)

These did not survive *in situ* but their position can be inferred from empty mortices for false tenons in the surviving second level of quayfront beams and from the position of two timbers found south of the quay in AREAS II and III. The former (II.513) had been reused to revet a Saxon embankment, presumably not far from its original position (Figure 39). It was of smaller cross-section than the second layer of quayfront beams, 0.3 × 0.23, at least 4.4 m long. The corresponding timber in AREA III (III.388) lay in the silts south of the quay where it had probably collapsed (Figure 48). This timber was 0.41 × 0.22 m in cross-section, and must have been set on its narrow face since both a dovetail mortice and a false tenon mortice were set into one of the narrow faces, suggesting the original presence of a fourth level of quayfront beams. If these beams were restored to their original position on the quay the top of the quayfront at this third layer would have been at about +0.25 m OD.

FIGURE 37 Axonometric reconstruction of quay construction stages 10 and 11, 3rd quayfront beam and 3rd layer of tieback braces.



Stage 11 Third layer of tieback braces

(Figures 12, 34, 49–53)

In AREAS I, II and III a number of tieback braces demonstrably joined with the third level of quayfront beams, and the position of others could be inferred. In AREA I at least six tiebacks were jointed with the quayfront at this level; four to the east were 0.8 m apart and the others more widely spaced to the west (I.662, 678, 683, 685, 5004, 5007, Figure 12). Four were recorded in AREA II (II.553, 546, 540, 524, Figure 12), and three in AREA III (III.240, 331, 326, Figure 49), lying above the diagonal braces of Stage 9. All these tiebacks shared the characteristic of cracked and weathered ends where they would have met the quayfront; it was not possible to determine if any had been cut for removal of the quayfront beams. The tiebacks were of similar dimensions to those below.

Stage 12 Fourth layer of quayfront beams

(Figures 35, 37)

Timbers which may have belonged to a fourth layer of quayfront beams were not found in the excavation but were suggested by the existence of a mortice for a false tenon in the top of one third layer beam (Figure 35) and the survival of tiebacks at the fourth level (Stage 13). The distance between the third and fourth tiers of tiebacks, 0.21 m, suggests a similar height for the fourth layer quayfront beam. This would raise the quayfront to a level of about +0.46 m OD. The height of the quayfront (sill beam and four superimposed beams) would then be between 1.5 and 2 m.

Stage 13 Fourth layer of tieback braces

(Figures 12, 50–1)

Tieback braces, rebated or nailed around piles, were found at this level in AREA I (I.683, 701, 5011, Figure 12), inferred from the survival of nails in piles in AREA II (II.531, Figure 51), and found in one instance north of AREA III (IV.676, Figure 12). The cross-sections of timbers resembled other tiebacks but their recorded lengths were fragmentary. The level of the timbers or the nails which held them varied between +0.5 m and 0.62 m OD, in the latter case still 0.36 m below the surviving tops of the adjacent structural piles. Several further diagonal braces were probably inserted at this stage, jointed to tiebacks or driven into the initial dumping around the base of the quay (II.565, 539; I.729; Figures 12, 50, 51).

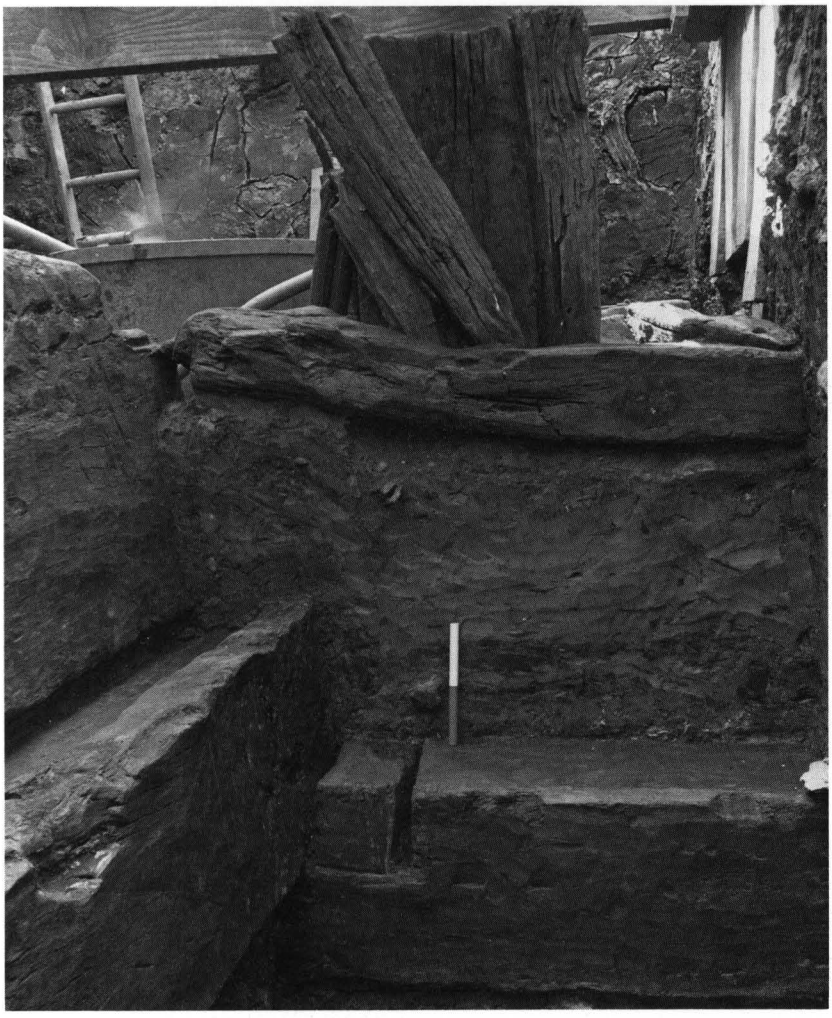


FIGURE 38 Detail of dumps inside the quay in AREA III, looking west.

Stage 14 Timbers associated with the quay

(Figures 12, 39)

Short posts in front of the quay, which may have been rubbing posts, were found in AREA I (I.691) and AREA III (III.254, 255, 358, 359, 295, Figure 12); the five in the latter group were at the south ends of tieback lines. These timbers survived only up to 1.14 m long, and thus probably did not give any indication as to the height of the quay. Other timbers in and around the quayfront were either probably used as packing within the structure or were collapsed parts whose function is difficult to interpret (I.687, II.651, 567, 568, 573, 548, 566; III.277–9, 322, 351–2, 372, Figure 39) though one has been identified as a missing third level beam (III.388, see Stage 10 above). No timber could be attributed directly to a superstructure, although the collapsed timbers in AREA II may have been joists. Very few planks were found in the vicinity of the quay (for examples, see II.572, III.263, Figure 39), and the working surface of the quay was not identified due to the post-Roman disturbance and erosion.

Period 1, Phase 5 *Infill of the quay*

(Figures 38–39, 45–53)

The cradling timbers were sealed by deposits of silt, sand and building material (II.111, Figure 50–2; III.338, 309, Figures 39, 49) which were also found on the south side of the quay (III.318) with a higher silt content, evidently forming the foreshore during the early lifetime of the quay (Figures 47–48). The piles of Stage 5 and the first and second layers of tiebacks and beams were stratigraphically sealed by deposits of very fine clay-like silt (I.108; II.110, 109, 511, 520, 525; III.329, 288, 289, 301, Figures 38–9, 45–9, 52). Horizons of gravel, charcoal and sand lay within this sequence (II.528, 523, 521, 526, Figures 52; III.319, 320, 289, Figure 39). The lowest deposits (II.110, III.329) contained large amounts of wood chips, perhaps suggesting working of the beams on site.

A large amount of pottery, including complete and unused samian vessels, was dumped in these layers. The homogenous nature of the pottery throughout the infill group (below, Richardson, p. 96) suggests that deposi-

tion took place at one time and that the debris did not accumulate slowly during an extended period. It therefore seems likely that the infilling was a deliberate operation as part of the quay construction. Though the top of the infill deposit was eroded, it is possible (and is suggested below, p. 68) that the infill itself formed the working surface of the quay.

Period 1, Phase 6 *Silting against the south face of the quay*

(Figures 39, 45–48, 51)

Fine grey silt and sand with occasional ragstone fragments on the southern, riverwards face of the two lower quayfront beams probably represented silting against the quay during its period of use (I.114, II.582, III.269, Figure 39) and certainly before its collapse, since timbers derived from the quay overlay this muddy foreshore (Figure 48). Clear delineation of layers at this point was difficult due to post-Roman disturbance and the slumping of infill layers from inside the quayfront in a southern direction after robbing of the beams. Contamination in this phase was most likely at the west end of AREA III (Figures 44–45; III.293).

Period 1, Phase 7 *Upper deposits inside the quay*

(Figures 39, 50–2)

The upper deposits inside the quay, which survived best in the northern part of the structure around the structural piles, consisted of dark grey organic silt (I.471, II.167, Figure 39) and mixed clayey silts, gravels and sands (II.166, 165, 113, 112, 164, 163, Figure 52). These could have been derived from the original infill deposits within the quay, but their mixed nature and position over both broken beams and the positions of missing beams suggests disturbance, presumably at a time when the quay fell out of use (Figure 50–2). Though they were not stratigraphically related to the riverside wall of Phase 8, it seems at least possible that this disturbance was associated with the building of the wall immediately to the north. The top of these silts (+0.9 m OD) lay just below the foundation level of the wall.

Period 1, Phase 8 *The Roman riverside wall*

(Figures 39–43)

A length of substantial walling lying under the pavement on the south side of Thames Street was recorded during the construction of the retaining wall for the new building in 1978. This masonry ran roughly along the line of the Phase 1 revetment, 3 m north of the Phase 3 revetment. The wall was revealed not at one time but in a series of successive trenches; 27 separate elevations

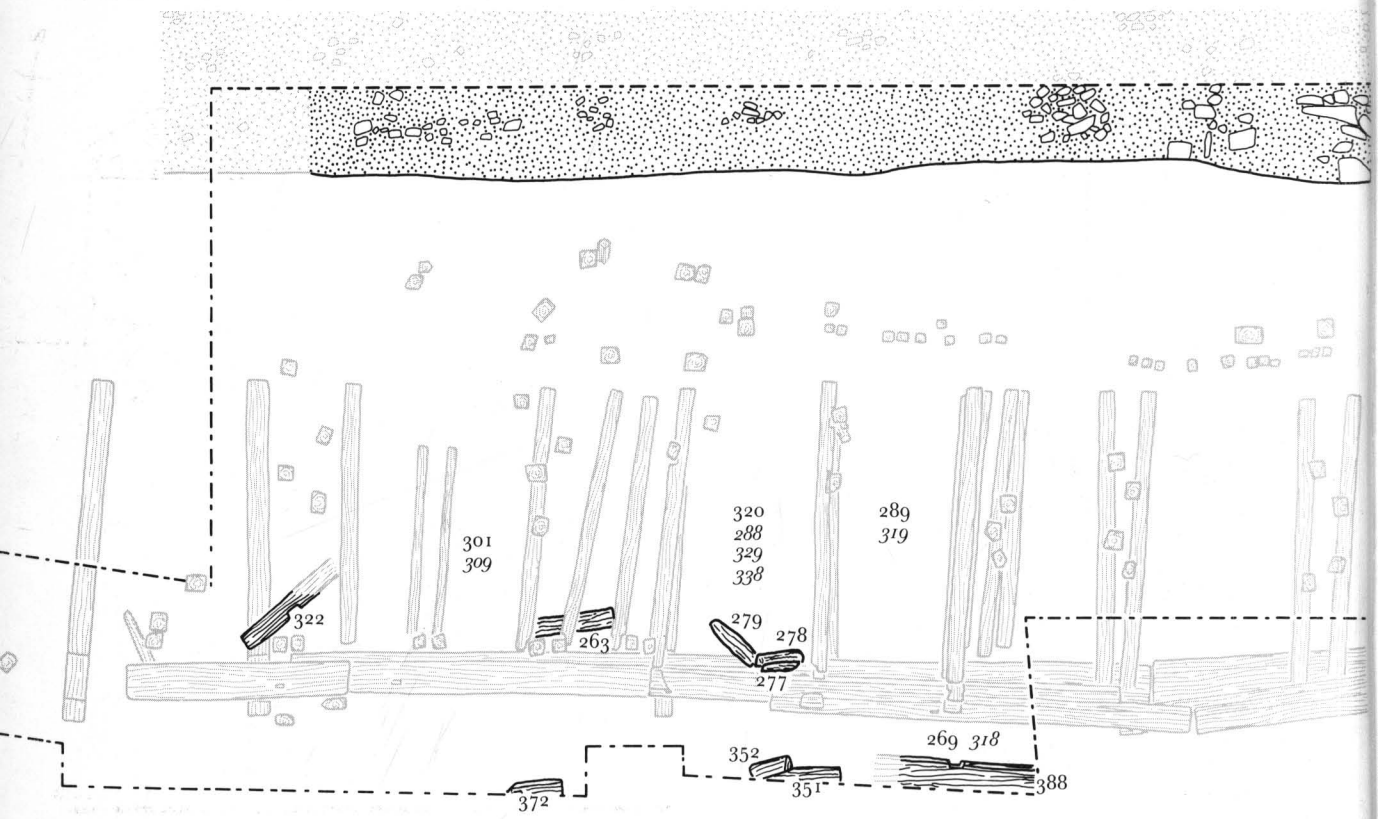


FIGURE 39 Plan of quay, silt infilling and riverside wall.

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Period 1, Phase 8 *The Roman riverside wall*

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The construction of the wall could be divided into four stages:

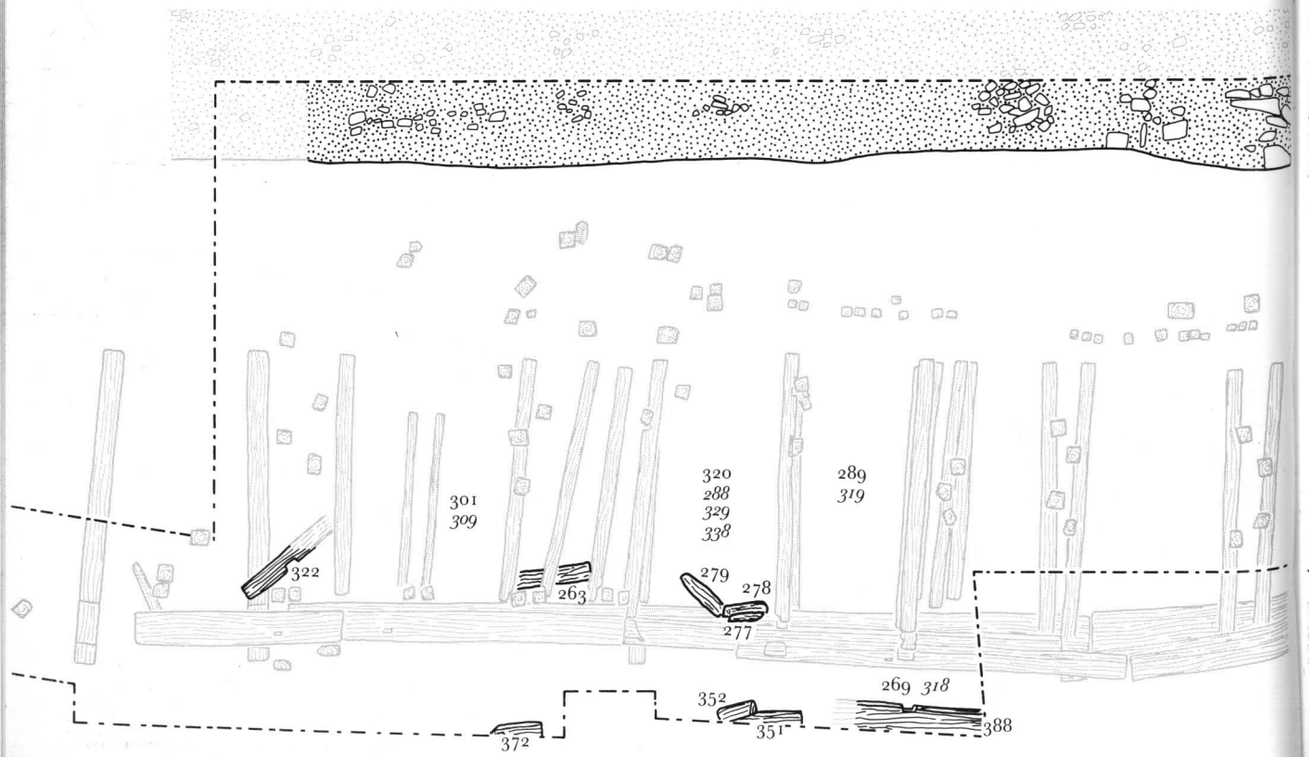
(a) *foundation piles* (Figures 40–41). A total of 180 piles (grouped as IV.798) were recorded, arranged in rows of three or four east-west, in north-south lines 0.12–0.2 m apart. The piles had rectangular cross-sections 0.26–0.3 m × 0.14–0.32 m, generally with the narrow side facing south. A difference in level of the tops of the piles, from +1.18 m OD to 1.61 m OD, may have been due to local subsidence, for the underlying ground here was recently reclaimed on a base of river mud, with the natural London Clay between 5 m and 8 m beneath. From the few total lengths recorded it seems that the southern, outermost row had piles between 1.62 m and 1.86 m in length, with occasional exceptions over 2 m, whereas piles in the next two inner rows had lengths of 2.4 m [32]. Since five rows of piles comprised the whole width of the wall at Baynard's Castle, it seems likely that the five rows observed at New Fresh Wharf also comprised the full width of the base of the wall.

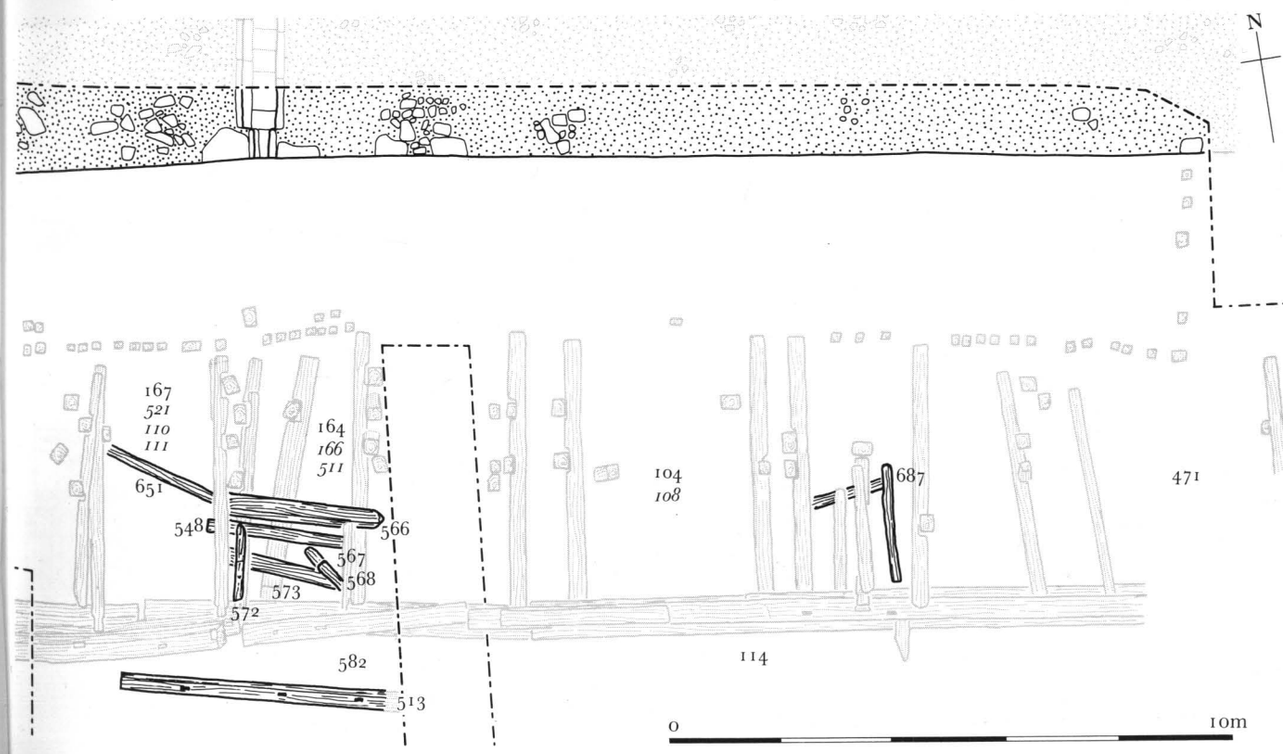
(b) *mortar bedding* (Figure 40). Spreading west from the east end of the observed foundation for about 20 m, over the tops of the piles and rammed between them, was a brown-grey sandy mortar with small chalk fragments, between 0.16 and 0.37 m thick (IV.435). A similar, but blue-grey, sandy mortar with gravel (IV.682) lay to the west after a gap of 2.5 m for a further 10 m. Such spreads were absent from the wall at Baynard's Castle [33].

(c) *foundation raft* (Figure 40). Small pieces of chalk were packed together to form a layer 0.2–0.4 m thick with a fairly level surface. This layer (IV.411) incorporated lateral timbers, most occurring towards the top, though some in the east lay above the chalk and were packed with grey silty sand (IV.410). The southern edge of the chalk raft was partially bordered by a line of squared horizontal timbers. Fourteen others, only three of which were squared, ran at right angles across the body of the wall, and some others ran diagonally or along the line of the wall.

(d) *the wall* (Figures 39–40, 43, 53). The wall (IV.494) built above these foundations differed slightly in character on either side of an incorporated culvert recorded about one third of the way along the wall's length from the east end. West of the culvert the wall consisted of coursed irregularly sized ragstone rubble, the angle of the stones suggesting they were laid from the west, with alternating courses of yellow-brown gravelly mortar

FIGURE 39 Plan of quay, silt infilling and riverside wall.





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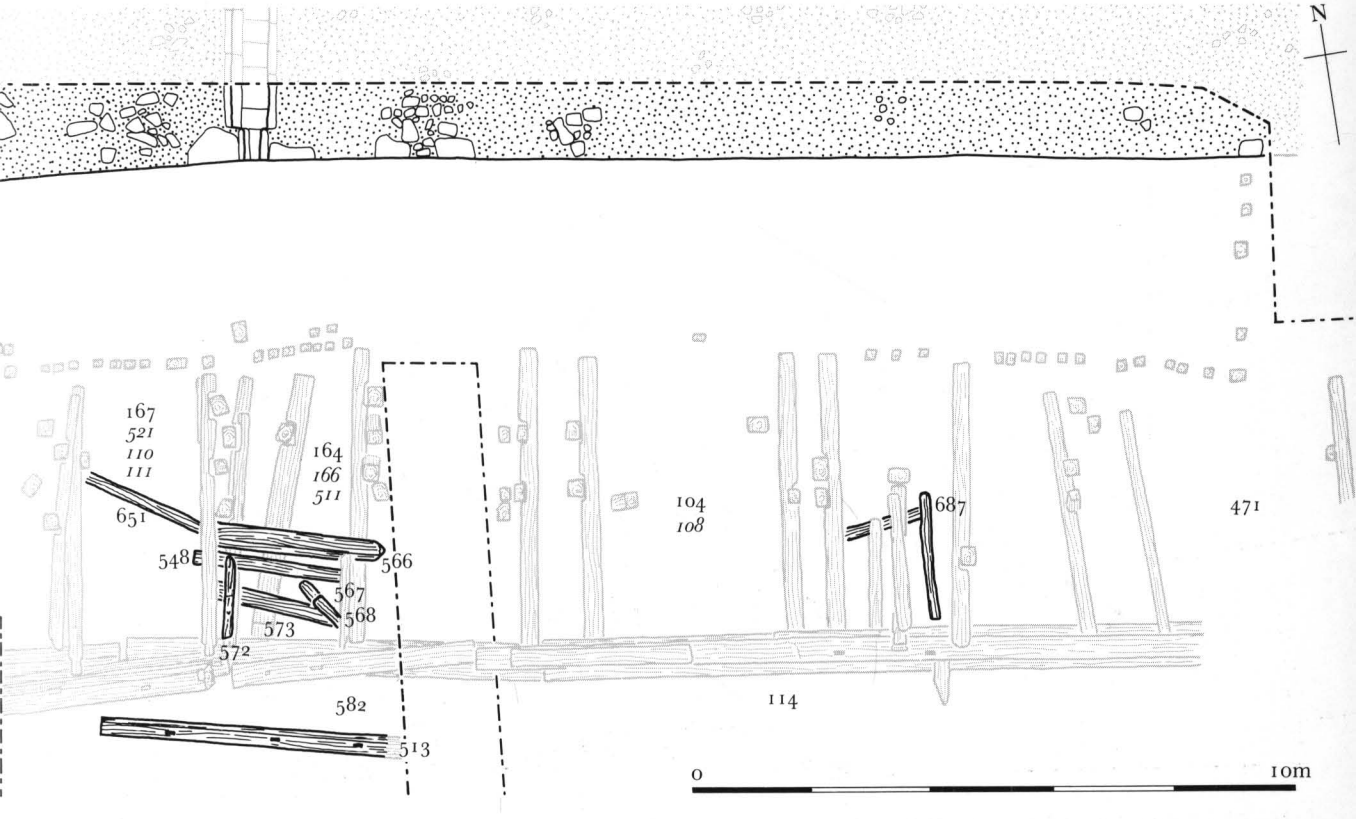


FIGURE 40 Construction of riverside wall, stages a–d.

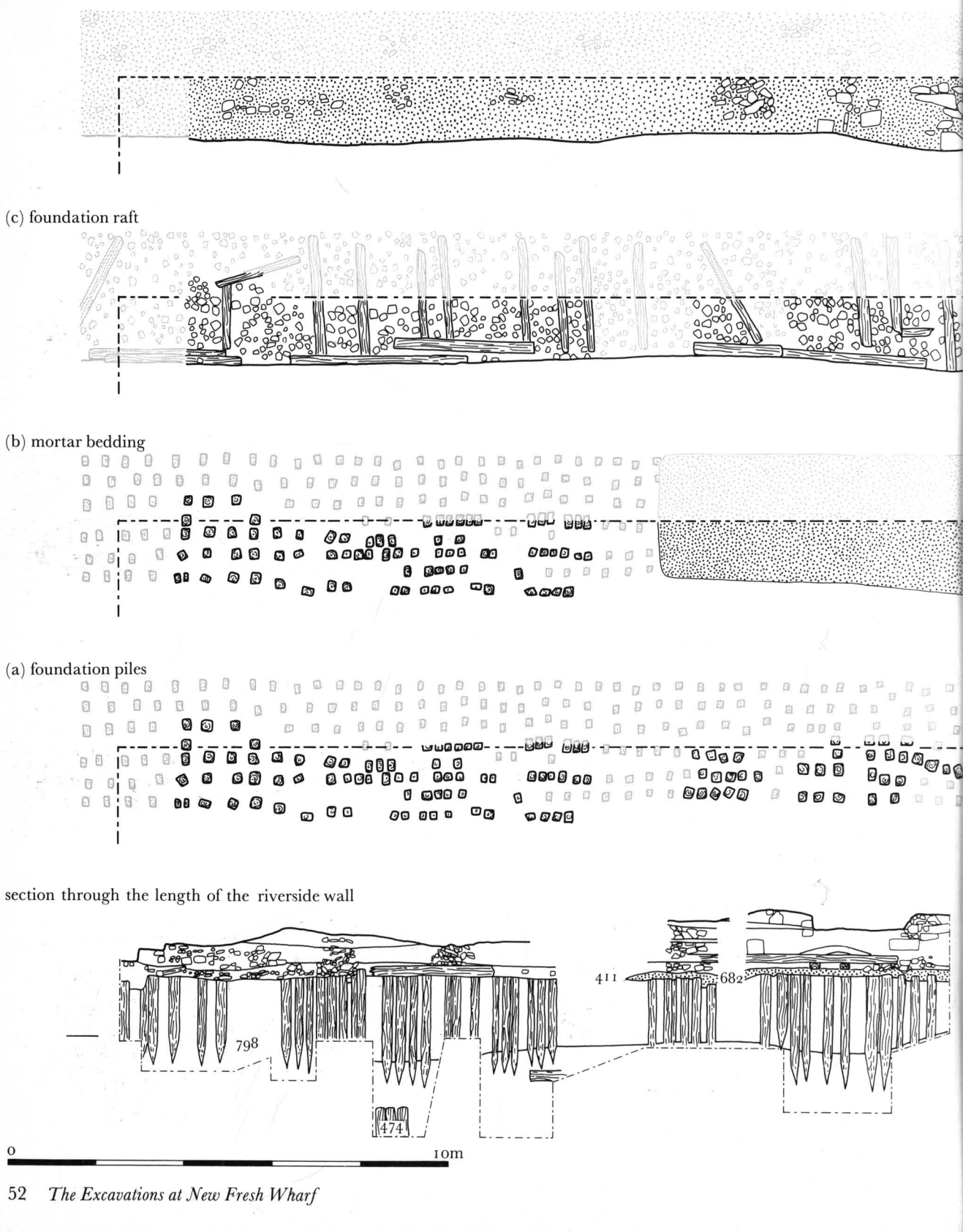


FIGURE 40 Construction of riverside wall, stages a–d.

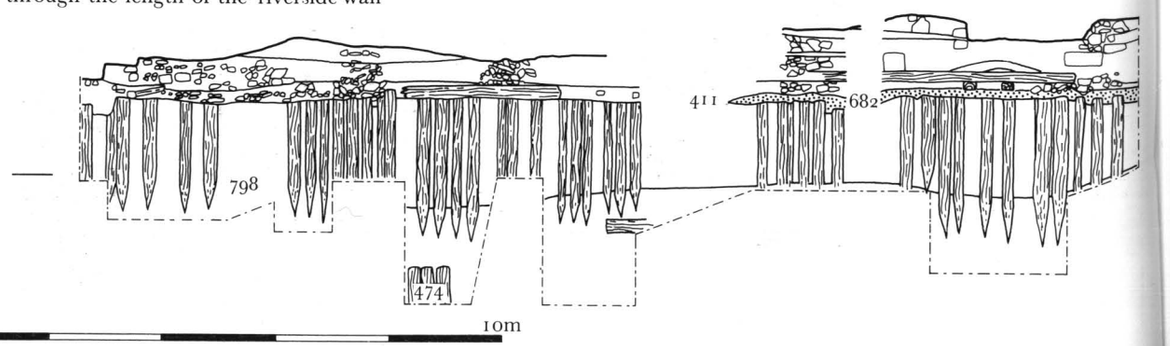
(d) wall

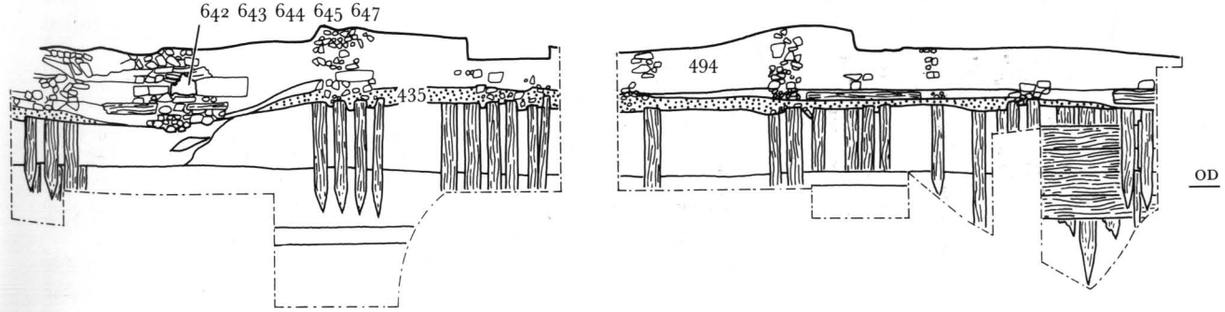
(c) foundation raft

(b) mortar bedding

(a) foundation piles

section through the length of the riverside wall





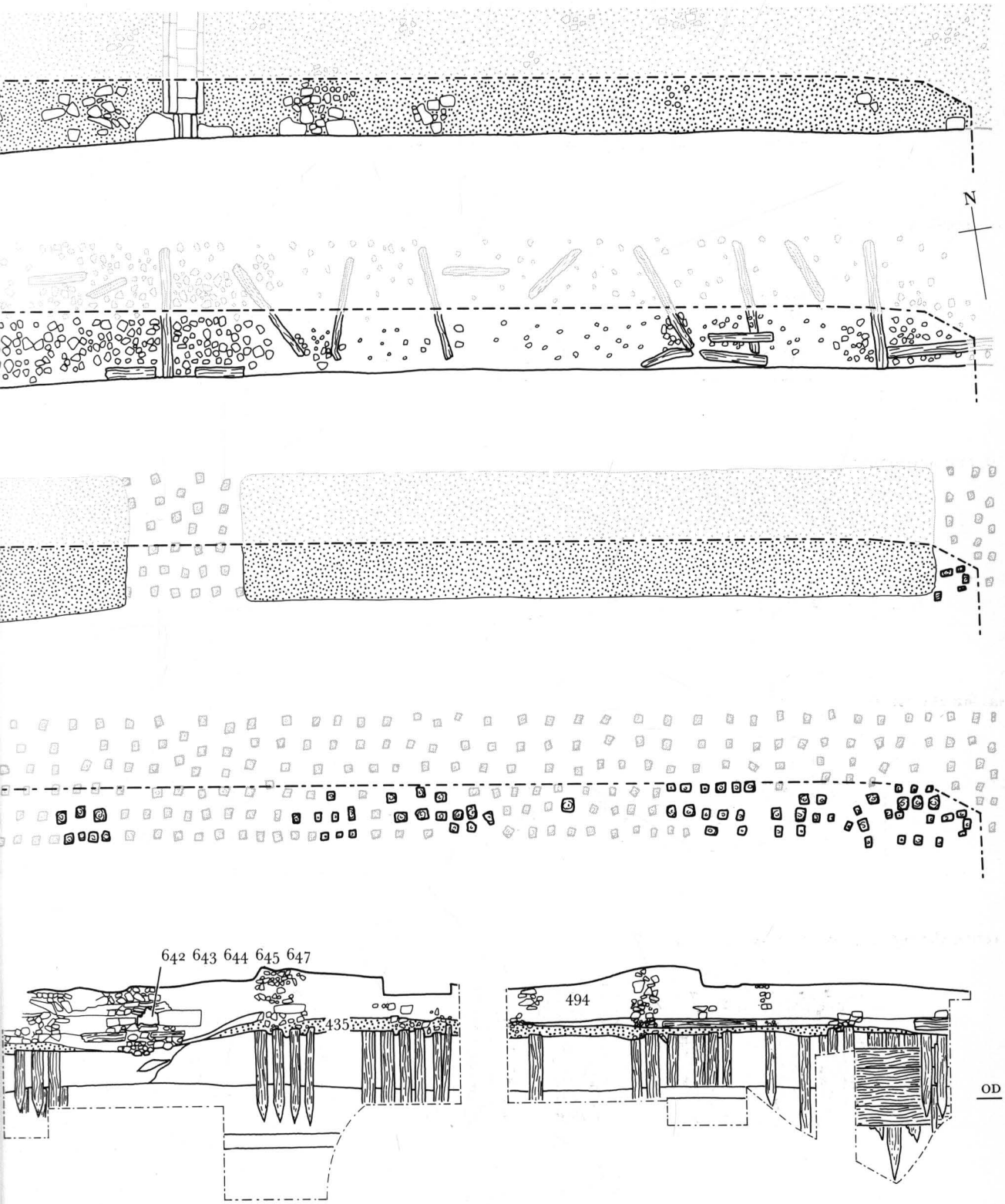

N
642 643 644 645 647
435
494
OD

FIGURE 41 Detail of foundation piles of riverside wall.



FIGURE 42 Detail of culvert in riverside wall.



(Figure 53). This technique of careful layering of the stones and mortar was noted at the riverside wall at Baynard's Castle, 1000 m upstream [34] and in the earlier landward city wall [35]. Voids between the stones, some packed with clay, were found at New Fresh Wharf as in the fabric of the city wall excavated at Duke's Place [36]. East of the culvert at New Fresh Wharf there were no definite courses but random rubble in thick mortar, similar to the construction of the earlier riverside wall found at the Tower, 700 m downstream [37]. Since only two or three courses of the wall survived there was no possibility of comparing the nature of any tile coursing, which lay generally above the fourth ragstone course at Baynard's Castle [38].

The full width of the wall was not recorded, though the presence of five pile lines, as at Baynard's Castle, suggests that the recorded width was very close to the full width of 2.75 m found at Baynard's Castle.

(e) *the culvert* (Figures 39, 40, 42). A tile-lined culvert (IV.647) ran through the base of the wall north of AREA II (Figures 39, 42). Capped by flat bricks and floored with overlapping *tegulae*, it was 0.26 m high and 0.45 m wide internally. Within it lay successive layers of grey, green, brown organic and finally grey silt (IV.642–645). The lower edge of the culvert mouth at the south face of the wall lay at + 1.65 m OD, presumably at or above contemporary river level; the floor of a similar culvert through the wall at Baynard's Castle, measured on the northern side of the wall, lay at 2.0 m OD.

Period 2 *Post-Roman activity on the site: a summary*

(Figures 44–46, 49, 51)

The post-Roman periods of activity at New Fresh Wharf are described in detail in the relevant archive reports (listed below, p. 267). It is however necessary to describe here the features apparently spanning the late Roman-Saxon transition.

The first Saxon structures, dated by dendrochronology to 971–1007 (Period 2, Phase 2), lay above a series of disturbed silts which post-dated the demise of the Roman quay (Period 2, Phase 1). During this period of time the quayfront timbers either collapsed or were partially dismantled, or both. At the west end of AREA III the sill beam was absent and this at least must have been removed by human agency. Timbers which had fallen onto the foreshore south of the quay were covered by mixed silty gravel with some organic material (III.258, Figure 46) and further west the sill beam, its overlying beams removed, was covered by silty gravel (III.293, Figure 45), which had perhaps begun forming during the lifetime of the quay (Phase 6 above). Two cuts were observed in these silts in AREA III, creating a shallow east-west trench about 0.4 m deep, backfilled with fine silt and gravel, immediately south of the sill beam (III.348, 345, Figures 45–46). Stratigraphically this should post-date the robbing of the quay, but river action may have disturbed and contaminated the silts. At the extreme west end of AREA III, and in AREA II, the river had mixed together the dumps behind the quay with silt (III.220, 221, Figure 49; II.166, 578, 579, Figure 51).

The earliest Saxon structures consisted of a rubble bank of late 10th to early 11th century date sealing these silts in front of the former quay in AREAS II and III,

FIGURE 43 Axonometric reconstruction of quay during decay.

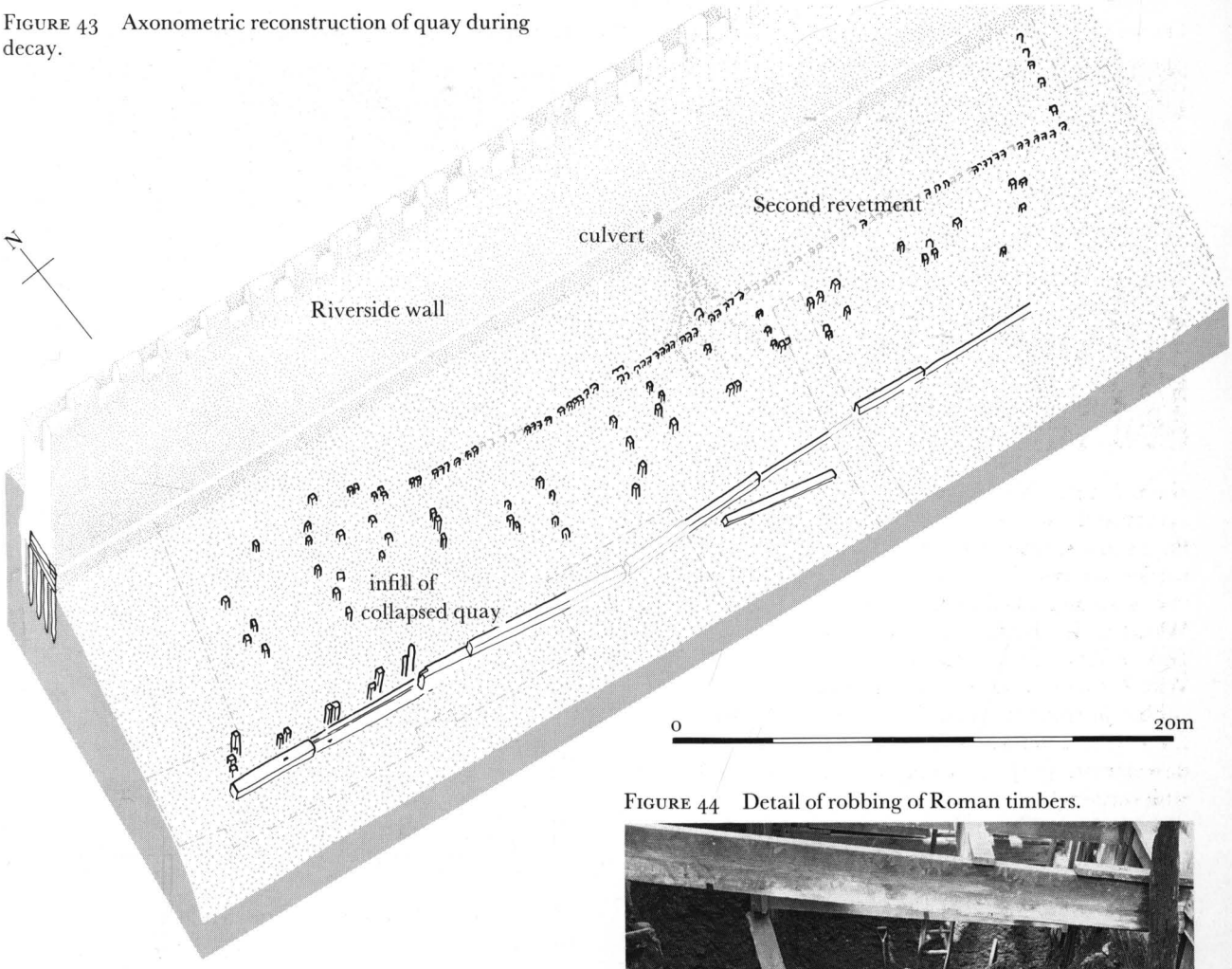


FIGURE 44 Detail of robbing of Roman timbers.



extending 4 m south of the quay and measuring about 18 m east-west (Period 2, Phase 2). West of the bank was a grid of oak stakes covering an area 7.5 m east-west and 10 m north-south, extending to within 1 m of the Roman riverside wall. These may have supported a jetty leading from the rubble embankment to a gap in the wall. At this point the wall survived to a lower level than elsewhere (+2.2 m OD as compared with up to +2.87 m OD), but there was no clear evidence of an opening.

After further silting (III.194, 195, 268, 256, 150, Figures 45–46; Period 2, Phase 3), the rubble bank and stakes were sealed by timber based clay embankments recorded in all AREAS (Period 3, Phase 1). The common southern limit of these banks was 19–22 m south of the riverside wall, which was still largely intact at this period. Five property boundaries were recorded, consisting of rough timber fences running north-south; on the west side river silts lay against the edge of the embankment, suggesting that west of it lay a narrow inlet. The embankments were dated to 991–1020 by dendrochronological analysis [39].

FIGURE 45 Section 1 (AREA III).

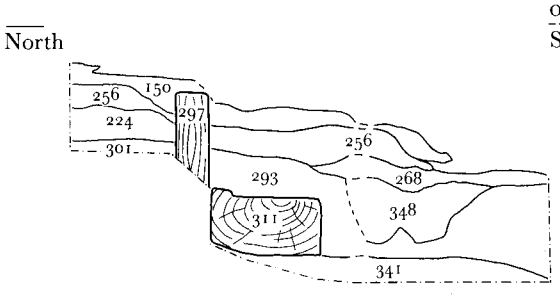


FIGURE 46 Section 2 (AREA III) (shown reversed).

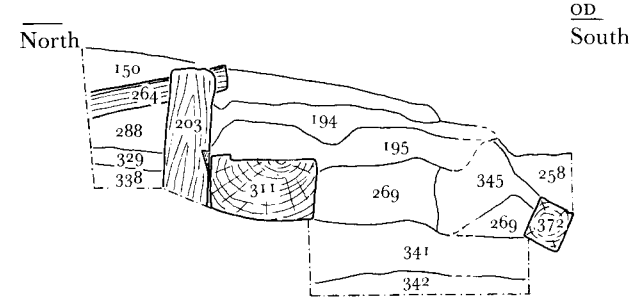


FIGURE 49 Section 5 (AREA III).

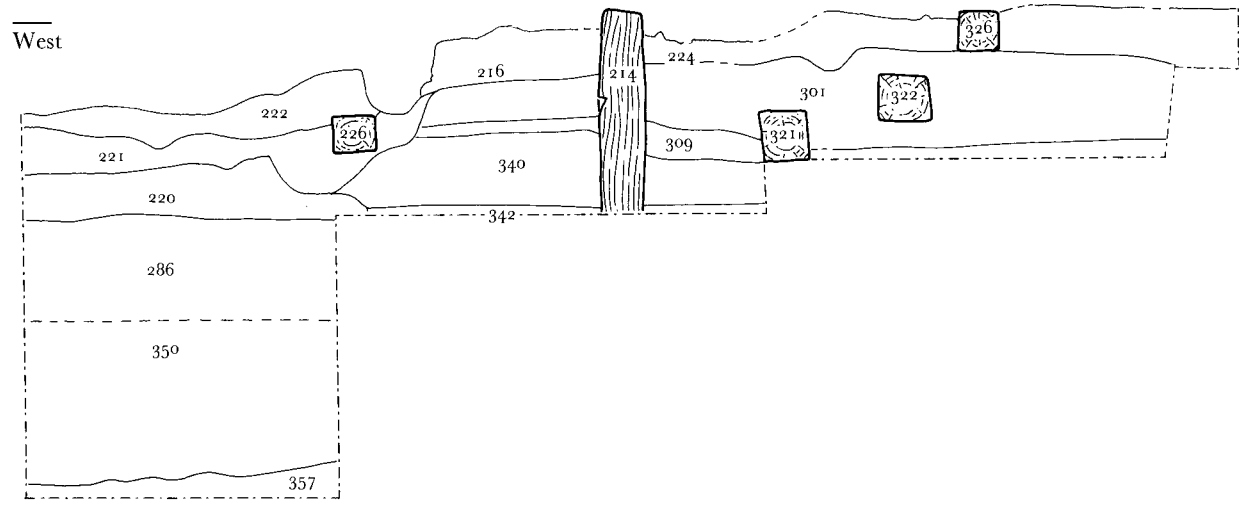


FIGURE 50 Section 6 (AREA II) (shown reversed).

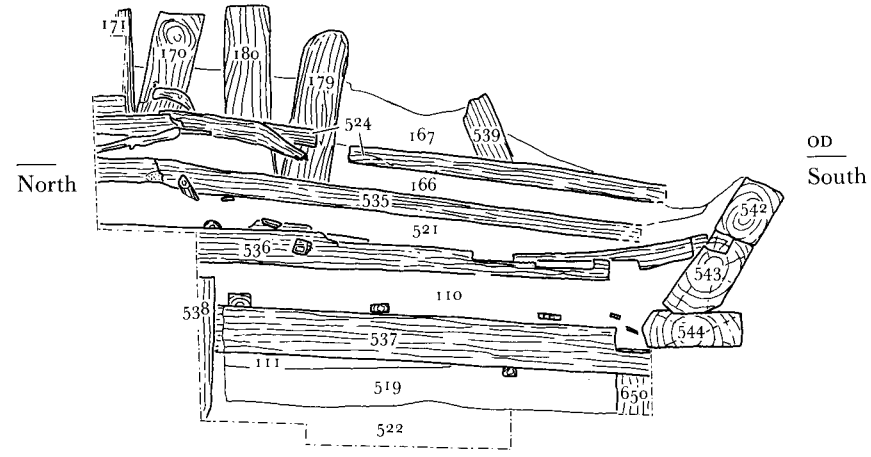


FIGURE 47 Section 3 (AREA III).

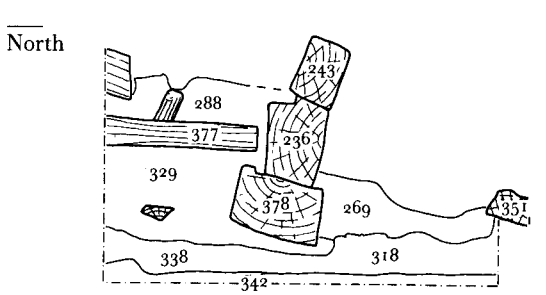
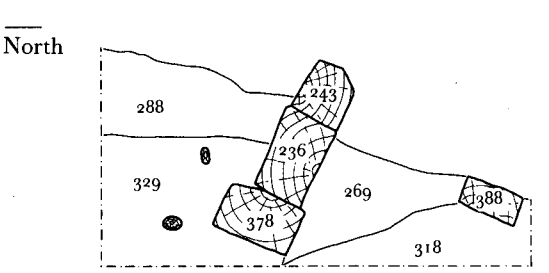
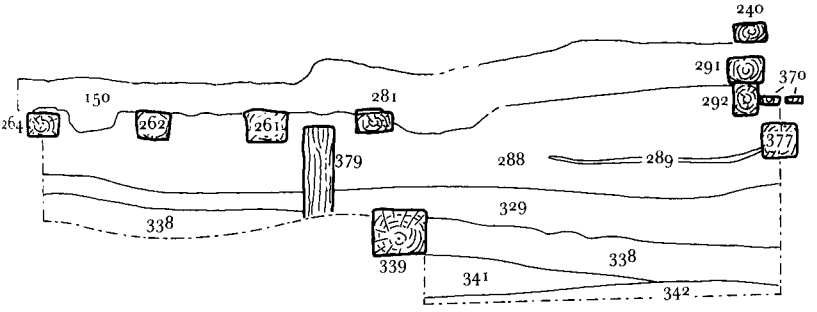


FIGURE 48 Section 4 (AREA III).





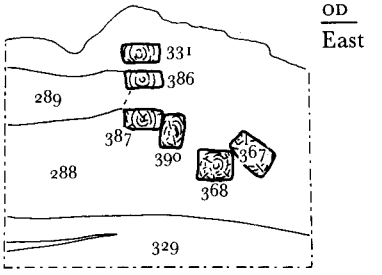


FIGURE 51 Section 7 (AREA II).

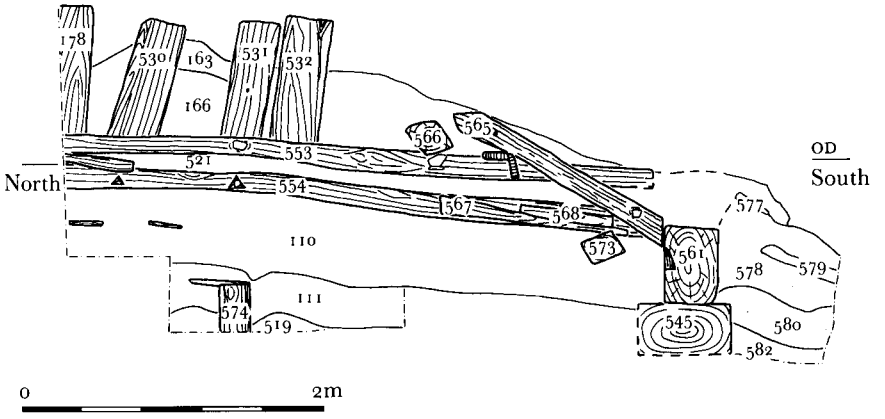


FIGURE 52 Section 8 (AREA II).

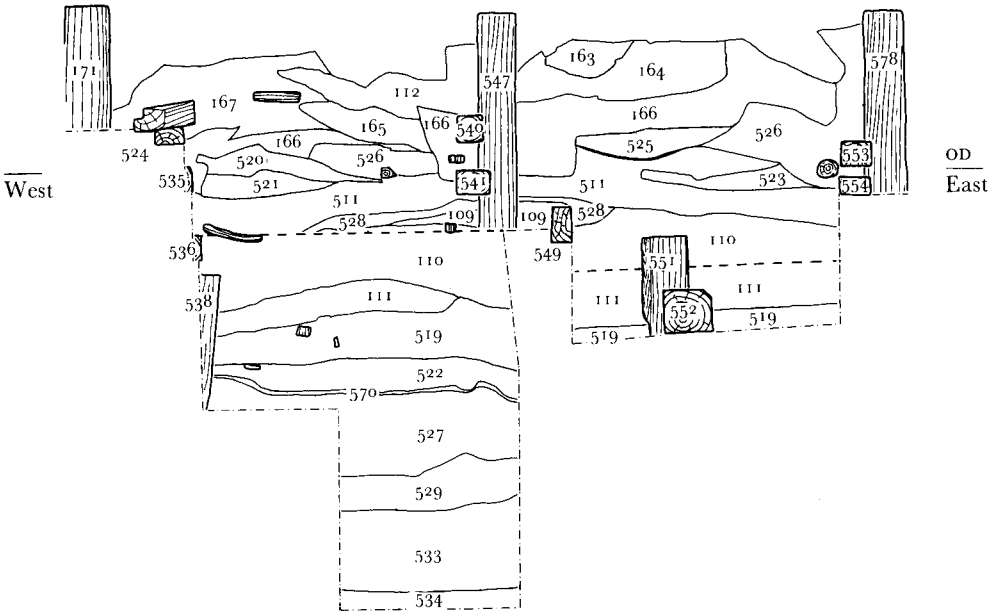
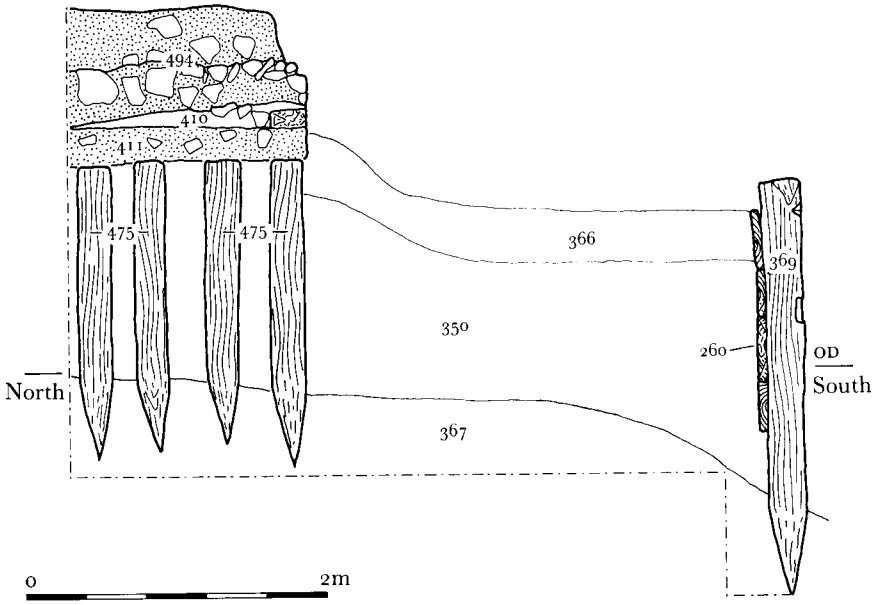


FIGURE 53 Section 9 (AREA IV) (composite).

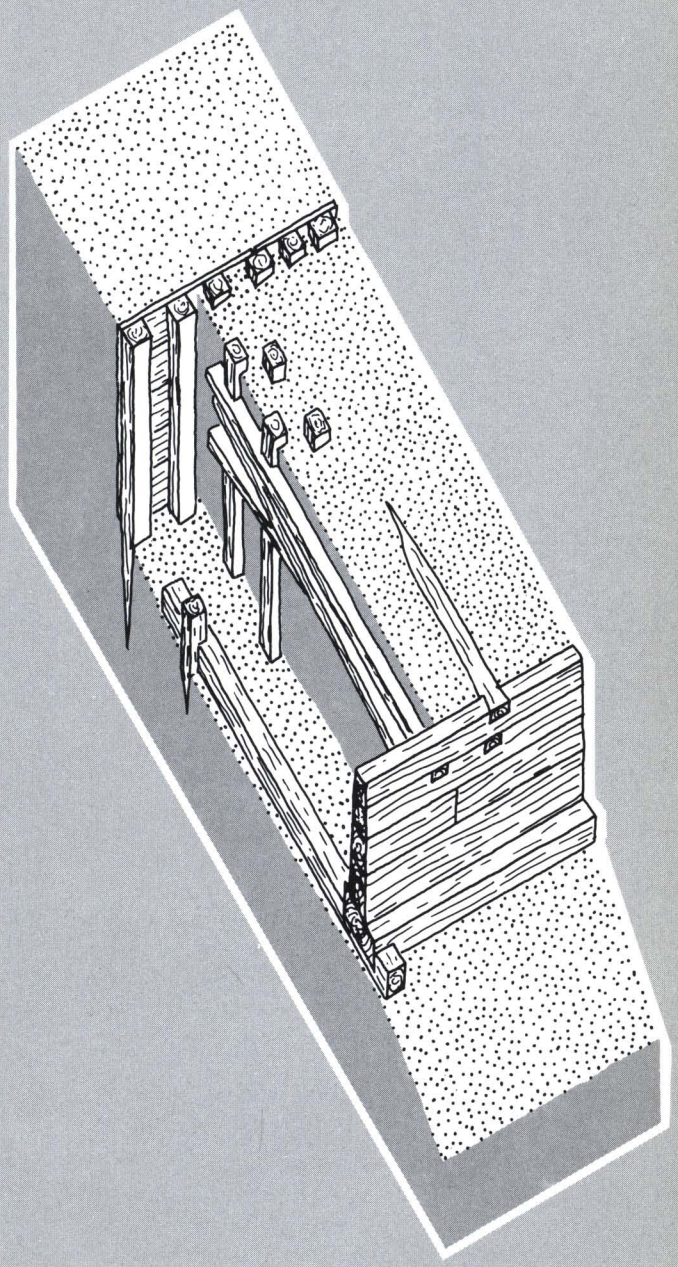


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25. When cross-sections of horizontal timbers are given in this report, the horizontal measurement (breadth) is given first, followed by the vertical measurement (depth).
26. The mark bears a resemblance to those cut on the edges of *tegulae* and brick, interpreted as possibly tally or batch marks (G. BRODRIBB 'Markings on Tile and Brick' in A. McWHIRR (ed) *Roman Brick and Tile* BAR S68 (1979) 211–20). We are grateful to Tim Williams for this suggestion.
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Synthesis and Discussion

Louise Miller and John Schofield
with Beth Richardson



This section of the report, a synthesis and discussion of the excavated site and its finds, falls into three parts: firstly, a discussion of the stratigraphic, artefactual and dendrochronological evidence for dating the sequence of structures and strata on the site; secondly, consideration of evidence for date supplied by Roman timber quays excavated elsewhere, parallels for the use of timber and inferences about the nature of the River Thames in the early 3rd century; and thirdly, a brief discussion of the New Fresh Wharf discoveries in the wider context of the Roman bridgehead area and the Roman city as a whole.

Dating the sequence from stratigraphic, artefactual and dendrochronological evidence

In the north part of the site a timber structure, built about 25 m south of the 1st century quays to the north of Thames Street comprised the *Phase 1* revetment (this and subsequent phases are all within Period 1). This earliest revetment on the site, together with the Phase 1 silts, was sealed by silting of *Phase 2*. A second revetment (*Phase 3*) 4 m to the south cut into the Phase 2 silts. In *Phase 4* a substantial timber structure, referred to as the quay, was built out between 4.4 and 5.2 m from the second revetment and on the Phase 2 silts. This structure was infilled with dumps of clay, silts, pottery and other debris; while this process probably took place during or shortly after construction it is discussed separately as *Phase 5*. Silting took place against the face of the quay in *Phase 6*. The quayfront was subsequently robbed and partly collapsed, involving disturbance and slumping of the dump layers of Phase 5 (*Phase 7*). The Roman riverside wall cut the dumps behind the Phase 3 revetment. It had no stratigraphic relationship with the quay sequence of Phases 4–7 but on dendrochronological grounds is later and therefore called *Phase 8*. The collapsed quay was covered by post-Roman silts (Period 2, Phase 1) which also lapped against the foundation of the riverside wall of Phase 8. Some of the upper part of the original infilling of the quay was redistributed during this period of river action.

These eight phases of activity can be dated, with varying degrees of confidence, by a combination of three dating mechanisms: dendrochronology, coins, and pottery (chiefly the large amounts of samian found around the Phase 4 quay). In addition several C14 dates

FIGURE 54 New Fresh Wharf, the main dating framework

Phase	Pottery	Coins	Dendrochronology	C14	Considered date with stratigraphic evidence
1	early second century			190±70	early second century
2	early second century	Vespasian (72–3) to Hadrian (119–38)			early to mid-second/early third
3	late second/early third		178–223		*c.* 225–245
4	late second/early third	151/2	209–224 or 209–244	295±60, 320±70	*c.* 225–245
5	*c.* 225–45	197	209–224 or 209–244		*c.* 225–245
6	first half of third				mid to later third
7	late third/early fourth				?late third/fourth century or later; contains much material derived from quay filling of Phase 5
8	third century		after 241		255–70 suggested by other sites

were obtained, but their date-ranges are too broad to be more than generally useful (see discussion on pp. 80–81). The dates for each phase from the three dating mechanisms, and a final overall preferred date, are shown in Figure 54.

Phase 1 early 2nd century

The earliest silts recorded, and the first revetment which cut into them, are both grouped within Phase 1 because of the unreliably small amount of evidence recovered. Pottery from the silts cut by the piles of the first revetment was no later than the early 2nd century, so that the structure can be no earlier than this. There were no coins, and no timber could be sampled for dendrochronological analysis. A C14 sample from the revetment gave a date of AD 190 ±70 (HAR-5481). The overall date for the phase is placed in the early 2nd century.

Phase 2 early or mid-2nd/early 3rd century

The silts against the first revetment contained a significant amount of late 1st and early 2nd century pottery. Although the depth of silts (1.3 m) suggested that they accumulated over a long period of time, the pottery evidence did not support this: there was no pottery of the mid-2nd century. One Hadrianic coin suggested that the silts were still forming in the 2nd quarter of the 2nd century but there was no conclusive evidence on this site for any waterfront activity between AD 150 and AD 180. A few sherds of unused pottery of late 2nd/early 3rd century date, of the types found in Phase 5, were probably intrusions derived from the construction of the Phase 3 revetment or Phase 4 quay.

Phase 3 late 2nd/early 3rd century; after 178

Pottery from the backfill behind the second revetment was dated to the late 2nd/early 3rd century. It was similar to that in Phases 4 and 5. The piles from the revetment could not be dated by dendrochronological analysis; they matched neither with each other nor with any other timber. The only horizontal timber to be sampled cross-matched with horizontal timbers from the Phase 4 quay, giving an earliest felling date of 178 (see Hillam and Morgan below, p. 81). The number of missing sapwood rings, probably between 10 and 55, can only be estimated. Only four rings survived, but at least 10 should be presumed, giving a date of 178; 55 years of sapwood would bring the felling date to AD 223. The timber for the revetment was therefore probably felled between 178 and 223. There are further reasons for suggesting that the revetment of Phase 3 was built at the same time as the quay of Phase 4, *c.* 225–245 (below, p. 65).

Phase 4 after 209; c. 225–245 if Phase 5 infilling is accepted as contemporary with the Phase 4 construction

The pottery from the consolidation dumps of building material round the quay dated generally to the late 2nd/early 3rd centuries. Absolute dates for the quay were obtained from dendrochronological analysis. The felling date of timbers sampled in AREA III could be no earlier than 209, the final ring of a cradling timber used in the primary phase of construction, and probably no later than 224, the latest date of the estimated felling range for one of the sill beams. The latest felling date for the cradling timber was estimated as 244. At first, during analysis, it seemed that, bearing in mind the Roman practice of using timber soon after it was felled [1], this date could not fit with the sillbeam III.378, which would have to have had 70 sapwood rings. While this is not impossible, a further suggestion (made by A. Vince) is that III.378 and the revetment timber IV.677 were re-used. They share the same heartwood-sapwood transition; III.378 did have an unaccountable lip along its back edge, which might have been from a previous use. A felling date for the quay timbers, apart from III.378, would therefore be placed in the wider range of 209–244. Tree-ring dates from the other areas of the excavated quay were not so conclusive, and a case could be made for an earlier felling date of the timber used in AREA I, but this is not supported by any significant differences in construction or dating by other means. Dendrochronologically undatable timbers from AREA I and four from AREA III which could not be matched with the others might be considered as evidence of modifications to the structure (in that the cause of their non-matching might be that they were brought from different woodlands, possibly at a different time from the timber for the main structure), but the group in question were from young trees which are difficult to date, and there was no structural or stratigraphic evidence to suggest that the undated piles were later insertions. On the contrary, the fact that several of these piles had notches cut in them which were lined up with the interior edge of the sill beam, and then obscured by the infilling of the quay, argues that the piles and whatever structure they supported were primary.

Phase 5 c. 225–45

Pottery research (below, p. 96) shows that these deposits were contemporary throughout the length of the quay structure. A coin of 197 came from the bottom of the infilling (III.309), and the whole phase is stratigraphically later than the quay construction dated by dendrochronology to sometime during 209–244 or shortly after. Pottery from Phase 5 includes Trier and Rheinzabern samian which is dated to 235–245. The temptation to take this as the date for construction of the quay, agreeing with the later end of the den-

drochonological date-range for the felling of the timbers for the quay (209–244) is great. This is however based on the suggestion that two timbers (III.378 and IV.677) may have been re-used, which only remains a possibility. If the timbers were on the other hand felled in 209–224, then three separate interpretations of the evidence should be considered:

1. The timber for the quay was felled between 209 and 224, but the timber was not used until 225–245, when the quay was built and infilled.
2. The quay was constructed as an open structure in the period 209–224 or shortly after, and infilled sometime during the succeeding years.
3. The quay was built and infilled between 209 and 224, but it was repaired or heightened up to 20 years later in a manner which left no trace on the recorded timbers, but which included the dumping of the later pottery.

The present authors consider Option 1 to be the least likely, given that Roman practice elsewhere and common sense strongly suggest that the Romans would have worked such large timbers in their green state. Option 2 disregards crossjoins between early samian (though not the later samian) and other pottery types in Phases 4 and 5, which argues that Phase 4 (construction) and Phase 5 (infilling) were at least nearly contemporary. The absence of any timber attributable to a quay flooring from the substantial length of quay exposed at New Fresh Wharf (and the adjacent Billingsgate site excavated in 1982) implies that there was never a widespread boarded surface. This in turn supports the suggestion that the infill was primary, to form the working surface of the quay as in the earlier quays north of Thames Street. A heightening or repair of the (infilled) quay several years after its construction, as suggested by Option 3, was not evident in excavation (which was, however, largely of the lower beams of the structure). Study of the pottery (below, p. 96) shows that though the clustering of the crucial East Gaulish Trier and Rheinzabern samian was concentrated in the upper fills (with the exception of some probable contamination of Phase 4 deposits III:340–1), some late Rheinzabern samian was found 'in smaller but significant quantities' in the lower dumps inside the quay in both areas (e.g. decorated samian No 2.116). The conclusion must be that there is no firm evidence for a distribution of pottery which would suggest radical alteration in the dump deposits at a later time.

None of these three interpretations is satisfactory. We are left with the more cautious interpretation, but one which seems to the present writers to best fit the evidence, that the timbers were felled in the wider range 209–244, perhaps that III.378 and IV.677 were re-used, and that the ceramic dates of 225–245 provide the date of an original infilling of the quay structure. Whether the latest samian of 235–245 was originally in the backfill of the quay, or its deposition points to a heightening of the quay which was otherwise not recorded, the occurrence of the samian, almost certainly reused as building rubble, suggests that the quay was serviceable in the 240s.

Phase 6 mid or later 3rd century

The silt against the quay (Phase 6) represented silting during its lifetime, and certainly formed before its collapse. At its highest point the silt was 0.6–0.7 m thick against the two lower beams of the quayfront. Recent work on the medieval waterfronts in London has suggested that silt could be deposited at a rate of 10–20 mm per annum [2], and although conditions may well have been different in the Roman period there remains the possibility that the silt at New Fresh Wharf was deposited in less than 100 years. By contrast, the amount of silting which survived to be recorded could have been affected by erosion. Thus the evidence from the surviving silts, which contained no contemporary coins and little pottery post-dating the mid-3rd century, suggests that the quay was in use for no more than 30 years and possibly as little as 20 years. A time-span of mid or later-3rd century is therefore suggested.

Phase 7 ?3rd century/early 4th century or later

Late 3rd/early 4th century pottery within the upper dumps of the quay infill probably represents the date at which robbing took place. Cut lines were traced in the infill and redeposited material sealed the robbed timbers. River action thereafter (Period 2 Phases 1–3) probably caused disturbance of the remaining quayfront and its infill. Much of the artefactual material from this phase is clearly derived from the original infilling of the quay during construction. There was no direct stratigraphic relationship between the robbing of the quay and the construction of the riverside wall to the north, but recent dating by dendrochronological analysis of piles below the wall at Baynard's Castle (see below, Phase 8) suggests that Phase 7 was close in date to Phase 8. It is not clear which phase came first; they may have been broadly contemporary.

Phase 8 ?c. 255–70

The riverside wall foundation cut into the dumped material associated with the Phase 3 revetment, dated to 180–*c.* 220. Third century pottery was found in the structure itself. The last ring on the most recent timber used for the piles of the wall was 241; no sapwood survived on any of the piles, so all that can be said is that the wall was built sometime after this date. Other sections of the wall at Baynard's Castle and the Tower have been dated to the period 255–270 (below, p. 83) and it seems reasonable to suggest that the New Fresh Wharf section may also date from this period.

Parallels for construction, use of timber and inferences about tidal conditions

The details of construction of the revetments, quay and riverside wall can be compared to structures on other waterfront sites in London and elsewhere in Britain and Europe, for analogies helpful for dating the New Fresh Wharf structures, and to find out whether differences in construction were the result of local considerations such as topography or tidal conditions.

The revetments *Phase 1 and Phase 3*

(Figures 55–9)

The first (Phase 1) and second (Phase 3) revetments at New Fresh Wharf appeared to be much the same type of plank and pile construction (Figure 55). The salient difference between them was that river silts lay against the first revetment but not against the second. This suggests that the first revetment was a river embankment wall whereas the second revetment formed an intermediate stage in land reclamation for which the Phase 4 quay served as the contemporary river embankment.

The closest parallel to the construction of the first revetment, in which the piles which retained it were closer set than in the second revetment, was found at Custom House, 310 m downstream, in 1974 [3], which also seemed to be early 2nd century in date. This waterfront also consisted of beams fronted by piles and edge-set planks, with sands and silts probably deposited by the river to the south. A second waterfront, 6 m to the south, was of similar construction with three rows of piles and planks fronting a wall of oak beams [4].

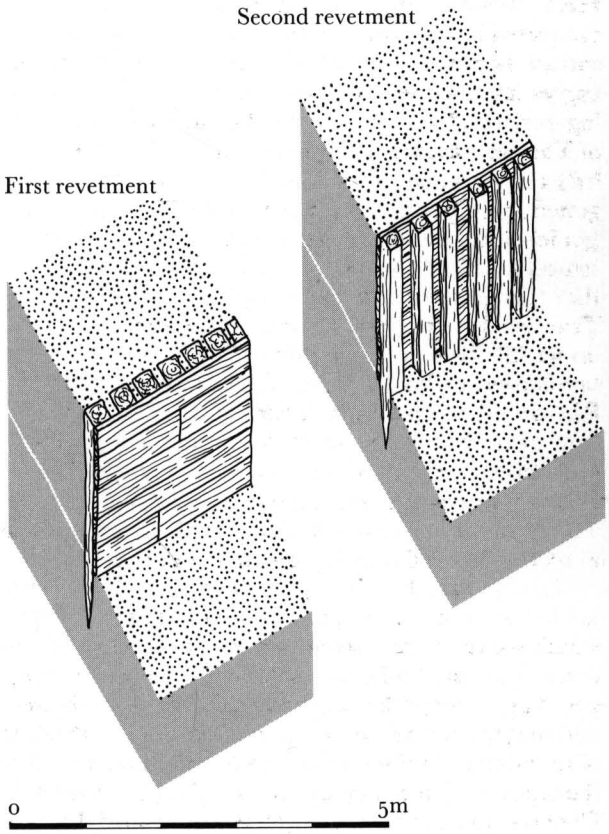
This type of river embankment wall generally used square-sectioned piles between 1.5 and 3 m long and with chamfered points. The type has been found at Chester, dating to the late 1st century [5]; Dover, in the mid-2nd century [6]; Gloucester in the 2nd century [7]; Fordwich in the 3rd century [8]; at York, possibly in the late 3rd to mid-4th century [9]; and elsewhere in north-west Europe. Series of revetments of this kind were found at Pommeroeul, Belgium, dating to the early 1st to 2nd century [10] and at the castellum of *Nigrum Pullum* on the Rhine at Zwammerdam, dating from AD 70 to 260 [11].

The post and plank river embankment walls found so far in the zone south of Thames Street in London were apparently 2nd century in date whereas elsewhere the type ranges in date from the 1st to the mid-3rd, and possibly into the 4th century. Such simple structures are still used today for revetting the banks of small streams and rivers, such as the Thames itself. While boats could be moored against such an embankment the presence of post and plank revetments along a bank or sea inlet does not necessarily indicate a landing-place, far less a commercial harbour. This could only be shown by corroborative evidence such as remains of boats or particular finds groups indicating traffic. No such evidence was directly associated with the first revetment at New Fresh Wharf and while the presence of silting against it indicates it was washed by the river, its use as a landing place cannot be proved. The possible purposes of this structure are best suggested by its context in earlier waterfront reclamation to the north of the site, which is briefly discussed below (p. 70).

The second, Phase 3, revetment was of similar construction but the absence of silting against it suggests that it was not directly exposed to the river but formed a part of a larger unit of land reclamation. The use of such revetments in this way is paralleled in the close vicinity of the site, in the revetments of the late 1st and early 2nd century at Miles Lane [12] and in the 2nd century at Billingsgate Buildings, immediately north-east of the site [13]. A revetment of piles and 'hurdle-work' found on the south side of Thames Street during the construction of London Bridge in 1831 [14] was possibly a similar structure.

The use of a quay fronting a structure which is a unit of land reclamation or consolidation is known elsewhere in Britain and on the Continent. At Dover traces of a timber platform or jetty, built before the mid-2nd century, were found apparently extending from the exist-

Figure 55 New Fresh Wharf: first and second revetments, construction



ing sea wall [15], and at Caerleon a projecting framework of piles and braces fronted the primary stone harbour wall in the late 3rd century [16]. A similar method was employed at the small Roman harbour at Pommeroeul on the river Haine in Belgium [17], where a platform for boats to berth extended from the river embankment.

THE QUAY *Phase 4*

(Figure 56)

(i) Type and method of construction

The Phase 4 quay consisted of a front wall of massive oak beams secured by piles and tieback braces which ran at right angles to the quayfront. The sill beams rested on piles and were also held by stout beams (here called cradling timbers) which passed beneath them. This type of construction, with horizontal beams forming a quaywall, has several analogies in London, elsewhere in Britain and in Europe. The analogies fall into two general types, here called TYPE A and TYPE B for convenience, differentiated largely by their use of either tieback braces with piles (TYPE A; Figures 56–7) or box construction (TYPE B; Figure 58). The TYPE A group, to which the quay at New Fresh Wharf belongs, is described first in detail.

The New Fresh Wharf quay is distinguished principally by the extensive use of piling to hold the tieback braces in position. Secondary characteristics are the use of small piles, braces and consolidation dumps to support the base of the quaywall, and the use of dovetail joints for all but the cradling timbers. These features are shared by broadly contemporary quays found upstream of London Bridge at Seal House [18] and Swan Lane [19]. The 2nd century quay found in the eastern part of the Custom House site closely resembled the first revetment at New Fresh Wharf but was also distinguished by the use of tiebacks jointed to piles behind the quayfront and the use of dovetail joints at the quayfront. Dovetail joints were also used in the western part of the 2nd century quay on the same site [20], and in the framework of the mole at Dover which was thought to be late 1st/early 2nd century [21].

The closest parallel for the construction of the New Fresh Wharf quay is the quay of AD 100–170 at Xanten in the Rhineland (Figure 57) [22]. This was built on a small tributary of the Rhine, but the topography of the river bank was similar to that at New Fresh Wharf. The detailed parallels are as follows:

(a) *ground conditions.* At Xanten fine sand 0.6–0.9 m deep had accumulated against the prehistoric river terrace and the quay was built on top of this river silt about 27 m from the original river bank; at New Fresh Wharf the quay was built on a thick layer of river silt, at least 35 m out from the prehistoric river bank. Both structures were based on piles because of the instability of the ground; the anchored cradling beams at New Fresh Wharf and the use of building material for consolidation on both sites (though used at slightly different stages in the construction process) may also have been for this reason. Only piles were used at Xanten but this may have been because the non-tidal river did not allow dry access to the foreshore. The presence of jointed timbers at sill beam level at New Fresh Wharf suggests that the consolidation dump on which they were cut and erected was above the level of low tide.

(b) *quaywall beams.* The beams of the quaywall at Xanten were between 5.25 and 7.9 m long, with one exception 2.55 m long. This occurred at a stepped arrangement of quayfront beams similar to that at the west end of the New Fresh Wharf structure. At Xanten, the stepped beam was supported on a vertical post with horizontal timbers passing through mortices at the level of the foreshore to stop it sinking, and at New Fresh Wharf the comparable beam (III:205) was supported on a pile. At both sites there was no change in the level of the foreshore and thus the unusual arrangement was not designed to account for changing levels; and in neither case could excavation proceed much further to find the possible reason, e.g. a change in alignment.

FIGURE 56 New Fresh Wharf: quay construction

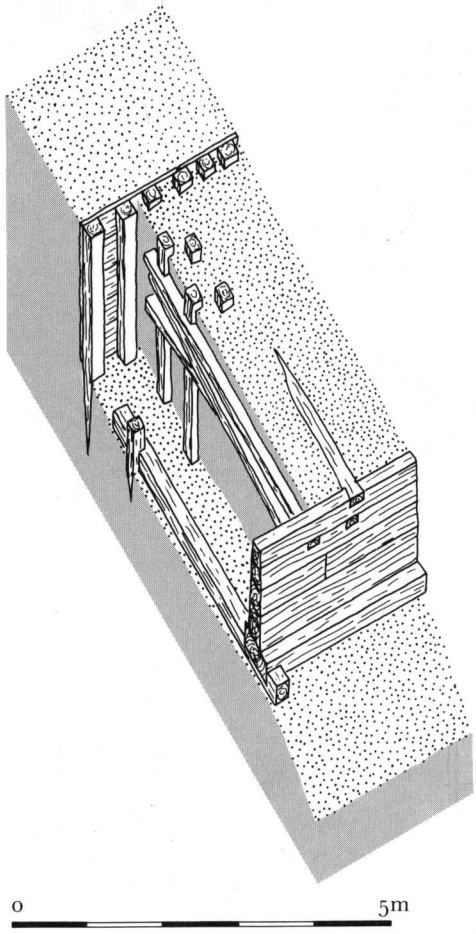


FIGURE 57 Xanten: quay construction

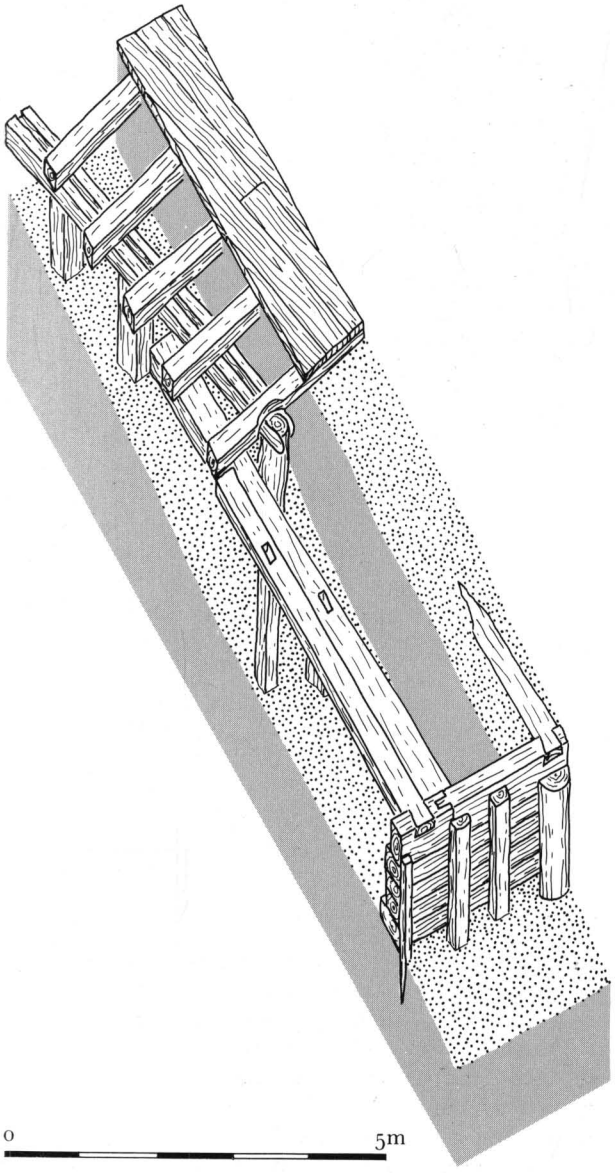
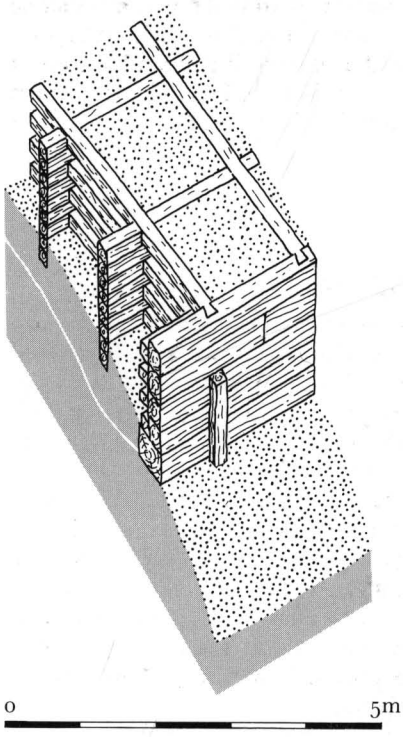


FIGURE 58 Custom House: quay construction.



On both sites the successive quaywall beams decreased in width, though generally larger timbers were used at New Fresh Wharf. The greater height of the New Fresh Wharf structure, it is suggested, was in response to the fluctuations in tidal river levels.

(c) *tieback braces*. Only the upper two beams of the Xanten quayfront were braced by tiebacks, positioned at irregular intervals, but the joints used were similar to those at New Fresh Wharf. The tiebacks at Xanten were generally similar in length and cross-section to the quayfront beams, whereas those at New Fresh Wharf were generally smaller in size and cross-section than the quayfront timbers. The relatively long, thin tiebacks at New Fresh Wharf meant that the bracing system was not so sturdy as that at Xanten; as a result there were many cracked timbers and broken joints at the former site, whereas those at Xanten remained intact.

(d) *piles*. The tiebacks at Xanten were supported by piles at distances similar to those at New Fresh Wharf (about 2.5 and 5.5 m), but instead of being rebated around the piles, the tiebacks at Xanten had mortices cut in their bases which fitted over tenons protruding from the tops of the piles. Piles immediately behind the quaywall, though of different sizes, were found on both sites in positions adjacent to the junction of tiebacks with the quayfront beams. Piles were also found in front of both structures, but were poorly represented at New Fresh Wharf, whereas there were three different kinds at Xanten: rubbing posts, piles supporting the fifth quayfront beam and later additions with possible bracing functions.

(e) *consolidation*. At Xanten consolidation material, consisting of a 0.6 m layer of sand, broken quartz and slate fragments, was dumped against the lowest two beams of the quayfront and around the piles behind the quayfront. This was similar to the consolidation dump at New Fresh Wharf, but was dumped at a slightly later stage in the construction process – necessarily if the suggested relationship between the dumping and the level of the river in each place is accepted. It was covered by fine silts and sands, similar to the New Fresh Wharf Phase 5 dumps, which both lay against the upper beams of the quayfront and stretched back over the bank of the tributary for 10 m. Thus at the level of the bank the extension into the river would have

appeared to be similar to the 9–10 m extension supplied by both revetment and quay at New Fresh Wharf.

(f) *planked surface.* At Xanten the consolidation dumps were pierced by posts which supported beams 6 m long at right angles to the quayfront, which supported horizontal cross-timbers at regular intervals in turn supporting planks. These formed a surface about 0.75 m higher than that of the uppermost quayfront beam; from the planks the uppermost tieback braces sloped down to the top of the quayfront at an angle of 5–7 degrees. At New Fresh Wharf the highest point of the quayfront beams, as suggested by the uppermost tiebacks and structural piles, stood at 1.3 m OD, and the highest point of the made-up ground behind at 1.6 m OD. It is possible that the quay and the associated revetment 4.5 m to the north had a surface of planks, but there was no form evidence for any such surface. The infill of the quay, of clay and rubbish from the city, may equally have formed the working surface of the quay.

The quay construction at New Fresh Wharf, Seal House, the eastern part of the Custom House, all in London, and at Xanten in Germany is one particular type (TYPE A), making extensive use of piles to support braces. The type dates elsewhere to the late 1st and 2nd centuries, and New Fresh Wharf is the latest example at *c.* 225–35. In contrast, a second type (TYPE B) was used in the 1st century quays at London, the 2nd century quay at the western part of Custom House and the 2nd century mole at Dover [23]. At the Custom House the quay in the western part of the site, although apparently of similar date to that in the east, used a box-frame construction with boxes 1.6 m square composed of walls of tiebacks which lapped at the junctions of the walls and jointed to the quaywall with dovetail joints. The regular arrangement of the timber boxes and the standard sizes of both timbers and joints suggested pre-fabrication [24]. It was also suggested that the quay was not filled in immediately but silted up over a long period of time [25].

There may be one major difference therefore between the two types: that TYPE A was made up of timbers worked on site with dumped material forming part of the construction process, and TYPE B was a prefabricated open framework. The two types existed side by side during the 2nd and 3rd centuries.

Although there was no observable typological development from one type to the other on the Custom House and New Fresh Wharf sites taken together, a second important difference, at least in London, is that the box-frame construction at Custom House was employed where the comparatively stable London Clay formed the underlying stratum; it even had to be partly dug out to accept the quayfront [26]. This may be one reason for the difference in construction; that the more flexible TYPE A construction was used to accommodate differing amounts of subsidence in the future structure.

At New Fresh Wharf the minor variations in construction along the length of the quay consisted of different arrangements of piles and tieback braces. Three different arrangements could be identified, and these may have been allocated to different groups of construction workers. Possibly one group left the graffito of the number IV at the end of their section (p. 41 above).

The occurrence of a concentration of piles at the edge of the quay, at the west end of the excavated section (Figure 26), suggests that this group (the Stage 5a piles) may have supported a quayside structure raised above the surface of the quay. There was no evidence to suggest what this structure might have been; a timber-framed building, a tower or simply a raised platform are possibilities.

(ii) timber supply

Differences in construction between quays of different date and location may also have been partly the result of the quality of the timber supply. At New Fresh Wharf the lowest two quayfront beams were cut from trees 200–250 years old which could be over 0.9 m in diameter; the resulting beams were up to 0.73 m wide. The upper quayfront beams, the tiebacks and piles came from less mature trees under 100 years old, and were generally under 0.3 m wide when trimmed. There was no identifiable attempt to use common divisions of the Roman foot in trimming the timbers, though this may have been obscured by distortion in the ground since deposition [27]. Timbers over 0.4 m wide, as used extensively in the late 1st century quay at Miles Lane and at Xanten [28] were used sparingly at New Fresh Wharf. Some of the largest timbers were cut into quarters to obtain four beam lengths from one tree. The extensive use of piling, in which young trees with greater strength can be used, also shows relatively economical use of timber. The extravagant early use of large mature forest trees must have diminished over the years, as the type of quay construction at New Fresh Wharf would have made less demands upon older stands of woodland.

(iii) tidal levels

The depth of water in front of the quay at Xanten was estimated at 0.8 to 1.0 m [29]. Some estimation can be made of the original height of the New Fresh Wharf quay, but estimations of the maximum depth of water and tidal range must be left for consideration of much wider factors than were apparent at the present site.

The following observations can however be made as contributions to the debate about the tidal range of the Thames in the Roman period [30]. The quayfront beams may have stood to an original height of 2 m from the base of the sill beam (above, p. 48), to about +0.45 m OD; a single tieback brace in AREA I was recorded at a level of +0.75 m OD, and it was nailed to a pile at +0.6 m OD at a distance of 3.3 m north of the quaywall. It is reasonable to assume that the top

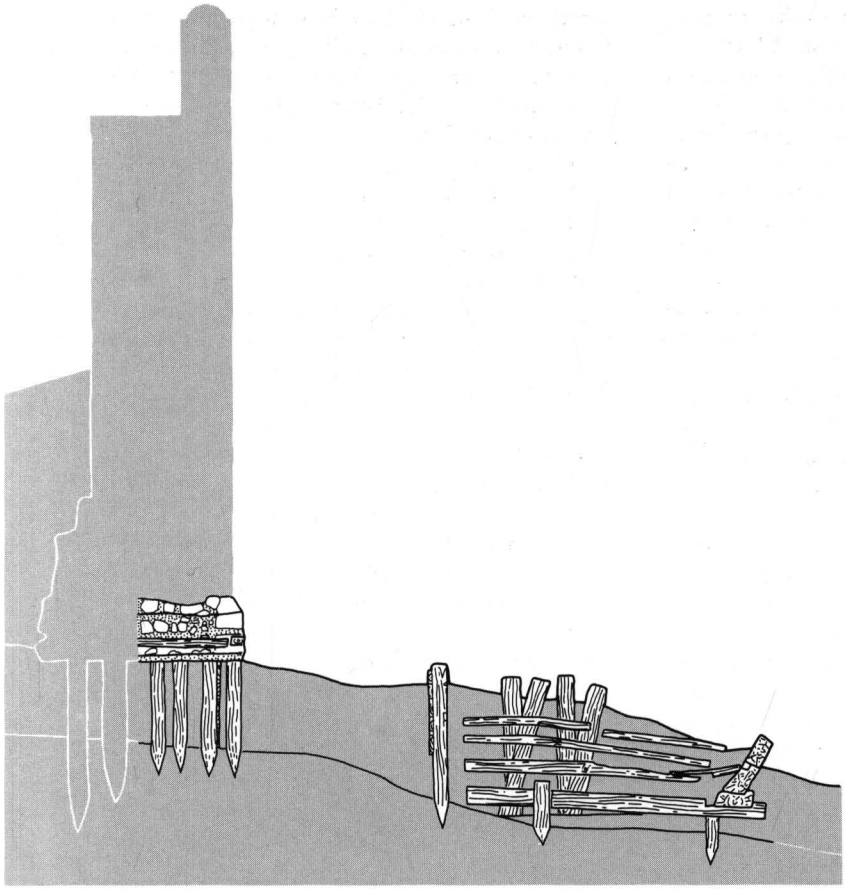


FIGURE 59 Section through the riverside wall and decayed quay, looking east.

of the quay was not washed at high tide, but without the true top of the quay it is not possible to say where this limit might be. The occurrence of what may be a fragment of plank flooring on the analogous Roman quay at Seal House at a level of 0.30 m OD suggests that the top may have varied between sections of quay within a range of 0.30–1.0 m OD. The ground surface at the time of construction of the riverside wall, as indicated by the plinth stones on its southern face, was at about 1.6 m OD, the same level as the surviving top of the dumps behind the Phase 3 revetment. This would indicate the maximum possible height of the quay surface (though it is also remotely possible that the quay was originally higher than the intended ground level in front of the later riverside wall, and had to be reduced in height).

As to the level of low tides, it can be suggested that the layer of building material used as a working surface for the construction of the quay would only be practicable if it were laid above low tide to ensure fairly dry working conditions; and that in contrast to Xanten, where the river did not fluctuate in level, a drop in the daily tide enabled joints to be cut in the lower timbers on site at New Fresh Wharf. The notches on the piles in AREA III, whatever their function, would also have been difficult to see and make use of underwater. This would suggest that the tide fell below the level of the hard standing, to lower than −1.4 m OD.

Despite the disturbed nature of the late Roman layers it is clear that the river deposited silt and foreshore material against the quay during the 3rd century; whether this was a significant factor in the quay's eventual abandonment is not ascertainable. In contrast, the evidence of an erosion horizon at the comparable point in the sequence at Custom House [31] and work at Westminster suggest that the river may have lost its tidal head and begun cutting a deeper channel, scouring the north bank. The problems of interpretation of this period are discussed more fully elsewhere [32].

THE RIVERSIDE WALL *Phase 8*

(Figure 59)

This 39 m length of wall at New Fresh Wharf was similar in construction to the eastern part of the riverside defensive wall found at Baynard's Castle in 1974–5 [33], and to the earlier of two riverside walls found at the Tower of London [34]. Fragments of a similar foundation crossed the north-east corner of the Custom House site [35]. The common factor in their construction was the use of oak piles and chalk raft foundations, used because of the unstable nature of the underlying

ground [36]. At New Fresh Wharf the wall was built on reclaimed land, about a metre above the pre-Roman river bed. This presumably also dictated the use of lateral timbers in the foundation, a technique not found in the other London examples but parallelled in the late 3rd century walls at Portchester, where lateral timbers were laid on a raft of chalk and packed around with further chalk and other stone, in this case without piles beneath [37]. The full width of the wall was not obtained; at the west end five rows of piles were observed, giving a width of just over 2 m. An overall width of about 2.7 m, similar to both the riverside wall at Baynard's Castle and to the earlier landward city wall [38], is likely.

The colour of the mortar spread over the chalk raft at New Fresh Wharf differed on either side of the culvert which led through the foundation, and which also marked a difference in construction between the east and west parts of the core of the wall above. Presumably this indicates the work of different construction gangs.

The south face of the wall did not survive above plinth level, but the core was generally intact and although erosion gravels were recorded at the base of the wall there was no evidence that the wall face had been seriously affected by erosion as at Baynard's Castle. Since both walls were probably built above High Water in the late Roman period, this difference may be significant. It would suggest that the period of serious erosion which toppled sections of the wall at Baynard's Castle was of the 10th century and later, when the riverside wall at New Fresh Wharf was protected by the late Saxon embankments against its riverwards face.

The wider contexts of the revetments, quay and riverside wall

The first revetment (2nd century)

River silts against this revetment indicate that it was a river embankment wall. The limited dating evidence suggests it was built after the early 2nd century, and the absence of mid 2nd century deposits may be explained by partial erosion of the silts against it. The pottery recovered did not indicate any large-scale commerical activity and the first revetment can only be understood in the context of the earlier wharves and contemporary buildings to the north, the subject of a separate and recently published study [39], and consequently only an outline is given here.

Evidence for the development of the waterfront area on the southern slope of the eastern of the two hills of Roman London first appears in the late 1st century, immediately after the Boudiccan destruction, though its character has been obscured by later modification. By the end of the 1st century the installations included a substantial timber quay and a bridge on wooden piers. Behind lay a network of streets, buildings and drains [40]; some of the buildings, by their size and construction, imply *horrea* or even a market-building such as a *macellum* [41]. Two major reclamations took place in the bridgehead area during the 2nd century, apparently largely to win new space to develop the commercial character of the area. The evidence connecting the small-scale observation of the first revetment at New Fresh Wharf with the more extensively-excavated sites to the north lies beneath modern Thames Street, and the sites can be related only through the sparse dating evidence at New Fresh Wharf. The conclusion, which must remain tentative, is that the first revetment formed the southern limit of one of these 2nd century extensions.

Second revetment and associated quay (c. 225–245)

These two structures are considered as part of a single scheme on the grounds of the similar ceramic and dendrochronological dates, though the absence of sapwood on the sampled timber from the revetment allows the dates of the two structures to be up to 20 years apart. The absence of silting against the revetment also argues for a swift addition of the Phase 4 quay. The two constructions together provided an extension into the river of 9 m, to a new quay wall which may have stood at least 2 m high. This new quay would have been suitable both for the riverine and estuarine craft exemplified by the Blackfriars barge (16.77 m long, over 5 m wide and 1.5 m deep amidships) and Roman cargo ships of the type used in the Mediterranean for coastal and river trade, as in the example of the County Hall ship (over 18.3 m long) [42]. Cargo ships are depicted on late 2nd/early 3rd century Rhenish stone monuments, which give a generalised impression of harbour activity of the period, as berthed lengthwise alongside quays, with the cargo manhandled up sloping gangplanks [43].

The primary infilling of the quay structure contained a wealth of finds which are the subjects of the reports elsewhere in this volume. Notable among the finds was a large group of imported pottery, including many unused complete examples. The character of the pottery suggests the clearance of warehouses whose existence in the bridgehead area has been suggested for some years. Other finds in the dumping included building material, leather waste and imported objects such as hones, writing tablets and figurines, suggesting much activity in the waterfront zone in the period shortly before and at the time of the quay's construction. The character of the finds in this dumping is very rich when compared with the other Roman waterfront sites at Seal House, Custom House and even the adjacent Billingsgate Lorry Park, excavated in 1982, and suggests that the comparative richness of the finds at New Fresh Wharf may reflect its position adjacent to the bridgehead.

Consideration of the whole Roman waterfront from Custom House to the bridge, and beyond it to the Governor's Palace, must await the review intended as part of the report on the section of wharf found at Billingsgate; but some suggestions about the wider context of the early or mid-3rd century port facilities, as shown by the length of quay excavated at New Fresh Wharf, may be made.

Excavation of the bridgehead sites to the north and north-west in 1979–81 has revealed several cases of rebuilding in the early 3rd century, comprising raising of floor levels and modifications to buildings; one warehouse range was refronted with a colonnade, and behind it the bath-house wing of what may have been an inn was rebuilt as a more standard domestic dwelling [44]. These changes probably reflect changed circumstances because of the distance of the buildings from the new wharf line; any commercial emphasis had moved away from the 1st century wharves and their immediate successors. If commercial buildings such as warehouses were built to function with the 3rd century quay, they must lie between the bridgehead sites and the New Fresh Wharf site, below Thames Street itself. Thus there is no immediate commercial context into which the New Fresh Wharf quay can be placed.

The Roman city as a whole appears to have received strategic and architectural embellishments at around this time, perhaps accompanying its redefined status as a capital of one of the two provincess into which Britain had now been divided. The landward city wall was probably built between 190 and 225 [45]; the most likely builders were either Clodius Albinus, governor of Britain and usurping emperor or his eventual conqueror, Septimius Severus [46]. Notably few Roman provincial towns had walls at this early date, and its building must therefore have invested London with some kind of special importance. The city was also enhanced by monuments and new or rebuilt temples, as shown by the recent discoveries of stones from the monumental arch and screen of gods, of early or mid-3rd century style, at Baynard's castle [47] which, like the construction of the New Fresh Wharf quay and the pottery inside it, show stylistic affinities with material from the region around the Rhine [48]. It seems clear that much of this architectural embellishment was a result of patronage by a resident class of provincial bureaucrats and military or civil service personnel. In the riverside wall at Baynard's Castle were parts of altars recording the restitution of two temples by individuals who were probably civil servants, and by the governor of the province between 251 and 259 [49]; tombstones of officials have also been recovered from London sites [50]. The 3rd century is also the possible date of the introduction of finer, larger houses with polychrome mosaics, especially in the Walbrook valley, which may have become a fashionable quarter. The occupier of one house in the valley built a private mithraeum as an extension of his residence in the 240s [51].

This evidence might, on the one hand, suggest that there was a clear attempt to provide the fortified and re-energised provincial capital with suitable waterfront installations. Some rebuilding has been noticed in other towns in the south-east at this time; the theatre at Canterbury was rebuilt and enlarged about 220, and two monumental arches at Verulamium probably also date from about this time [52]. Prospects for London, in the 230s and 240s, must have looked promising.

But there is an alternative explanation for the very existence of the 3rd century quay. The date of the New Fresh Wharf quay cannot be much later than, and may have been at least partially contemporary with, the construction of the landward city wall, and it may have represented an undertaking of comparable magnitude. Both for this and for the other monumental building just reviewed, the necessary building materials were probably largely imported by river. One suggestion for the function of the quay at Xanten is that it was for the unloading of building material for the civic buildings of *Colonia Ulpia Traiana*, such as the amphitheatre [53], and a similar use can be suggested for the harbourworks of which the New Fresh Wharf quay formed part. We know so little about Roman attitudes to the deployment of labour and resources for grand schemes that it would be a mistake to extrapolate from modern experience and reject the notion that the entire quay was built for the landing of building materials and not primarily for wider trading purposes. The great majority of foreign imports around the quay, for instance, derived from the dumps used in its construction, not from layers clearly of the period of use.

Although it is clear that London was a port of some kind in the 3rd century, probably within a system of trade-routes which included most of the North European littoral and especially the mouth of the Rhine [54], the present authors wish to step back from the conclusion that the refurbishment of London in the early 3rd century was primarily, or even largely, intended to boost its trading functions. The evidence is simply not yet ready to support such a conclusion. There are two related points here, which area of Europe the trade was with, and what was traded. The most recent review of imports into Roman London concluded that during the 2nd century Italy was becoming part of a trade-network with Spain and North Africa, and that Mediterranean imports into London, with the exception perhaps of exotic stone for building facades, were of less importance than those from the nearer, northern part of the Empire [55]. Further, as far as long-distance trade with Italy and the Mediterranean is concerned, the argument has been put forward that there was a progressive decline in such long-distance imports from the early conquest period, and that the apparent decline in trade is no more than a reflection of the developing romanisation of Britain [56]. According to this

model the early import of home-produced goods into the colony was gradually matched and then overtaken by an opposite rise in exports, mostly in commodities which leave few archaeological traces. The large rural estates based on villas would be exporting staples such as corn, cattle, and perhaps metals in exchange for money rather than goods. For this there were several east coast ports besides London. It may be significant, for instance, that while the seventy or so persons recorded on inscriptions from Roman London do not include a single trader, York has a notable inscription of a 'trader with Britain' from the Rhineland, who presented an arch and gate to the city in AD 221 [57].

The riverside wall (c. 255–70)

As noted above (p. 64) the silting against the face of the Roman quay may represent a short period of use since expected objects, such as contemporary coins, disappear from the sequence. Here the fact that the last evidence for the use of the quay coincides with the probable date of building of the riverside wall immediately to the north must be significant. Further background reasons for disuse of the quay may be found in the troubled history of the Empire in the late 3rd century, the higher costs of imports in a time of rampant inflation and the threat of Saxon pirates [58]. Destruction on or near the east coast at Chelmsford and Colchester and an increase in the number of coin hoards in south-east England has been taken to indicate that pirates were already active in the 260s and 270s [59]. The building of the riverside defensive wall, and, from recent study of the coins, the building of the watch-tower at Shadwell [60], may have been London's reaction to this threat.

Timber-piled foundations of three different sections of a riverside wall at Baynard's Castle, New Fresh Wharf and the Tower of London have been dated by dendrochronology to 255–70 [61]. Although earlier terrace walls may have been incorporated [62], the evidence is growing for a continuous wall extending for over 1700m along the waterfront, a short distance behind the 3rd century shoreline. Detailed consideration of the whole wall and its context is reserved for another publication, but it may be suggested that the construction of riverside defences in London in the mid- or late-3rd century might belong to the re-organisation of the coastal defences of south-east Britain in response to Saxon raiders, with forts at Brancaster and Caistor by Yarmouth, walls round Colchester and Rochester, and defences at Reculver, Richborough and Lympne [63]. Equally the building might have stemmed from a feeling that an incomplete circuit was simply unsatisfactory. Here we should note that the date of the construction of the quayside, *c.* 225–45, besides being shortly after the date of the only datable section of landward city wall (between 190 and 225), is a few years before the revised date of construction of the riverside wall at *c.* 255–70. It is therefore possible that the city wall and riverside wall formed the beginning and end respectively of a period of continuous building in the city.

Parts of the timber quay may have been dismantled at the time of, or shortly after, the construction of the riverside wall. Third and 4th century pottery was found in the disturbed upper fill of the quay (Phase 7) and in silts to the south, but it was not representative of trading functions. Changing trade patterns and decline in overseas shipping may have contributed to the quay's disuse; there may also have been a change in the type of ship used for cargo transport [64]. When the plank floor of the quay, if there ever was one, was removed, the former quay area would have functioned as a berm in front of the riverside wall similar to that in front of the landward defences. The total removal of the quay at the western end of the New Fresh Wharf site resulted in the formation of an inlet which was not completely filled in until the end of the 13th century. Two centuries before this date there was a public access to the river from Thames Street at this point called *Roderesgate*. The last element in this name evidently refers to a point of access, and it is possible that the Roman quay had been dismantled, in the late Roman period, to give access through an actual gate in the riverside wall to the river.

The late 3rd century changes on this site are mirrored by similar changes throughout the Roman city and in its environs. Previously voluminous trade with Spain, the Rhineland and Gaul dried up; the most significant pottery industries of Gaul collapsed. After the 250s there was a virtual stop to imports of Western Mediterranean pottery to Britain [65]. The latest group of samian in Britain, made in East Gaul about 260, was found at the mid 3rd-century signal station at Shadwell to the east of London [66]. But again, we must be careful not to exaggerate this change by seeing it as a collapse of a powerful trading city. The creation of the Gallic Empire under Postumus in 259 and the other imperial struggles must have cut Britain off from the Mediterranean and certainly severely restricted the flow of new coin to the province [67]. Opinions differ about the amount of measurable 3rd century trade into British ports [68]. Nor can inflation be blamed for any change, or diminution, in the appearance of buildings or installations: at Verulamium, on the contrary, the excavator has concluded that 'the great inflation had no recognisable effect on the archaeology' of a series of fine and substantial 3rd century buildings [69].

The character of late 3rd-century and 4th century London is not well known, and the findings at New Fresh Wharf can be taken either way: as an illustration of a great commercial centre which fell on hard times in the second half of the 3rd century, or as an illustration of one feature – a quay – of the 'administrative village' [70] which London had now become. Further excava-

tion of 3rd and 4th century sites within the city is required before a fruitful synthesis can be attempted.

The riverside wall in the post-Roman period

The first post-Roman structures on the waterfront at New Fresh Wharf consisted of 10th century rubble banks to the south of the former Roman quay and rows of stakes which may have formed a jetty or access route leading from the bank to within a metre of the Roman wall at the west end of the site. The stakes marked the east side of the inlet referred to above. The ground at the base of the Roman wall had been eroded to some extent but the wall above seems to have been largely intact; some plinth stones survived to be covered by further clay flood-dykes of about 1000. The wall downstream of the bridge may well have been intact over a long distance since in 1014 the attacking force chose to attempt access into the city by storming the bridge itself.

The first clear evidence of the destruction of the wall lies in the medieval chalk foundations which were constructed along its south edge, and which were connected to surfaces of medieval Thames Street over the body of the wall, in the 12th century. By the end of the 13th century the inlet at the west end of the site had been filled in and further land reclamation had pushed some distance south of Thames Street; the direct influence of the Roman riverside wall had ceased.

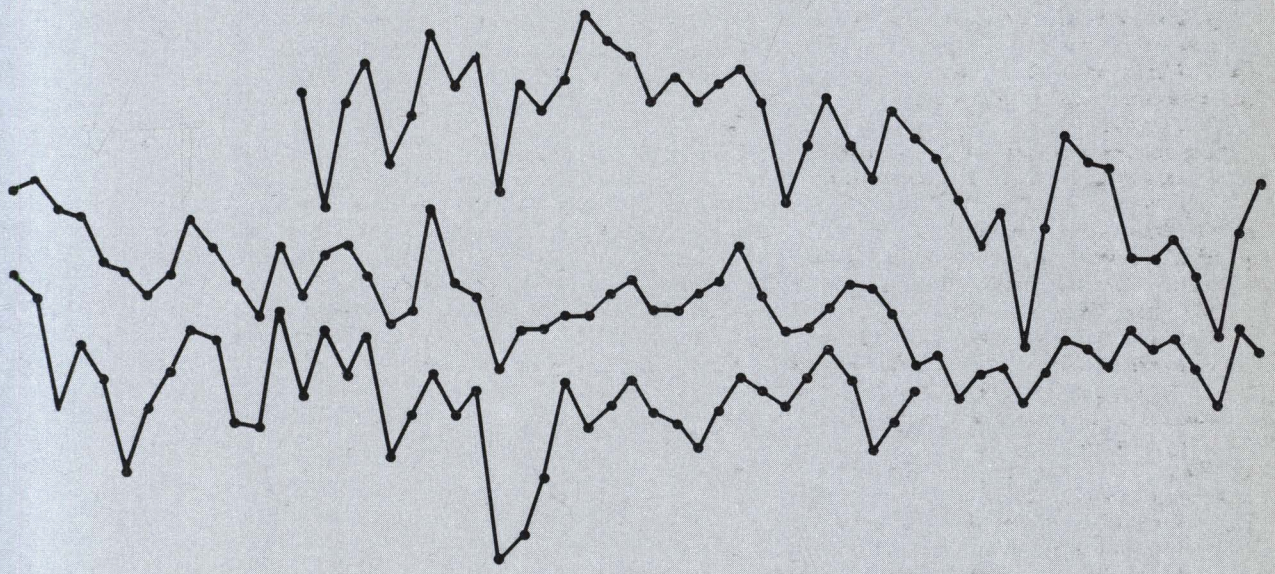
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42. P. MARSDEN *A ship of the Roman period from Blackfriars in the City of London* Guildhall Museum (1967); see also P. MARSDEN 'Shipping and the waterfronts of London' in G. MILNE and B. HOBLEY (eds.) *Waterfront Archaeology in Britain and Northern Europe* CBA Res. Rep. No. 41 (1981) 10–11. For the County Hall ship, P. MARSDEN 'The County Hall Ship, London' *Intern. Journ. Naut. Archaeol.* 3 (1974) 55–65.
43. For example Mainz Mittelrhenisches Landesmuseum, Inscription No. 662 and 1053.
44. MILLER *op. cit.* in note 12; G. MILNE *op. cit.* in note 12, 31. For the function of the Billingsgate bath-house, dated to the third century, see P. MARSDEN *Roman London* (London 1980) 152–5.
45. *ibid.* 125–6.
46. R. MERRIFIELD *London City of the Romans* (London 1983) 164.
47. HILL, MILLETT and BLAGG *op. cit.* in note 30.
48. T. BLAGG 'The Sculptured Stones' in HILL, MILLETT and BLAGG, *op. cit.* in note 30, 125–93, especially 180.
49. All the sculptured stones, it should be noted, came from the section of riverside wall which was not dated by dendrochronology. It could therefore be of later date, which would allow for a period of use for the monuments and temples before demolition.
50. MERRIFIELD *op. cit.* in note 46, 173–6.
51. *ibid.* 183.
52. T. BLAGG 'Architectural patronage in the western provinces of the Roman Empire in the third century' in A. KING and M. HENIG (eds.) *The Roman West in the Third Century* BAR S109 (1981) 173.
53. PETRIKOVITZ *op. cit.* in note 22, 143 and 156.
54. M. HASSALL 'Britain and the Rhine provinces: epigraphic evidence for Roman trade' in J. DU PLAT TAYLOR and H. CLEERE (eds.) *Roman Shipping and trade: Britain and the Rhine provinces* CBA Res. Rep. No. 24 (1978) 41–8.
55. G. MILNE *op. cit.* in note 12, 124.
56. M. FULFORD 'The interpretation of Britain's late Roman trade: the scope of medieval historical and archaeological analogy' in J. DU PLAT TAYLOR and H. CLEERE *op. cit.* in note 54, 59–69.
57. M. HASSALL *op. cit.* in note 54, 46.
58. S. JOHNSON *Later Roman Britain* (London 1980) 70–103.
59. *ibid.*
60. Information from B. RICHARDSON and T. JOHNSON.
61. H. SHELDON and I. TYERS 'Recent dendrochronological work in Southwark and its implications' *London Archaeol.* 4 (1983) 355–61.
62. T. WILLIAMS 'St Peter's Hill' *Popular Archaeol.* 4 No. 1 (1982) 26.
63. CUNLIFFE *op. cit.* in note 37; *cf.* JOHNSON *op. cit.* in note 58.
64. Germanic warships of the same general type as the Nydam ship (*c.* 400), found in South Jutland, are depicted on samian bowls from Trier dating to the first half of the 4th century. See D. ELLMERS 'Roman shipping on the Rhine' in J. DE PLAT TAYLOR and H. CLEERE (eds.) *Roman Shipping and Trade: Britain and the Rhine Provinces* CBA Res. Rep. No. 24 (1978) 9–10.
65. G. MILNE *op. cit.* in note 12, 124.
66. MERRIFIELD *op. cit.* in note 47, 197.
67. C. E. KING 'The circulation of coin in the western provinces AD 200–295' in KING and HENIG *op. cit.* in note 52, 89–92.
68. E.g. G. WEBSTER 'The history and archaeology of Roman Britain in the third century' in KING and HENIG, *op. cit.* in note 52, 343–62; and M. FULFORD *op. cit.* in note 56.
69. S. S. FRERE 'Verulamium in the third century' in KING and HENIG *op. cit.* in note 52, 383–92, especially 390.
70. R. REECE 'The third century: crisis or change?' in KING and HENIG *op. cit.* in note 52, 31.

Tree-ring analysis of the Roman timbers

Jennifer Hillam and
Ruth A. Morgan



Excavations started at New Fresh Wharf, on the site of the future St Magnus House, in 1974 AREA II. No tree-ring samples were collected at this time, but when a further 18 m in the AREA III (St Magnus) trench was excavated in 1975, a selection of timbers was sampled from the Roman and medieval levels (Figure 60). In 1978 the site was extended and a watching brief produced timbers of the Roman, Saxon and medieval periods. The analysis of the 1975 and 1978 timbers by dendrochronology provided many absolute and relative dates as well as information about the use of wood in London. Whilst the results are helpful in interpreting the archaeology of New Fresh Wharf, they will all also add to the general tree-ring research which is being carried out on timbers from many sites in the City of London.

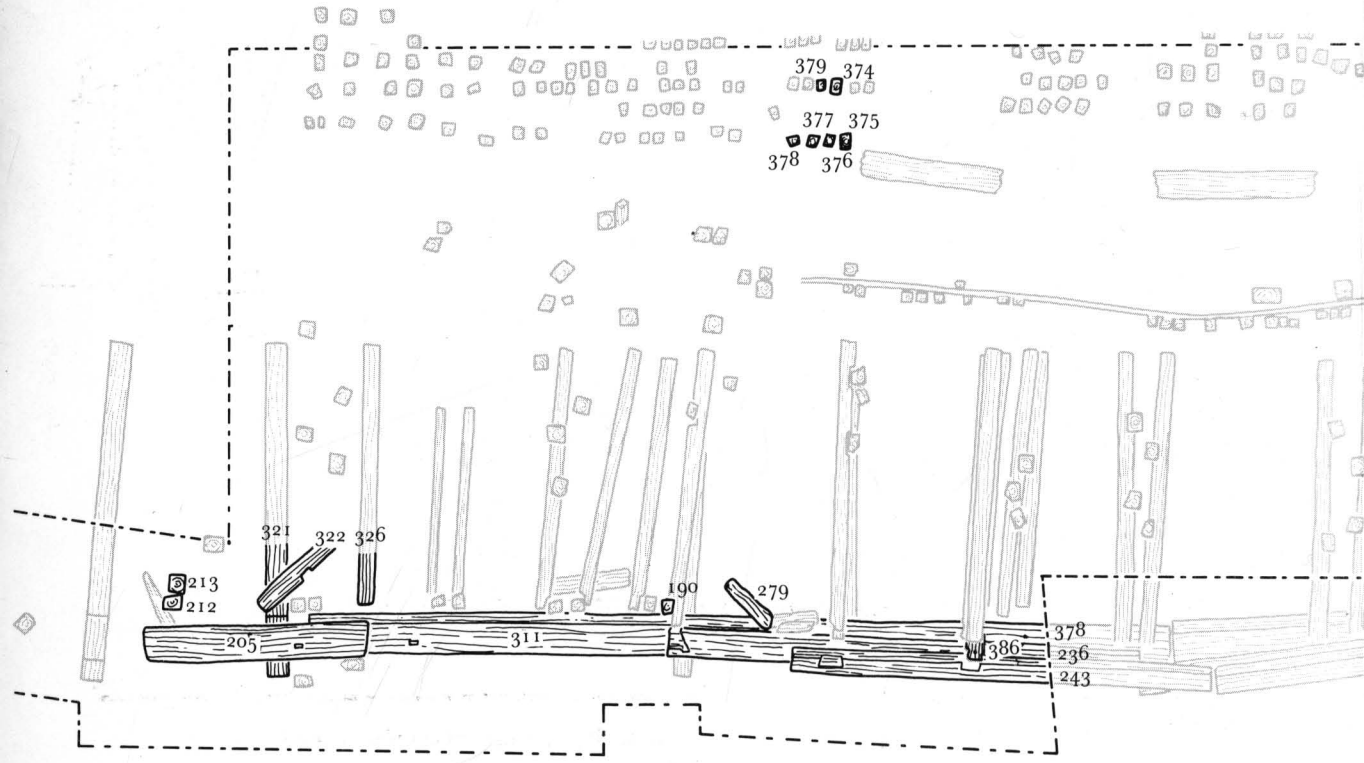
Tree-ring analysis

When this study commenced in 1976, there were few dated tree-ring reference curves from England, and none that extended back in time before *c.* AD 800. In 1980, many Saxon sequences were absolutely dated, providing a continuous English tree-ring chronology for the period AD 404–1216 (e.g. Hillam 1981). However it was not until 1981 that the first Roman chronology from England was dated (Fletcher 1981; Hillam & Morgan 1981b). This was achieved by correlating English curves with dated German chronologies (Becker 1981; Hollstein 1980). The English Roman curve is continually being consolidated and extended as further timbers are examined from the City of London and Southwark. At present, it spans the period 252 BC–AD 294 (Hillam 1985; Sheldon & Tyers 1983).

Timber sampling and preparation

On site, thin sections were removed from the oak timbers with a chain saw, the wood being too hard, even though waterlogged, to permit the use of a hand saw. From 1975 a policy of sampling as many timbers as possible has been adopted. Ideally every timber should be sectioned for analysis if the maximum amount of information is to be extracted (Hillam & Morgan 1981a). In fact at New Fresh Wharf samples were taken from defined places as a result of the excavation strategy (Figure 60).

The 1975 wood samples were kept under water at the DoE's Ancient Monuments Laboratory prior to their transport to Sheffield. Subsequent samples were stored at the DUA, sealed in polythene, until ready to be sent to Sheffield. Since 1978 two samples per timber have been removed, one of which is sent for tree-ring analysis whilst the other remains at the DUA against the need for radiocarbon dating or for further research. The samples taken are 0.05–0.15 m thick; anything thicker is unmanageable in the laboratory. At Sheffield



INTRODUCTION

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The waterlogged samples were frozen for 48 hours before being surfaced with a plane (Stanley surform) to expose the structure of the growth rings. The ring widths of the 1975 samples were measured with a 10x hand lens containing a 0.1 mm scale. Later samples were measured, under a low-power binocular microscope, on a travelling stage connected electronically to a display panel which reveals the ring widths after each annual ring has been traversed.

The ring width data were plotted on transparent semi-logarithmic recorded paper. The ring patterns were synchronized by sliding one graph over and past another until the position of best fit was found. Computer programs were also used to save time and to give an independent measure for the agreement between two curves. Early tree-ring matching relied upon a program written in Hamburg (Eckstein & Bauch 1969), but the later work was aided solely by the Belfast computer program (Baillie & Pilcher 1973), which proved to be far more useful (Hillam 1979). The former program outputs the results as agreement values (W), whilst the latter calculates the value of Student's *t* for each position of overlap between two curves. A value greater than $t=3.50$ indicates a match provided it is accompanied by an acceptable visual agreement (see Baillie 1982, pp. 82–5, for a fuller explanation).

THE TIMBERS

The Phase 4 Roman quay in AREA III, excavated in 1975, consisted of ground piles and cradling timbers which supported massive sill beams. Built up on these were a series of horizontal beams, probably to a height of five or more beams. They were held in place by tie-back braces and piles. Pairs of piles were in position immediately behind the sill beams at the west end of AREA III. Thirteen timbers were sampled, providing wood sections from a variety of components from the structure (Figure 61).

In January 1978, the original site was extended when the contractors again began work. The watching brief produced little stratified pottery so the phasing and dating of the new site was based on that from the controlled excavation. Fifteen timbers were sampled for tree-ring analysis (Figure 61). As well as four further samples from the Roman quay, five sections were taken from timbers belonging to the Roman revetment for land reclamation. This was thought either to be contemporary with the quay or to pre-date it. Finally six piles were sampled from the foundations of the riverside wall, thought at the time of excavation to be 4th century in date. Timbers from this wall had already been examined from Baynard's Castle (Hill *et al* 1980) and the Tower of London (Parnell 1978).

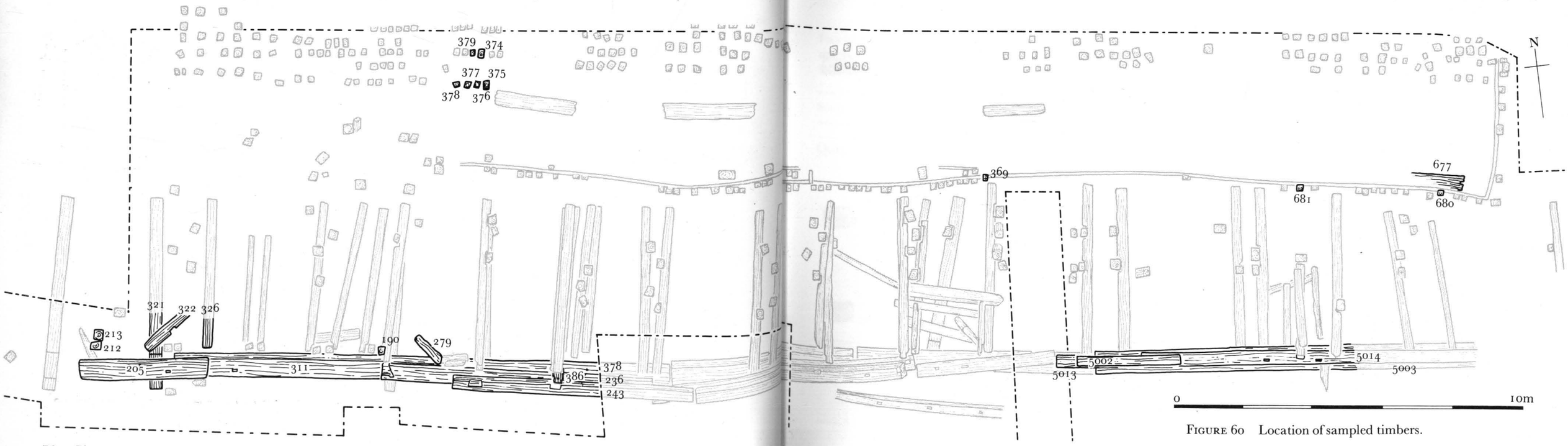


FIGURE 60 Location of sampled timbers.

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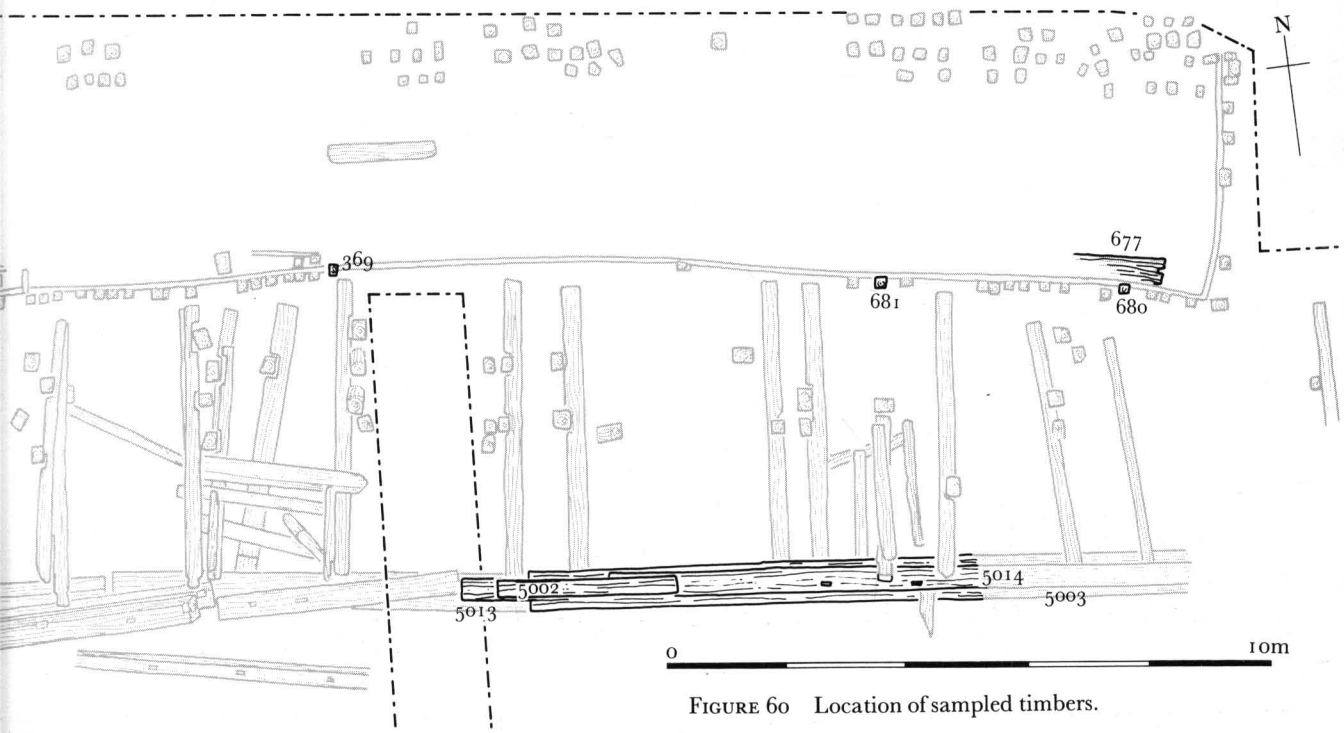


FIGURE 60 Location of sampled timbers.

FIGURE 61 Details of the Roman timbers. The cross-sectional sketches are not drawn to scale.

Number	Function	Number of rings	Sapwood rings	Average width (mm)	Dimensions (mm)	Sketch
Period 1, Phase 3						
IV.368		37		2.72	20 × 15	
IV.369		68		1.73	18 × 11	
IV.677		217	4	1.61	39 × 29	
IV.680		79	14	1.85	25 × 19	
IV.681		57		2.18	20 × 15	
Period 1, Phase 4						
III.190	pile	51		4.25	31 × 30	
III.205	sill-beam	134		2.80	45 × 34	
III.212	pile	62	11	3.25	30 × 29	
III.213	pile	70	8	2.74	23 × 23	
III.236	first row beam	197		1.63	60 × 38	
III.243	second row beam	80	23	2.86	38 × 26	
III.279	stray	92	19	2.43	28 × 24	
III.311	sill-beam	218		1.88	74 × 37	
III.321	cradling beam?	163	20	1.64	31 × 20	
III.322	unknown	111		1.80	29 × 24	
III.326	row tieback brace	49		1.76	26 × 23	
III.378	sill-beam	212	38	1.76	59 × 38	
III.386	row tieback brace	61	4	2.16	23 × 16	
IV.5002	third beam of quay front	115		2.78	35 × 28	
IV.5003	sill-beam	152		2.08	56 × 31	
IV.5013	second beam of quayfront	125		2.03	52 × 30	
IV.5014	second beam of quayfront	202		1.78	37 × 32	
Period 1, Phase 8						
IV.374	pile	41		2.80	22 × 12	
IV.375	pile	64		2.01	21 × 17	
IV.376	pile	58		1.90	21 × 18	
IV.377	pile	62	1	1.82	22 × 16	
IV.378	pile	48		2.05	21 × 14	
IV.379	pile	47		2.14	17 × 13	

Period 1, Phase 4 *The Roman quay*

The thirteen timbers from the 1975 excavation contained between 49 and 218 growth rings; all appeared suitable for measurement and crossdating. Some or all of the sapwood was preserved on seven timbers. The 1978 timbers contained 115–202 rings but none of the sapwood remained.

The timbers selected for sampling had served several functions (Figures 61–2): four had been sill beams (III.205, III.311, III.378, IV.5003) and were large, rectangular-shaped timbers. Sometimes the complete trunk had been hewn into a rectangle (e.g. III.378), but others had been shaped from halved trunks (e.g. IV.5003); this no doubt depended upon the size of the available trunks. Of similar type were beams from the second (III.236, IV.5013, 5014) and third (III.243) rows above the sill beams. The cradling timber (III.321) was a quartered trunk. Three piles (III.190, 212 and 213), standing in pairs behind the sill beam, were squared complete trunks with fewer and wider rings, as were the two braces (III.326, 386). Finally a stray piece (III.279) and a timber of unknown function (III.322) were again squared trunks.

The majority of the samples had rings of narrow to average width, suggesting that the trees had grown in a woodland where they were subject to competition from other trees or factors such as local drainage may have influenced local microecological conditions. The woodland source was obviously a stand with trees of different ages and sizes, since some timbers came from mature oaks whilst other trees must have been felled when young. Some of the mature trees were large: III.311 had a cross-section of 0.74 × 0.37 m, indicating that the tree was at least 0.90 m in diameter. It would have been about 250 years of age when felled, and must have involved a considerable effort in felling, transport and conversion. The younger trees, less than 100 years old when felled, had diameters of 0.4–0.5 m allowing for missing sapwood. These tended to be wider ringed and were presumably selected because of their greater strength, due to the larger proportion of dense late-wood. As such, they were used for piling and bracing.

Nine of the AREA III ring patterns (tree-ring curves) crossmatched to form a site mean curve of 262 years (Figure 62). This was combined with data from the Custom House and Seal House sites, and published as a Roman London mean curve (Morgan & Schofield 1978). When the four AREA IV samples were examined, two of these synchronised with the original 262-year curve ($t = 3.70$ and 7.46 for IV.5003 and IV.5014 respectively). A new site chronology (Figure 63) was produced which includes the data from the nine 1975 timbers, IV.5003, 5014 and 677 (see below). The ring width data from the individual samples are available from the Sheffield Dendrochronology Laboratory.

Of the unmatched samples, four were from young trees (III.190, 212, 213 and 243) and two from older ones (IV.5002 and IV.5013). Short ring patterns are often difficult to crossmatch, although III.326, with only 49 rings, did crossdate. Tentative matches were found for the AREA III samples but none were sufficiently convincing to warrant publication. A sample from III.213 was radiocarbon dated: it gave a result of AD 320 ± 70 (HAR-1421). The two 1978 samples (IV.5003, IV.5014) matched each other ($t = 5.66$), but not the new chronology. A series of three radiocarbon samples,

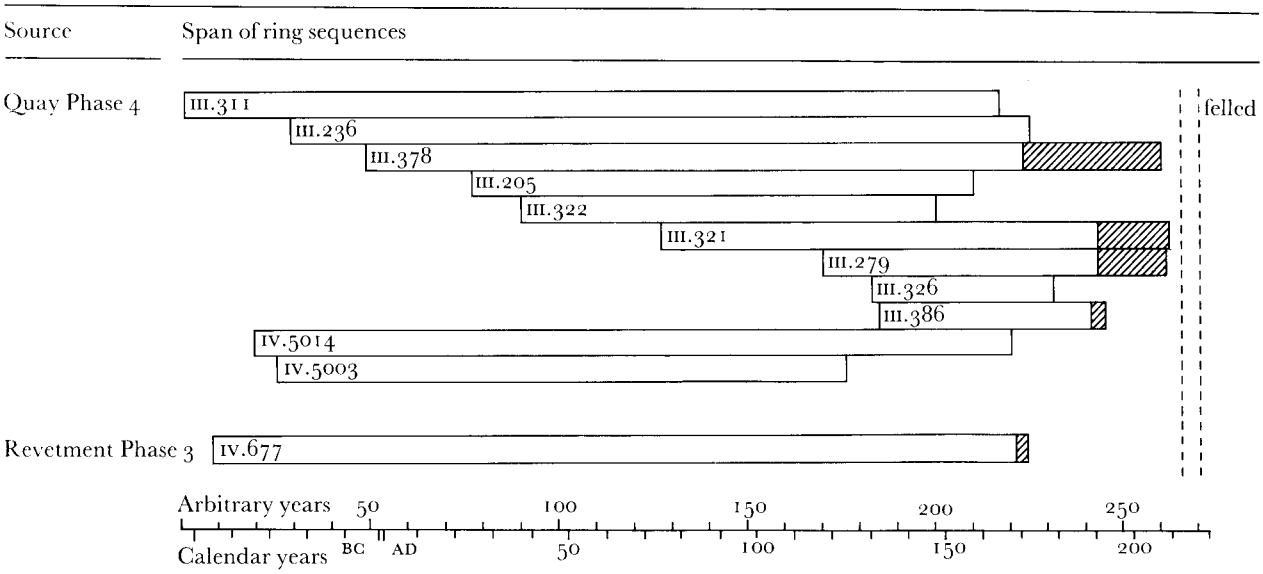


FIGURE 62 Bar diagram indicating the years spanned by the ring sequences of the matching Phase 3 and 4 timbers. Sapwood rings are represented by hatching.

FIGURE 63 New Fresh Wharf master curve, 53 BC–AD 209.

Year	Ring widths (0.1 mm)										Number of samples
	0	1	2	3	4	5	6	7	8	9	
0		13.0	18.0	18.0	24.0	28.0	32.0	19.0	34.5	33.0	1
10	29.5	26.0	26.5	23.0	28.0	31.5	34.5	26.5	31.5	30.0	2
20	23.3	28.0	30.7	38.7	34.7	33.0	26.0	43.0	36.5	37.4	4
30	33.6	29.2	24.0	19.0	17.4	23.2	24.2	33.4	25.2	27.8	5
40	30.8	24.4	22.4	20.8	29.4	25.2	20.0	23.2	24.0	22.8	5
50	25.3	18.3	16.5	12.8	19.3	22.0	20.8	19.2	20.3	22.8	6
60	20.2	18.8	24.0	19.5	15.2	15.0	14.8	15.0	19.8	20.7	6
70	21.0	19.5	18.8	19.8	13.3	11.0	9.5	19.1	18.7	22.4	6
80	23.4	19.7	25.4	15.6	17.1	14.7	15.9	14.3	17.7	15.6	7
90	18.4	26.0	19.2	18.9	22.1	17.6	18.0	23.2	21.0	18.1	8
100	17.5	20.1	23.4	17.0	19.1	23.9	23.5	25.7	22.5	22.0	8
110	18.2	19.6	17.4	19.1	22.4	18.5	20.9	21.1	18.4	21.0	8
120	23.0	23.7	27.2	23.2	23.5	17.7	14.0	23.1	18.4	19.3	9
130	15.6	18.8	19.2	16.7	18.4	16.1	13.0	13.7	13.1	18.0	9
140	23.3	20.4	18.1	19.4	19.0	15.7	14.4	11.8	19.0	16.9	9
150	18.6	12.2	14.1	16.0	18.9	17.2	13.8	14.3	16.1	15.0	9
160	15.4	17.8	17.9	19.3	18.9	21.1	18.4	14.7	11.8	14.6	9
170	21.2	21.7	22.4	24.6	18.9	19.5	17.7	20.3	14.8	20.1	10
180	20.4	22.1	17.9	20.1	19.7	20.7	19.7	21.6	21.8	23.5	10
190	19.5	15.9	20.3	18.8	20.5	22.5	19.6	21.2	19.5	13.0	11
200	18.3	19.1	16.5	22.1	21.9	19.2	17.9	12.2	20.2	17.3	10
210	15.2	16.0	15.1	16.2	19.4	19.0	17.2	17.4	14.7	15.4	9
220	18.2	17.3	18.6	16.6	17.0	17.8	14.6	20.2	19.0	22.8	7
230	15.8	19.0	16.2	16.5	13.2	15.5	17.0	16.5	18.2	16.0	4
240	16.5	18.2	15.2	16.7	11.7	10.5	12.0	13.0	13.3	16.0	4
250	16.7	15.0	11.7	11.7	13.7	13.7	13.0	9.0	10.3	13.7	3
260	16.3	11.0	13.0								2

FIGURE 64 Results of radiocarbon analyses carried out on the unmatched IV.5013. The growth allowance must be added to the radiocarbon result so that the three samples relate to the same felling date, i.e. year 161 on the scale of the IV.5013, 5002 mean curve.

HAR number	Rings of 161-year mean curve	Growth allowance (years)	Temp. C14 result	Felling date (AD)
3104	27–46	125	AD 270±90	395±90
3105	57–76	95	AD 30±100	125±100
3103	87–106	65	50±120 BC	15±120

taken at known intervals of time from IV.5013, were submitted for analysis to determine if they differed in date. The results (Figure 64) were not conclusive as they indicated a felling date between AD 15±120 and AD 395±90.

An estimate of the felling dates of trees used to construct the quay can be made by examining the amounts of sapwood on the timber as this usually maintains a fairly standard width of about 10–55 rings for mature oaks (Hillam, Morgan & Tyers 1986; Hughes *et al* 1981). III.378 has a wide zone of 38 rings, III.321 and III.279 have around 20 rings, and III.386 has 4 rings. The heartwood-sapwood boundaries of III.279, 321 and 386 have very similar relative dates but that of III.378 is about 20 years earlier (Figure 62). The former timbers may therefore be slightly later in date than III.378. Construction would have followed very soon after felling as it was not the Roman practice to season timber (Hollstein 1965).

Period 1, Phase 3 *The Roman revetment for land reclamation*

Five timbers were sampled from this structure (Figure 61): IV.677 was a large timber with 217 growth rings, and of similar size to some of the sill beams from the quay. The others (IV.368, 369, 680 and 681) were smaller timbers containing between 37 and 79 rings. Sample IV.677 was a quartered trunk which had been hewn into rectangular shape. The tree was about 250 years old when felled and had a diameter of at least 1 m, whilst the remaining samples came from trees younger than 100 years old, with diameters ranging from *c.* 0.3–0.6 m. As with the Roman quay, the woodland source contained oaks of varying size and age. The average widths of the annual rings were similar to those of the quay timbers.

When the ring widths had been measured, the data

FIGURE 65 Radiocarbon results for samples from New Fresh Wharf and Custom House. The exact relationship, in years, between each sample is known from the tree-ring analysis. The results can therefore all be related to the estimated felling date of the New Fresh Wharf timbers – years 262–272 on the arbitrary scale – by the addition of the appropriate growth allowance.

HAR number	Rings of 270-year mean curve	Growth allowance (years)	C14 result	Result related to NFW felling date
New Fresh Wharf				
1867 (III.311, 378)	70–90	190	AD 110±60	AD 300±60
1865 (III.311, 378)	120–140	140	AD 150±60	AD 290±60
1864 (III.311, 321, 378)	170–190	90	AD 290±60	AD 380±60
1868 (III.321, 378)	220–240	40	AD 190±60	AD 230±60
Custom House				
2532	40–60	220	70±70 BC	AD 150±70
2530	70–90	190	AD 80±70	AD 270±70
2534	115–135	145	AD 80±70	AD 225±70

from IV.368 was rejected since the 37-year ring sequence was too short to be crossmatched with any reliability. The other curves were compared with the Roman quay sequences. Sample IV.677 crossmatched well at the position indicated in Figure 62. The quality of the agreement ($t=9.97$) between it and the other matching curves suggested that the timbers had come from the same area of woodland. Sample IV.369, 680 and 681 did not match, either with the Roman quay sequences or with each other. (However IV.681 was dated to AD 122–178 by comparison in 1986 with sequences from Billingsgate Lorry Park (Hillam in prep).)

Sample IV.677 contained 4 sapwood rings and the date of its heartwood-sapwood boundary was similar to that for III.378 from the quay, i.e. year 240 on the arbitrary scale. It seems likely therefore that timbers IV.677 and III.378 are contemporary. The last measured heartwood ring of IV.681 is 10 years later than the heartwood-sapwood boundary of IV.677 so that this timber could be slightly later in date than IV.677. Both the quay and the revetment therefore may contain timbers of two different dates. For the suggestion that III.378 and IV.677 may be re-used, see the Synthesis, above pp. 63–4.

Dating the Phase 3 and 4 timbers

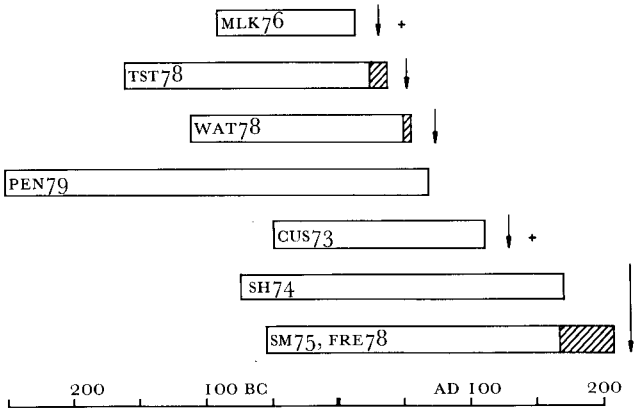
When the first AREA III timbers were examined there were no dated British tree-ring chronologies with which to compare their ring patterns. Several short sequences from Europe had been published (e.g. Hollstein 1972, 1974), and one of those, Wederath (Hollstein 1972), gave a tentative match ($t=4.08$) when the 262-year London curve ended in AD 151 (actually AD 178; for the revised dating see Hollstein, 1980). While this agreed with the archaeological dating, the visual match was poor, and comparisons with Hollstein's most recent curve (1980) did not confirm the result. With the failure

FIGURE 66 Dating of the Phase 3 and 4 timbers. A '+' by the felling date indicates that an estimate of the *terminus post quem* has been made. The sapwood estimate is 10–55 rings.

Sample number	Number of rings	Sap-wood rings	Years spanned	Felling date
Phase 3				
IV.677	217	4	46 BC–AD 171	AD 178–223
Phase 4				
IV.5014	202		35 BC–AD 167	AD 177+
IV.5003	152		29 BC–AD 123	AD 133+
III.311	218		53 BC–AD 165	AD 175+
III.236	197		25 BC–AD 172	AD 182+
III.378	212	38	5 BC–AD 207	AD 207–224
III.205	134		AD 24–157	AD 167+
III.322	111		AD 37–147	AD 157+
III.321	136	20	AD 74–209	AD 209–244
III.279	92	19	AD 117–208	AD 208–244
III.326	46		AD 130–178	AD 182
III.386	61	4	AD 132–192	AD 199–244

to obtain absolute dating, four radiocarbon samples, each covering 20 rings, were cut from beams III.311, 378 and 321 at 50 year intervals with respect to the mean curve. The results (Figure 65) showed considerable variability but, with growth allowance added to account for missing heartwood and sapwood, the felling date averages out at AD 295±35 (R. Otlet, pers. comm.). Since this date did not agree with the late 2nd-mid 3rd century date indicated by the pottery evidence, further radiocarbon samples were taken from the Custom House timbers, which were firmly dated by dendrochronology relative to the New Fresh Wharf timbers (Figure 67). The three Custom House radiocarbon results were earlier than those from New Fresh Wharf: when related to arbitrary year 270, the estimated felling date for New Fresh Wharf, they gave an

FIGURE 67 Temporal relationship of the ring sequences from the various Roman London sites. Arrows represent approximate felling dates; '+' indicates an estimation of a *terminus post quem*. CUS 73—Custom House (Fletcher, 1974); MLK 76 – Milk Street; PEN 79 – Peninsular House; SH 74 – Seal House; SM 75 and FRE 78 – St Magnus, St Magnus House; TST 78 – Thames Street Tunnel; WAT 78 – Watling Court.



average value *c.* AD 215 (Figure 65). The variability of the individual radiocarbon results suggests that this form of dating should only be used to obtain a rough indication of a sample's date and not as a means of establishing an exact date.

By 1981, tree-ring analysis had been carried out on Roman timbers from several sites in the City. The relative dating is summarised in Figure 67, whilst examples of the inter-site crossmatching are illustrated in Figure 68. A chronology from the adjacent Seal House site (Morgan 1977; Morgan & Schofield 1978) was almost identical to that from New Fresh Wharf, and the two revetments appear to be contemporary. The Custom House sequences, measured by Fletcher (1974), were also synchronous, although lack of sapwood made it impossible to give an exact felling date for the Custom House timbers. It was however built no more than *c.* 80 years earlier than the structures at Seal House and New Fresh Wharf. This agrees with the results given by Fletcher (1982), but see Hillam *et al* (forthcoming) for further discussion of the Custom House dates.

Twelve revetment timbers from the Thames Street Tunnel site (TST 78) resulted in the establishment of a 198-year master curve, while four oak piles from Watling Court (WAT 78) made possible the construction of a 167-year master sequence. These, as well as a sequence from a Milk Street (MLK 76) well timber, all crossmatched with New Fresh Wharf. The levels of agreement between the various sites are set out in Figure 91. Finally over 40 timbers from the 1979 Peninsular House excavation (PEN 79) were analysed. The majority of the ring sequences crossmatched, producing a 322-year master curve (Figures 67–8).

It was possible to assign approximate calendar dates to these chronologies and their respective felling years because evidence of the Hadrianic Fire at Watling Court indicated that the oak piles from that site had been felled in *c.* AD 100 (C. Harding, pers. comm.). Using this time scale, the Phase 3 and 4 timbers from New Fresh Wharf would have been felled in *c.* AD 230–40.

In the meantime the search for absolute dating continued. By 1980 two unpublished chronologies were available: one from Ireland, spanning 12 BC–AD 894 (Baillie 1980), and the other, 397 BC–AD 216, from the Danube region of southern Germany (Becker 1981). No crossdating was found between London and Ireland, but a tentative match was obtained between the Danube curve and London's Thames Street Tunnel ($t=3.99$) when the last ring of the London curve was equal to AD 39).

In early 1981, the data of Hollstein's West German

FIGURE 68 Matching site master curves: New Fresh Wharf/Seal House (NFW), Thames Street Tunnel (TST) and Watling Court (WAT), over the period 73BC–AD57.

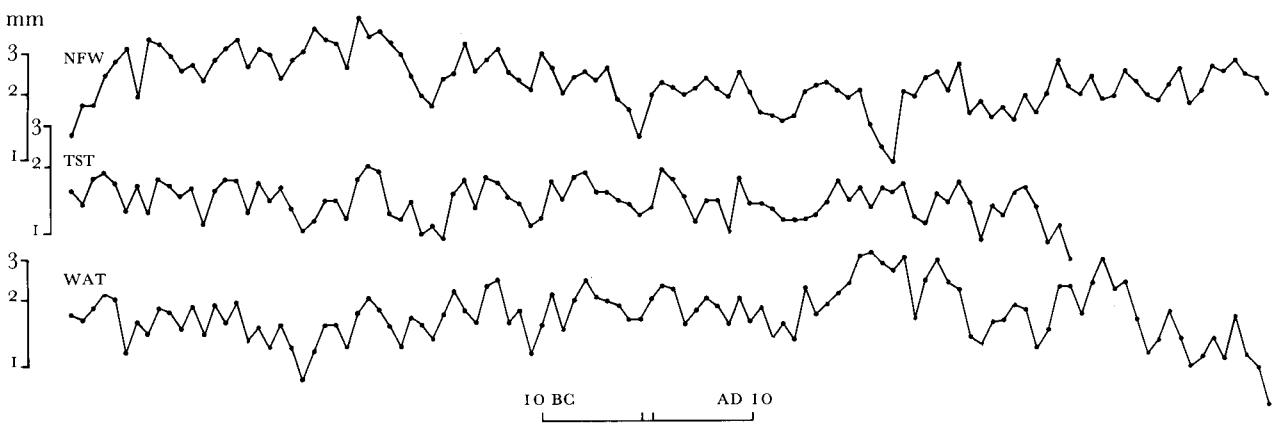
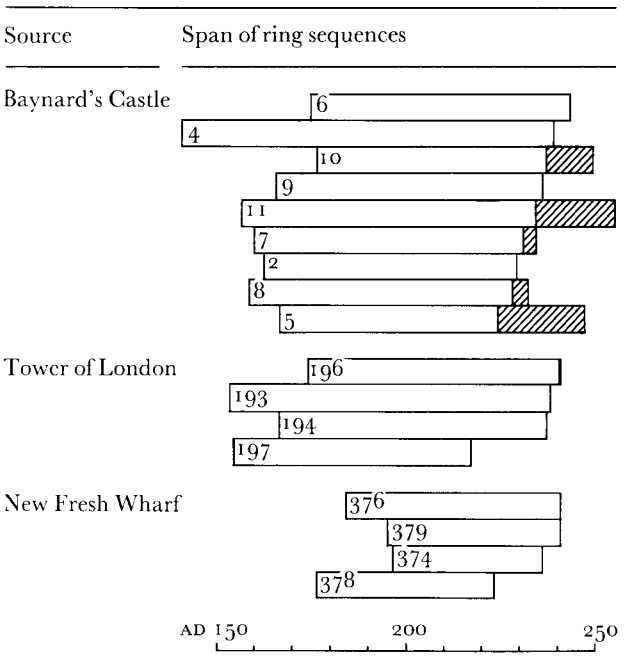


FIGURE 69 *t*-values for the agreements between the various Roman London site master curves, and between them and the two dated German chronologies. Site codes are explained in the legend to Figure 67.

	WAT	MLK	TST	NFW/SH	Danube	West Germany
PEN	10.80		15.61	6.61	3.95	3.8
WAT		4.02	10.56	5.48	2.85	1.62
MLK			4.98	2.20		2.2
TST				6.02	3.99	3.1

FIGURE 70 Bar diagram showing the relative positions of the riverside wall ring sequences from Baynards Castle (Morgan, 1980), the Tower of London (Hillam, 1983) and New Fresh Wharf. Hatching – sapwood; HS – heartwood-sapwood transition. The estimated felling date for the timbers is AD 255–70.



oak chronology (700 BC to the present day: Hollstein 1980) was obtained. Simultaneously, work on the Peninsular House timbers had resulted in the production of a new London tree-ring chronology. All the Roman London sequences were therefore compared with the two German chronologies. The tentative Thames Street Tunnel/Danube match was confirmed as the Thames Street Tunnel curve matched with Hollstein's chronology over the same period of time. Peninsular House also matched well with both German curves. The absolute dating of the London sequences is therefore well replicated, and can be accepted with 100 per cent certainty (Figures 66, 69). The New Fresh Wharf/Seal House chronology was also dated independently in Oxford by Fletcher (1981), again by comparison with the 1980 Hollstein curve. The 262-year New Fresh Wharf sequence therefore spans the years 53 BC–AD 209.

IV.677 and IV.681 from the Phase 3 revetment were felled in AD 178–223 and AD 188+ respectively. The Phase 4 quay timbers were either all felled in AD 209–224, or III.378 was felled in AD 207–224 and the remainder felled during the period AD 209–244.

Period 1, Phase 8 *The Roman riverside wall*

The 1978 watching brief revealed a section of the Roman defensive wall with its oak pile foundations. The structure was similar to the sections of wall already excavated at Baynard's Castle, Blackfriars (Hill *et al* 1980) and the Tower of London (Parnell 1978), where tree-ring work had been carried out on the timbers. (A description of the wall as found at Baynard's Castle is given in Hill *et al* 1980.) At Baynard's Castle, a mean curve of 116 years was produced. No absolute dating was possible at the time of analysis because of the lack of dated reference curves for the Roman period, but a series of four radiocarbon dates indicated that the timbers were felled around AD 330–50 (Morgan 1980). The Tower of London excavation produced six piles for tree-ring analysis. Four of these crossmatched, both with each other and with the Baynard's Castle master curve (Hillam 1983). The relative positions of the ring

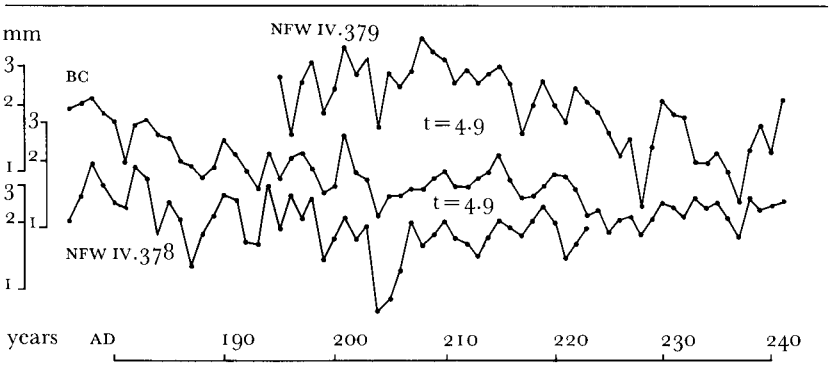


FIGURE 71 Matching tree-ring curves: FRE 379 and FRE 378 with a section of the Baynards Castle master curve (BC).

FIGURE 72 Calendar dates for the riverside wall ring sequences from New Fresh Wharf, Tower of London and Baynard's Castle. HS – heartwood-sapwood transition. City/Southwark chronology contains data from various sites in Southwark and the City, including those from Baynard's Castle (Tyers, pers. comm.).

Sample number	Date span AD	Date of HS	*t*-value with City Southwark chronology
New Fresh Wharf			
374	196–236		4.1
376	184–241		6.2
378	176–223		6.1
379	195–241		5.3
Tower of London			
193	153–238		3.7
194	166–237		4.1
196	174–241	241	4.2
197	154–217		3.6
Baynards Castle			
2	162–229		
4	140–239		
5	166–247	224	
6	174–243		
7	159–234	231	
8	158–232	228	
9	165–236		
10	176–249	236	
11	156–255	233	

sequences from the two sites were similar, although the dates of the heartwood-sapwood transitions from Baynard's Castle were more variable.

The removal of six oak piles from Phase 8 at New Fresh Wharf made it possible to compare further ring patterns with those from the previous two sites. The samples (IV.374–9) contained between 41 and 64 growth rings (Figure 60). They came from whole trunks which had been hewn into rectangular shape, and were roughly similar in size to the piles found at the Tower and Baynard's Castle. The average ring widths were also similar at the three sites (*c.* 2 mm).

The New Fresh Wharf ring patterns proved difficult to crossmatch, as had those from the Tower, due to the shortness of the ring sequences. Four curves were synchronised visually, and their ring widths averaged to produce a short master sequence of 66 years. This master crossmatched with the sequences from the other two sites. The dates of the outer rings of the New Fresh Wharf and Tower timbers are very similar, and are less variable than those from Baynard's Castle (Figure 70). Without sapwood, the exact felling dates cannot be determined, but the relative dating indicates that the timbers might be contemporary, although this does not necessarily imply that the three stretches of wall were built simultaneously.

The archaeological dating of the '4th century' wall was queried in 1982, as evidence of an early to mid 3rd century date was found (Williams 1982). The Baynard's Castle curve was dated in 1983 by Ian Tyers during examination of Roman timbers from Southwark (Sheldon & Tyers 1983), and a date of AD 255–70 was given for the construction of the wall. This automatically dated the ring sequences from New Fresh Wharf and the Tower (Figures 71–2), although they also dated independently against the Southwark sequences (Tyers, pers. comm.). The date of AD 255–70 therefore is the likely construction date for the Roman defensive wall at New Fresh Wharf.

Conclusion

The most important outcome of the tree-ring study is the absolute dating of the Phase 3 and 4 timbers. The dating of the New Fresh Wharf chronology to 53BC–AD209 is completely reliable. However the interpretation of the tree-ring dates so as to estimate the most likely time of felling and construction has proved difficult and has only been achieved after much consultation between dendrochronologist and archaeologist, and the consideration of other evidence such as the tree-ring results from the adjacent site of Billingsgate (Hillam in prep) or the results from the pottery (pp. 96–9).

If the timbers in the quay and the revetment were all primary, then the quay was constructed in about AD 209–224 and the revetment in AD 188–223. However if III.378 from the quay and IV.677 from the revetment were re-used then the revetment was constructed after AD 188 whilst the quay was built after AD 209 and before about AD 244. The re-used timbers would come from a structure built around AD 207–224. The latter interpretation is more compatible with the pottery evidence and the tree-ring results from Billingsgate.

This site illustrates a major problem which often occurs with dendrochronology: that of interpreting the tree-ring dates once they have been obtained. Lack of sapwood is making interpretation difficult on other Roman London sites, such as Peninsular House or Miles Lane, but by sampling as many timbers as possible, and by considering other dating evidence such as pottery or stratigraphy, the problem can be overcome.

The examination of the timbers themselves show that there was a massive exploitation of large, long-lived oak trees in the 2nd and early 3rd centuries, but that, by the mid 3rd century, resources were diminishing and only younger trees were available.

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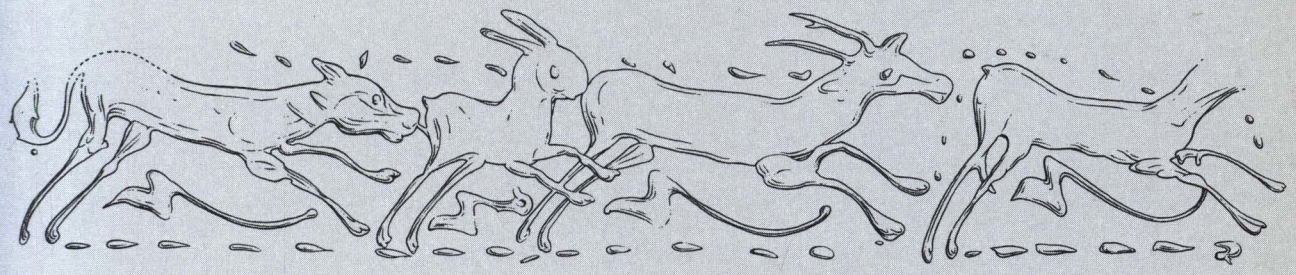
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The Finds

Edited by Michael Rhodes



DISCUSSION

The loose artefacts from the New Fresh Wharf excavations represent a significant addition to previous collections of Roman materials from the City of London. The majority come from dumps associated with the construction of the early to mid 3rd-century quay, and form the largest and most extensive series of materials of this date from London. The combination of a high ground water level with river silt deposits created anaerobic conditions favourable to the preservation of vulnerable organic objects (leather-work, wood, etc.). The collection therefore not only extends the dated series of waterlogged finds from the nearby 1st- and 2nd-century waterfronts at Billingsgate Buildings (Rhodes 1980a), but complements also the nationally important collections of late 1st- to mid 2nd-century objects from silt deposits in the Walbrook valley, preserved in the Museum of London and the British Museum. The finds include the largest group of late samian found in this country, containing many unused vessels, which, together with previous discoveries, point to a long-lived tradition of pottery warehouses in the region of the Roman bridgehead. The footwear is of international importance, being the largest well-dated late Roman assemblage to have been recovered. Some of the leather garments are also of exceptional rarity and interest.

Apart from dating the stratigraphy, the finds have been examined as a potential source of information on the social and economic background to the construction of the quay in the second quarter of the 3rd century. Particular attention has been paid to artefacts which might elucidate activities associated with the quay and its 'hinterland' to the north of the excavations. Items illustrative of trade and commerce have been given special attention as have items indicative of social conditions in the first half of the 3rd century.

The dating of the stratigraphy rests primarily on the dendrochronology and the pottery, and is discussed elsewhere (pp. 62–5). Corroborative dating evidence is provided by coins, footwear, glassware and other items. A study of the pottery strongly suggests that many of the finds in Period 1, Phases 6–7 and Period 2, Phases 1–3 had been displaced from inside the Phase 5 quay structure, and are therefore likely to be substantially earlier than the date of the deposit from which they were recovered. For this and other similar reasons, some further remarks on the dating of the finds are included in the following discussion.

The conditions of excavation and completeness of recovery varied in different parts of the excavation. AREAS IV and V were investigated in the course of a watching brief, which made it possible to retain only small quantities of material for dating evidence. AREAS II and III were excavated under controlled conditions, and the quality of retrieval should in consequence be high, although a number of problems associated with the excavation of AREA II might have adversely affected the reliability of some groups. Nonetheless only one or two deposits have suffered obvious contamination with later materials (as indicated below).

In the following summary and discussion, those finds which are specifically reported here are indicated by an appropriate number and page reference. Details of finds which are not fully described in this publication are available in a series of numbered archive reports (listed on p. 267). These may be obtained from the Museum of London on request.

Period 1, Phase 1 *River silts*

The pottery is datable to the late 1st and early 2nd centuries (see p. 129). It was mostly recovered from III.357, which was contaminated by a sherd of 4th-century coarseware, another of Antonine samian, and two large fragments of mid 2nd-century tile. The other finds may be explained as domestic refuse, with the probable exception of some of the amphorae, and an unusual triangular blade of copper alloy, which seems to be a specialist craft tool, possibly associated with leather-working (No. 14.2). A closely similar blade has been recovered from the Billingsgate Buildings site (Chapman 1980a, No. 466), which has also produced conclusive evidence for leather-working in London at this date (Miller and Rhodes 1980). The skeletal remains are representative of ox, cattle, pony, sheep, goat, pig, roe deer, hare (P. Armitage, Archive Report), domestic chicken, domestic duck, domestic goose and raven (G. Carey and P. Armitage, Archive Report).

Period 1, Phase 2 *River silts*

The next assemblages come from a series of river silts, found in all areas of the excavations, which pre-date the construction of the early to mid 3rd-century quay. Most of the pottery is Hadrianic (p. 129), although a number of deposits (notably III.286, III.342, III.350, III.392, II.527, II.529 and II.533) contain pottery dated to the late 2nd to early 3rd centuries, which was apparently trodden into the earlier strata when the quay was constructed. Although no stratigraphic disturbances of the kind which might be associated with the assembly of the quay were noted by the excavators, they may well have been obliterated by river action during and after its construction.

In general character the finds closely match the contemporary finds from Billingsgate Buildings (Rhodes 1980a, 35–6), and reinforce the impression that the region from which they were derived (presumably a restricted area of the city north of the site) was not devoted to a single specialised function. They again pro-

vide evidence of substantial buildings, this time in the form of wall plaster (Archive Report No. 15), tesserae (Archive Report No. 17), a fragment of window glass (p. 209), mortar, nails (Archive Report No. 12), a joiner's dog (Archive Report No. 11.35), and 13.5 kg of roof and flue tiles (p. 247).

Most of the pottery seems to be domestic, although a substantial proportion of the pottery by weight comprises amphorae associated with the importation of fish products, wine and olive oil (see pp. 100–1 and p. 129). This may simply be domestic refuse, but could reflect the unloading of ships and/or the presence of warehouses in the immediate area, as suggested by subsequent excavations at Pudding Lane, which lies to the north of New Fresh Wharf, immediately east of the line of the Roman bridgehead (Milne 1982).

At Pudding Lane the principal Roman discoveries took the form of a landing stage of mid 1st-century date, which was replaced in the late 1st-century by substantial wooden quays associated with two ranges of apparently open-fronted masonry buildings. These are thought to have been harbour-side storage buildings for commodities in transit (Bateman and Milne 1983, 214–7). Large quantities of amphorae were recovered from the foreshores and the fill of the quay (Chadburn and Tyers 1984, 23 and Figure 10). Amphorae also form a high proportion of the pottery at Billingsgate Buildings (Green 1980a, 77), so this would seem to be a common phenomenon on London waterfront sites, at least in the region of the bridgehead. Other evidence for the transportation and storage of goods at Pudding Lane comes in the form of numerous barrel staves, which are matched at New Fresh Wharf by the head of a small barrel and the stave of a larger example (Archive Report Nos. 7.1 and 7.2, respectively). Most of the barrels recovered from London are of 1st to 2nd century date, and are thought to be associated with the importation of wine (Wilmott 1982, 23). A small Brockley Hill *seria*, represented by a rim fragment (p. 129), may have been used for the bulk secondary storage of wine, or perhaps oil.

Apart from the pottery, evidence from New Fresh Wharf of domestic life in Hadrianic times takes the form of vessel glass (p. 209), the rim of a small, wooden lathe-turned box (Archive Report No. 7.12), part of a box-wood scoop, identical to a complete example from a 1st-century well in Queen Street (Wilmott 1982, 49 and Figure 32, No. 93; Archive Report No. 7.10), an oak spoon with an offset handle (Archive Report No. 7.11), a fragment of figurine, perhaps from a domestic shrine (No. 5.4), and personal items, which include an iron finger ring with an inlaid copper alloy cross, bearing the inscription *DA MI VITA* (Henig 1984, and see p. 16), the left flap of a leather jacket (No. 7.1), and other fragments of leather clothing (Archive Report, Nos. 4.2–4.3), including fourteen shoes (Archive Report Nos. 6.1–6.14).

Evidence for local crafts takes the form of sheet metal fragments from a bronze-smith's workshop, ox horn cores bearing saw and cleaver marks which are indicative of horn working (P. Armitage, Archive Report), and leather waste from the manufacture of shoes and unknown items, possibly clothing (Archive Report No. 7). The latter are represented by discards and waste from worn-out garments of thin cattle hide, cut up for re-use (see p. 211). Similar items have been recovered from Billingsgate Buildings (Miller and Rhodes 1980, 95), from other waterfront sites, and from the Walbrook valley. Of particular interest and importance are three off-cuts inscribed with curriers' or tanners' marks, which alongside similar finds from other city sites, suggest that London was supplied with leather from large tanneries (Rhodes forthcoming a; Van Driel-Murray 1977a). Such marks are apparently unknown elsewhere in Britain, which points to an unusually high demand for leather in London, associated with the manufacture of leather goods (of which there is plentiful evidence), and probably also with a trading centre for hides. A ready and plentiful supply of salt would have been required if untanned hides were to be transported in bulk. That salt from the Thames estuary was available in London is confirmed by sherds of salt vessels, which, although from later river silts, possibly date from the early 2nd century (see pp. 131–2).

Other finds from this phase include six coins (p. 234), a strand of copper wire (Archive Report No. 11.1), an iron needle (Archive Report No. 11.31), a hone of Kentish Rag type (No. 15.1), and the the bones of ox, sheep, red deer, roe deer, pig, hare, dog and cat (P. Armitage, Archive Report), domestic chicken, domestic duck, and domestic goose (G. Carey and P. Armitage, Archive Report).

Dumps behind Period 1, Phase 3 revetment

Few finds were recovered from the dumps behind the Phase 3 revetment, which was excavated during a watching brief. The only item of interest was a large deposit of samian from IV.380 (of which only a small quantity could be retained for study). Some of the samian is definitely unused, and by character and content the group is indistinguishable from the main quay assemblage (of Period I, Phase 5). Other finds include four fragments of re-deposited human bone (Archive Report No. 22). A scatter of human skeletal remains was also recovered on the nearby excavations at Billingsgate Buildings (for comments see Rhodes 1980a, 35).

Period 1, Phases 4 and 5 *Quay Construction Layers*

The deposits associated with the construction of the quay comprise consolidation layers beneath the quay structure (Period 1, Phase 4), the quay timbers themselves, and a succession of dumped layers inside the

structure (Period 1, Phase 5). These are sealed deposits of the second quarter of the 3rd century (pp. 96–8). The assemblages are apparently uncontaminated by later finds, apart from *c.* ten sherds of 4th-century coarse-wares from III.319 and III.329.

A high proportion of the pottery, most of which is unused, is Lezoux samian dated to *c.* AD 170–80 (pp. 140–1). The unused pottery seems to be composed of an accumulation of breakages together with a smaller quantity of unwanted complete vessels, from warehouses somewhere in the vicinity (see pp. 199–204). Because of the special nature of the ceramic assemblage, there is no reason to suppose that the non-ceramic finds are also substantially earlier than the date of this quay, although the possibility that some individual finds belong to the late 2nd century cannot be eliminated. As assemblages, that dating is summarized as 'early to mid 3rd century' in the discussion sections of the specialist reports. There is no evidence to suggest that materials from the Antonine foreshore were shovelled into the newly-constructed quay structure. The foreshore deposits under the quay are primarily of Hadrianic date, whereas there is a noticeable absence of Hadrianic or even early Antonine pottery within the structure (Beth Richardson, pers. comm.). The character of the finds is discussed below (pp. 91–5).

It is thought that the quay framework was infilled immediately after construction in order to consolidate the structure. If so the activity would have been organised by the same authorities who organised the quay's construction. Apart from the unused pottery, the infill comprises tips of refuse and building rubble presumably derived from a nearby area of the city. Stratigraphic evidence for the inclusion of separate loads of tipped material is reinforced by the clustered distribution of various types of pottery (see pp. 96–7). The roof tile reflects a similar pattern, the tile from Period 1, Phase 4 apparently coming from earlier buildings than the tile in Period 1, Phase 5, even though the deposits were laid in close succession (see p. 247).

Period 1, Phases 6–7; Period 2, Phases 1 to 3

These phases comprise disturbed quay fill deposits which lay over and in front of the quay, and were finally sealed in the late Roman period (Period 1, Phases 6–7) and in the late Saxon era (Period 2, Phases 1–3). None of the finds can be positively associated with the useful life of the quay. That most of the finds were originally deposited inside the 3rd-century quay structure is indicated by the date of the pottery and numerous cross-joins between sherds found within and without the structure (see p. 96). There are a few residual objects of the late 1st to 2nd centuries and small quantities of late 3rd- and 4th-century materials. Period 2 is to be dated to the late 10th to early 11th centuries by dendrochronology (p. 55), although the finds again comprise predominantly Roman materials derived from the quay fill. Hardly any late Saxon pottery was recovered from Phase 1 (less than 400 g), and this may be regarded as intrusive. Only in Phases 2 and 3 of Period 2 do Saxon finds occur in any quantity. Excluding those objects which are datable on intrinsic grounds to the late 3rd or 4th centuries (see below), the Roman finds from the late and post Roman phases are discussed together with the finds which were recovered from the quay fill (pp. 91–95). They match the quay group in general character, so if a very small proportion of them are later than the mid 3rd century, the general conclusions will be unaffected.

The only finds which may be assigned with certainty to the late 3rd and 4th centuries comprise a small amount of pottery from deposits in front of the quay (e.g. III.269, III.318; Period 1, Phase 6), an incised glass bowl or cup (No. 6.8), and two coins. Considering the extent of the excavations, two late coins is an exceptionally low number. They comprise a radiate of the late 3rd century and a coin of Constantine II dated to AD 330–5 (p. 234). The latter is one of the few finds which must be as late as the 4th century. A concentration of late 3rd-century *Oxford white mortaria* and a corresponding lack of 4th-century forms (p. 130) suggests that very little 4th-century material entered the sequence when the quay was robbed. The late 3rd century materials may have been introduced onto the site during the construction of the riverside wall, which must have resulted in a considerable disturbance of the whole area. Other sections of the wall have recently been dated to *c.* AD 255–70 by a dendrochronological analysis of some of the timber piles on which it was built (Sheldon and Tyers 1983). Thereafter the site would have been isolated from the city and apparently lay abandoned.

The wall, albeit possibly in a state of decay, would presumably have remained effective as a barrier well into the Saxon period, restricting the flow onto the site of any Roman materials brought to the surface as the result of digging for building materials. Such activities are well documented in *Verulamium* (Wheeler and Wheeler 1936, 35–8) and probably took place in London also, although to what extent is as yet unclear. There is some slight evidence for disturbance of buried Roman structures in the form of fragments of early Roman plaster, which appear to have been introduced onto the site at a late period (Archive Report No. 15). At Pudding Lane, Roman stonework and roof-tiles were used extensively in the foundations of late Saxon buildings (F. Grew and F. Pritchard, Archive Finds Appraisal, Pudding Lane site) suggesting that deliberate robbing of earlier structures may have taken place in the vicinity. The only evidence for the re-use of Roman building materials at New Fresh Wharf is supplied by an abraded portion of column base, encircled with a groove for a rope (pp. 244–5, No. 15.16). This is

thought to have been used as a weight, or perhaps a makeshift anchor, at some period prior to the 11th century.

The early to mid 3rd-century finds

The following section brings together objects packed around the base and lower timbers of the quay (Period 1, Phase 4), finds from a succession of dumped layers inside the quay (Period 1, Phase 5), displaced materials which were redeposited outside the quay when it collapsed at a later date (Period 1, Phase 6), and a smaller quantity of redeposited finds from silts and disturbed deposits overlying the quay (Period 1, Phase 7; Period 2, Phases 1–3). The most remarkable feature of these assemblages is a large quantity of mostly unused and imported pottery. This consists primarily of samian, the dating of which is discussed by Joanna Bird (pp. 140–5). Reasons for a discrepancy between the date of the latest samian and the dendrochronological date for the quay are discussed by Beth Richardson (pp. 96–8), who also describes the coarsewares and the significance of both the samian and the coarsewares as trade items (pp. 98–9). The fullest account of the grounds for interpreting this pottery as redeposited dumps of warehouse breakages is given elsewhere by the writer, together with a discussion of possible reasons for locating pottery warehouses near London Bridge (pp. 199–204).

Evidence of river-side activities

Most of the finds associated with the quay seem to be general city refuse, although a few may be linked with riverside activities. These comprise a barbed iron fish-hook (No. 14.19; p. **19**), a length of bark rope (No. 11.1), a possible boxwood 'fid', used for opening holes in canvas or splicing rope (No. 10.5), and nineteen dome-headed nails of Manning (1986) Type 1a. This variety was commonly used to attach boat strakes to floor timbers, and one is sufficiently complete to reveal the distinctive bends associated with this function (shown by Marsden 1965, 16, Pl. 4). A small quantity of pine resin, which could be connected with the waterproofing of ships, was recovered from III.318 (Archive Report No. 21). Edible shell-fish remains, including oyster, whelk, mussel and cockle, were found in some quantity. Winkle and great scallop, *Pecten maximus*, were also present (Archive Report).

As might be expected, there is plenty of evidence suggestive of commercial activity in the region of the waterfront. This contrasts with the relative paucity of such finds from waterfront excavations further to the east on the Billingsgate Lorry Park site of 1982–3, the Customs House site of 1973 (Tatton-Brown 1974) and from other waterfront sites. It is best explained in terms of the greater commercial use of this region of the waterfront in view of its proximity to the bridge-head and the main road to the forum, the focus of commercial activity. Samian and other varieties of imported pottery seem to have been stored in the vicinity for redistribution by road or water, and the same may apply to the Kentish Rag whetstones (see p. **20**, 203 and pp. 240–3). Once again there are large quantities of amphorae and other containers, notably fragments of three barrels, mostly large (Nos. 10.3–10.4; Archive Report, No. 7.3). Another storage vessel is of particular interest on account of its enormous capacity (*c.* 500–700 litres), and was probably used by a merchant for storing dry goods (No. 1.30). A number of coins were recovered (p. 234), and an exceptionally large number of writing tablets, mostly of legal type, may reflect the manner in which trading activities were recorded (see p. **6** and pp. 227–9). They are matched by five iron styli (Nos. 14.9–14.14), and one of bone (Archive Report No. 9.33).

Evidence for maritime trade routes

A high proportion of the remaining finds are imported, either from the continent or from coastal parts of Britain. This suggests that London's maritime trading links remained important in the period prior to the construction of the quay, providing one possible reason for replacing the earlier structure (but see also pp. 71–2). It is feasible, however, that finds from a river-side site might contain an unusually high proportion of imports, thereby giving an exaggerated impression of their importance. Unfortunately it is impossible to test this hypothesis by comparing the New Fresh Wharf finds with other London assemblages, since comparable assemblages of early to mid 3rd century date are rare and of small size; only further excavations can elucidate the point.

The various trade routes indicated by the large quantities of imported pottery (see pp. 98–9) are mirrored by other finds. Mediterranean commodities are represented by East Mediterranean wine amphorae (p. 103), a fragment of onyx marble veneer, probably from North Africa (Archive Report No. 14.6), olive oil amphorae from southern Spain (p. 100) and North Africa (p. 102), and wine amphorae from southern Gaul (p. 101). These would have been transported via the Rhône, Saône and Rhine, which provided the major link between the Mediterranean and the Rhineland, and, therefore, ultimately with Britain. Various wooden objects would have found their way to this country along the same route. These comprise writing tablets in cedar (an imported species at this period) and silver fir, larch, and Norway spruce, which come from central and southern Europe (see p. 227). Some of the bungs (Archive Report Nos. 7.6–7.8), and at least one, perhaps two, barrels are also made of silver fir (Nos 10.3–10.4). Strong trading links with the Rhine-

land are also indicated by the large quantities of East-Gaulish samian and colour-coated pottery, by mortaria, including Verecundus mortaria from near Bonn (No. 1.77–1.80; p. **18**), the Cologne hunt cup beakers (p. **17** and pp. 112–4), and a portion of ceramic face mask, apparently also from the Rhineland (Marsh 1979; Archive Report No. 1.1). Other pottery indicates a supply route along the Moselle and Rhine (pp. 109–10), and the use of direct cross-channel routes is indicated by pottery from the Pas de Calais/Picardy region of North West Gaul (pp. **11–13** and pp. 106–9) and a pilaster capital in white limestone, possibly from Northern France (p. 244, No. 15.15). The supply routes for the Central-Gaulish fine-wares and figurines are uncertain (Marsh 1981, 201–2).

The finds provide evidence, albeit much less substantial, of trade around the coasts of Britain. Propable contacts with North Wales are represented by roofing slates (p. 245). One of the hones (No. 15.13) may be in Pennant Grit from the Bristol region. South Devon is represented by jars and tripod bowls of micaceous Black Burnished ware (p. 125). Links with Dorset are demonstrated by the presence of bowls, jars and dishes of BB1 pottery (p. 125), a single vessel of Shelly Black Burnished ware (p. 126), a portion of wall(?) inlay of Purbeck marble (Archive Report No. 14.7), and fragments of a Kimmeridge shale armlet and a bowl (Archive Report Nos. 13.3 and 13.4 respectively). Supplies of stone paving(?) were shipped from South Kent (p. 240; Archive Report Nos. 14.8–14.12), whilst North Kent provided mass-produced stone hones (p. **20** and pp. 240–3) and probably also bowls of BB2 pottery (p. 127). Bowls, mortaria, and slip-decorated beakers were imported from Colchester (p. 128). Shipping links with the East coast are represented by a fragment of column in an oolitic limestone, probably from near Grantham, Lincolnshire (No. 15.16); another Lincolnshire limestone was used for the early 3rd-century monumental arch discovered at Blackfriars (Dimes 1980). That the east coast trade links extended as far as the north of England is demonstrated by jet pins from Whitby (Archive Report Nos. 13.1–13.2), fragments of roofing slate, seemingly of Elland flag (p. 245), and probably by coals; a petrographic and palynological analysis suggests that these come from the Durham coalfield, although the possibility that they come from South Wales cannot be eliminated (Archive Report No. 19). In this connection, it is interesting to note that the 2nd-century boat found at Blackfriars contained an unfinished millstone of Millstone Grit, from the Yorkshire region. Marine worm in the timbers confirm that it had served as a coastal trader (Marsden 1965).

The sale in London of building materials and coal from such distant locations can hardly have paid for the long voyages involved. This suggests that the profit may have been made on outgoing journeys, so far as the northern and western military zones were concerned, and that any cargo was regarded as better than an empty load on the return voyage. A useful comparison may be made with the situation on the Rhine, where products of tile factories are found predominantly on sites upstream of the various production centres. This is thought to reflect the fact that river craft were heavily laden with Mediterranean goods when travelling downstream, whereas a tile cargo would have been useful as a 'make weight' on the return journey, bringing a small financial return into the bargain (Peacock 1982, 145). The wide variety of tile fabrics in the quay infill has led to a suggestion that some may have been brought from distant sources as ships ballast (see p. 252). In the absence of firm evidence, it remains doubtful that broken tile was ever used for this purpose, although it is not impossible that tile products from distant sources were imported into London due to the imbalance of trade mentioned above.

There is little evidence of trade along Britain's inland waterways, which is represented merely by a few beakers from the Nene Valley and Oxfordshire mortaria (p. 128).

Evidence of crafts

Many of the crafts present in London during the late 1st to early 2nd centuries, as indicated at Billingsgate Buildings, were still being practised in the early to mid 3rd century, on the evidence of waste products from the quay fill. The most notable group comprises leather waste from the manufacture of shoes, and possibly other items of clothing, many of the latter being made from, or repaired with, pieces of recycled leather (see pp. 211–2). A copper needle with a triangular point (No. 14.7), three iron needles (Archive Report Nos. 11.31–11.34), and some of the hones (pp. 240–3) may be associated with them.

Evidence for the proximity of a bronze-smith's workshop is provided by twenty-eight fragments of copper sheet (p. 235). An iron awl or gouge may be from the same workshop (No. 14.15). The presence of other metal-working trades is suggested by an unfinished iron nail (Archive Report No. 12.1), a few fragments and trimmmings of sheet lead (Archive Report No. 11), four examples of fire-distorted leaden waste, which may be the result of recycling scrap lead (Archive Report Nos. 20.5–20.8), and eighteen pieces of coal (Archive Report No. 19). Whilst occasional coal fragments are not uncommon on 1st- and 2nd-century London sites, these are the first of 3rd-century date to have been noted, and the first of any date to have been analysed. Although coal was used for heating purposes in towns near the principal outcrops, for example at Wroxeter and Caerwent (Webster 1955, 200), it has not been found so far in domestic hearths in London. It is also known to have been used for smelting iron, and is often found in association with iron slags (Forbes 1964, 111),

as at Cheapside in 1955 (Grimes 1968, 134).

A number of off-cuts in oak and softwoods, are suggestive of furniture making (p. 230). Thirty-six unused nails were recovered from III.318, and over one hundred used nails were recovered from quay fill in general, most of the latter bearing clear signs of having been extracted (Archive Report No. 12). There is clear evidence for horn and bone working in the form of an ox horn core with cleaver marks from III.269 (Archive Report), and an off-cut from the metatarsal bone of an adult ox from III.289. This last item had probably been cut up to make a knife handle, or perhaps some gaming counters (Archive Report). Other finds include abundant debris from slaughter yards, and two bone needles (Archive Report Nos. 9.30–9.31).

Building debris

A large quantity of building debris was incorporated within the quay fill. The roof tiles provide useful statistical evidence for the comparative importance of the various building material industries which supplied London during the 2nd to mid 3rd centuries. They are especially suitable for this purpose since, like the other building materials, they are clearly derived from a variety of local sources. As such, they are more likely to reflect the general pattern of supply to London than roofing materials from a site formerly occupied by buildings, which would tend to reflect the structures present, rather than the situation in London generally.

The major structural materials comprise pieces of building stone, apparently all of Kentish Rag (Archive Report No. 14), and fragments of mortar (Archive Report No. 17). A few fragments of air-dried clay bricks were recovered (Archive Report No. 17), but these could represent debris from early Roman structures. Substantial quantities of wall-plaster came from a variety of buildings, to judge from the varied composition of the backing and the painted designs (Archive Report No. 15). That some of these buildings were of a high quality is indicated by the presence of fragments of Carrara marble (Archive Report No. 14.15), by a moulding in white limestone, probably from a pilaster capital, and by part of a column shaft (Nos. 15.15 and 15.16 respectively). This impression is confirmed by the presence of window glass (p. 209), and fragments of decorative stone wall(?) veneers of onyx marble and purbeck marble (Archive Report Nos. 14.6 and 14.7 respectively). The flooring materials include *tesserae*, some from plain red and white panels, one or two apparently from a mosaic design (Archive Report No. 17), stone paving(?) slabs (Archive Report Nos. 14.8–14.12), which are very uncommon in London (see p. 240), and a ceramic paving tile (p. 246).

For the first time in London there is clear evidence of stone roofs, the materials being derived from distant sources (see above, and p. 245). As usual, there are substantial quantities of *tegulae* and *imbrices* (pp. 246–52), whose configuration on the roof is illustrated by some very unusual pieces of mortar pointing (Archive Report No. 17).

Fragments of box flue tiles (p. 250), a piece of *opus signinum* (Archive Report No. 17), and a fragment of what is thought to be a stone *labrum* (a form of basin often found in bath-houses; Archive Report No. 14.5), bring to mind the proximity of the bath house at Pudding Lane, which lies no more than 100 metres to the north-west (Merrifield 1965, sites 312 and 314). This was uncovered in stages between 1833 and 1841, and was partly excavated in 1981 (for summary see Richardson 1982, 161). Some of the building materials mentioned earlier may come from the same building. These include those fragments of wall plaster which incorporate crushed brick and tile in the backing (Archive Report No. 15), and red and white tesserae, which could be derived from the cold bath discovered in 1833 and 1981 (Archive Report No. 17).

Items of furniture are represented merely by the end-piece of a multiple hinge in bone, probably from a cupboard or box (Archive Report No. 9.34), and a finial in oak, also probably from an item of furniture (No. 10.16).

Domestic refuse

As is usual in London, one of the largest groups of material comprises domestic refuse of various kinds, and again the most numerous items in this category comprise potsherds from vessels associated with the storage, cooking, serving and eating of food-stuffs. Four of these bear graffiti (Archive Report Nos. 18.1–18.4; one graffito is substantially complete and has been published by Hassall and Tomlin 1982, 418, No. 67). The storage vessels are matched by wooden bungs from amphorae, and smaller ones for barrels, casks or possibly flagons (see p. 230). A large number of glass fragments, mostly small, are derived from beakers, cups, flasks and bottles, and bowls (pp. 209–10; Archive Report No. 3). Of greater rarity is a fragment from what appears to be a shallow bowl of shale (Archive Report No. 13.4). The only definite eating implement is a copper spoon (No. 14.5; p. **19**). Decorative ceramic beakers (see p. **14**, **17**) were probably used to drink imported wines, whose source is indicated by amphorae (see pp. 101–4). Other varieties of amphorae show that olive oil was imported for cooking purposes. The only other indications as to the diet are provided by the skeletal remains, which include those of ox, sheep/goat, pig, roe deer, hare (P. Armitage, Archive Report), domestic chicken, domestic goose, and domestic duck (G. Carey and P. Armitage, Archive Report). The quantity of bone recovered was surprisingly small, less than one fifth by both volume and weight of the quantities from the pre-quay foreshore deposits.

A large number of objects for personal ornamentation or of specifically cosmetic use were recovered. They include an inscribed gold finger-ring (No. 14.1; p. **16**, and see p. 95), a copper broooch (No. 14.8; p. **16**), a lathe-turned amber bead (Archive Report No. 8.1), and two glass beads, one small and biconical (Archive Report No. 3.86), the other of a segmentary gold-in-glass variety (No. 6.11; p. **16**). Small items such as these could have been stored in a small cylindrical wooden box, represented here by the lid (No. 10.1). Other items in this category comprise a copper pin (No. 14.3), fragments of two copper wire bracelets(?) (Archive Report Nos. 11.2–11.3), a segment of shale armlet (Archive Report No. 13.3), and part of a double-sided boxwood comb (No. 10.2). A substantial number of plain, hair or dress pins were recovered, some whole, some fragmentary. Nineteen are of bone (Archive Report Nos. 9.1–9.19), two are of jet (Archive Report Nos. 13.1–13.2), and one is boxwood (Archive Report No. 7.13). The use of unguents and cosmetics is illustrated by a glass stirring rod (Archive Report No. 3.85), a copper instrument thought to be used for extracting cosmetics from unguent bottles (No. 14.4; p. **19**), a bevelled-edge, stone cosmetic palette (Archive Report No. 14.1), and two more possible stone palettes (Archive Report Nos. 14.2–14.3). The conditions of burial were apparently not conducive to the survival of cloth, but there were a large number of fragments of leather clothing (pp. 211–26), including 135 men's, women's and children's shoes of both indoor and outdoor types (pp. 218–26), some lavishly ornamented (see below and p. **11**).

Other objects of probable domestic origin include four ceramic lamps (Nos. 1.215–1.218), a finger ring with a rotary key, probably for a small cupboard or chest (No. 14.6, p. **19**), iron binding from a box, casket or furniture (No. 14.23, p. **19**), several needles, an hemispherical, stone spindle-whorl (Archive Report (No. 14.4), and a fire shovel, which may have religious rather than purely domestic associations (No. 14.18).

Other finds illustrative of city life

Recreational pursuits are illustrated by a polished bone gaming counter (Archive Report No. 9.32) and another cut from a potsherd (Archive Report No. 1.2). The skeletal record indicates that deer and perhaps other game were probably hunted for sport, and that dogs were kept as pets, or for domestic purposes (Archive Report).

Religious beliefs are illustrated primarily by fragments of pipeclay figurines, which could have been intended for use in domestic shrines, although they are found on Romano-Celtic temple sites in Gaul (Dr F. Jenkins, pers. comm.). The most numerous are of Venus (six examples: Nos. 5.1–5.6; and see p. **15**), whose cult was evidently very popular in London during the 2nd century. The other figurines comprise two of the '*Dea Nutrix*' (Nos. 5.7–5.8), the figurine of a bird(?) (No. 5.9), a bull (No. 5.11), and a horse(?) (No. 5.12). A fragment of statue, apparently Egyptian in style and possibly from a half-size representation of Isis, may have come from a temple (No. 15.14). A possible altar shovel was also recovered (No. 14.18). A ceramic face mask of Manducus(?), represented by one small fragment, is thought to have been used in 'quasi-religious ceremonies' (Marsh 1979; Archive Report No. 1.1).

As is often the case, it is difficult to ascertain which items may have military associations. The most likely candidates are one or two iron spear-heads (Nos. 14.16–14.17), part of a possible pair of leather breeches (No. 7.11), and some of the leather jackets, one of which is represented by a unique inscribed shoulder patch (No. 7.7).

Items of uncertain or non-specific use include a rare example of a cylindrical or conical basket (No. 12.1), an iron split pin and an iron hook (Archive Report Nos. 11.40 and 11.43 respectively), two short lengths of light iron chain with figure-of-eight links (Archive Report Nos. 11.38–11.39), iron rings (Archive Report Nos. 11.36–11.37), a fragment of iron wire, iron bars and strips (for details see Archive Report No. 11), two iron slide keys (Nos. 14.20–14.21), an iron implement of unknown use (No. 14.22), an iron T-staple and an iron rivet (Archive Report Nos. 12.5 and 12.6 respectively).

Comparison with earlier assemblages

As the first substantial groups of early to mid 3rd-century finds from London to be studied in some detail, the quay assemblages afford some interesting comparisons with earlier Roman finds, in particular those from the nearby excavations at Billingsgate Buildings. The general impression is more one of continuity of lifestyle and practices, despite the intervening decline of the city which apparently followed the Hadrianic fire (Marsden 1980, 111–7). Both assemblages underline the importance of London's trading links with Gaul, the Rhineland, and ultimately with the Mediterranean, as indicated by the consistently high proportion of imported amphorae, fine-wares and other pottery. The coastal trade around Britain, which, on the basis of the pottery from Billingsgate Buildings, evidently acquired a new significance during the Hadrianic period (Green 1980a, 77–8 and Figure 44), seems to have become even more extensive, on the evidence of building materials from as far away as North Wales and the North East.

Apart from the dumps of unused samian, which were absent at Billingsgate Buildings, neither assemblage seems to be of a specialised character. Both contain evidence of commercial activity, and small scale workshops, notably shoe-making and leather crafts, also bone and horn-working. Both contain abundant evi-

dence of domestic activities, and the genteel refinements of life to be found in every major Roman city. Both provide evidence of substantial buildings in the vicinity, although a detailed examination of the building materials reveal some significant differences. The New Fresh Wharf assemblages contain the first evidence of stone roofs, unknown in early Roman London, and a study of the roof tiles reveals major changes in sources of supply in the late 2nd to mid 3rd centuries. Ten new tile fabrics occur in the quay fill (p. 247), which could reflect a major new building phase in this region of the city, beginning probably towards the end of the 2nd century. This probably corresponded with a more general effort to restore and revitalise the city following the political disturbances at the end of the 2nd century (see Marsden 1980, 119).

The jackets (Nos. 7.1–7.8), and breeches (?) (No. 7.11) are stylistically far removed from classical clothing, and may represent an example of the development of regional styles within the provinces from the end of the 2nd century. Unfortunately insufficient is known about the use of leather garments in the northern provinces during the first two centuries to permit any meaningful contrast to be drawn.

Surprisingly enough, the most significant evidence of social change is furnished by the shoes, which provide striking contrasts with the footwear from Billingsgate Buildings. The scallop toe *solea*, a traditional classical type, known in Greece as early as the 6th century BC and common throughout both Britain and the Rhineland during the 1st and 2nd centuries AD (Rhodes 1980b, 121), has entirely disappeared. Two more varieties, namely the one-piece shoe, another ancient type, dating from the pre-Roman iron age (*ibid.*, 127), and more significantly the traditional open army 'boot' or *caliga*, are present only in very small numbers, and had evidently almost fallen out of use (p. 226). The latter shoe was totally unsuitable in the cold northern climate, but the weight of Roman military tradition ensured that it was stoically retained during the first century of Roman rule. It was replaced at New Fresh Wharf by a closed shoe which had become the standard form for all groups, military personnel and civilians – men, women and children.

Despite the relative scarcity of other groups of shoes of this date, there are indications that these changes in fashion may reflect wide-spread changes in footwear technology throughout the Northern provinces, rather than purely local trends. However, another new footwear type, a highly impracticable item of high fashion here termed the broad-toed sandal, includes a single-soled sub-variety which is currently unknown outside London. This could not have been worn comfortably outdoors, and seems to be designed for wealthy citizens to wear on smooth, mosaic-paved floors. By contrasts, the impoverished condition of other inhabitants is demonstrated by amateur repairs to two items of leather clothing (see p. 211).

Of even greater interest are a series of six uppers from ladies' soft indoor shoes (pp. 223–5). Two of these are unique in the northern provinces, if not in the Empire as a whole, being both gilded and ornamented with tooled designs (Nos. 8.27–8.28; p. **11**). One seems to depict a human head resting on a bolster. Nothing could demonstrate more expressively the opulent life style which its owner had attained. In this context we may note the gold ring (No. 14.1; p. **16**), which must have been the property of a wealthy person, and bears its owner's initials in retrograde so that it could be used as a seal. Such finds bring to mind the luxurious mansions built on the banks of the Walbrook and around the forum, apparently from the late 2nd to 3rd centuries: the homes of wealthy provincial Romans, who had time and money to indulge their tastes for imported commodities and ostentatious clothing.

If their wealth was based on commerce, as at an earlier period, this heyday of Roman London may have lasted for little more than a generation. By the mid 3rd century, economic changes in Britain and Gaul and pirate adventurers in the North sea would severely disrupt the cross-channel trade links. The next decades would see the construction of a massive riverside wall which would have hindered ready access to the quays. The river, an earlier source of wealth, was now seen more as a weakness in its defences, and personal safety rather than commerce had become the main pre-occupation.

Conventions used in this report

Every finds report has been numbered consecutively, as listed in the table of contents (p.v). Within each report, each individually described object and illustrated pottery-form is given a decimalised Catalogue Number. The number preceding the decimal point is the report number; the number after the decimal point is the number of the object within the report. The Catalogue Numbers are used also in the illustrations.

The letters and numbers in brackets are Museum of London registration numbers. These are in two parts. The initials NFW, SM and FRE, are abbreviations for NFW 74, SM 75 AND FRE 78 respectively, which are the site codes of the three related excavations described in this report. The numbers which follow the initials are the finds registration numbers.

The provenance of each object is stated at the end of its catalogue entry. The Area Number is given as a Roman numeral, and is followed immediately by the Context Number. The abbreviations Per. and Ph. stand for Period and Phase.

(All of the finds are now in the Museum of London.)

POTTERY

Beth Richardson

The excavations at New Fresh Wharf produced about 520 kgs of Roman pottery, the bulk of which was recovered either from the lower infill of the Roman timber quay or from its collapsed upper levels. The following report concentrates on these materials which are dated within the period *c.* AD 170–245. The group consists largely of unused imports, many of which have never before been found in such quantity or in such a securely dated context. The smaller groups of 1st- and 2nd-century pottery from layers underlying the quay are summarised briefly, since material of this date from London has been described fully elsewhere (Green 1980a; Marsh and Tyers 1980). The late 3rd to early 4th-century pottery from disturbed layers overlying the quay is also summarised, although a few of the unusual imports are discussed more fully.

The stratigraphy and phasing

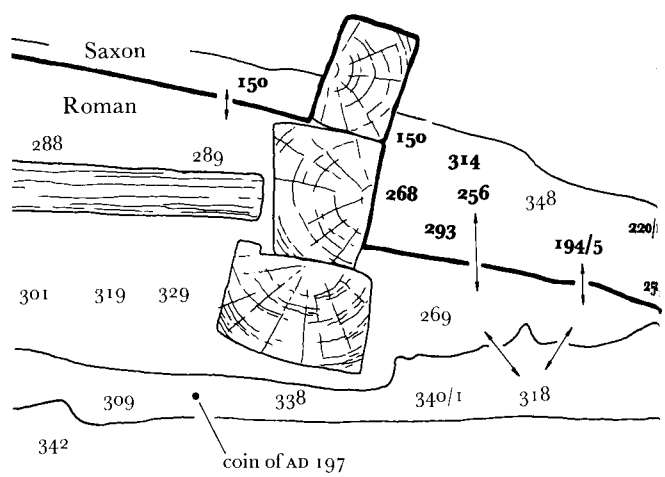
The stratigraphy and constructional sequence of the site is described in the excavation report but is summarised here and diagrammatically in Figure 73. Unless otherwise stated, all the phases discussed here belong to Period 1 (Roman). Underlying the quay are gravel/silt layers, the earliest of which (Phases 1 and 2) pre-date the quay and the latest of which (Phase 4) is contemporary with its construction. There are virtually no finds at all from Phase 3, which marks the construction of what would appear to be a slightly earlier quay. Phase 5, the lower part of the fill of the timber quay, consists of silt-like material which, as a result of the study of the pottery, is interpreted as a rapid and perhaps immediate infill of the quay's 'box' structure. Phase 7, which overlies Phase 5, is almost certainly contemporary with it, but was partially disturbed and redeposited by robbing of the timbers in late Roman or Saxon times. Phase 6 (two pottery-producing contexts only) comprises mixed river deposits and collapsed quay infill. Period 2, Phases 1, 2 and 3 overlie Phase 6 and consist of further collapsed infill which, like Phase 7, is disturbed and contains small quantities of late Roman and Saxon pottery in addition to material derived from the collapse of the quay. The large group of pottery associated with the timber quay was recovered from Roman Phases 4–7, and 'Saxon' (Period 2) Phases 1–3; to have studied only the material securely stratified in Phases 4–5 deposits would have artificially diminished the size of a group whose essential integrity is shown by numerous cross-joining sherds.

Dating

The quay group is difficult to date with complete certainty since a considerably wider time span has been suggested for its manufacture than for its deposition. The date of the deposit must rest primarily on the dendrochronological evidence for the quay, which suggests felling after AD 209 although possibly as late as *c.* AD 244, for the timbers in AREA III. The relevant sample for AREA II lacks its outer sapwood, but it is strongly suggested that it too is *c.* AD 209–44 (see Hillam, p. 76) and that, as we might expect, the same quay is involved in both trenches (p. 80). The discovery of a coin of AD 197 stratified beneath the quay in AREA III provides some confirmation that the structure is indeed of 3rd-century date (see Hall, p. 234). There is good reason to think that the 'box' structures formed by the timbers would have been filled with earth and debris on its completion to provide strength and stability, and a slow accumulation of debris within the boxes seems unlikely in view of the vertical separation of joining pottery sherds within the fill. It might therefore be assumed that the pottery group, which appears at first sight to be homogeneous, formed a single deposit *c.* AD 209–244. A date towards the end of this range has been favoured because of the presence in the quay's collapsed fill of East Gaulish samian pottery dated AD 235–245.

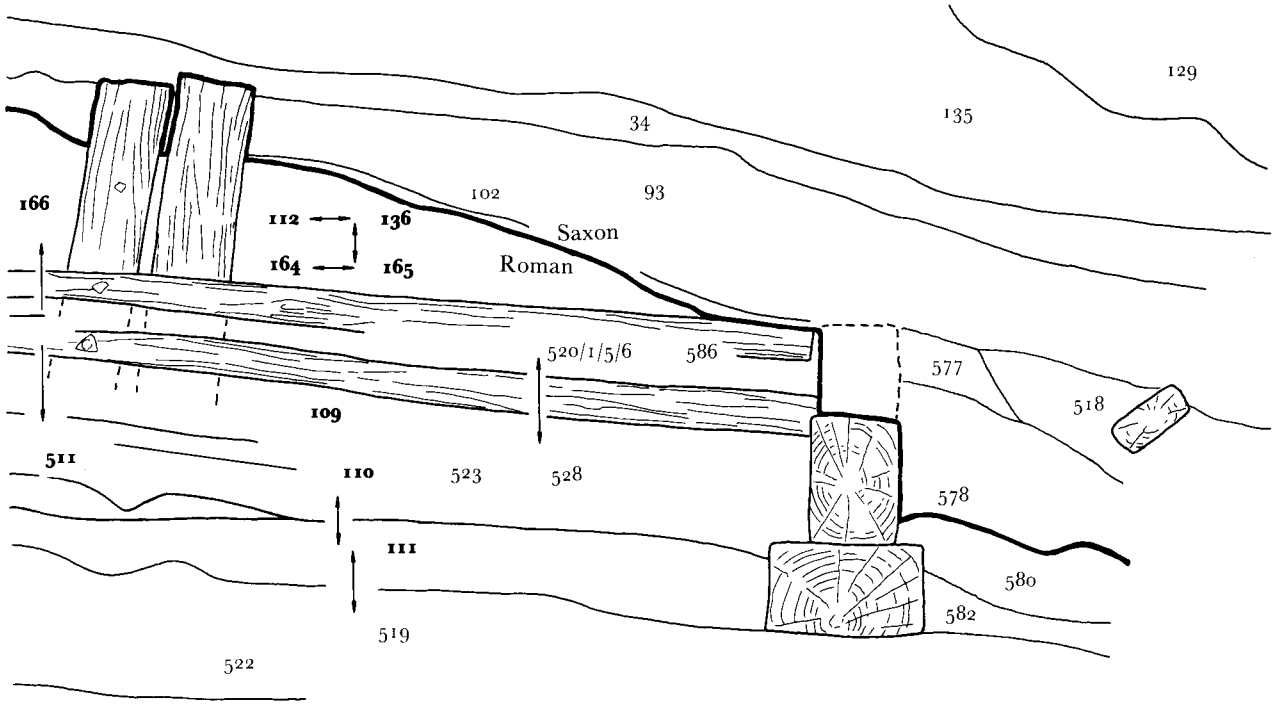
While AD 235–245 is a convenient dendrochronological date accommodating the latest dates for the samian, there are problems of interpretation which require further discussion. The date rests on two assumptions: firstly that the latest groups of East Gaulish samian are in a primary position within the quay, and secondly

FIGURE 73 Simplified section across AREAS III (below) and II (right) showing main pottery contexts and phasing. Contexts indicated in bold type produced the bulk of the material. Joining sherds from different contexts are indicated by double-headed arrows.



that two timbers, III.378 and IV.677, can be discounted as dating evidence on the grounds of possible reuse. The dendrochronological evidence is discussed above (pp. 76–84) and it need only be remarked that the apparent date of the quay is AD 209–224, and that the theory of reuse, excluding two timbers and broadening the range to AD 209–244, is unproven. The origin of the supposedly reused sillbeam, III.378, itself raises a problem as it has not yet been possible to identify a structure (presumably another waterfront) from which it might have been taken. The ambiguous dendrochronological evidence only underlines already existing uncertainties over the dating of the pottery as a group. Large quantities of unused samian and other imports, apparently (on external evidence) differing in date by as much as 60 or 70 years, are mixed together in the quay. While a dendrochronological date of AD 244 correlates well with the latest samian, it implies that the most numerous and best-preserved vessels within the quay, the Central Gaulish samian and colour-coated wares, dated as probably no later than *c.* AD 180, were at least 65 years old (and many others over 30) at the time of deposition. Although this is not impossible, the distribution of the differently dated groups inside the quay is obviously crucial, and should be examined in some detail.

The first point is that there is no evidence to suggest a slow accumulation of debris within the box structures formed by the quay. The wide vertical separation of joining sherds within the fill supports the logical view that the boxes would have been filled with earth and debris on completion to provide strength and stability to the structure. Secondly, there is no evidence to suggest redeposition of the anomalous early group of Central Gaulish wares from, for example, an earlier revetment of foreshore dump. The large groups contain several complete or near complete vessels, and are in extremely fresh condition. A third question, whether there is evidence to suggest a heightening or repair of the quay with a fill incorporating later pottery, is particularly important if a date of AD 235–245 is preferred. The theory was tested as far as possible by examining the distribution of the late East Gaulish samian and other distinctive wares such as the *Moselkeramik*, North French wares and Cologne finewares within the lower and upper levels of AREAS II and III. Nearly all the distributions proved to be partially clustered and partially scattered throughout the quay fill and its collapse, and horizontally between the excavated sections of the quay, but there were significant concentrations of the earlier Central Gaulish samian and colour-coated wares at the bottom of the infill in AREA II, and a complete concentration of the latest East Gaulish Trier and Rheinzabern samian (the Primanus and Julius II-Julianus I groups dated AD 235–245) in the upper collapsed fills and disturbed (Phase 4) footings of AREA III. All pottery types inside the quay are clustered to some extent, and many of the types concentrated with the late Trier and Rheinzabern samian (most notably Rheinzabern samian stamped by Verinus, Perpetus and Paternus viii thought to date to the second quarter of the third century) are present in small quantities at the bottom of the quay in AREAS II and III, but it must be concluded that while there is no firm evidence for the degree of spatial separation of pottery types which



would point to the fill having been deposited in two or more distinct phases, similarly there is no pottery within the lower fills which can be definitely dated as late as AD 235–245, and that a secondary infill of pottery of this date must remain a possibility.

Finally it has been suggested that the samian dating may require modification, that the Central Gaulish samian is in fact later than supposed, and could date the construction of the quay. In an interim report on research in progress, A. King (1981) has argued independently that the dating of late samian needs revision and that the production and distribution of Central Gaulish samian continued, alongside that of East Gaulish wares, after AD 200. Although the lengthening of the date ranges of certain workshops, notably Cinnamus, presents difficulties (see footnote 2, p. 146), this may not exclude the redating of other mid- to late-Antonine potters. Given that the period of the later 2nd to mid-3rd century offers very few closely dated assemblages, serious consideration must be given to an assemblage, such as that from New Fresh Wharf, where the archaeological context is dated by dendrochronology. Such an assemblage must carry greater weight than, say, a collection such as that from Pudding Pan Rock, which is neither independently dated nor securely provenanced as a homogenous assemblage. Leaving aside the question of the Cinnamus bowls, which could represeent a residual component, the New Fresh Wharf discovery gives added urgency for a reassessment of samian currently dated to the mid- and late-Antonine periods.

It must reluctantly be concluded that there is much dating evidence, but little of it certain enough to form the basis for categorical statements. What can be said is that the quay contains material dated *c.* AD 180–245, that on dendrochronological evidence the material can have been deposited no earlier than *c.* AD 209, and that on the evidence of a small quantity of East Gaulish Rheinzabern samian in the lower fills of the quay it seems possible that the quay was filled in the second quarter of the 3rd century. While a 'true' date can never be established with complete confidence, it is hoped that the publication of other early-mid-3rd century sites will refine the balance of probabilities.

FIGURE 74 Proportions of imported and Romano-British vessels from New Fresh Wharf, calculated by EVES (see p. 100), excluding 'unknowns' which account for less than 5%.

	Imported	Romano-British	Total percentage
Samian	63		63
Other finewares	16	2	18
Coarsewares (jars, bowls etc.)	3	9.5	12.5
Mortaria	1	present	1
Flagons	1.5	present	1.5
Amphorae	4		4
Total percentage	88.5	11.5	100

Deposition and nature of the quay group

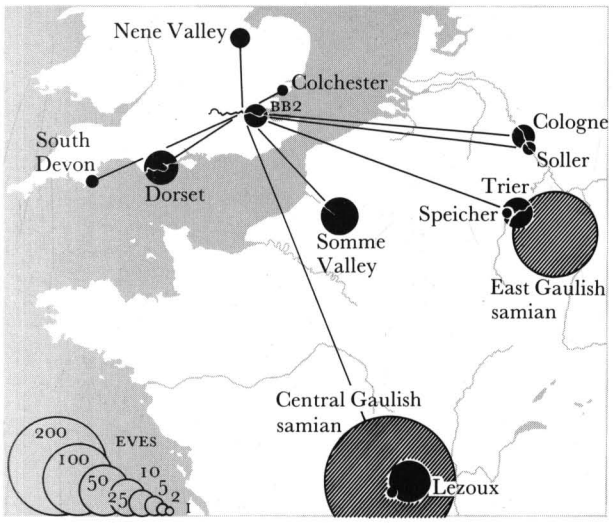
The pottery from New Fresh Wharf is an isolated group which neither mirrors contemporary pottery assemblages nor bears much comparison with pottery from infills of the contemporary(?) quay further to the east at Custom House (Tatton-Brown 1974) and Billingsgate Lorry Park (B. Richardson, M.O.L. Archive Report, forthcoming). The group largely consists of unused imports which were presumably dumped inside the quay because they were unfit for sale, unsold or uncollected. Whether they were deposited straight from the quayside or whether they came from warehouse clearance is not certain, but their good condition, and the occurrence of unused vessels of different dates in the same deposits, strongly suggests that some of the pottery at least had been stored in warehouses or shops prior to its deposition (see also pp. 199–204). However their presence in the quay is interpreted, it is clear that the group as a whole provides evidence for continuing maritime trade between Britain and the Roman Empire in the late 2nd and early 3rd centuries. The unusually high proportion of imported and fine wares is especially valuable in indicating possible sources of supply for the British market.

Source of the pottery

A breakdown of the pottery from the waterfront phases in AREAS II and III shows that approximately 88% of all the wares are imports (Figure 74).

The majority of the imported pottery consists of fine table wares from Central and East Gaul: samian and black colour-coated wares which are largely derived from the major centres of pottery production at Lezoux, Rheinzabern and Trier, with much smaller quantities from Les Martres-de-Veyre, Heiligenberg, La Madeleine, Lavoye and Blickweiler. The picture is a familiar one, reflecting the predominance of the Central and East Gaulish colour-coated industries in the late 2nd and early 3rd centuries, although the quantities involved far outnumber those from other British sites, and many of the forms are previously unrecorded from this country. Less familiar are the smaller, but significant, quantities of coarsewares and finewares from other production sites on and near the Rhine and Moselle: the mortaria, bowls and jars thought to come from Speicher (near Trier), the Verecundus and other mortaria from Soller, near Bonn, and the large quantities of hunt beakers from Cologne. These wares, together with coarsewares, pinch-neck flagons and pentice beakers from the Pas-de-Calais/Picardy region of

FIGURE 75 Sources of the pottery associated with the quay at New Fresh Wharf.



North West Gaul (a previously unsuspected source of supply to Britain) are described in detail in the pottery report and their approximate proportions in the waterfront groups are shown on the map below (Figure 75). The sources of the amphorae (4% of total) are discussed in the amphora report; a bias towards sources in North Africa and the East Mediterranean is evident although the origin of many types is not yet known.

Romano-British pottery constitutes only approximately 12% of the wares at New Fresh Wharf. It comes almost entirely from four production centres: South Devon, Dorset, the Nene Valley and Colchester. The approximate proportions of these wares in the waterfront groups are shown on the map above (Figure 75). The absence of 'local' wares is almost complete; a situation which appears to be an accurate reflection of London's changing pottery supply in the early 3rd century. There are few early to mid 3rd-century pottery assemblages from London, but where these have been identified at Shadwell (Richardson forthcoming) and Billingsgate Buildings (Green 1980a) they tend to include very high proportions of BB1 and Nene Valley wares, and smaller proportions of Colchester and Alice Holt (Surrey) wares. Colchester was the nearest large pottery production centre to London in this period: the local industries which accounted for a very high percentage of London's pottery in the 1st and 2nd centuries had ceased production (Green 1980a; Marsh and Tyers 1980), and it had become usual to transport pottery over relatively long distances. This trend continued in the late 3rd and 4th centuries when large industries in Dorset, Surrey, Oxford and the Nene Valley dominated the London market (Fulford 1978; Green 1980a).

Parallels and distribution

The apparent conservatism of British pottery styles in the late 2nd and early 3rd centuries, in conjunction with a short supply of coinage, has made it difficult to distinguish 3rd-century occupation from the many deposits identified as late 2nd century in date (*cf.* Reece's theory of 'terminal residuality' of pottery for the late 4th century: Reece 1980). The large range of imported pottery types of this period from New Fresh Wharf can be used to identify late 2nd- and early to mid 3rd-century deposits in London and in the rest of Britain. In London these imported wares have a scattered and limited distribution. The largest group to date comes from Shadwell, a site to the east of the City of London, which would have been very close to the Thames in the Roman period and which was probably used by the army in the mid to late 3rd century (Whipp forthcoming). The East Gaulish samian and some of the other finewares from Shadwell are directly comparable to those from New Fresh Wharf (Bird and Richardson in Whipp *ibid.*). Smaller groups occur in dumps behind the waterfront on the Billingsgate Lorry Park site, at Billingsgate Buildings (Jones and Rhodes 1980), Swan Lane and Pudding Lane.

Domestic groups of this date are rare in London. Elsewhere in the east and south-east of Britain, they are, however, commoner than is generally realised. A widespread eastern distribution for Northern French wares has been demonstrated (Richardson and Tyers 1984), and it is becoming obvious that such types as Cologne hunt beakers, Soller mortaria and *Moselkeramik* (as well as Northern French wares) are not uncommon on rural and other sites in the South-East (see for example Beauport Park, Sussex, and Beddington, Surrey: Green forthcoming a and b). Advances in our knowledge of the distribution of imported pottery types may suggest that London acted more as a centre for transhipment than for their consumption. If this is so, the New Fresh Wharf group may represent a transitional phase between the City's pre-eminence as a port in the 1st and 2nd centuries and its position in the later 3rd and 4th centuries, when a lack of evidence for intensive occupation and pottery use is matched by the (admittedly negative) evidence for the decline and disuse of the New Fresh Wharf quay itself.

Method of classification

The pottery from all phases was studied and catalogued using the Department of Urban Archaeology's system for sorting and classifying pottery as described by Orton (1980) and Green (1980a, 39). It has been quantified by the 'estimated vessel equivalent method' (EVES), also described by Orton (1975). Catalogues quantifying the pottery by context, fabric and form type, and the pottery boxed by context and bagged by fabric, are available for study on request from the Department of Urban Archaeology. The catalogues for the waterfront group are summarised in Figure 76.

The abbreviations A., S.A., and R. stand for angular, sub-angular, and rounded, respectively.

The waterfront group: amphorae and analogous vessels

C. M. Green

The 140 kg of amphorae and similar commodity-bearing containers from the quay period and later deposits at New Fresh Wharf are of considerable importance in providing an indication of London's trade contacts in the first half of the 3rd century. This period is rarely illustrated in Britain by such large quantities of material, and the evidence expands that already collated by Peacock (1977a; 1978) for the continued importation of wine, in particular, on some scale in the 3rd and 4th centuries. It will be seen that the assemblage shows the extension of supply from the western provinces (France and Spain) to North Africa and the eastern Mediterranean, and that the apparent shift in sources took place as early as the first decades of the 3rd century. Most of the late Roman amphora types recognised in Britain are already present in the quay deposits (with the exception of the Palestinian vessels, Nos. 1.206–1.208).

Sherds of common 1st- and 2nd-century amphora types found scattered throughout the deposits are regarded as residuals, and are not described in this report. A number of body sherds from the quay deposits probably represent examples of 3rd-century types previously unknown in London. In the absence of substantially complete profiles, it is extremely difficult to parallel rare amphora types in the literature. Virtually all these sherds are, however, from cylindrical amphorae with corrugated bodies.

DRESSEL 20 GLOBULAR AMPHORAE

A very widely distributed olive oil amphora from the Guadalquivir Valley of southern Spain (see Peacock 1971a). Since its known date range in Britain extends from pre-Conquest times until the 3rd century, it is for the most part impossible to distinguish contemporary and residual vessels in the quay deposits. Nonetheless, the presence of vessels of at least later 2nd-century date is shown by examples with angular rim profiles. With form Dr. 30 (below) this type is the commonest amphora type present (not illustrated).



1.1 .FCCVFC(?) retrograde, *cf.* Callender (1965, 851, Figure 8, No. 50). A similar stamp, FCCO(?) retrograde, has been recovered from the Roman land wall bank (or a later deposit) at the White Tower, Tower of London, and must therefore date to *c.* AD 200 or earlier. III.269 (illustrated).



1.2 CLPV. Close to Callender (1965, 382, Figure 5, No. 39; 'pre-AD 160'). III.258 (illustrated).



1.3 EXOFORR[. . . Carefully cut with the letters raised in the die; the stamp thus lacks an impressed border. Presumably this is an incomplete example of one of the 'Saxum Ferreum' group of stamps (e.g. SAX.FER; SAXXO; SAXOFERRO), and may have read 'SEXOFORRO' (see Callender 1965, 242, No. 1573). Probably *c.* AD 110–60. Unstratified (illustrated).

DRESSEL 30 (PELICHET 47) AMPHORAE (not illustrated)

Wine amphorae from the Marseille region of southern France (see Peacock 1978). Like form Dr. 20, Dr. 30 is abundant at New Fresh Wharf, but its known date range is rather long. There is, however, no reason to doubt that the majority of the sherds are contemporary with the quay deposits.

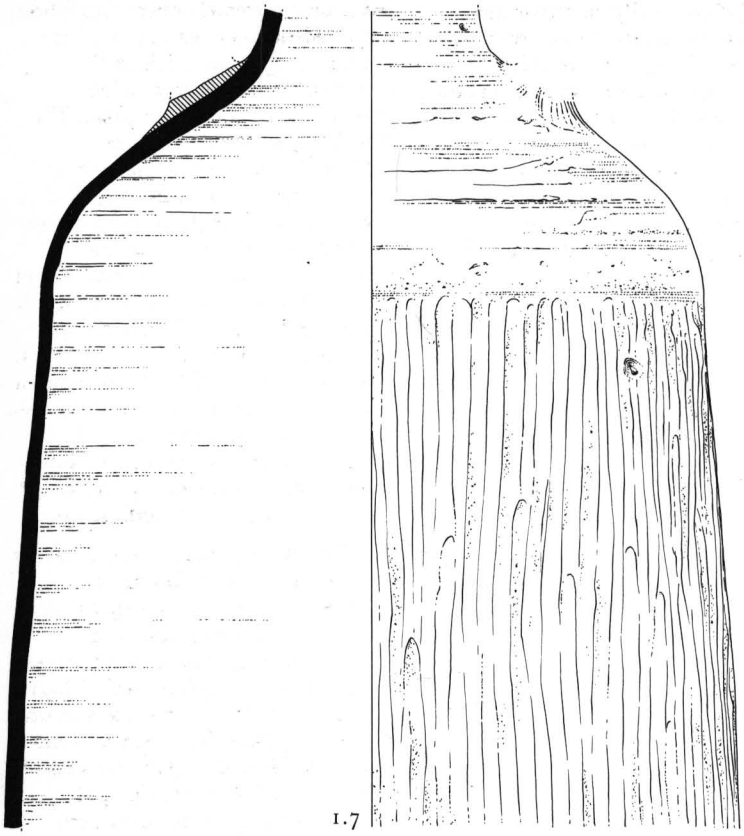
RICHBOROUGH 527 AMPHORAE 1.4–1.6

A rather uncommon but well-defined amphora type of uncertain source (see p. **10**; Peacock 1977b). It is characterised by its coarse manufacture, and the abundant inclusions of volcanic rocks and minerals in its hard greenish-white/grey fabric; these include sherds of volcanic glass which have been boiled during firing, erupting at the surface of the vessel.

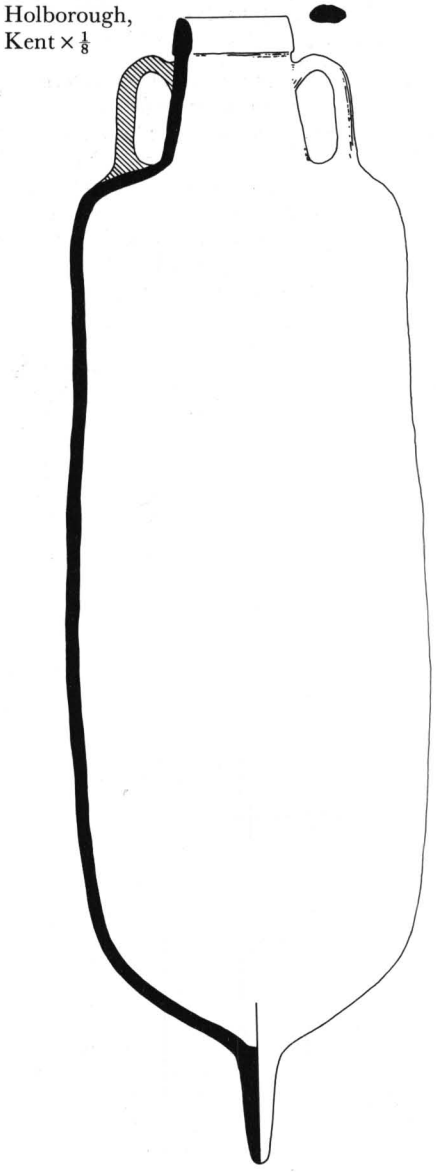
The presence of three Richborough 527 amphorae in early to mid 3rd-century deposits at New Fresh Wharf is surprising in view of the 1st century date of most previous finds, some of which have been from pre-Conquest deposits. However, the present examples are amongst the most substantially complete vessels yet found, and suggest that the type may have been produced with unchanged form for upwards of 150 years.



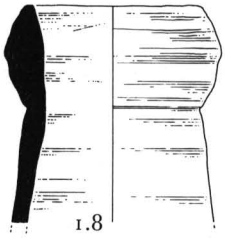
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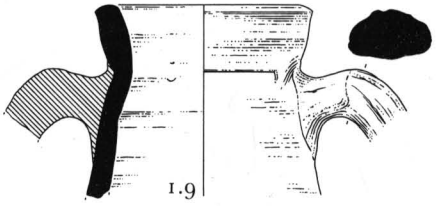
1.7



Holborough, Kent × $\frac{1}{8}$



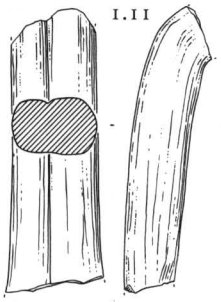
1.8



1.9



1.10



1.11

0 40 mm

NORTH AFRICAN CYLINDRICAL AMPHORAE

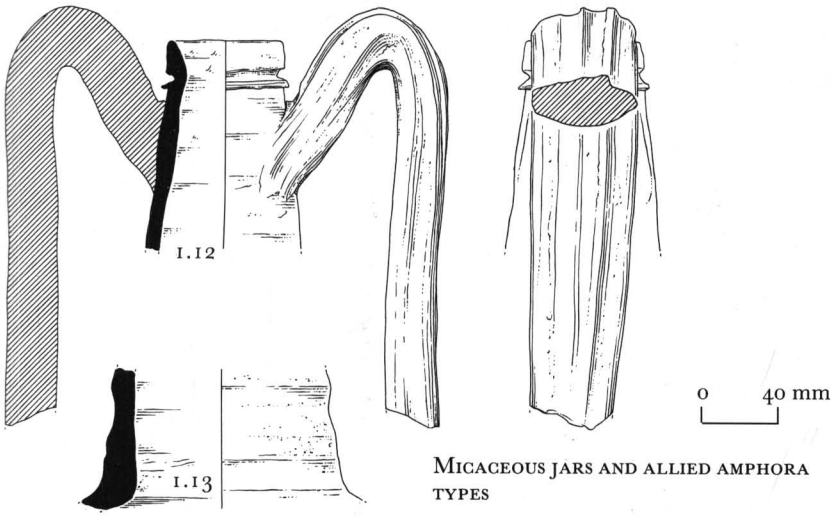
1.7–1.11

Large oil amphorae made over a wide geographical area (in present day Libya, Tunisia and Algeria), and varying in details of form and fabric (for the type see Peacock 1977b). Vertical wiping or knife trimming is commonly seen on the body.

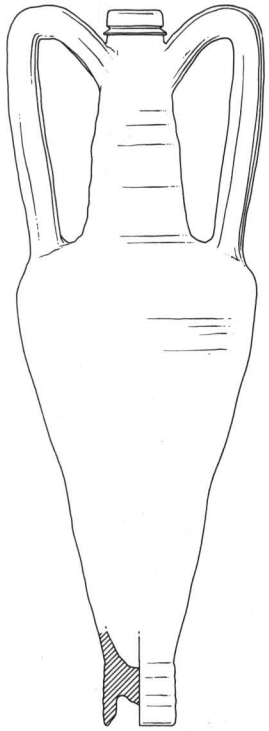
Though common in the early to mid 3rd-century quay deposits, similar amphorae were imported into Britain throughout the 4th century, and some of the material in Saxon deposits may be of this date. Although the quay deposits provide useful evidence of importation in the first half of the 3rd century, an example of Hadrianic date has recently been found in London, at Bishopsgate (Tyers 1984). (The reconstruction shows a complete example from Holborough, Kent).

HOLLOW FOOT AMPHORAE
1.12–1.13

A well-defined type, probably of eastern Mediterranean (perhaps Aegean) origin (see Peacock 1977a). The fabric of the two or three examples from New Fresh Wharf is variable in detail, but coarse, hard, dull red or grey (grey sherds may simply be the result of mud staining), and contains moderate quantities of subangular quartz, some iron ore, occasionally limestone and other rock fragments < 1 mm or more in diameter. Only one of the New Fresh Wharf sherds was found stratified in the quay deposits, but the type is more characteristic of 3rd- than 4th-century assemblages elsewhere. (The reconstruction is a composite of the present examples and a largely complete vessel from Southwark).



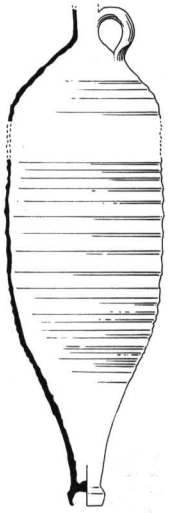
Southwark/City × $\frac{1}{8}$



MICACEOUS JARS AND ALLIED AMPHORA TYPES

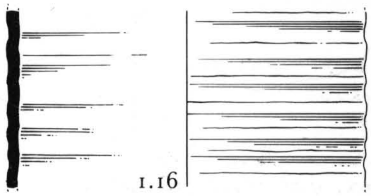
The site produced a small group of sherds, comprising the micaceous one-handled jars first described below, and sherds from three further sources thought to be copies of this widely distributed and well-known, if not common, type.

Bath × $\frac{1}{8}$

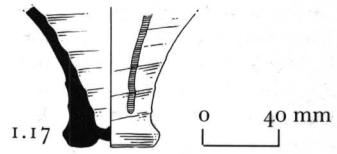


1.14 A very few body sherds, perhaps from a single vessel, representing a micaceous jar of a type described by Peacock (1977a): friable, laminar fine red-brown extremely micaceous fabric with gold-brown micaceous surfaces. Peacock suggests an origin in the eastern Mediterranean provinces, perhaps the Aegean or Anatolia. The New Fresh Wharf sherds were recovered from the quay deposits and later contexts. Imports as early as the beginning of the century seem to have one handle, as distinct from the otherwise similar true amphorae found in Dark Age contexts in western Britain ('B iv' amphorae, see Radford 1956; Radford and Thomas 1959). However, an even earlier vessel has been found in an early 2nd-century well on the Queen Street site, City of London (Well 19, Wilmott 1982). (Not illustrated, but a reconstruction based on a vessel found at Bath is given: see Cunliffe 1969).

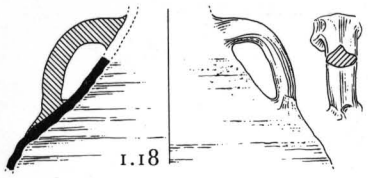
1.15 Two sherds from a vessel or vessels precisely matching Billingsgate Buildings type 376 (Green 1980a), a brown-slipped micaceous jar or amphora clearly analogous to the type just described. The New Fresh Wharf sherds are well stratified in early to mid 3rd-century quay deposits, providing general confirmation of the 3rd-century date suspected for the Billingsgate Buildings example (not illustrated).



1.16 A single body-sherd of a jar/amphora with brownish-grey (probably mudstained) fabric containing little mica or quartz, the only macroscopically visible inclusion being abundant calcium carbonate, no larger than 0.1 mm in diameter. From early to mid 3rd-century quay deposits.



1.17 A single foot sherd of a jar/amphora with beige fabric (7.5YR 6/4) with paler salt-surfacing; abundant brown and white micas, 0.5 mm or less in length are seen, with lesser amounts of limestone and quartz, *c.* 0.1 mm. An external runnel may represent a thick dark brown slip applied to the upper body. From a medieval context.



SMALL AMPHORA OF UNKNOWN SOURCE

1.18 Dull red fabric with pale grey, perhaps mudstained, surfaces. Conspicuous inclusions of angular white limestone with lesser quantities of quartz and iron ores, less than 0.5 mm in diameter. The fabric is reminiscent of African cylindrical amphorae (Nos 1.7–1.11 above).

LARGER CYLINDRICAL CORRUGATED/RILLED AMPHORAE FROM UNKNOWN SOURCES

Of the many sherds in a wide variety of fabrics (usually with common sedimentary inclusions), two are illustrated. Confusion of vessels such as No. 1.19 with medieval Spanish amphorae (Vince 1982) is a particular danger when dealing with material from post-Roman context.

1.19 Sherds from a number of these very large but thin-walled vessels occurred throughout the quay and post-Roman deposits. The fabric is dull pink with beige margins and a cream external salt surface. Light and brown micas are rather abundant, and lesser amounts of subangular limestone, quartz, shell and iron ores, rarely larger than 0.5 mm, are seen.

1.20 Sherd from a very large rilled vessel, for which a post 3rd-century date cannot be ruled out, since it was found in a disturbed context. Rather coarse pale buff fabric, with a greyish core; cream, perhaps salted, exterior. Abundant, miscellaneous and generally subangular inclusions: altered limestone, rock fragments, quartz, occasional feldspars, dark micas and ferromagnesian mineral fragments, all in the size range 0.2–0.5 mm.

TWO-HANDLED CONTAINERS, POSSIBLY FROM NON-MEDITERRANEAN SOURCES

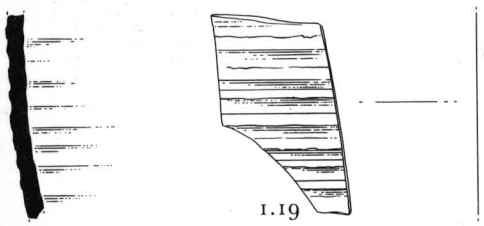
These vessels are not true amphorae, but are undoubtedly imported, and presumably the containers for specific commodities. Small sherds might easily be mistaken for fragments of cooking jar in the case of Nos. 1.21–1.24 or flagons and form Dr. 30 amphorae in the case of Nos. 1.25–1.28.

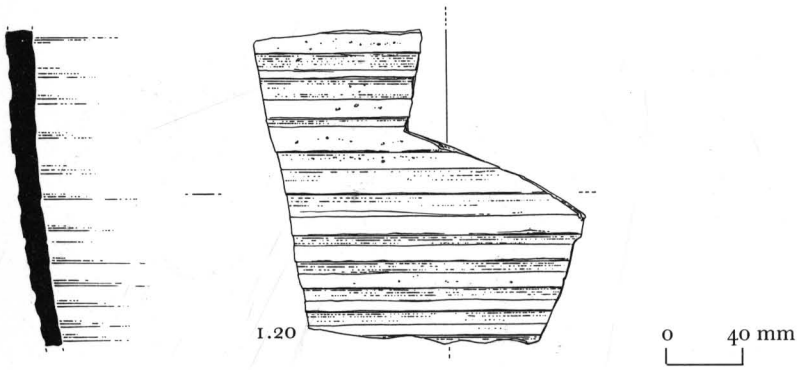
1.21–1.24 Vessels with a wide foot and distinctive form of rim and handle attachment. The fabric is dull orange/beige, hard and rough with a hackly fracture, characterised by abundant, more or less angular and ill-sorted inclusions, up to 1.0 mm in length: quartz, with occasional soft red iron ores and white mica. Thin sectioning also revealed a good deal of plagioclase feldspar, a little volcanic glass, kyanite, olivine, and minute ferro-magnesian mineral grains in one, but not both, of the vessels examined, in an anisotropic yellow/brown clay matrix.

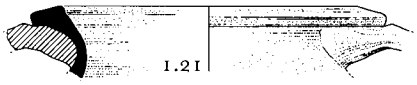
Although the origin of these vessels is not established, the Rhineland, the source of several coarseware types at New Fresh Wharf, seems a strong possibility, and Gose Forms 415–8, stated to be 3rd century (Gose 1950), agree in size, form, colour and approximate date. The bulk of the New Fresh Wharf sherds (which form substantial parts of three vessels) are from post-Roman layers, but sufficient were recorded from within the quay to confirm an early to mid 3rd-century (or earlier) date.

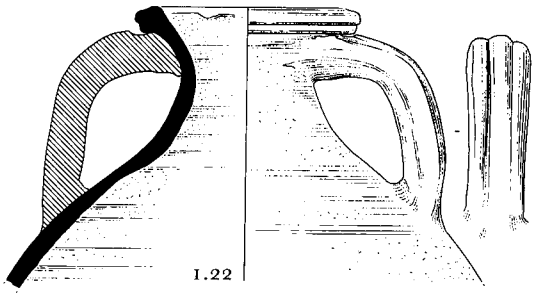
1.25–1.29 Vessels of unusual form, with small foot, corrugated sub-spherical body, disc mouth and broad strap-handles. None is large enough to qualify as a true amphora. The fabric is not at all distinctive in the hand: pale grey, sometimes tinged with cream, with a few inclusions of quartz, iron ore and limestone, rarely much more than 1.0 mm in diameter. However, thin sectioning reveals a most distinctive partially isotropic brown clay matrix, containing many streaks and diffuse areas of very finely divided calcite, deriving from decaying grains of limestone. In addition to grains of quartz, angular chert is seen to be a common inclusion.

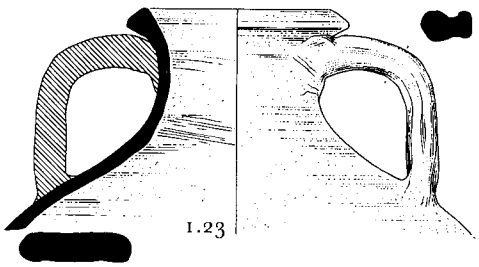
Sherds from a considerable number of vessels were found, with over half of the material occurring within the quay. The type is hard to parallel, but has also been found at Leicester (pers. comm., Dr D. P. S. Peacock). Vessels of similar form are illustrated from sites in Amiens (Truffreau-Libre 1977a), and in the absence of further information, northern France (the source of much of the New Fresh Wharf assemblage) seems a possible origin.

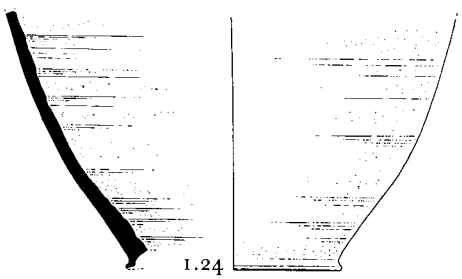


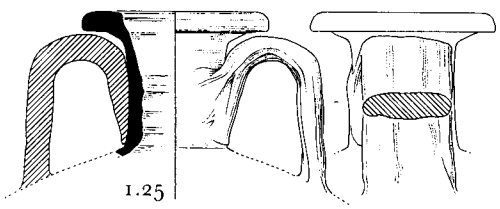


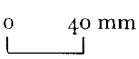

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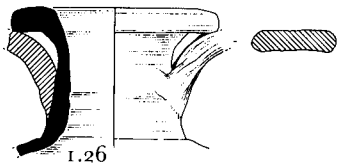

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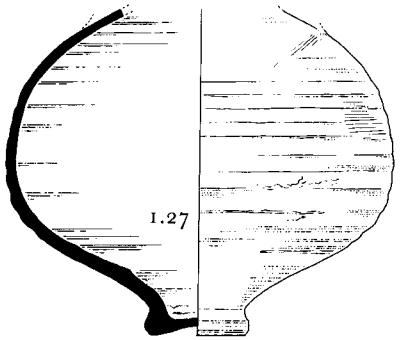

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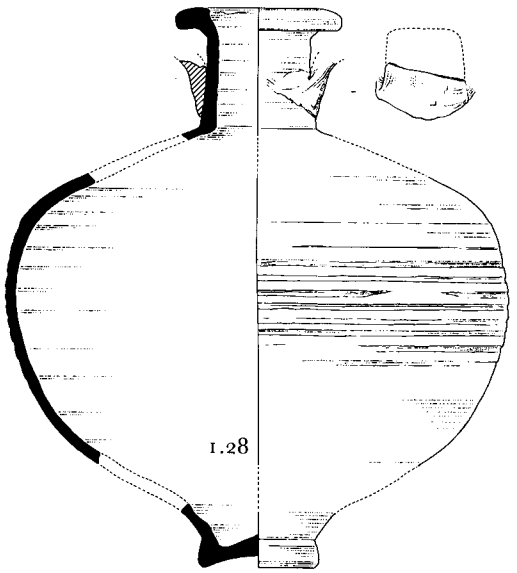

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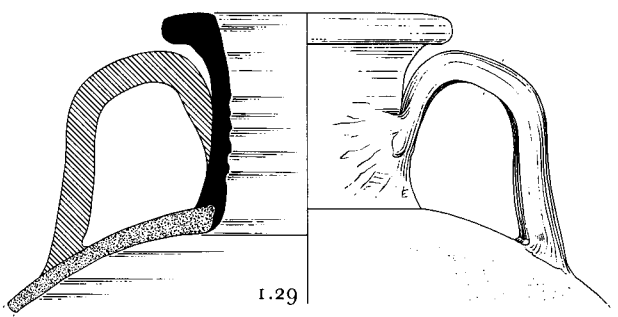

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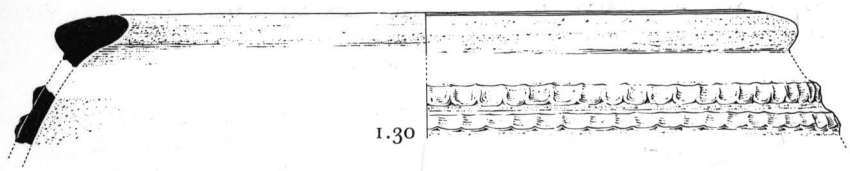

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40 mm

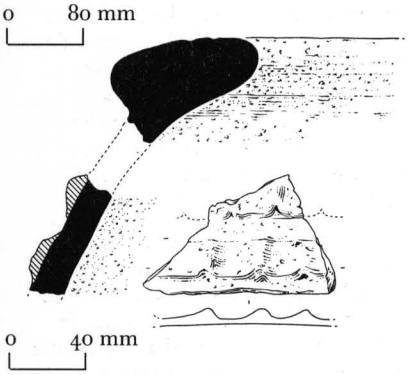

1.26


1.27


1.28


1.29





AN IMPORTED STORAGE JAR

1.30 Two sherds of a huge handmade strapped storage jar, one of them securely stratified in early to mid 3rd-century quay deposits, represent perhaps the largest Roman ceramic object yet found in Britain. The notes below refer solely to this vessel, but the broader evidence for similar, if smaller, jars from London is to be discussed elsewhere (C. M. Green, in prep.; the following draws on the work of White 1975, and Callender 1965).

As will be seen from the illustration, the jar is of extremely large dimensions, with a rim diameter in the region of 800 mm. The fabric is extremely distinctive and necessarily very coarse: drab brownish grey (Munsell 7.5YR 5/4) with black margins and surfaces; inclusions of crushed grey slightly arenaceous nummulitic limestone and detached *Nummulites* are abundant, and clearly represent a deliberately crushed temper. Dr C. G. Adams kindly examined the sherd in thin section, and reports that the fossils comprise both microspheric and megaspheric generations of an intermediate species of *Nummulites* (a large discoidal fossil foraminifera), indicating the use of a lower or (more probably) middle Eocene limestone. The geographical range of *Nummulites* is very wide (from Britain to India), so that the source of the limestone cannot readily be identified: however, the Mediterranean regions of Europe and north Africa are more likely than the Paris Basin, the nearest continental source. *Nummulites* occurs in British rocks in the Hampshire Basin, but there are no suitable limestone formations in the British Eocene series.

Although the jar is far from complete, its apparent similarity to smaller locally made vessels found in London, and to continental types from the Rhineland (e.g. Gose 1950, Type 358), enable its capacity to be estimated at between 500 and 700 litres. In theory, it could thus have contained over half a ton of water, and falls into the size range quoted by classical authors for true *dolia* (*c.* 360–1700 litres).

Dolia were normally sunk to their necks in the ground, and used for the fermentation of wine or the storage of olive oil – hence their confinement to the Mediterranean south. The fabric of the New Fresh Wharf vessel suggests that it may well have been made in a Mediterranean province, but its relatively small size and the presence of strapping to strengthen the walls may indicate that it was never intended for burial; *dolia defossa* were supported by the surrounding soil rather than integral strapwork. Instead the vessel is tentatively identified with a class of smaller (though substantial) jars mentioned by classical authors: the *seriae*. These were large but moveable vessels, generally used for the storage of dry goods, or set outside shops for their sale. Other uses, for example boundary markers, are mentioned. Columella alone gives the capacity of a *seria*: 7 quadrantals, i.e. 184 litres, a figure within the range of 90–270 litres estimated for comparable strapped jars excavated in London, the Rhineland and Belgium. The New Fresh Wharf jar is of course considerably larger, but no doubt capacities varied widely. Identification as a possible *seria* also eases the problem (nonetheless a considerable one) of the vessels's presence in London, since it seems unlikely that the larger *dolia* would have travelled once they had been put into commission.

The waterfront group: coarsewares and non-samian finewares

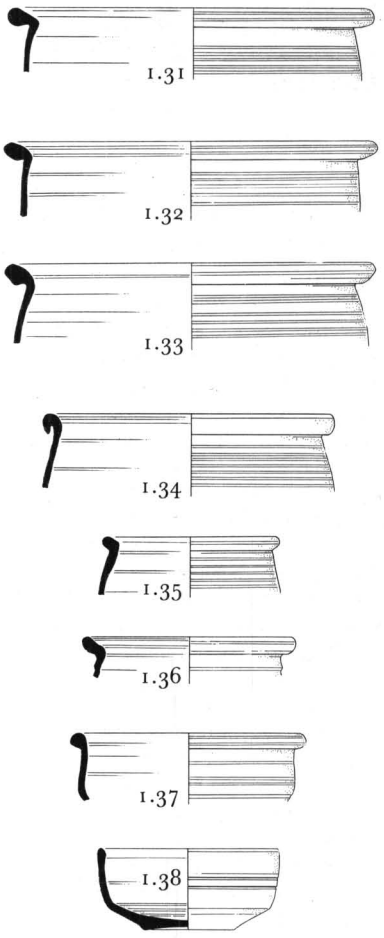
Beth Richardson

POTTERY FROM NORTH WEST GAUL (PAS-DE-CALAIS/PICARDY REGION)

1.31–1.63 The pottery from N.W. Gaul is divided into several sub-groups. Some are strikingly similar in thin section, others are related more through general fabric similiarities and a more nebulous 'feel' or 'style' (pp. **11–13**). Parallels were drawn between most of the groups before their source was known. The textural and fabric differences are to some extent function-related (cooking pots and bowls tend to contain larger inclusions), but final groupings probably reflect the fact that the pots come from many production centres. Some of the kilns have been excavated at La Calotterie (Couppe, Tuffreau-Libre and Vincent 1977) and Labuissiere (Bourgeois 1972), but others are as yet undiscovered. All seem to have been producing an extremely standardised range of forms and decoration in the late 2nd and early 3rd centuries, which in English terms can be perhaps most readily compared in scope and complexity with the 'BB2' industry in Kent and Essex.

1.31–1.42 Dishes, bowls and beakers decorated with '*bandes lustrées*' (lustrous bands). One of the most distinctive of all the north French greywares, recently discussed in articles by Jelsky (1977), Tuffreau-Libre (1975), Bayard (1980) and Richardson and Tyers (1984). The vessels all have a light grey fabric covered with a thin darker grey self-slip (7.5YR 6/0, 5/0). They are burnished in bands at different points on different vessels.

The fabric is hard and breaks cleanly with a rather granular fracture as a result of the abundant fine and well-sorted quartz inclusions (S.A. 0.1–0.3 mm). Other inclusions are sparse: small specks of black iron ore, white mica, chert (all <0.3 mm and usually <0.1 mm). There is a striking resemblance in thin section to the fabric of the pentice beaker (No. 1.43, see p. **13**) and this fact, coupled with similarities in decorative technique and style (noticeable especially on the necks of the beakers: both types share a



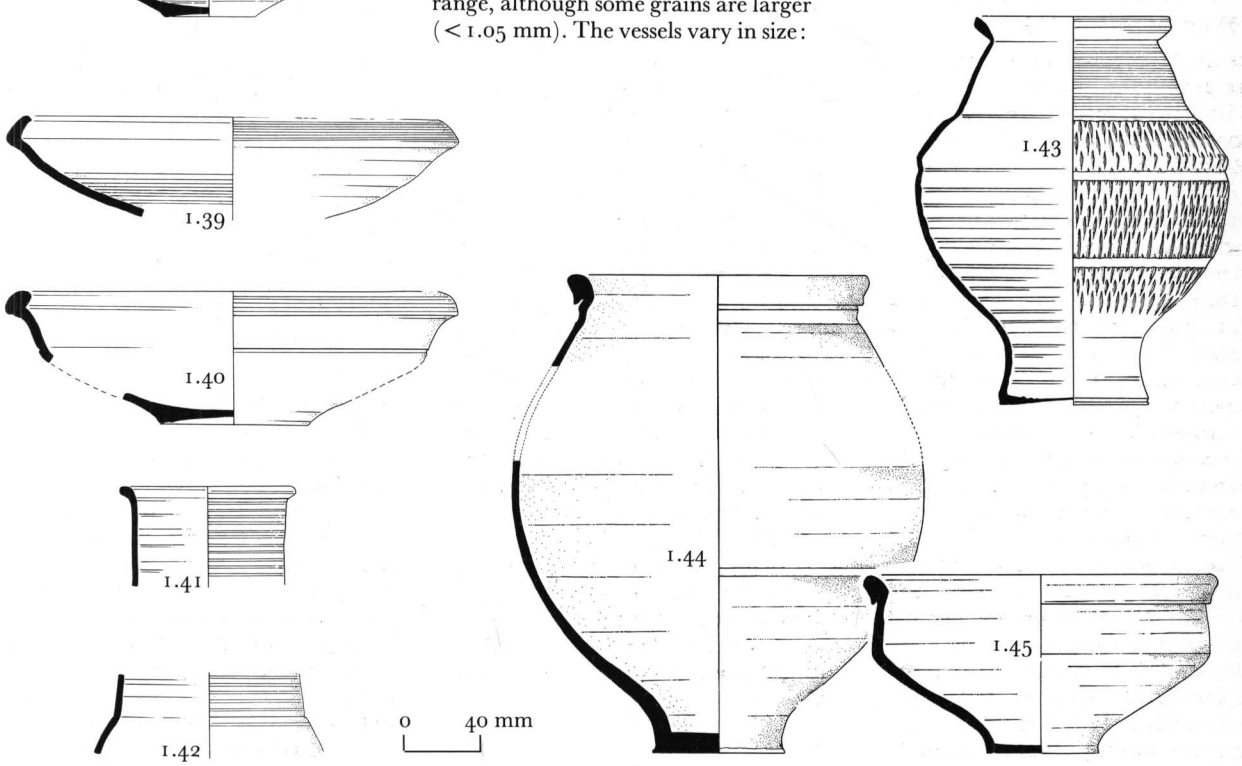
convex profile and banded slip decoration) might indicate a common source.

The fabric of No. 1.38 differs slightly from that of the others (more black ironstone, less quartz) and it has a thicker slip. The form is not paralleled in Bayard and Tuffreau-Libre, but is grouped with the others because of stylistic similarities.

1.43 Pentice moulded beakers. There are eight to ten unused but fragmented vessels of this type, probably from one batch. They were almost certainly made in N.W. Gaul (see above), probably in the Somme Valley area, and exported into Britain in the late 2nd and early to mid 3rd centuries. Thinly slipped on the exterior, unslipped and rough inside, and burnished on the neck and rim and in thin bands on the body, they are decorated with judder rouletting which gives them their characteristic 'cut-glass' appearance. Some vessels are medium/light grey (e.g. 10YR 7/1), others are oxydised to beige or light orange-red (e.g. 7.5YR 6/6 or 10YR 8/4). They are all hard, clean-fractured, and contain abundant clear and rose-coloured quartz (s.a. <0.3 mm). Medium quantities of red and black iron ore mostly fall into the same size range, although some grains are larger (<1.05 mm). The vessels vary in size: there are three bases in the group which are twice as large as the base of No. 1.43.

The pentice beaker is the descendant of the 1st-century butt-beaker, and, like the butt-beaker, seems to have originated in N.W. Gaul and to have been widely copied in other parts of the Empire. These pentice beakers are easily distinguishable from later examples from the Oxford and Nene Valley kilns on account of their large size, distinctive finish, and the high quality of their judder-rouletting.

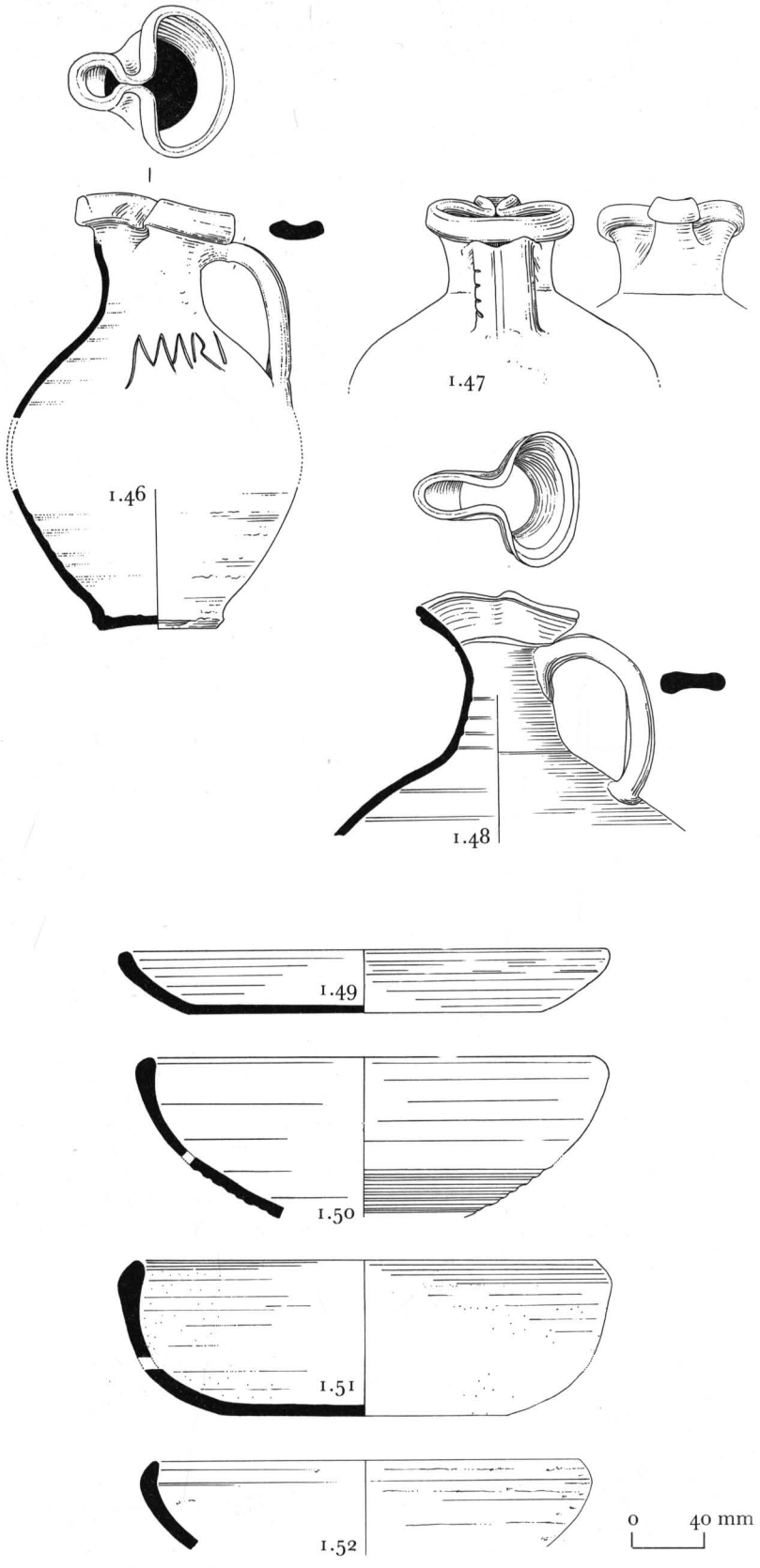
1.44–1.45 Jars and bowls. All the jars and bowls in this group have distinctive hooked rims. They are covered with a thin grey self-slip, have a grey fabric (7.5YR 6/0), and are hard and granular with inclusions more iron-rich, but otherwise identical in size, range and quantity, to that of vessels with lustrous bands (Nos. 1.31–1.42). They are paralleled in many French publications (e.g. Bayard 1980) and would appear to be products of the N.W. French industry, probably Pas-de-Calais rather than Somme Valley (pers. comm., D. Bayard).

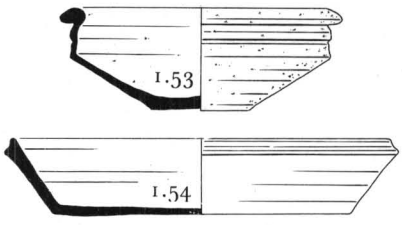


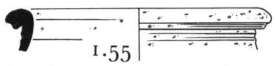
1.46–1.48 Pinch-neck flagons. Also thought to be imports from N.W. France. Their fabric is very similar to that of the other N.W. French imports, especially that of Nos. 1.31–1.43. They form the largest group of flagons from New Fresh Wharf. Though often burnt to a blackish-brown, their surfaces are generally a yellowish grey or cream (e.g. 10YR 8/2, 8/4, 9/4), or light orange (7.5YR 7/6), and are smoothed, partially facetted, and slightly powdery and rough to the touch. There are wire marks on the bases. No. 1.46 has a graffito on its shoulder (illustrated). The fabric is off-white or grey-beige (sometimes sandwiched pink-grey), hard, and breaks cleanly. There are abundant, tiny, clear and milky quartz particles in the clay (S.A. 0.1–0.3 mm), some streaks of red iron-rich clay, sparse red and black iron ore and milky quartz (S.A., both <0.5 mm) and sparse, fine white mica. No. 1.48 has smoother surfaces covered with a thin metallic grey slip (7.5YR 7/0, 6/0). It is slightly harder than the others with a white-grey fabric but is otherwise very similar. It may well have been made from a pipe clay; pockets of white clay are known to have been used for Roman pottery manufacture in the Somme Valley industries (Couppe, Tuffreau-Libre and Vincent 1977).

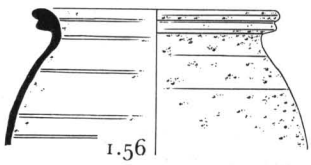
1.49–1.50 Dishes. These have the same fabric and surface treatment as flagon No. 1.48. They are dark metallic grey with a thin dull slip, slightly burnished in facets at the rim and inside the shallower of the two forms. The fabric is light grey-grey beige.

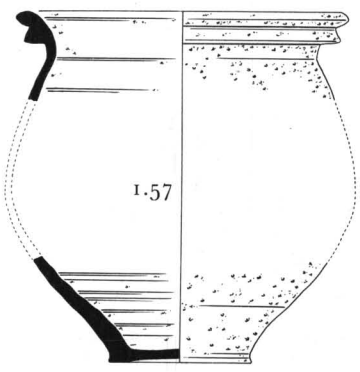
1.51–1.52 Dishes. A coarser version of Nos 1.49–1.50, altogether denser and heavier with lumpy surfaces covered with a dark grey/black burnished slip. The fabric is very hard and off-white/grey/beige (e.g. 10YR 7/1, 7/4) with an irregular glistening fracture. Abundant inclusions of clear and white quartz are noticeably bi-modal (0.2 mm and 1.0 mm). Other inclusions are fairly sparse and consist of black iron ore and white mica. Close parallels can be drawn with the fabric of Nos. 1.53–1.57 below. No. 1.51 is partially oxidised (at the core) and is unslipped. The rim is burnished in facets. Quartz inclusions are abundant, and range in size from <0.1 mm to <1.0 mm. The larger quartz inclusions are more rounded than those of other vessels in this group.

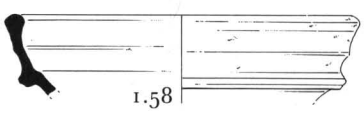


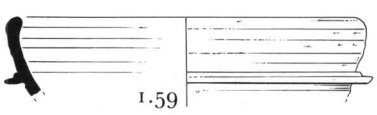


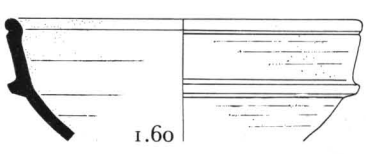








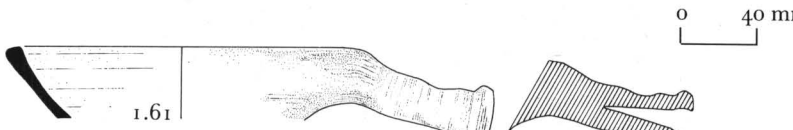


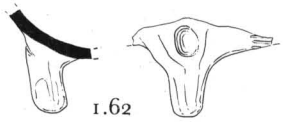


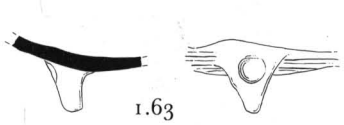
1.53–1.57 'Double-lipped' jars, bowl and dish. Despite their coarse fabric, these vessels have very thin walls and crisp angles. The double lip is very characteristic, as is their tendency to have dark outer surfaces and light inner surfaces. Outer surfaces are dark grey-black, and often carry plucking marks. They are thinly-slipped, lumpy but fairly smooth considering the size and abundance of the quartz inclusions. Inner surfaces are also thinly-slipped, but often pale matt grey (e.g. 10YR 8/1–61) or beige. The fabric, which is grey-beige (e.g. 10YR 8/1–7/2), is extremely similar to that of dishes Nos. 1.51–1.52, and is characterised by its density and its large quartz inclusions.

1.58–1.60 Bowls. Metallic grey slipped surfaces, smooth but fairly lumpy due to abundant inclusions of ill-sorted clear and white quartz (S.A. <0.3 – >1.0 mm). The fabric is very hard and light grey, the fracture clean and vesicular. Other inclusions are less abundant: fine white mica, some black iron ore, grey siltstone. The siltstone and quartz show clearly in clean fracture, making this a type which is easily recognised. It is thought to have come from N.W. France or Picardy (present for example at the Musée Vivenel de Compiègne) but the area of production is not known.

1.61–1.63 Handled(?) tripod bowls. It is not known whether these vessels were made in N.W. France, but similarities to Nos. 1.49–1.52, and a similar published example from France with a handle but no feet (Tuffreau Libre 1977a) make a French origin a possibility. The fabric is hard, grey and contains abundant silt-sized quarts (S.A. <0.1 mm) and some fine white mica. The vessels are slipped and burnished on the interior, and grey and smoothed on the exterior. Their bases are rilled on the underside and burnt (whether this occurred in use or firing is not clear).







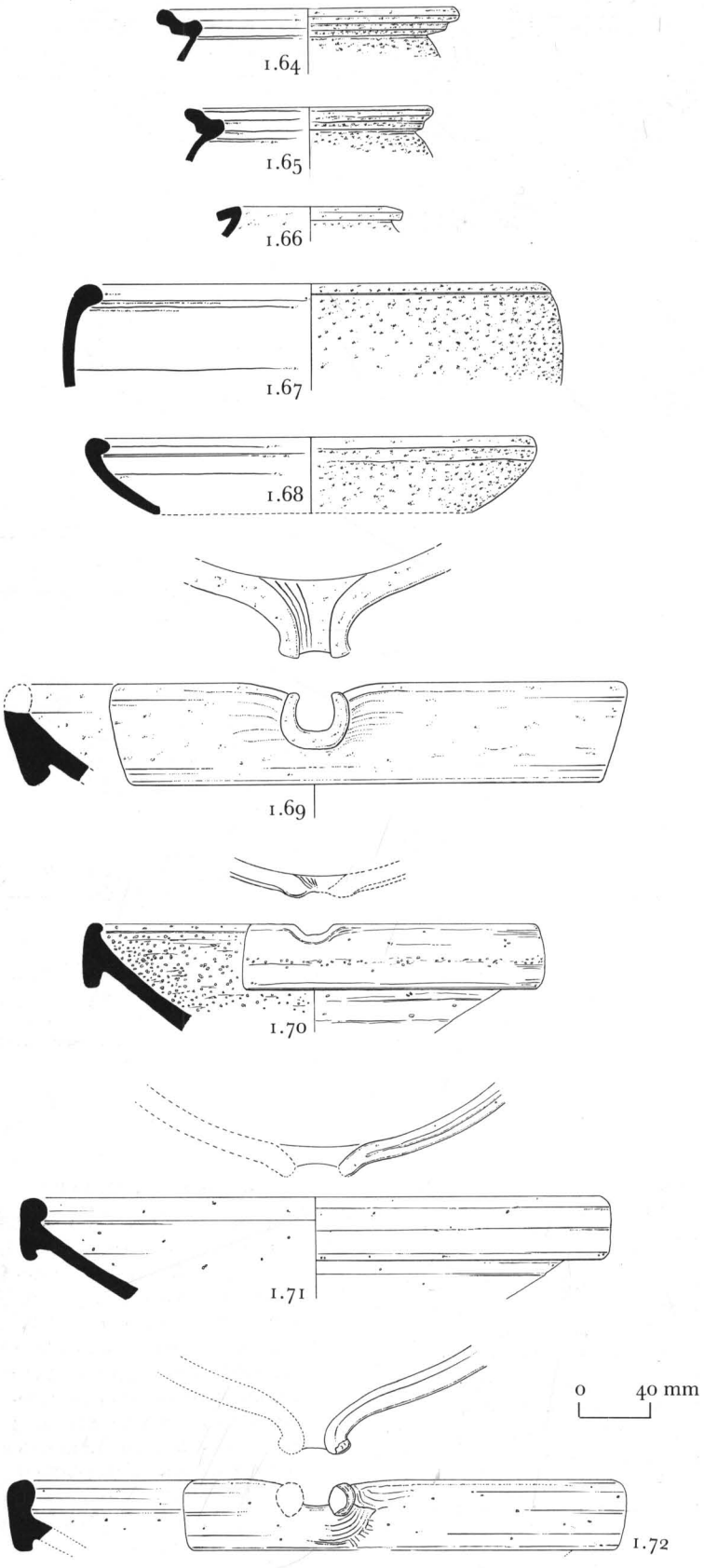
Pottery from the middle and lower Rhine and Moselle

I am grateful to Mark Redknap for discussing the Eifelkeramik; his comments have been incorporated in this section.

The blanket term '*Eifelkeramik*' is used here to describe a type of coarse pottery which was produced in the Eifel/Rhine area of Germany (the lower/middle Rhine and Moselle) from the mid 1st century to the end of the Roman occupation in the 5th century. The pottery was made in a hard, almost stoneware-like, pimply fabric, in a large range of forms which included flagons and mortaria, as well as the better known (in Britain) lid-seated jars. The principal workshops producing pottery in this tradition seem to have been at Speicher, Trier, Urmitz and Mayen. At their height of production (the 2nd and 3rd centuries at Urmitz, 2nd to 4th centuries at Speicher and Trier, and 4th and 5th centuries at Mayen) the wares were exported over much of the northern part of the northern Roman provinces. On grounds of fabric analysis (see description of Nos. 1.64–1.72) the Eifelkeramik from New Fresh Wharf was almost certainly made at Speicher or Trier (the two sites are only 10 km apart), but the strong family resemblance in forms and fabrics between pottery from these centres and pottery from Urmitz and other more minor Rhineland kilns makes the use of such terms as 'Speicher ware' and 'Urmitzer ware' unwise.

The *Eifelkeramik* is thought to be contemporary with the early to mid 3rd-century pottery inside the quay. It is tempting to think that it was shipped in with the Trier colour coated wares, but this cannot be proved, especially as the *Eifelkeramik* lid-seated jar forms change little if at all throughout the later Roman period. The 'collared' mortaria (Nos. 1.69–1.72) can be dated by their form, however, and these spouted examples are probably early to mid 3rd century (pers. comm., K. Hartley).

1.64–1.68 Very hard and laminar fabric which is 'pimply' due to large (0.3–1.0 mm) inclusions of rose-coloured quartz, red slate and red iron ore, which stand out cleanly against the creamy fabric when broken, and protrude through the outer and inner surfaces of the pots. The surfaces tend to be



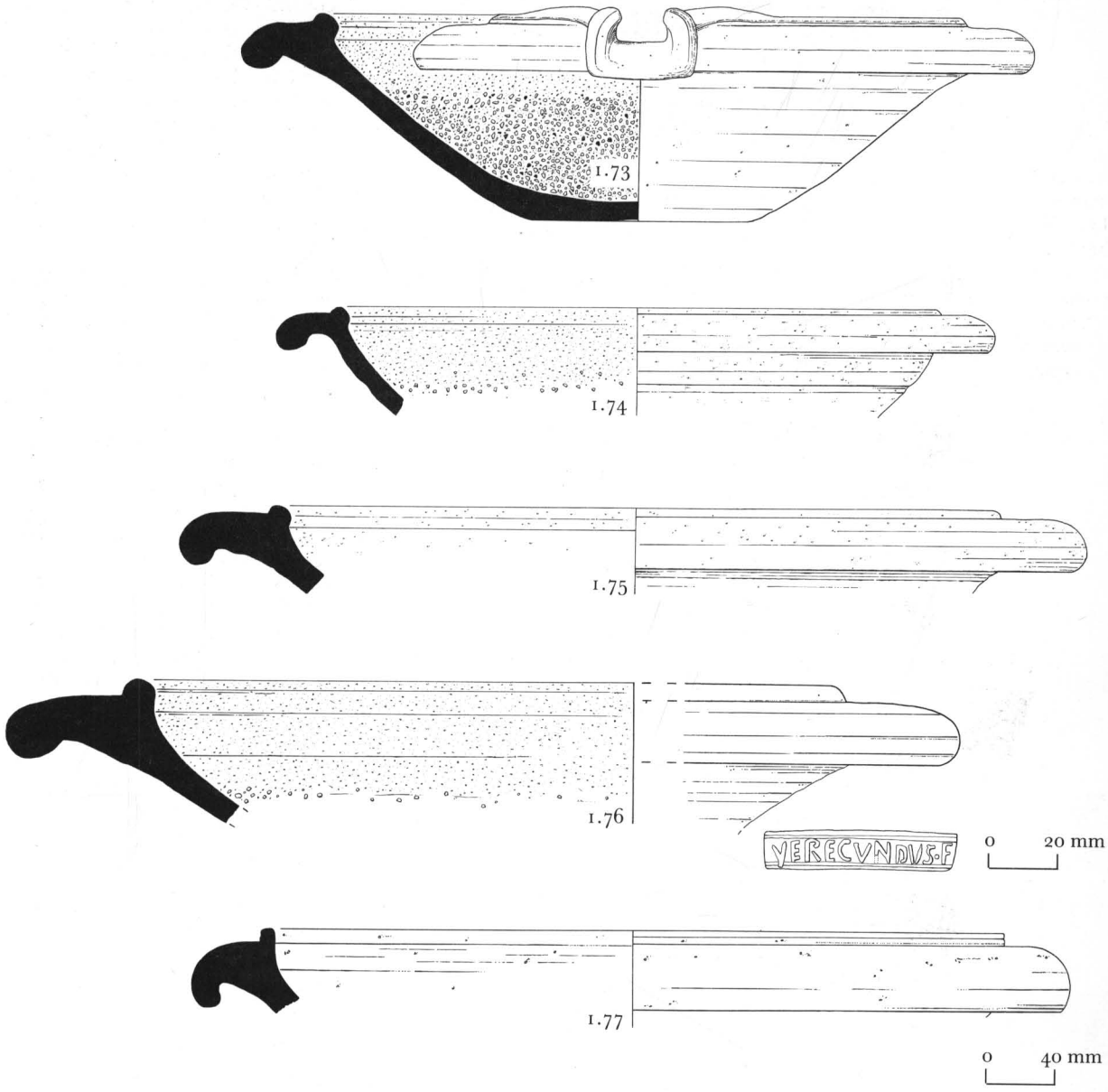
greyish-yellow/grey (e.g. 2.5Y–5/2) with a slight metallic sheen, or a darker blue-grey mustard yellow (e.g. 2.5Y 7/4). The fabric is usually off-white/cream but is sometimes reduced grey all through. In thin section it is apparent that many of the minerals are iron-stained, and that red (ironstained) slate in elongated plates and nodules, and slate-quartz agglomerates are present in large quantities. The Moselle flows through slate mountains between Trier and Bernkastel, and red slate is a characteristic of Moselle and middle/lower Rhine deposits (in diminishing quantities) as far down the Rhine as Cologne and Duisberg (information from Dr I. Freestone; see also Koldewijn 1955). The quartz inclusions are noticeably rounded, although some are sub-angular and tend to be more polychrystaline. The iron ore, which has the same size range and is sparser, is sub-angular and rounded. Other (very sparse) inclusions consist of sanidine and plagioclase feldspar (both S.A. and 0.2–1.0 mm), and occasional small pieces of volcanic glass and pumice. Moderate quantities of epidote are also visible in thin section.

The mortaria (Nos. 1.69–1.72) have the same fabric but are a more consistent off-white-yellow/cream colour. Except for No. 1.70, they all contain large quantities of red slate. The trituration grits are the same as those in the fabric. Mortaria of this form were made at Speicher, but also at Urmitz, and probably at other Rhineland kilns.

VERECUNDUS MORTARIA
1.73–1.76

Kay Hartley kindly identified these mortaria, and the other Rhineland mortaria, and commented on their forms and possible dates (below), but the author is responsible for fabric descriptions and grouping.

There is a minimum of fourteen different *Verecundus* mortaria from New Fresh Wharf. Distinctive for their large size alone (an average diameter of approx. 750 mm), they are also easily distinguished by their light orange/yellow/cream colour (e.g. 10YR 8/6 & 9/4), and their 'pimply' feel, due to the quartz inclusions which protrude the surfaces (p. **18**). They are very hard and extremely heavy. The fracture is irregular, and standing out against the otherwise clear matrix are abundant



quantities of largely polycrystalline, rounded and sub-angular quartz (light grey, clear, white and rose, 0.2–2.0 mm, mostly >0.5 mm) with sparse, clear, angular quartz, plagioclase feldspar, fine white mica, and red and black iron ore. The quartz trituration grits (2–4 mm) tend to be larger than the quartz in the matrix.

Kay Hartley comments that these mortaria were made in the *Verecundus* workshops at Soller, Kreis Duren, in Lower Germany, to a fairly uniform design. Although they are widely distributed in Britain, they are often found singly and may have had a special culinary or commercial use. The mortaria at New Fresh Wharf are unused, and were presumably intended for re-sale. Stamped *Verecundus* mortaria (such as No. 1.76) normally appear in contexts dated AD 150–200, but the unstamped shovel-spouted example (No. 1.73), and other unstamped and lighter weight mortaria (not all of which are illustrated), may be later, dating perhaps to *c.* AD 200–20. The workshop is thought to have continued in use until at least the mid 3rd century.

VERECUNDUS-LIKE MORTARIA

Also present at New Fresh Wharf but unstratified, are two rim sherds from mortaria similar in size and rim form to *Verecundus* but containing more feldspar, and red slate which protrudes in red elongated streaks and nodules. One of these is illustrated (No. 1.77). Obvious fabric comparisons can be drawn with the 'Speicher' mortaria (above p. 110), although these mortaria have a softer fabric and contain less quartz.

Other Rhineland mortaria
1.78–1.80

With the *Verecundus* mortaria, these distinctive mortaria with curved flanges, internal beads and corrugated sides form the largest and most homogeneous of the Rhineland mortaria groups at New Fresh Wharf. Like the other mortaria they are very hard, but they are lighter in colour (off white/cream – 5Y 9/1), and the quartz inclusions (mostly 0.2 mm, some 0.2–0.5 mm) are noticeably finer. Their surfaces, although rough, are less lumpy as a result, and the matrix is less clear. The fabric is a much finer version of the *Eifelkaramik* groups. It contains abundant rounded quartz and very small (<0.2 mm) nodules of red slate, and red and black iron ore. Fine white mica and a few larger flakes of biotite mica are also present in sparse quantities. All the examples from this site (three of which are illustrated here) are spoutless, but an identical *mortarium* from a site at Shadwell, East London, has a simple pulled spout similar to those on Nos. 1.71 and 1.72 (Richardson in Whipp forthcoming).

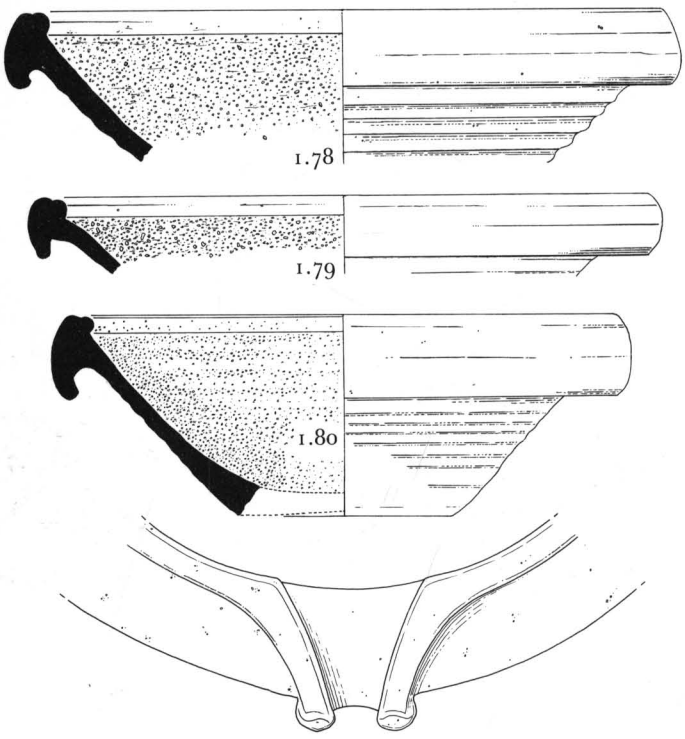
1.81–1.82 Off-white/white, fairly hard and very micaceous. The mica is white and fine (generally <0.2 mm). Other inclusions are more sparse and include quartz (S.A. <0.3 mm), red iron ore (<0.3 mm) and occasional large pieces of white quartzite (<1.0 mm).

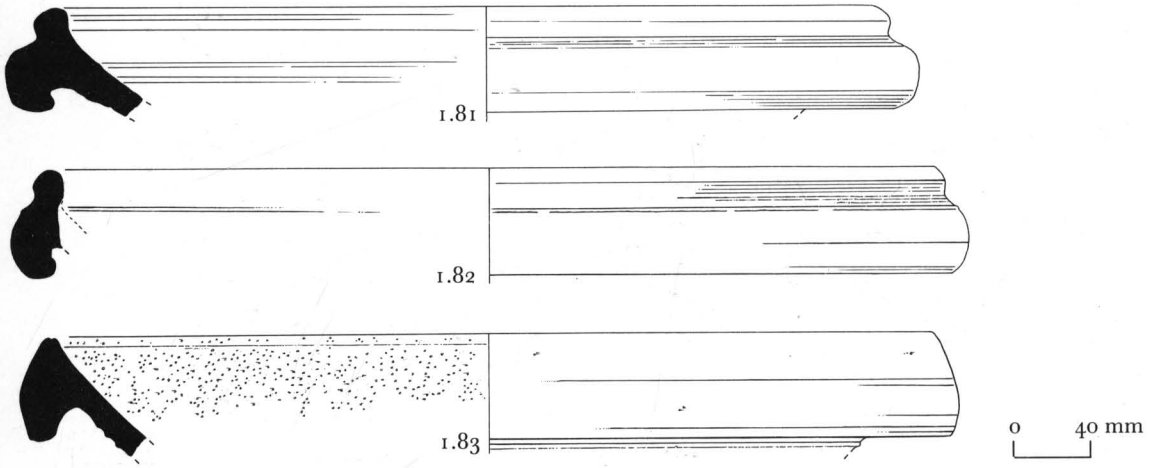
1.83 One example only. Very hard (over-fired) off-white/grey and fairly smooth with an irregular fracture. Inclusions consist mainly of quartz in moderate quantities (R. or S.A., 0.3–0.5 mm, light grey-rose), some white mica (<0.1 mm), and specks of black iron ore. The trituration grits are very small (as in matrix) and dense, extending to the top of the rim.

Other Rhineland mortaria have been identified by K. Hartley; they differ in fabric details and are too fragmentary to illustrate.

Cologne black-slipped beakers
1.84–1.96

Pure white or faintly creamish, hard, with hardly any inclusions >0.1 mm. Inclusions consist of quartz, occasional flakes of mica and specks of red iron ore (Green 1980a, 67–73). All surfaces are covered with a black or very dark brown slip (2.5YR 2.5/0), mottled, where the slip is thinner, to a light orange-brown (e.g. 5YR 7/10). The trailed barbotine decoration is made of the same pure white pipe clay as that used for the body of the vessels (p. **17**). It was applied before the vessels were slipped, unlike the Nene Valley black slipped beakers (p. 128) which seem to have been slipped twice, before and after barbotine was applied. The suggestion that some of the New Fresh



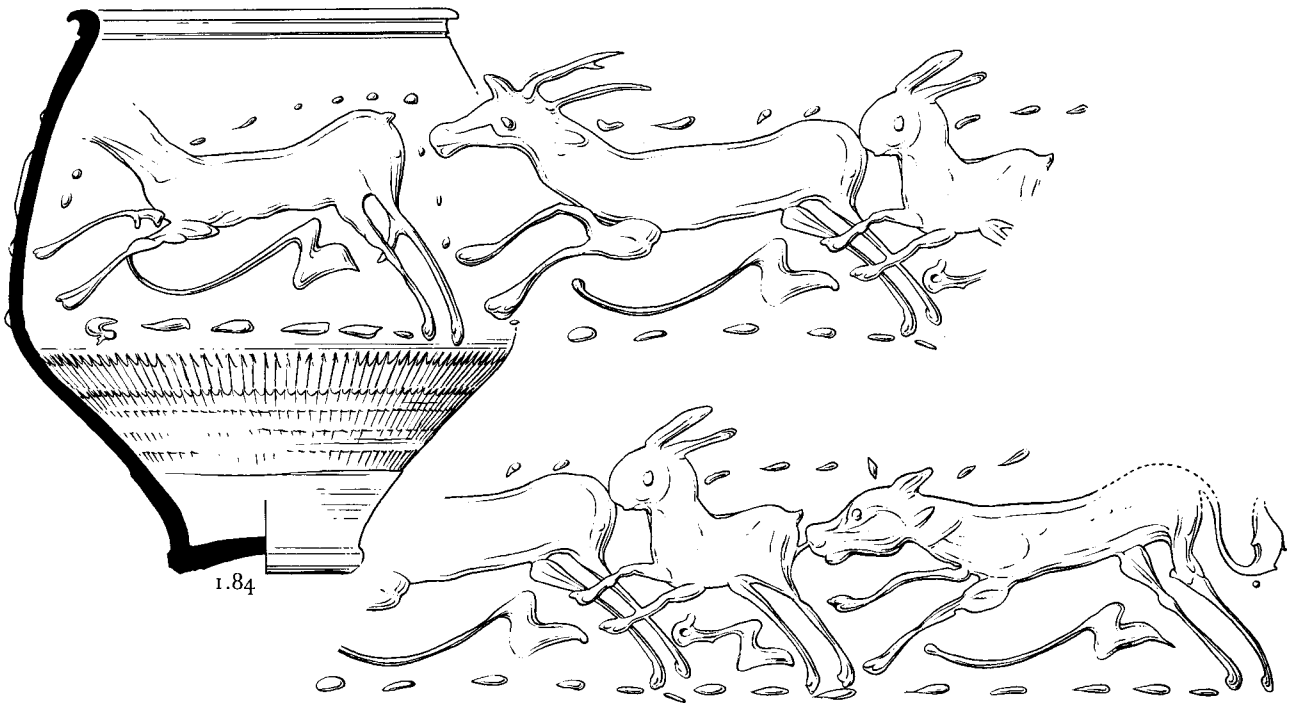


Wharf material is from a separate source, perhaps in Central Gaul (Anderson *et al* 1982), can be discounted as a result of further chemical analysis on kiln samples from Cologne. As expected, the New Fresh Wharf material falls within the parameters of Cologne products. (Information from Dr. M. Pollard).

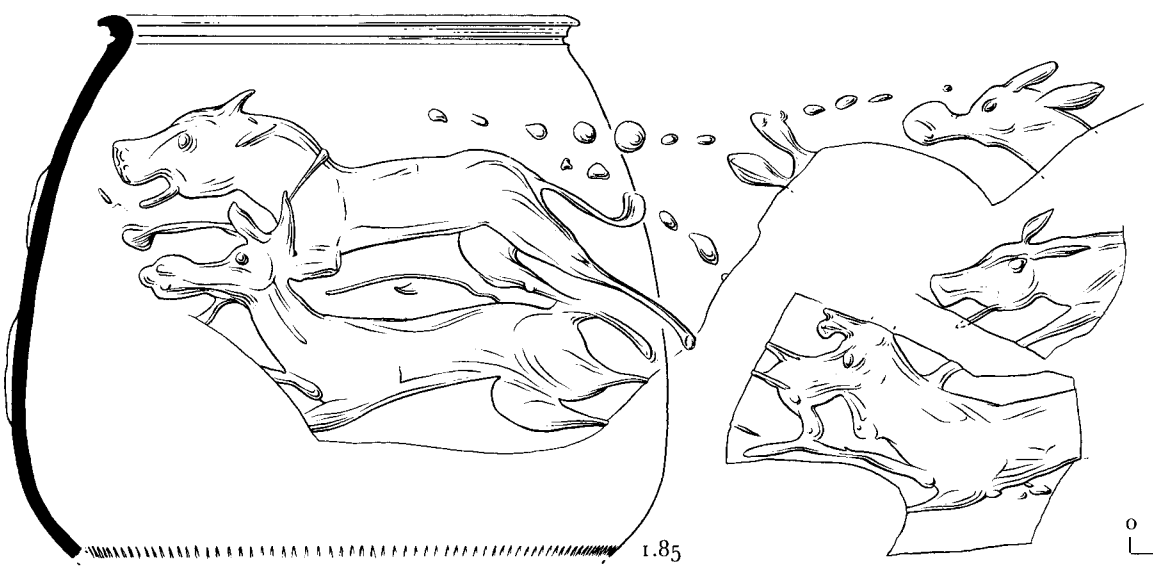
POMPEIAN RED WARE, FABRIC 3
(not illustrated)

For descriptions of this Central Gaulish type see Peacock (1977c), and Green (1980a). There are sherds from at least four shallow dishes, one of which (from III.269 and 318), is substantially complete. The dishes vary in size and thickness, but all have the characteristic inturned rim and slight footring.

Although most of the examples are from the upper disturbed layers, there are sherds from two dishes in stratified quay deposits (II.519 and III.341). The dating for late Pompeian Red Ware of this type is still uncertain, but it is possible that these dishes are contemporary with the quay.

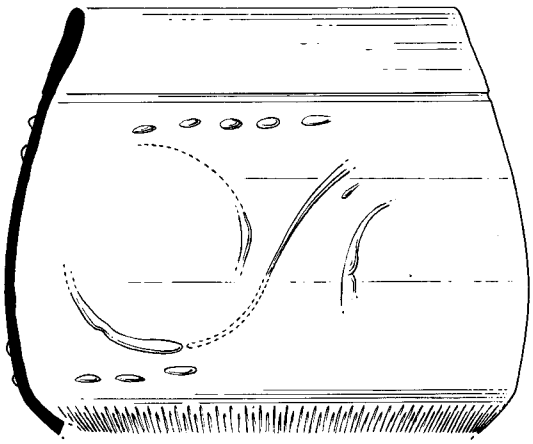


1.84

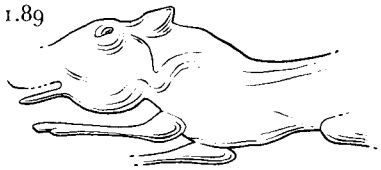


1.85

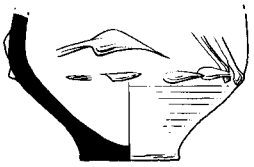
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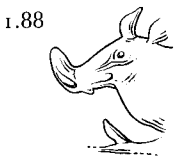
1.86



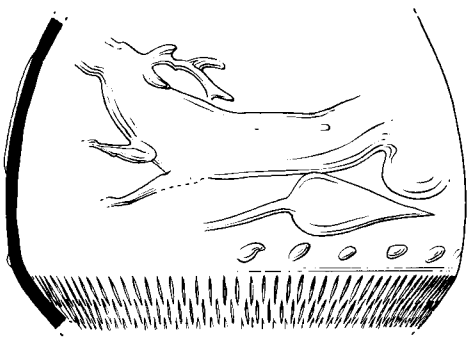
1.89



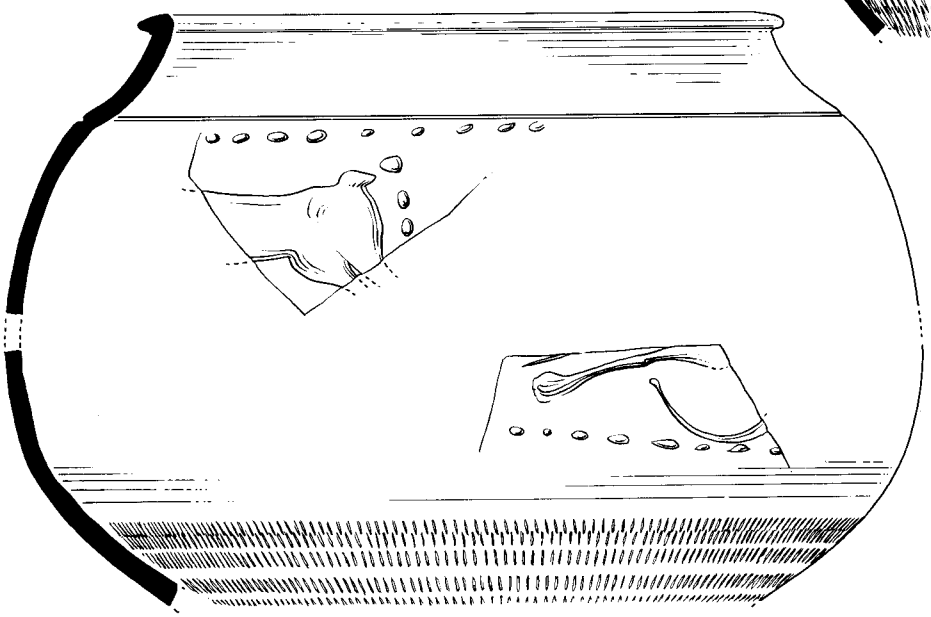
1.87



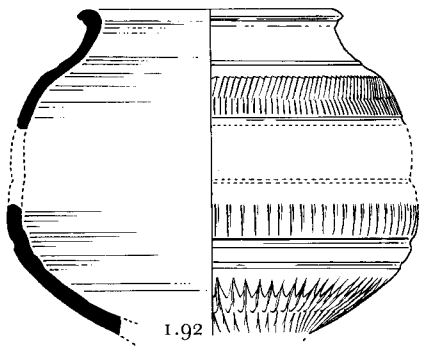
1.88



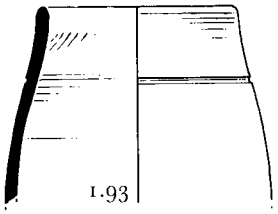
1.90



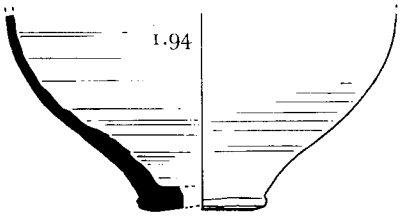
1.91



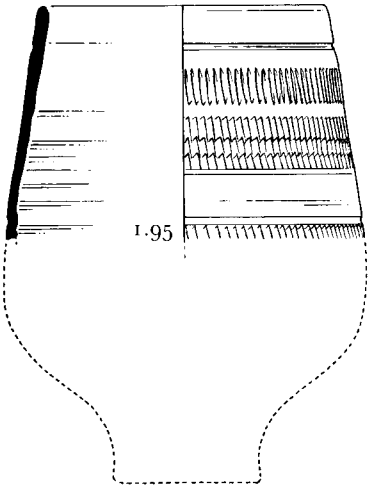
1.92



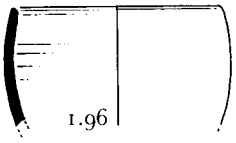
1.93



1.94



1.95



1.96

0 20 mm

Rhenish wares
1.97–1.143

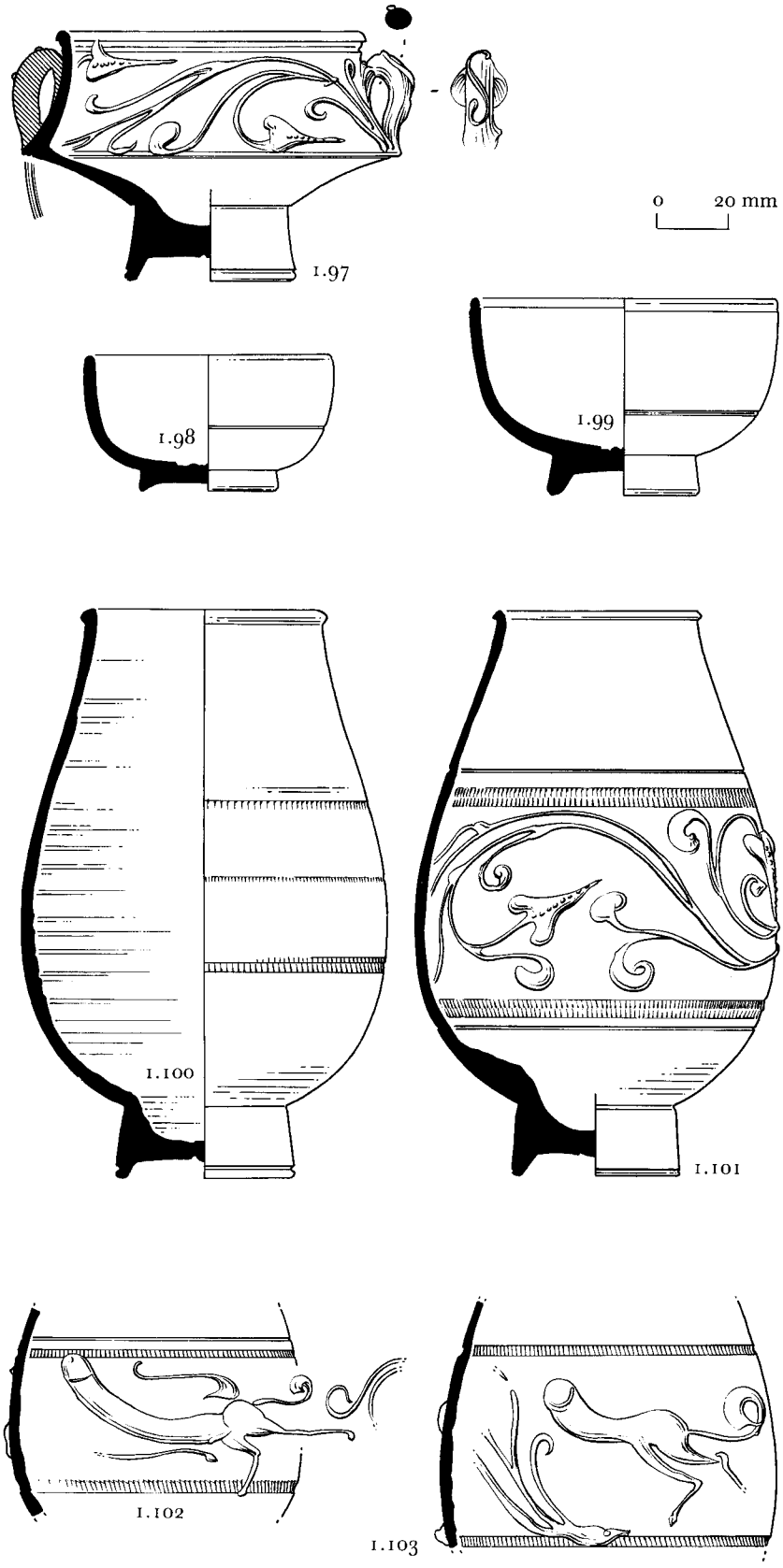
The term 'Rhenish wares' is a commonly-used misnomer as none of the fine black slipped beakers and cups (and, more rarely, flagons) which constitute this category of fine wares was made on the Rhine. The two main centres of production were in Central Gaul (Lezoux and other kiln sites on and near the River Allier) and in East Gaul (Trier on the River Moselle). Other kilns producing similar wares were scattered between these two areas, but their output was relatively small and their products are seldom, if ever, found in Britain (Leredde and Jacob 1974; R. Symonds, pers. comm.).

The wares have often been described in general terms, notably by Brewster (1972) and Greene (1978a; 1978b). The quantity of well-preserved excavated material available for study has always been limited in Britain however, and terminology and identification in pottery reports have suffered as a result. The New Fresh Wharf Group, consisting as it does of at least 140 unused vessels, provides a means of qualifying past statements and providing a definitive catalogue of forms by source.

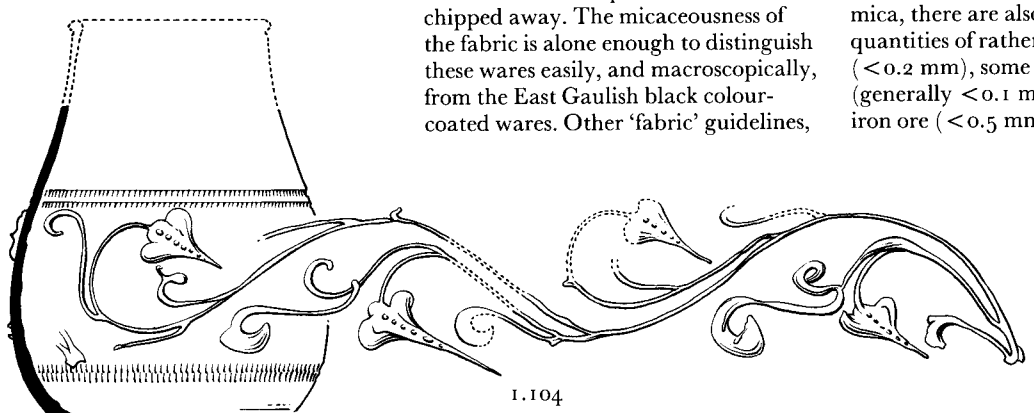
The wares have been divided into 3 groups on basis of fabric:

Central Gaulish black colour-coated ware
1.97–1.114

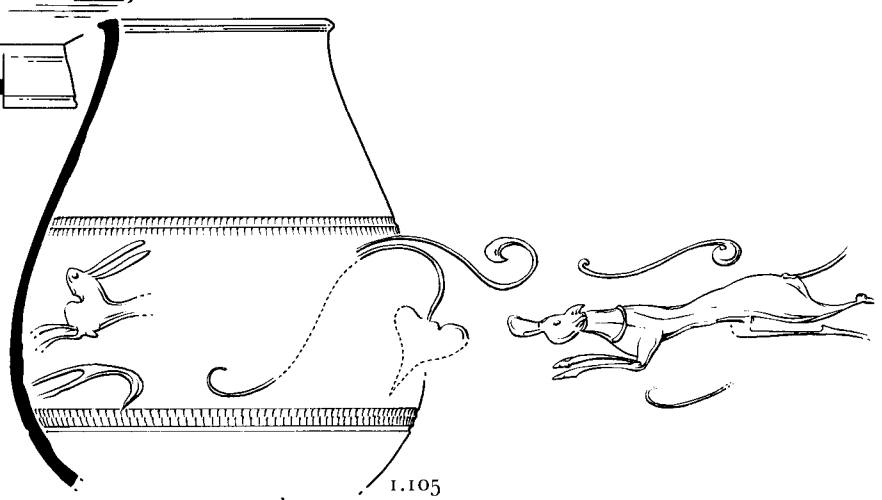
This group, which is the largest amongst the 'Rhenish wares' (at least 103 vessels), almost certainly comes from Lezoux. It is concentrated in the AREA II deposits with the bulk of the Central Gaulish samian, and could be dated, with the samian, to *c.* AD 170–80. Alternatively, it could have been imported at any time after AD 180, and stored prior to its deposition in the second quarter of the 3rd century. Any date in the range *c.* AD 180–210/220 is possible for this ware which, although generally dated to *c.* 160–200 in Britain (Greene 1978b), may have been manufactured in Gaul until *c.* AD 220 (pers. comm., R. Symonds). The similarities between the New Fresh Wharf assemblage and that from Pudding Pan Rock (Smith 1907; 1909) indicate that a date of *c.* AD 180–200 might be most appropriate, but a later date cannot be ruled out.



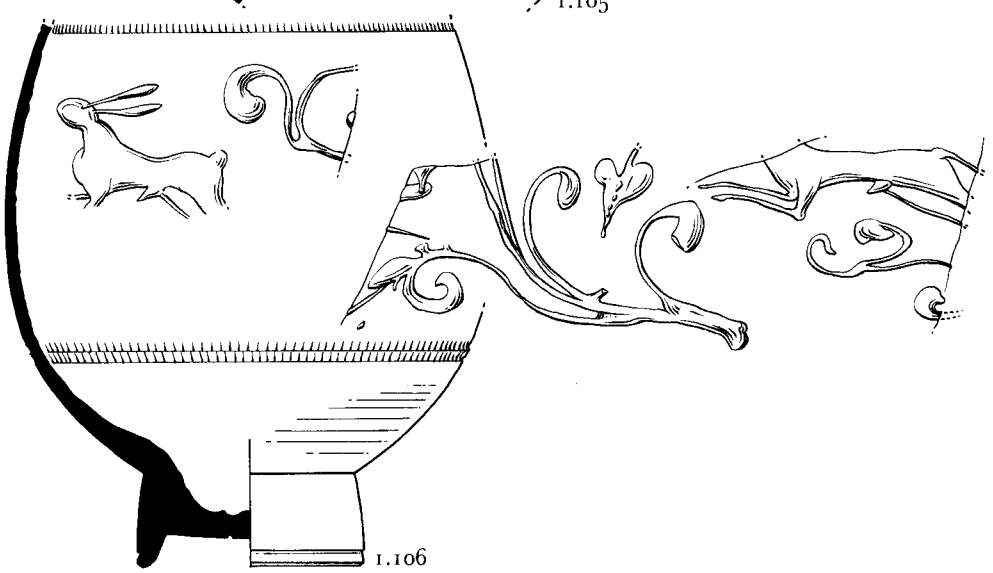
The wares were made in the same workshops as the Central Gaulish Lezoux samian, and like the samian contain considerable quantities of fine dark biotite mica, which, as mica aligns itself tangentially in the throwing and firing, is most easily seen when part of the barbotine or slip is broken or chipped away. The micaceousness of the fabric is alone enough to distinguish these wares easily, and macroscopically, from the East Gaulish black colour-coated wares. Other 'fabric' guidelines, such as lack of sandwich effect in the fabric and a 'pinkish' or 'whitish' colour tone, though generally helpful, can be misleading because Lezoux fabrics, though generally pink (2.5YR 6/6) or beige (5YR 7/4), do sometimes deepen to a light red (2.5YR 5/6 or 4/6) or fire to a two tone 'sandwich'. As well as the mica, there are also abundant quantities of rather worn limestone (<0.2 mm), some very fine quartz (generally <0.1 mm) and sparse red iron ore (<0.5 mm) in the clay. The



1.104



1.105



1.106

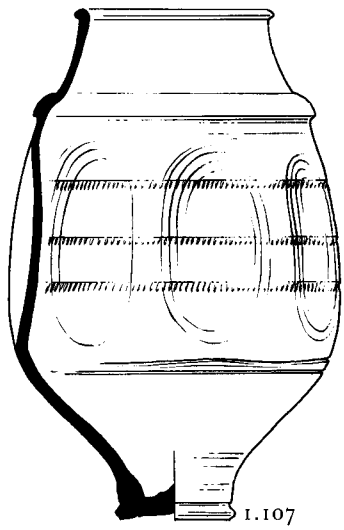
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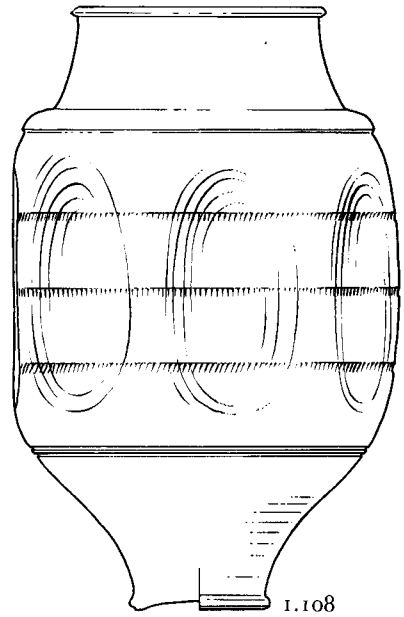
colour coat (slip) is invariably black, sometimes with a slight reddish-brown tinge when thin. It is shiny or glossy, sometimes duller with a more leathery or crazed appearance in cases of over-firing.

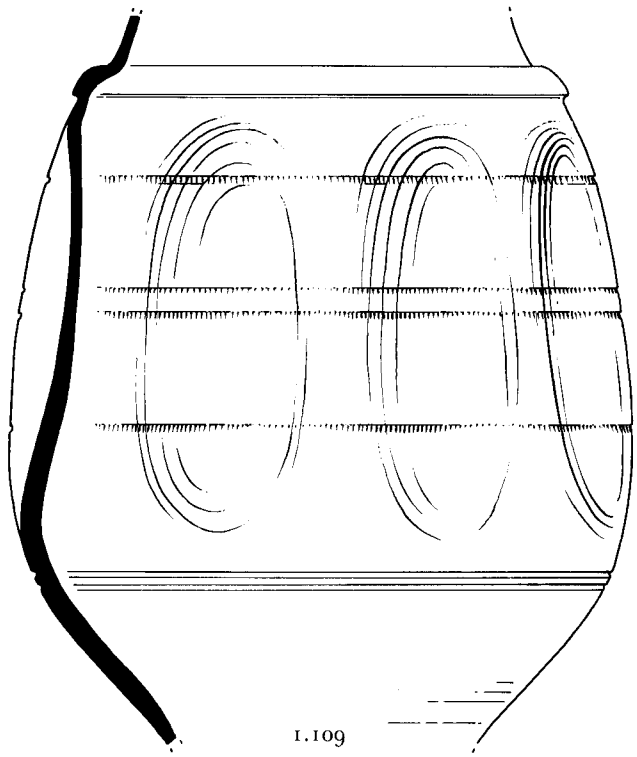
Decoration, when present, consists of judder rouletting (present on all beaker forms), and trailed decoration *en barbotine*. The barbotine is clearly made from the same clay as the body of the vessels. It is covered by the black slip so that no colour contrast is visible. The floral motifs are of a standardised 'ivy scroll' pattern; the appliqué leaf on No. 1.112 is atypical, and is derived from samian decoration (it is similar to, if smaller than Déchelette appliqué Type No. 7: pers. comm., J. Bird). The hunt and phallic designs, often liberally intertwined with 'ivy scroll', are obviously far less standardised, and are less common in the New Fresh Wharf assemblage than 'ivy scroll' on its own. In this assemblage, decoration *en barbotine* is restricted to the unshouldered beakers with pedestal bases, and to the two-handled cups.

Nine forms present in the assemblage, all of which would appear to be contemporary. They are:

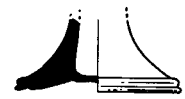
Bowl shaped cup, form Drag. 40 (Nos. 1.98–1.99; 13%)
Two-handled cup (No. 1.97; 5%)
Unshouldered beaker with pedestal base (Nos. 1.100–1.106, 1.112; 34%)
Unshouldered beaker with 'plain' base (No. 1.116; 2%)
Shouldered beaker with 'plain' base (No. 1.115; 2%)
Folded beaker (Nos. 1.107–1.109; 18%)
'Vase' (No. 1.111; <1%)
Two-handled 'vase' or bowl (No. 1.110; <1%)
Lamp (No. 1.218; <1%)

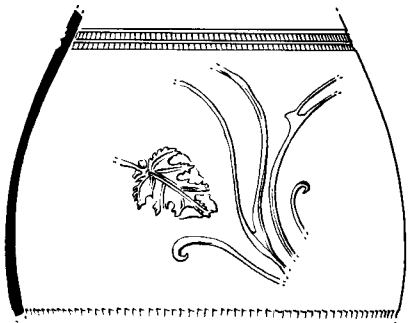

1.107

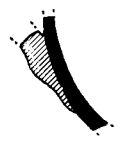

1.108

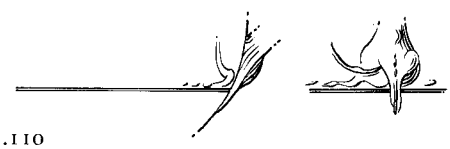

1.109

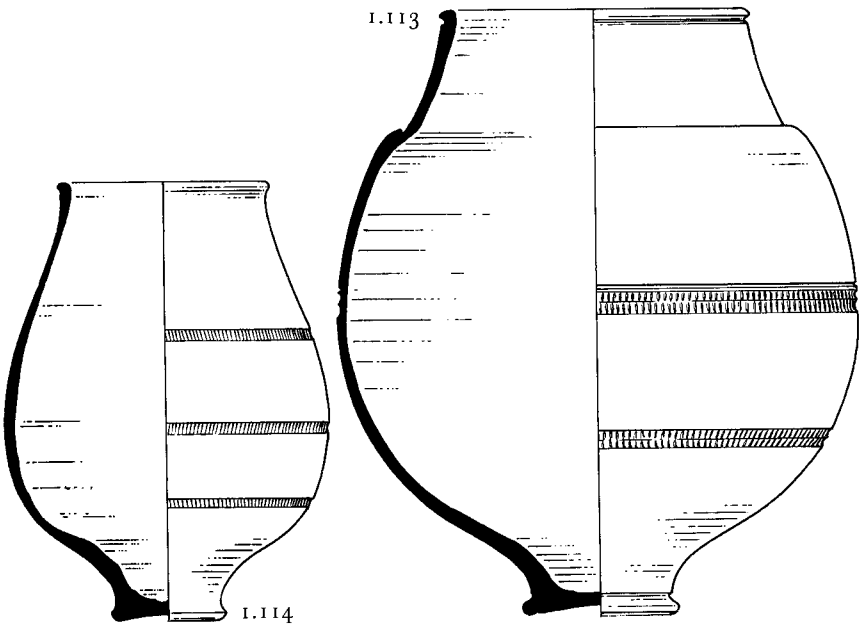
0 20 mm


1.111


1.112




1.110



These forms, with all their variations in size and decoration, are illustrated (and see p. **14**). The percentages in brackets after each form are percentages of the whole Lezoux group calculated by weight. Percentages by vessel equivalent were also calculated, but found to be less accurate because body sherds for all types of beakers are more diagnostic than rim sherds.

It will be seen that only approximately 60% of the total can be definitely accounted for in this way. The other 40% belong to 'umbrella' groups, each of which is precisely defined, and incorporates a combination of two or more forms. The sorting of thousands of sherds to any degree of objectivity and consistency would have been impossible without first having established these groups; the definition of the groups, and of the illustrated form/decoration/size combinations, proved to be a study in itself which will be published elsewhere for both the Central Gaulish and East Gaulish black colour-coated wares.

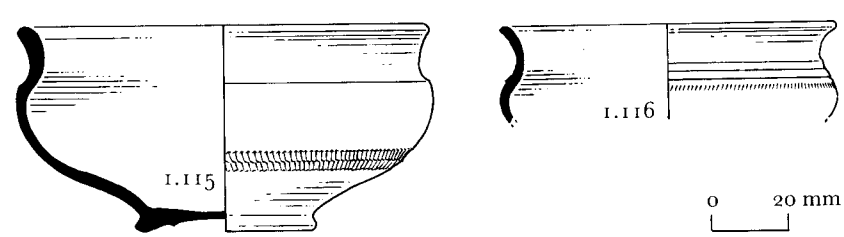
GAULISH BLACK COLOUR-COATED WARE (SOURCE UNKNOWN)
1.115–1.116

Sherds from two vessels in the 'Rhenish' group differ from the Central Gaulish and East Gaulish black colour-coated wares in both fabric and form. Their fabric is pinky-orange, and more of a 'Lezoux' colour than a 'Trier' colour, but it does not contain the characteristic Lezoux flakes of mica. It is harder than the Lezoux fabric, and breaks with a more vesicular fracture. The inclusions can only be seen properly with the aid of a low power microscope. They are very fine (<0.1 mm) limestone and mica (both of which are quite abundant), and sparser silt-sized quartz. The source of these vessels is not known but might well be in Central Gaul, although a similar vessel illustrated in Gose (1950, Taf. 15, No. 227) is said to come from Trier.

EAST GAULISH BLACK COLOUR-COATED WARE
1.117–1.143

This ware, sometimes called *Moselkeramik*, seems to have been made almost exclusively at Trier, although other minor workshops in the Trier area may have been producing similar vessels (see below). The New Fresh Wharf group consists of at least thirty-five vessels which are fairly evenly divided in number and form types between AREAS II and III, with a slight bias towards AREA III. Like the Central Gaulish black colour-coated ware, the group shows great homogeneity in fabric and in form. The ware is generally dated to AD 180/90–250 in Britain (Greene 1978b). At New Fresh Wharf it might be contemporary with the suggested date of AD 180–220 for the Central Gaulish black colour-coated wares (the similarity between some of the forms is striking), or with the Trier East Gaulish samian which has been dated as late as *c.* AD 235–45.

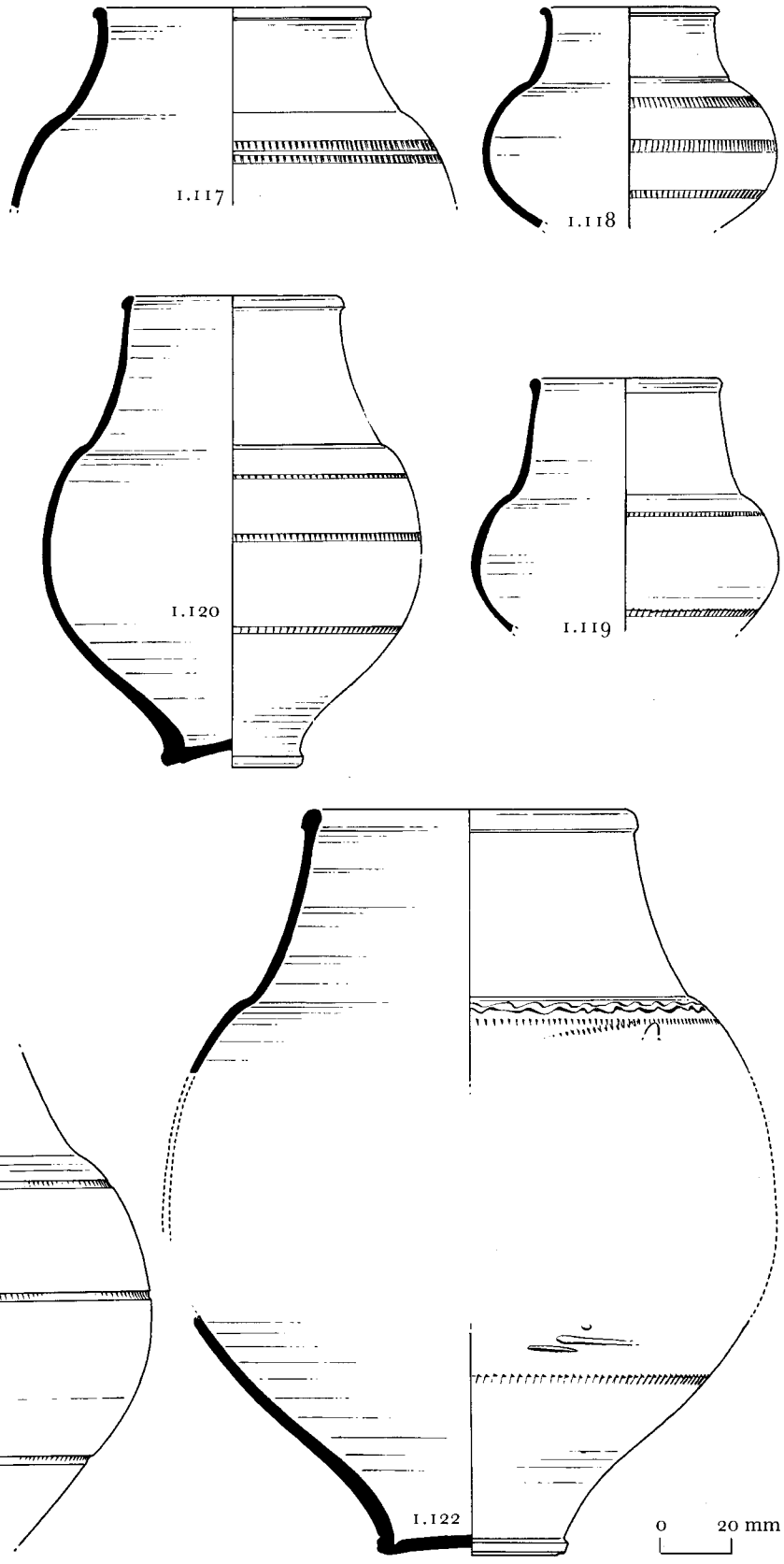
The fabric is generally a rather dull brick red (10YR 4/6; 2.5YR 4/6), sometimes a lighter red (10YR 5/6; 2.5YR 5/6) or, where reduced, light or dark grey. Different combinations can often be found in the same pot. The fabric's chief characteristic is a speckled appearance caused by quantities of very fine limestone (<0.1 mm; occasionally as large as 0.4 mm) in the clay. Other inclusions, which can best be seen in thin section, mainly consist of fine silt-sized sub-angular quartz, and very fine biotite mica. The black slip, like that of the Central Gaulish wares, varies considerably with firing conditions. The decoration consists of rouletting, trailed white barbotine, and indentations which are obviously intended to be decorative as well as functional. The barbotine, unlike that on the Central Gaulish wares, is made from a white 'pipe' clay, and was applied to the vessels after they had been slipped. Very few vessels in the group are decorated in this way, and indentations are more common.

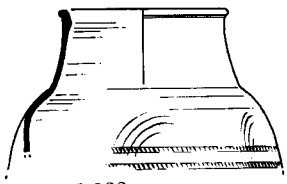


The forms, all of which are beakers, are far less standardised than the Central Gaulish forms. They are as follows (all bases are 'plain', i.e. not pedestal):

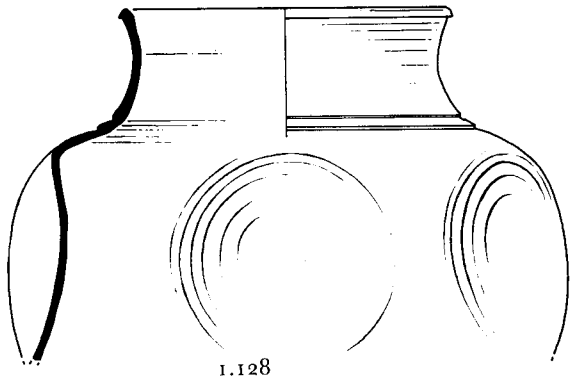
Unshouldered beaker (Nos. 1.138–1.140; 9%)
Shouldered beaker (Nos. 1.117–1.122; 23%)
Indented beaker (all shouldered; Nos. 1.123–1.128; 12%)
Folded beaker (Nos. 1.129–1.130; 37%)
Two-handled 'vase' (Nos. 1.141–1.142; <1%)

The illustrations depict all variations in size and decoration. The percentages given are percentages of the whole East Gaulish (Trier) group by weight. Three of the forms, the folded beaker (see No. 1.130), the unshouldered beaker (see Nos. 1.138–1.140)), and the shouldered beaker (see Nos. 1.117–1.122) are markedly similar to Nos. 1.107–1.109, 1.116 and 1.110, and 1.115 respectively, in the Central Gaulish range. It should be noted that the Lezoux folded beakers are cordonned. The large number of Lezoux folded beakers at New Fresh Wharf is particularly significant as the type is comparatively rare in museum collections in Central and East France (R. Symonds, pers. comm.).

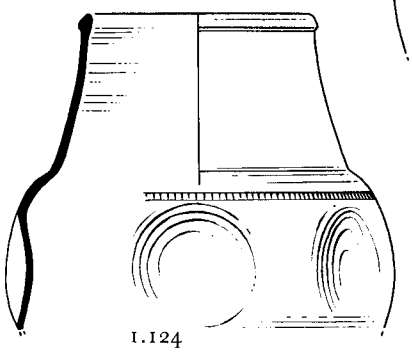




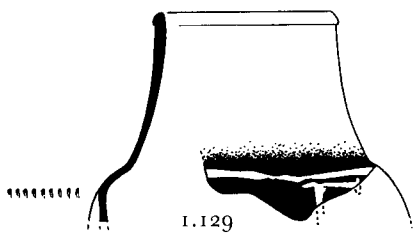
1.123



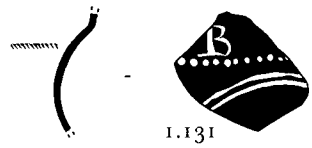
1.128



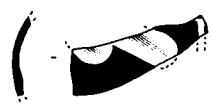
1.124



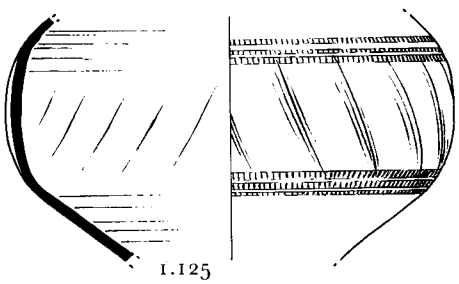
1.129



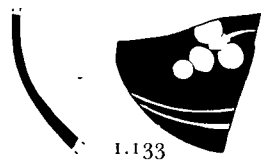
1.131



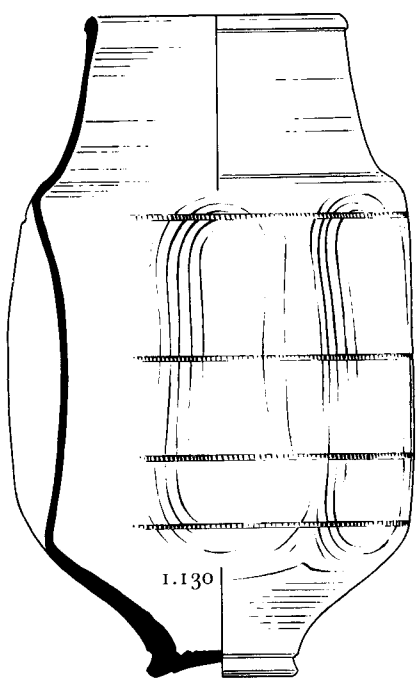
1.132



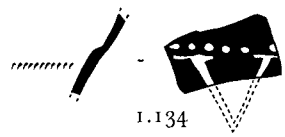
1.125



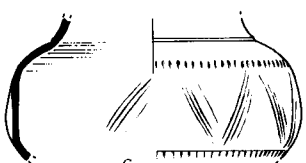
1.133



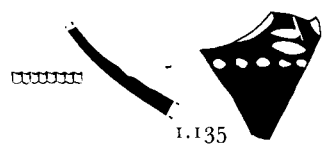
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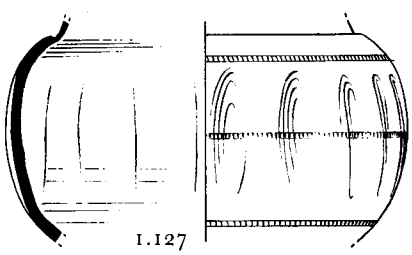
1.134



1.126



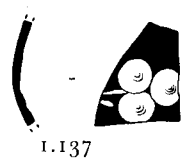
1.135



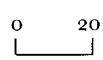
1.127

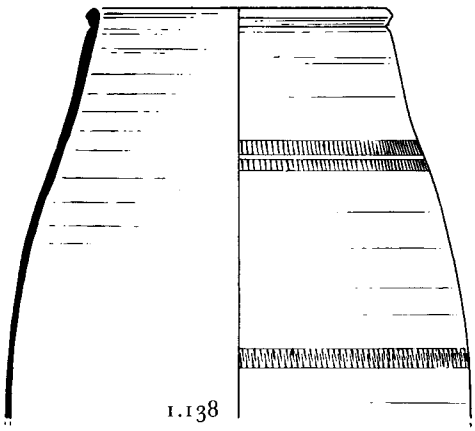


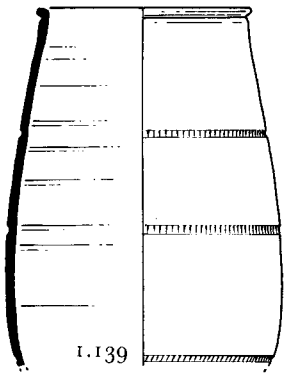
1.136

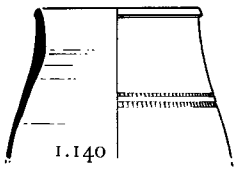


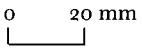
1.137

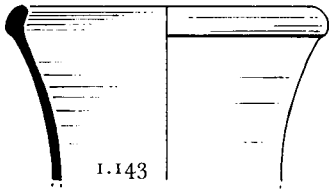


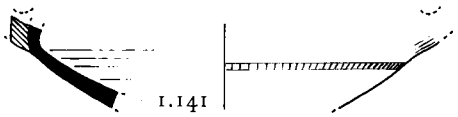


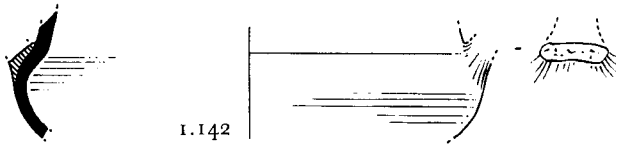










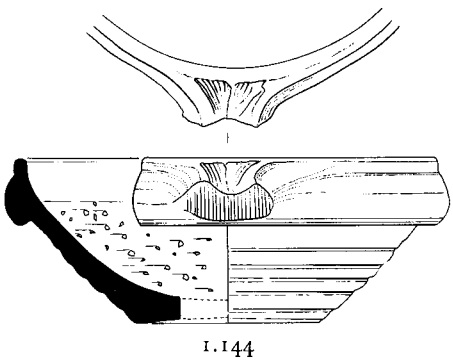


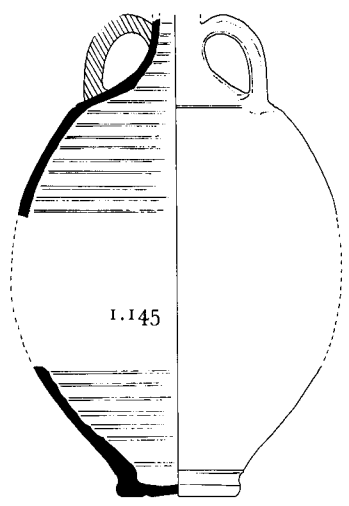
MISCELLANEOUS ITEMS

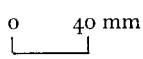
1.144–1.164 Most of the examples of pottery in this section are single sherds or very small fabric groups. They are included because they are unusual, and intact enough to be illustrated. Not all of them need be contemporary with the quay. Their context numbers are listed in Figure 76 and the phasing can be checked with Figure 73.

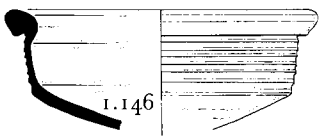
1.144 Hard and light grey, although this may be the result of over-firing. K. Hartley comments that these mortaria are usually cream and fairly smooth, and that they are probably imported. The fracture is fine, irregular and powdery. The inclusions comprise medium amounts of sub-angular quartz, limestone and black and white mica (all 0.1–0.5 mm). The trituration grits are large and consist of angular white quartzite and soft rounded limestone. Deep striations run horizontally around the inside where the grits have been applied with the wheel in motion. The mortaria appear to be contemporary with the main quay group (from III.318, III.341, III.338 and III.220).

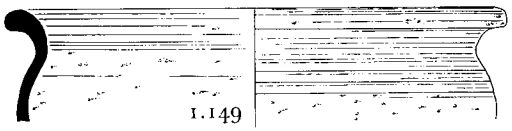
1.145 Smoothed highly burnished creamy-beige surfaces from the shoulder downwards, and a light cream partially reduced fabric. The fracture is extremely laminar and flaky. There is abundant silt-sized quartz in the matrix, which otherwise contains moderate quantities of white mica and quartz (S.A. <5 mm), and red and black iron ore.

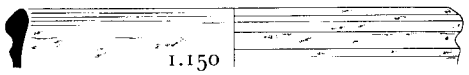


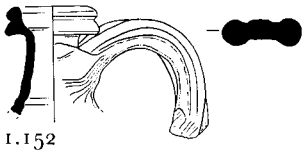




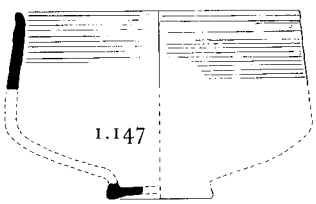








1.146 Dark grey, exterior and interior, smooth slightly lumpy surfaces, very hard. The fabric partially oxidised and contains abundant and rounded clear grey and rose quartz (0.2–0.5 mm), some silt sized clear angular quartz (<0.1 mm), sparse white mica, and moderate quantities of red and black iron ore and black ironstone. Possibly North French on stylistic grounds (see pp. 106–10).



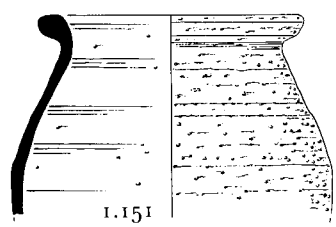
1.147 Exterior and part of interior covered with a thin metallic slip. The fabric is quite coarse, fairly hard, and tempered with large quantities of rounded clear quartz (0.5–2.0 mm), feldspar and smaller quantities of white mica.



1.148 Slipped and burnished all over in facets. Originally cream or white but burnt black (presumably in firing). The fabric contains well sorted rounded quartz (abundant, averaging 0.4 mm) and white mica (abundant, 0.2–0.6 mm).

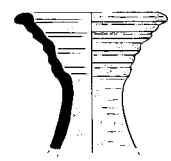
1.149 Very hard grey fabric (e.g 7.5YR 6/0), soapy and slightly lumpy exterior and interior surfaces, with a thin rather metallic 'self' slip. Large (<1.0 mm) flakes of dark mica are abundant on the surfaces and in the fabric. Other inclusions: abundant large (<2.0 mm, mostly <1.0 mm) rounded quartz, sub-angular polycrystalline quartz, moderate-sparse feldspar. Silt-sized quartz and mica in matrix.

1.150 Hard, grey black, partially burnished. Lumpy appearance due to abundant quantities of large rounded quartz (up to 1.5 mm) and smaller quantities of feldspar.



1.151 Very hard, lumpy, dark brown-grey fabric (2.5 YR4/6–3/0), with prominent turning and wiping marks on exterior surface. Abundant inclusions of rounded quartz (rose, clear, some iron stained), more granitic rock fragments composed of quartz and feldspar, and sparse large grains of black iron ore and fine white mica. The inclusions are notably bi-modal (*c.* 0.1 mm and *c.* 1.0 mm). The inclusions may have been mixed in a clay solution before being added as clay skins around the larger inclusions are visible in thin section. The mineral inclusions are consistent with a lower/middle Rhineland source.

1.152 Light pink-orange, hard fairly smooth surfaces with finely irregular fracture. The inclusions consist of abundant, ill-sorted limestone (<0.6 mm), fine white mica (<0.1 mm) and moderate quantities of sub-angular clear and grey quartz (<0.5 mm) and red iron ore.

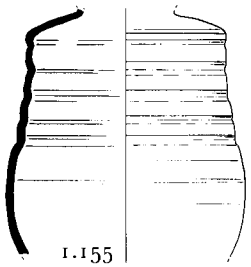


1.153 Orange red, wiped. The fabric is very hard and quite coarse, containing abundant white, grey and rose rounded quartz (<0.2–>1.0 mm), moderate quantities of red iron ore and moderate-sparse dark and white mica (0.1–0.4 mm).



1.154 Light pink-beige, very hard, slightly rough surfaces with irregular fracture. Fairly micaceous fabric (very fine white mica), with moderate quantities of rounded sub-angular grey and white quartz (<0.4 mm), and sparse altered limestone and black iron ore.

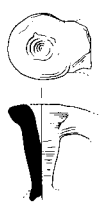
0 40 mm



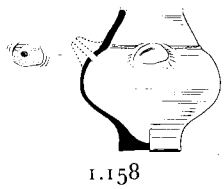
1.155 Cream, light grey surfaces and fabric (5Y 9/1, 8/1), exterior smooth and thinly slipped. The fabric is hard, and contains abundant, clear silt-sized quartz (<0.1 mm), moderate amounts of red and black iron ore (<0.2 mm) and fine white mica.



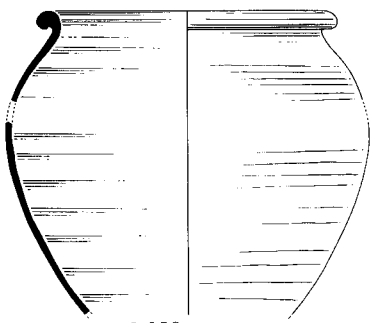
1.156 Thick cream slip, light brown partially reduced fabric (10 YR 6/4). Fairly hard, containing abundant, fine (<0.2 mm), clear and white quartz, and sparse black iron ore and fine white mica.



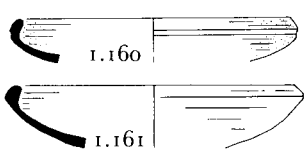
1.157 Triple vase. Over-fired and mud stained. The fabric is fine, and contains abundant silt-sized quartz, sparse clear quartz (S.A., <0.3 mm), sparse iron ore and fine white mica.



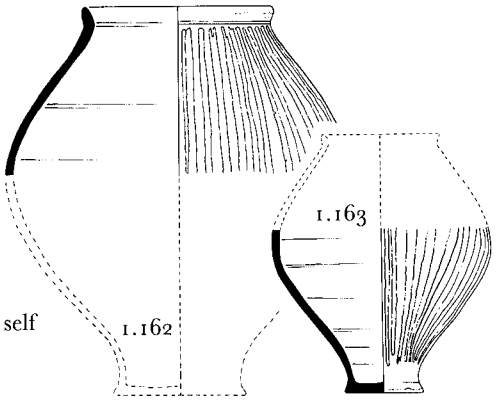
1.158 'Feeding bottle'. Light brown, self slipped and externally burnished surfaces. Buff-red micaceous fabric (white, <0.1 mm), containing sparse, clear and grey quartz (S.A., <0.3 mm), sparse iron ore and fine white mica.



1.159 Mica dusted on exterior and on interior of rim. Surfaces smooth and silky, and light red (2.5 YR 6/10) to red-brown. The fabric is hard, light red with reduced core; the fracture is irregular. The inclusions (mostly <0.2 mm) comprise moderate quantities of clear and rose quartz (R., S.A.) and silt-sized clear quartz, sparse black limestone and white mica. Source unknown, but thought to be an import.

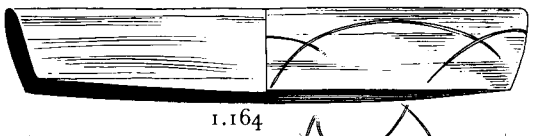


1.160–1.161 Hard, light red-red brown (5YR 7/6–7/8) with reduced core. Two distinct fabrics, but otherwise very standardised in size and shape. Inclusions consist of abundant clear and milky quartz, abundant fine white mica, sparse iron ore, sparse limestone. The quartz inclusions are very fine (<0.1 mm) or medium-coarse (0.3–0.7 mm).

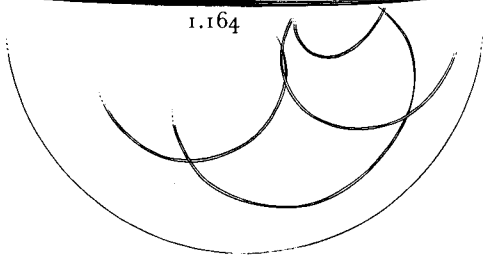


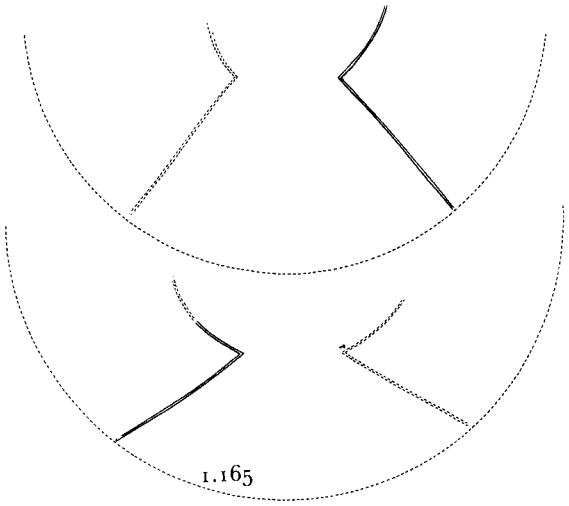
1.162–1.163 Distinctive bulbous form and exterior burnishing in smooth vertical stripes. The fabric is fairly soft, rather powdery, and blue-grey. The outer surfaces are also grey. The fabric contains abundant, clear, angular silt-sized quartz, and lesser quantities of fine white mica.

0 40 mm

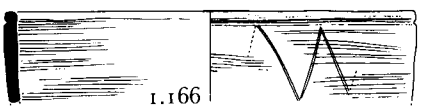


1.164

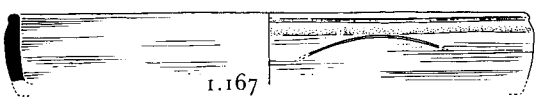




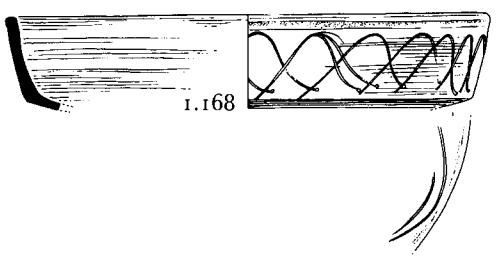
1.165



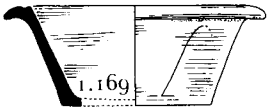
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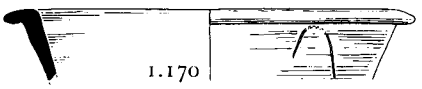
1.167



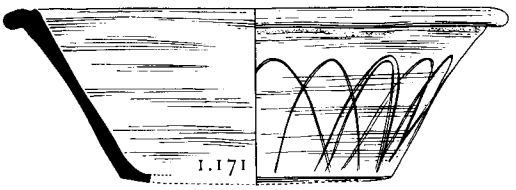
1.168



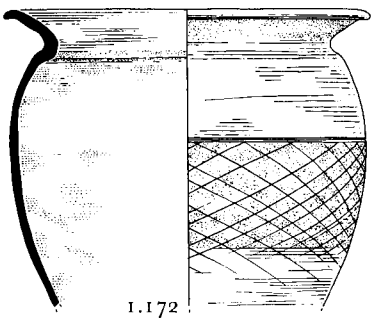
1.169



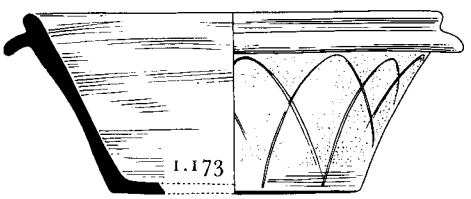
1.170



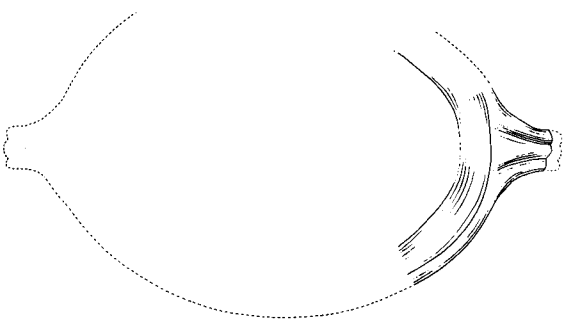
1.171

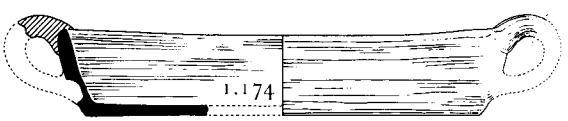


1.172



1.173





1.174

0 40 mm

The waterfront group: Romano-British pottery

BB1 (DORSET)
1.164–1.174

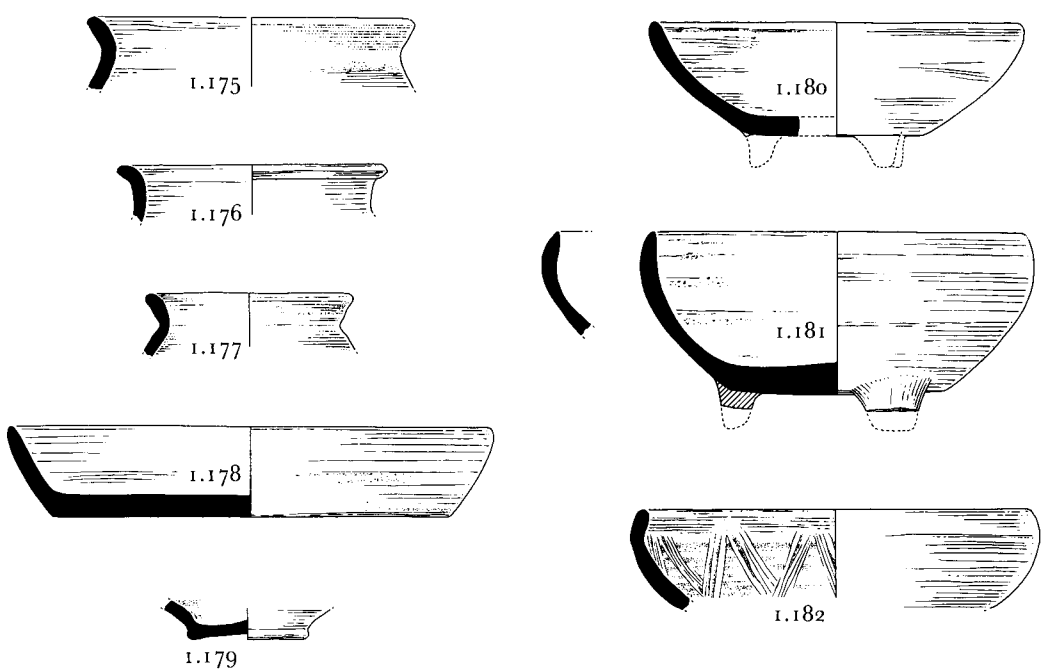
The fabric and forms have been described by Farrar (1973, 1977; see also Williams 1977), and there is a detailed fabric description by Green (1980a). Nos. 1.164–1.171 are all late 2nd- and early 3rd-century forms, and there is no reason to believe that they are not contemporary with the infilling of the quay. Flanged bowl No. 1.173 and handled dish No. 1.174 (one example only) are generally dated to the late 3rd and 4th centuries. At New Fresh Wharf, single sherds of both types occur well down in stratified quay deposits (III.309 and II.525) and for this reason have been included in the quay group. Other sherds of No. 1.173 are present and common in deposits containing intrusive 4th-century material. Jar No. 1.172, which is customarily dated to the mid/late 3rd century, occurs in sufficient quantity in the quay deposits to suggest contemporaneity with the infilling of the quay, and therefore its presence in London in the late 2nd or early to mid 3rd century.

MICACEOUS BLACK BURNISHED WARE (SOUTH DEVON)
1.175–1.182

The existence of a black burnished ware industry in South Devon has already been suggested by Greene and Greene (1970) and Bidwell (1977; 1979), and Green (1980a) has noted that products of this industry were reaching London by the Hadrianic-Antonine period. Sherds from several vessels in this distinctive ware were found at New Fresh Wharf, most of which were concentrated in the collapsed waterfront in front of AREA III. No. 1.170 comes from just beneath the waterfront at AREA III and may well be part of the same group.

The vessels are hand-made, often rather thick-walled, and usually fairly hard with an irregular fracture. They are carbon-rich but are sometimes oxidised red or brownish-grey. All accessible surfaces are burnished in strong facets. Inclusions consist of very abundant ill-sorted angular feldspar and distinctly dark mica (<0.1 mm–1.0 mm; occasionally <3 mm). Quartz is sparse and distinguished by its well-rounded grains. Sherds from a few vessels, with the same forms and surface treatment as the others, have a noticeably finer fabric containing smaller quantities of mica and feldspar. Vessels in this ware are common in S.W. England, more so in the 3rd and 4th centuries than earlier in the Roman period. The jar forms and dish (No. 1.182) are approximately paralleled at Clanacombe (Greene and Greene 1970) and Exeter (Bidwell 1979).

The tripod bowls seem to be less common, although at least one unpublished example is known from Exeter (pers. comm., P. Bidwell). An early to mid 3rd-century date is postulated for these wares on stratigraphic grounds, although some examples came from disturbed Period 1, Phases 6 and 7.



Shelly black burnished ware (Dorset/Somerset)
1.183

There is one vessel only in this fabric which, although it comes from a disturbed layer (III.150), is probably late 2nd or 3rd century. The surface treatment and form are precisely that of the mid 2nd-century bowls from the Poole area of Dorset. The fabric is carbon-rich, black and laminar. It is conspicuously full of thin fossil shell fragments (<0.5 mm) and lesser quantities of limestone and mudstone. Quartz inclusions are fairly sparse, sub-angular and rounded, and 0.5–1.0 mm in size. The nature of the fossil shell, which contains many bivalve fragments and some cylindrical echinoid spines, suggests a Jurassic limestone source. Close parallels have been drawn between this fabric and that of Iron Age Glastonbury group 4 (Peacock 1969; and pers. comm.) suggesting the possibility of a kiln source in the Dorset/Somerset region.

Black burnished ware (source unknown)
1.184

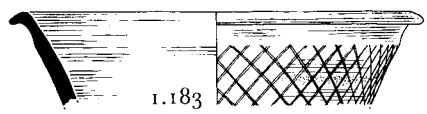
Sherds from one vessel stratified with the micaceous black burnished ware. Surfaces are black and strongly burnished internally. The fabric is grey, with abundant irregular inclusions of white and off-white, slightly arenaceous limestone (0.2–1.0 mm) and lesser quantities of sub-angular quartz (0.1–0.5 mm).

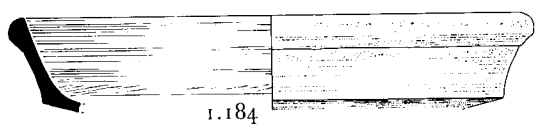
1.185 Handmade, possibly wheel-finished on slow wheel. The grey fabric is burnt black-grey on the exterior. It is fairly hard and fine, containing abundant white mica and milky sub-angular quartz (both 0.1–0.3 mm), and sparse black iron ore (0.2–0.4 mm).

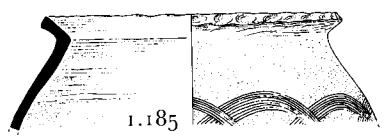
1.186 Handmade with wheel finished rim. Slipped and heavily burnished. The hard fabric contains abundant, clear rounded quartz (average size 0.4 mm) and moderate quantities of black iron ore.

Grog-tempered jars and bowls
1.187–1.190

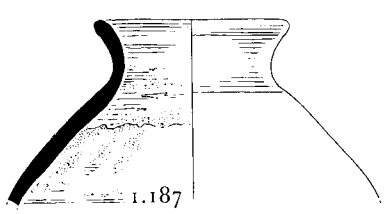
Hand-made, hard, soapy, light grey-brown-red, with dark grey-black surfaces which are partially burnished. No. 1.190 has burnished decoration. Inclusions (which are M–VC; 0.3–2.0 mm) consist of grog, mudstone, grains and nodules of ironstone and burnt organic matter. Quartz and ironstone are present but sparse. The vessels resemble East Sussex ware and allied Wealden types in fabric (Green 1980b), and more generally, in form. Such vessels were being made throughout much of the Roman period with only slight typological variation. Nos. 1.187, 1.178 and 1.190 are stratified within the waterfront, unlike the majority of the rest of the handmade/grog tempered wares, which come from more disturbed layers. Grog-tempered pottery constitutes only a very small percentage of the New Fresh Wharf assemblage, and only four vessels are reconstructable (all illustrated).

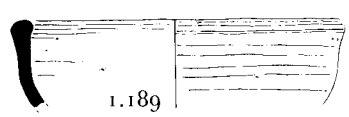


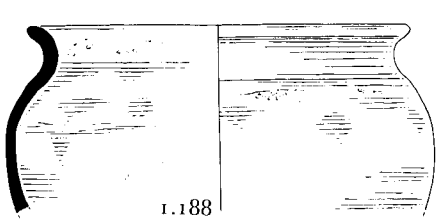


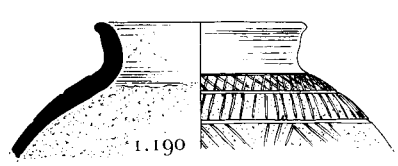












0 40 mm

BLACK BURNISHED WARE 2
1.191–1.199

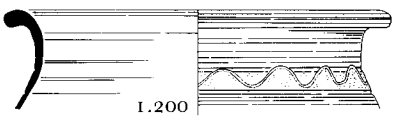
The BB2 from the waterfront groups is stylistically different from, and has a finer fabric than the earlier 'Colchester' BB2 described by Green (1980a, Nos. 250–7). The only 'Colchester' BB2 present at New Fresh Wharf comes from the pre-quay deposits. It seems from this evidence, and from observations at other sites in London, that by the Antonine/Severan period London's BB2 supply was either coming from a different source (probably North Kent), or that the Colchester fabric was now significantly finer than in the early/mid 2nd century.

The quay group BB2 has been divided into two fabric groups which are fairly similar, and may well represent variations from the same area. The majority of vessels in both fabrics are plain (un-hatched) bowls of Gillam (1957) Type 225 (Nos. 1.191 and 1.192). These bowls (which occur in various depths and sizes) and jar Nos. 1.198 and 1.199 are probably the only forms which can be said to be contemporary with the infill of the waterfront – i.e. late 2nd to mid 3rd centuries. The other forms (one example of each only) were all found in disturbed upper Roman layers (Period 1, Phase 7) and 'Saxon' layers Period 2, Phases 1, 2 and 3, and cannot be dated with such accuracy.

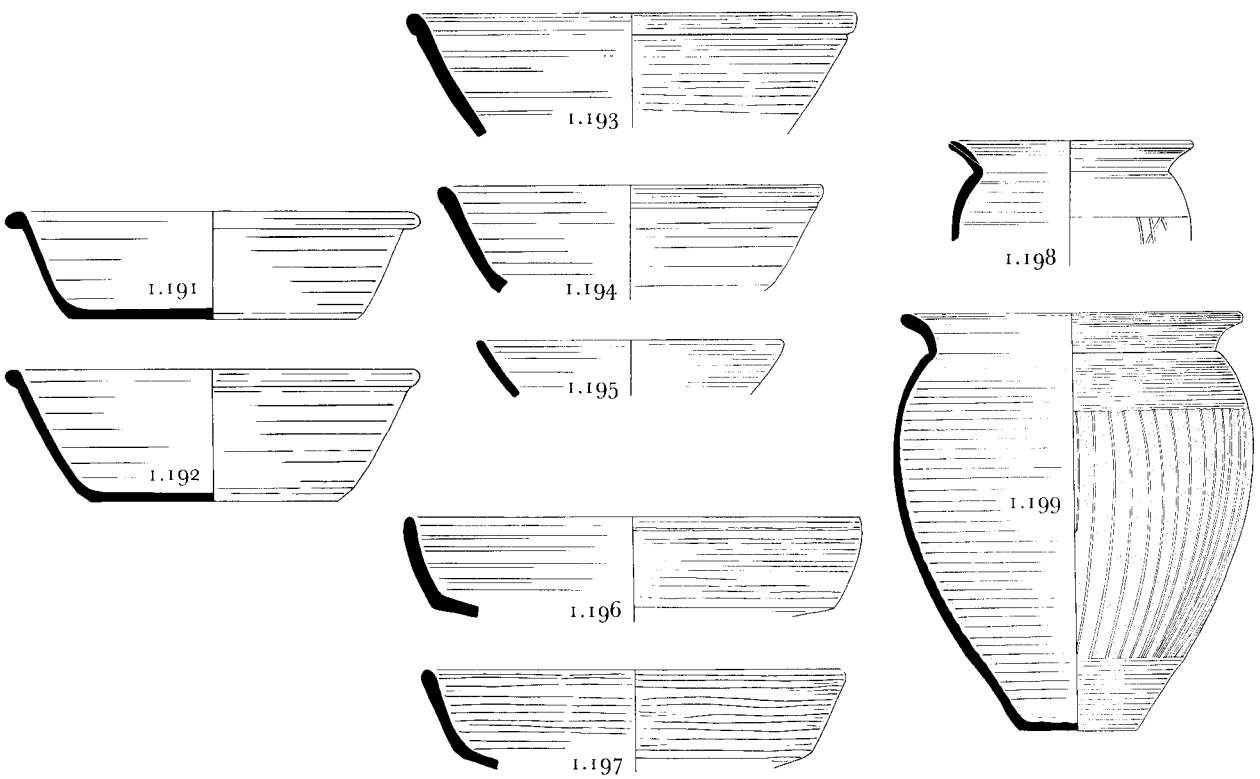
1.191–1.192 and 1.198–1.199 Wheelmade, very hard slightly laminar fabric; light grey with some light brown margins/cores. Abundant quartz (0.2–0.5 mm, S.A. to A., clear, milky), moderate quantities black ironstone (R. and S.A.), fine white mica, sparse charcoal and limestone. The bowls are slipped (medium-dark grey) and burnished. Only one example is cross-hatched (not illustrated). The jars all have everted rims, and are decorated below the shoulder with acute cross hatching or with diagonal and vertical lines.

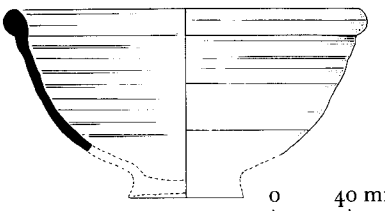
1.193–1.197 Wheelmade, hard fabric, dark grey or black, with some dark brown margins/cores, and a distinctly silty appearance due to abundant quantities of fine quartz and mica (0.1 mm or less) which stand out against the dark matrix. Sparse inclusions of clear quartz (<0.5 mm, S.A.) and grey and iron-stained quartz (more rounded) and pellets of black ironstone. The surfaces are slipped and burnished, dark grey/black, and brought to shiny silky finish.

The bowls are undecorated. The jars, of which there are a very small quantity, are very similar to Nos. 1.198–1.199. None survives below the shoulder.



1.200 Wheelmade, hard grey fabric. Sand-tempered with small quantities of iron ore and white mica. Source unknown, but *cf.* Green (1980a, No. 181).

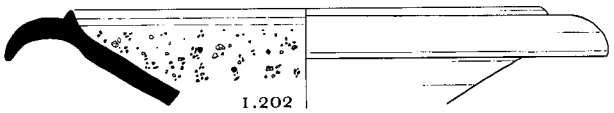




1.201

'D' Rim bowls of Colchester Type 306
1.201

Hard, grey, containing abundant quartz inclusions (often rounded, <0.6 mm), some iron ore, and sparse mica. The type has recently been described by Green (1980a). There are sherds from at least five vessels in the New Fresh Wharf waterfront deposits, some of which may be intrusive. The illustrated example from II.525 appears to be securely stratified and therefore of the late 2nd or early to mid 3rd centuries. Recent evidence suggests that these vessels were being manufactured in Southwark in the late 3rd century (Yule 1982), and the large number of examples from the Colchester 'Mithraeum' also appear to be late 3rd century, (information from C. Going). It may be that this was a long-lived type, produced throughout the 3rd century to *c.* AD 270 or later. The evidence from New Fresh Wharf is not conclusive.



1.202

1.202 Mortarium. One example only. Kay Hartley comments that this is an Antonine form which is commonly found in Southern England. It is therefore included in this section despite its disturbed context. Surfaces are very smooth, and cream coloured with oxidised patches. There are virtually no inclusions except for fine white mica, and sparse fine quartz and iron ore. The trituration grits are very distinctive, and consist of large pieces of white calcined flint and ironstone (<5 or 6 mm) and large grains (<5 mm; averaging 2–3 mm) of rounded and angular quartz.

Colchester mortaria
1.203 (not illustrated)

The only two sizeable sherds of mortaria come from unstratified and post-quay deposits. They are good examples of Hull's wall-sided Form 501B (Hull 1963), which is dated to the late 2nd to mid 3rd centuries. Body sherds in the same fabric occur in waterfront contexts.

Oxford mortarium
1.204 (not illustrated)

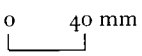
One example only of a Young Type M10–11 (Young 1977)

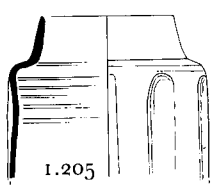
Colchester colour-coated ware
(not illustrated)

The fabric and general appearance are described in Green (1980a). The quantity and sherd size present at New Fresh Wharf is small. The forms represented are cornice rim beakers with raised slip decoration in 'ivy scroll' and hunt themes, and indented beakers.

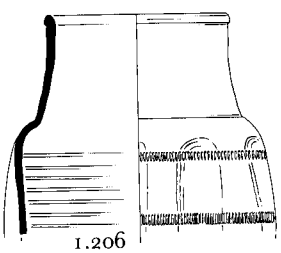
Nene Valley colour-coated ware
1.205–1.214

The fabric is a greyish off-white-beige (e.g. 7.5YR 7/8–7/6) to orange (7.5YR 8/6), and hard with fairly abundant inclusions: quartz (S.A. – A., <0.2 mm, occasionally <1.0 mm), red iron ore (R., 0.5 mm, some larger grains <2.0 mm), sparse white mica. All surfaces are covered with a black or very dark brown slip, mottled where thinner to a light orange-brown. Trailed barbotine is of the same clay as the body of the vessels, and a thin layer of slip underneath the raised barbotine shows that the vessels were slipped twice, both before and after the application of barbotine (see comments on p. 112).

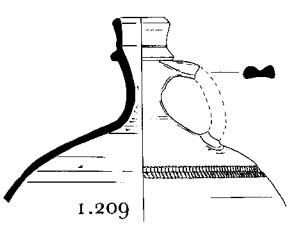




1.205



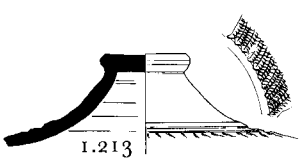
1.206



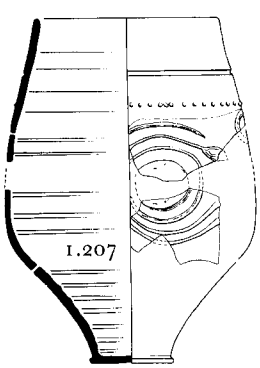
1.209



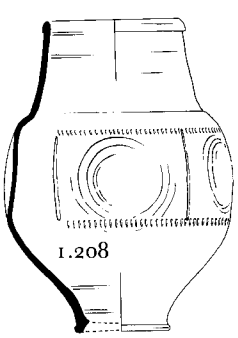
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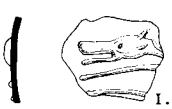
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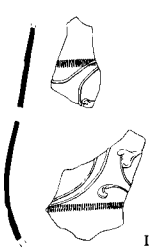
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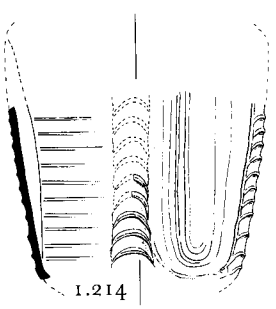
1.208



1.210



1.211



1.214

Late 1st and 2nd century pottery from Period 1, Phases 1 and 2

Period, 1, Phase 1
The pottery from Period 1, Phase 1 contains the following diagnostic types: forms Dr. 2–4 (Koan); Cam. 185A; Cam. 186; Rhodian amphora; Brockley Hill white ware; Hoo flagon; ring and dot Beaker. There are no coins. It is a typical Flavian/Trajanic assemblage, if very small, weighing 10 kilos with vessel equivalents of only one vessel.

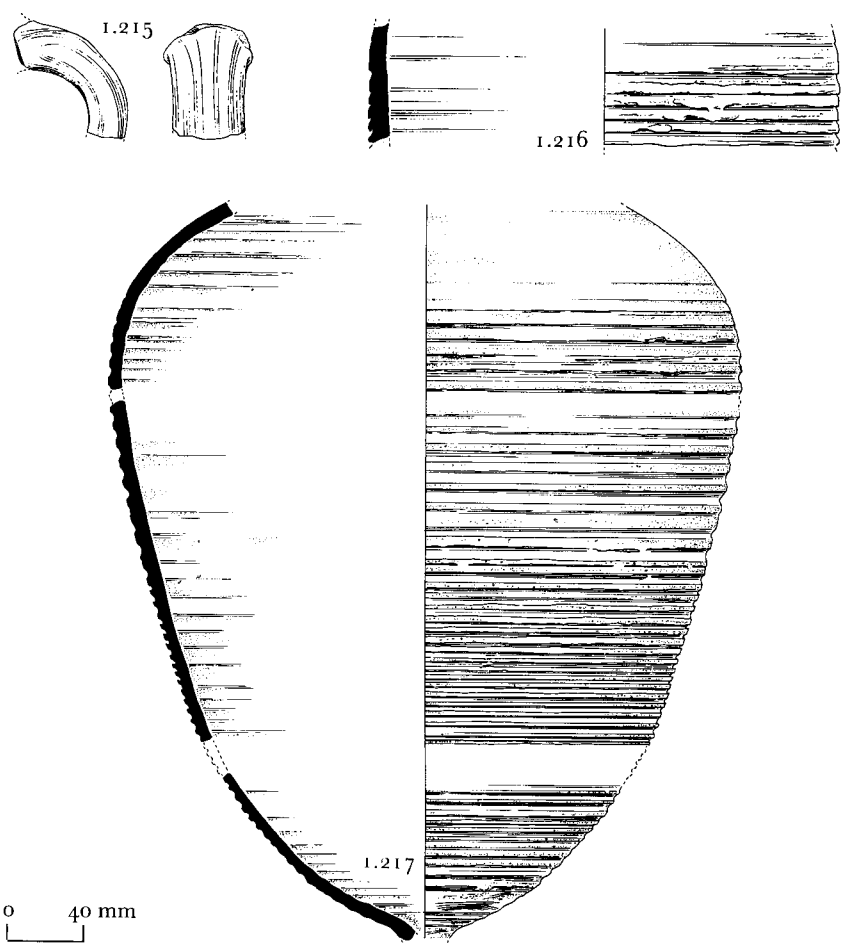
Period 1, Phase 2
The pottery from Period 1, Phase 2 contains the following diagnostic types: Brockley Hill amphora, Brockley Hill mortarium, Gillam (1957) Type 238 mortarium, Hoo flagon, BB2, early BB1, N. Kent hand-made shell tempered jar, Brockley Hill white ware, Highgate ware and Highgate type ware (probably made in N. Kent), Mica-dusted ware, Pompeian Red ware fabric 3, Central Gaulish lead-glazed ware fabric B, Cologne Roughcast beaker. There are five coins, the latest of which is AD 119–38. The date of this phase appears to be Hadrianic. It is a small assemblage weighing 35 kilos, with vessel equivalents of 22 vessels. The weight of this phase, and of the preceding one, is considerably swollen by the large amount of amphora sherds, particularly forms Dr. 20, Dr. 30 and Cam. 186, which always occur in early Roman waterfront deposits in London. A large proportion of the pottery comes from II.286, which contained quantities of Brockley Hill white ware (including the rim of a small *dolium* or *seria*), Poppy Head beakers from Highgate, the Upchurch marshes, and another unknown London source (probably on fabric similarities the same source as 'London ware'), BB1 (Gillam 1957, Type G119 jars and G316 bowl), and BB2 with a probable Colchester source (see Green 1980a, 60). Records of this context, and all the others from Period 1, Phases 1 and 2, are available from the Department of Urban Archaeology.

Late third century and early fourth century pottery intrusive in Period 1, Phases 6–7 and residual from Period 2, Phases 1–3

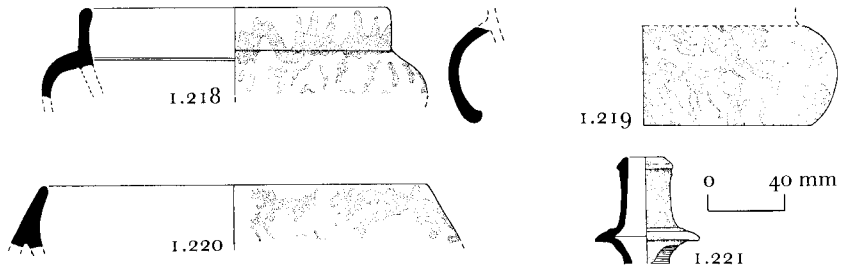
LATE ROMAN PALESTINIAN AMPHORAE
1.215–1.217

Rilled wine amphorae of moderate size. The fabric is generally dull brown or grey (perhaps mudstained), but the most complete example (No. 1.217) is oxidised red-brown externally. Rather friable as a result of the fairly abundant inclusions of wind-polished quartz grains *c.* 0.1–0.5 mm in diameter. The vessels are also all markedly calcareous, and angular white limestone or shell fragments can be seen under low magnification. One of the sherds examined in thin section also displayed numerous *foraminifera* in the clay matrix. Sparse, black, iron ore inclusions are seen in some examples.

These amphorae are of the general type found in 6th-century 'Dark Age' contexts in western Britain, where they have been denominated Bi-ii (Radford and Thomas 1959). It is now believed that importation into London took place in the 4th and early 5th centuries (pers. comm., Dr D. P. S. Peacock). In view of the interest the amphorae have excited, the precise contexts in which the sherds occurred are listed below. Little reliance is placed upon the single record from the early 3rd-century quay deposits, and it is assumed that the Palestinian amphorae, like the Oxfordshire M17 mortaria and *céramique à l'éponge* described below, belong to a subsequent phase, possibly when the quay was in disuse. If these other types of pottery are reliable guides, this phase should date to the late 3rd/early 4th centuries rather than later. None the less, the stratigraphy does not rule out importation after the period of Roman occupation.



The sherds derive from at least ten vessels, but no rims remain. One sherd is recorded as having been found in II.166, in the uppermost quay levels where intrusive sherds might be most expected. The rest are from slumped deposits directly in front of the Roman quay. No. 1.217, represented by about twenty-five small sherds, is the most complete vessel, and was found in both III.293 and III.348, but this amount of material could easily have derived from the breakage of two or three large sherds rather than an entire vessel.



Ceramique a l'éponge
1.218–1.221

A distinctive late Roman import discussed by Raimbault (1973), Fulford (1977a), and Clément *et al* (1980). There are thirty-seven sherds from New Fresh Wharf, representing perhaps ten vessels. Nearly all the sherds are body or flange sherds from bowls of Raimbault Form 6, a flanged bowl directly derived from samian Form 38. Flanges in this form vary considerably in length and shape, but all the New Fresh Wharf examples are long and curved with thickened ends (see No. 1.218, and Raimbault Pl. 1, No. 398). The other form represented on the site is a single example of Raimbault's Form 10, a narrow-necked flagon. Both types are common in the à l'éponge repertoire, and Form 6 was widely exported (Clément *et al.* 1980, 267–9).

No kiln sites have been found for à l'éponge to date, but the distribution is concetrated in South West France between the Loire and the Gironde. In view of the central/north/eastern Gaulish origin of the bulk of the New Fresh Wharf imports, a sherd was submitted to Dr D. F. Williams to determine whether a south-western French source was petrologically likely for the New Fresh Wharf à l'éponge sherds. It was thought at this time that the à l'éponge might be contemporary with the other Gaulish imports, but revised stratigraphical interpretation has made this unlikely. The Rhine and Moselle regions also produced late Roman marbled wares which might conceivably have been mistaken for à l'éponge. Dr Williams reports that the sherd is in a hard reddish fabric, with a fine glossy slip and blurred patterns on the outer surface. In fresh fracture, a distinctive feature of the sherd is the presence of frequent, fairly well-rounded reddish-brown inclusions, ranging up to 1 mm across, in what is otherwise a fine-textured, if slightly micaceous paste. Thin sectioning reveals that these reddish-brown grains are a highly micaceous siltstone, set in an optically anisotropic matrix of fired clay. Also present are plentiful flecks of muscovite and subangular quartz grains, up to 0.1 mm in size.

Since these are commonplace minerals, heavy mineral analysis was undertaken, the prepared sample being subjected to centrifugation rather than the more normal settling, since this greatly increases the number of grains recovered from a sherd. Amongst a large number of opaques, mainly ilmenite, with some magnetite and limonite, over one hundred non-opaque grains were separated. The majority are zircon, with a lesser, but significant quantity of kyanite and andalusite, and some tourmalines, staurolites and garnets. All the grains are well rounded, implying lengthy transportation. This combination recalls Class 'E' dark age imported pottery suggested to originate in the Tertiary deposits of the Paris Basin, or, more likely, Aquitaine, though the match is by no means exact (Peacock and Thomas 1967, 40–4). On this basis a Rhineland or Moselle source can be ruled out for the New Fresh Wharf sherd, since the sedimentary geology of these areas is largely pre-Tertiary (Sindowski 1949). The presence of kyanite and particularly andalusite suggest an origin in an area of Tertiary rocks, and the originally suggested source area between the Loire and Gironde would thus be more suitable than the Poitiers area to the north, which is an area of mainly Jurassic rocks with only small Tertiary outcrops.

A l'éponge is generally dated to the late 3rd and 4th centuries, and at New Fresh Wharf is stratified in Period 1, Phases 6 and 7 (disturbed upper Roman and post Roman). There is one sherd in Period 1, Phase 5 which may well be intrusive as the beams of its context (III.329) were robbed. There is therefore no firm evidence to date the à l'éponge with the quay group, and it probably dates to the late 3rd or early 4th centuries, like the rest of the later intrusive pottery.

Oxford white mortaria
(not illustrated)

For description of these see Young (1977, 56 and 64–5). There are several fairly complete examples nearly all of which come from the disturbed upper Roman levels (Period 1, Phase 7) and the 'Saxon' levels of Period 2, Phases 1, 2 and 3. A small percentage came from II.511. Except for one Form M.22 (from II.164, not illustrated) which could be late 3rd or 4th century, they are all Forms M.17–18, and are therefore late 3rd century in date. C. J. Young comments that this concentration of late 3rd-century mortaria and a corresponding lack of 4th-century mortaria is striking. In mixed post-Roman contexts from London such as these, one would generally expect to find more 4th-century than late 3rd-century material. There are no Form C.100 mortaria (which are exclusively 4th century) and there is only one Form M.22. In the whole Oxford assemblage (see also Oxford red wares and colour coated wares below) there is only one sherd which need be later than *c.* AD 340. It is obvious that little 4th-century material entered during the Saxon robbing of the quay.

Oxford red colour-coated mortaria
(not illustrated)

For the type, see Young (1977, 173). Four sherds only, all Form C.97, and all in post-quay deposits. None need be as late as the 4th century.

Oxford white colour-coated mortarium
(not illustrated)

For the type, see Young (1977, 122). One example only, of a Form WC7, found in residual 4th-century contexts.

Oxford red colour-coated ware
(not illustrated)

For the type, see Young (1977, 123 *ff.*). Various small sherds from late 3rd- and early 4th-century forms: i.e. flanged bowl Type C.51, shallow bowl Types C.48 and C.50, necked bowl Type C.75, shallow bowl Type C.45. Small body sherds from beakers and flagons are also present. All from post-quay deposits and dated *c.* AD 240–340.

Hadham ware
(not illustrated)

For the type, see Orton (1977, 37), and Harden and Green (1978). The small quantity of Hadham red ware sherds from the site are all from closed forms. They nearly all come from the disturbed upper layers, and are probably late 3rd or early 4th century. There is no firm evidence to suggest contemporeanity with the quay.

Porchester 'D' ware
(not illustrated)

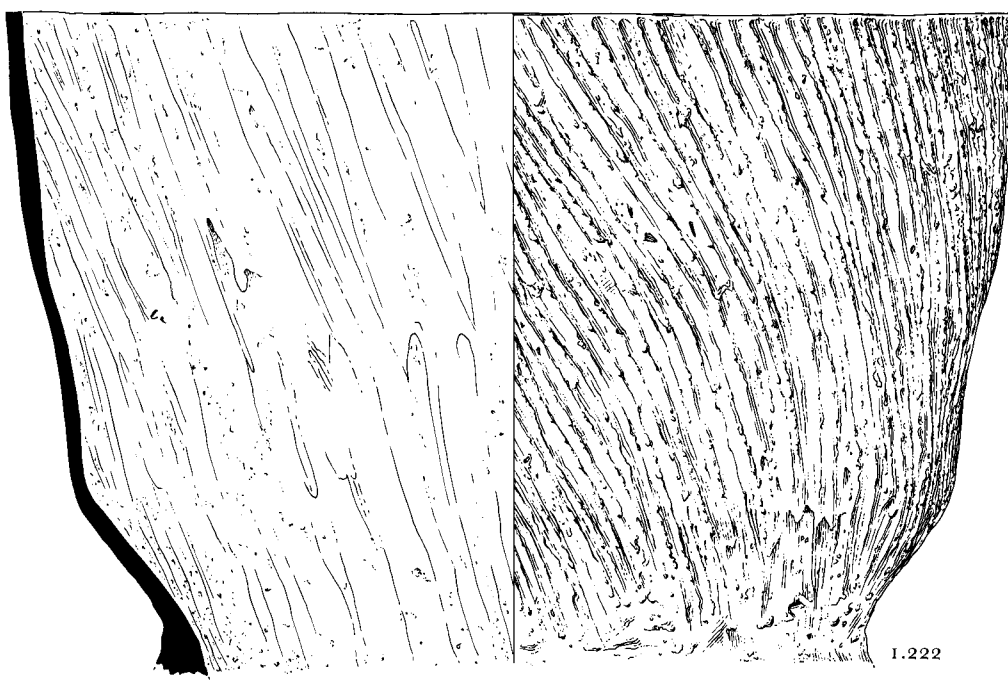
A few sherds from post-Roman contexts. Most are body and base sherds from rilled jars, but there are also rim sherds from a flanged bowl, possibly Fulford's Form 87.2 and dish Form 109.8 (see Fulford 1975).

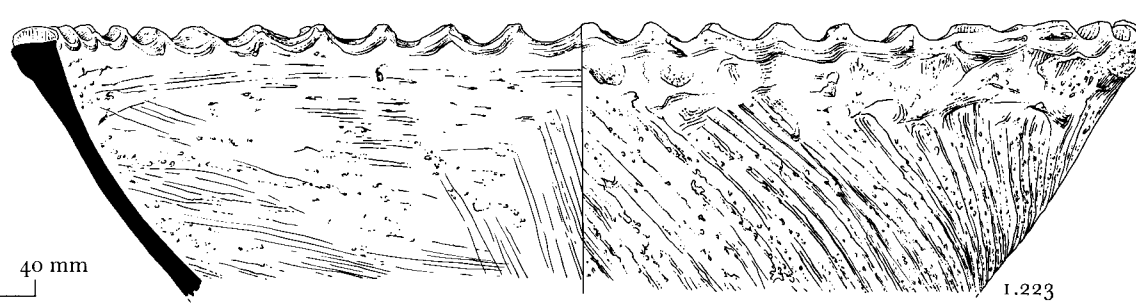
Alice Holt ware
(not illustrated)

Sherds from late 3rd- to early 4th-century forms (flanged bowls, dishes and jars (see Lyne and Jefferies 1979), all from the disturbed upper layers and post Roman deposits. Alice Holt ware is common in London from the mid to late 3rd century onwards, and is found in moderate quantities in the 1st, 2nd and early 3rd centuries.

Salt vessels, unstratified
1.222–1.223

Several large *briquetage* sherds representing two, or possibly three, vessels were recovered from silt in front of the waterfront (II.580). These vessels are good examples of salt or brine containers, which were used at various





0 40 mm

stages in the process of salt drying. Vessels of this nature are found in large quantities, though normally in an extremely fragmentary state, in areas of Iron Age and Roman salt production. *Briquetage* is very rarely found in London where the low salinity of the Thames would have made salt production virtually impossible (Willcox 1975; Batterbee 1982). The means by which these and other small sherds of *briquetage* found on Roman sites in London might have reached the city are discussed below.

Both vessels are massive, coil-built and thin walled for their size, with walls averaging *c.* 10 mm thick. No. 1.222 is bucket shaped, sloping gradually towards a base which was probably flat. Its knife-cut rim has a diameter of *c.* 59 mm. No. 1.223 has a pie crust rim (dia. *c.* 64 mm) and its sides slope fairly steeply. Both vessels are finger ridged on the outside and fairly smooth on the inside. They are fired, or were perhaps subsequently burnt, unevenly (red-buff-grey), although generally oxidised to an overall soft brick red, and are hard but very brittle. They are made from a fine sedimentary clay, which contains rounded quartz, iron ore, some altered limestone and abundant grog inclusions (<2.0 mm) and burnt out vegetable matter. Thin sectioning reveals a sparse scatter of flint, glauconite and plagioclase feldspar (all <0.1 mm) and a fine silty matrix which is entirely consistent with an alluvial source.

No close parallel for either form has been published from saltern sites near London. The thumbed and ridged sherds of *briquetage* from the 'Red Hill' sites on the Essex coast bear a resemblance to the London vessels but, when re-constructable, appear to come from smaller, shallower and more rectangular containers (De Brisay 1975 and P. Barford pers. comm.). Kentish briquetage from the North Kent marshes is entirely dissimilar to the London examples (Rodwell 1979; P. Barford pers. comm.). The flat-rimmed 'Fitzworth trough' of the South-East Dorset saltern sites (Farrar 1975) provides the nearest form parallel for No. 1.222, but its fabric (similar to that of the Dorset 'BB1' pottery) is different to that of the London vessels. Petrologically a South East English source seems likely for the London vessels, and it may be that they originate from undiscovered or submerged saltern sites on the Essex or Suffolk coast or in the Thames estuary.

Rodwell (*ibid.*) has argued for at least two distinct major salt industries on the Kent and Essex coasts in the late Iron Age and early-mid Roman period, and has suggested that the 'Essex East coast group', to which these vessels are perhaps more closely typologically affiliated, is predominantly Iron Age and very early Roman at the latest. The New Fresh Wharf vessels were buried in silt in the river, and while it is impossible to date them closely on stratigraphical grounds, or from associated finds (the only other pottery from this context was one sherd of Roman greyware), there are two sherds from identical salt vessels on other City sites which come from Roman contexts. One of these (from a large flat rimmed vessel very similar to No. 1.222) comes from an inland domestic site (the G.P.O. site of 1975) in a securely dated and stratified Trajanic/Hadrianic context. The other, a ridged body sherd, comes from a 2nd-century context at Miles Lane, a site which would have been on or very close to the river in the 1st and 2nd centuries. In view of this evidence, and the virtual absence of Iron Age occupation in London, it is suggested that salt containers were reaching London in the Roman period.

Salt vessels of this large bucket variety are almost entirely confined to the saltern sites where they were used. It is still not known what containers were used to transport dried salt from the saltern to the markets. Green (1980) has suggested that pitch-sealed shelly jars of a type common in North Kent and London may have served this purpose, while Rodwell (*ibid.*) has suggested that the North Essex *briquetage* vessel sherds may be more common on inland Essex sites than is generally appreciated and may, therefore, represent dual usage as evaporation vessels and containers. Vessels of the type found at New Fresh Wharf would have been too bulky and brittle to have been habitually used for transportation, but it is possible that they did contain salt or a salted commodity such as fish or meat. It is equally possible that they were used fraudulently to make up the weight of a shipment of salt.

Ceramic Lamps

The lamps, or fragments of lamps, range in date from the 1st to the late 2nd or early 3rd centuries. Only No. 1.227, dated *c.* AD 180–220, is contemporary with, or slightly earlier than, the building of the quay. No. 1.225 comes from a layer which pre-dates the quay. No. 1.224 is unstratified (but would appear from its fabric to be late 1st or early 2nd century), and No. 1.226 may be residual.

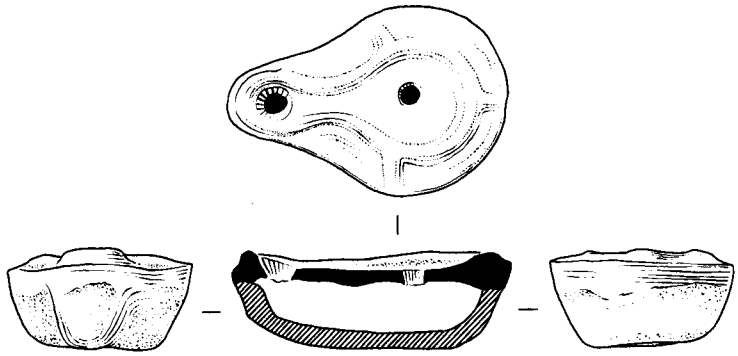
No. 1.225 is the earliest fragment. It was made in Italy, and can be placed in Type I or IV of Loeschcke's classification (Loeschcke 1919). Two of the other lamps and fragments of lamps come from *Firmalampen* (Loeschcke Types IX and X). One of them (No. 1.224) was locally made, and the other (with fragments of two identical lamps from the same mould, which are not illustrated) was made at Lezoux in Central Gaul. The Lezoux lamps are complete, unused, and good examples of a type which is rarely found in Britain. They are obviously part of the large unused group of Lezoux black colour-coated pottery (see pp. 115–8), which, together with the samian from the same area, and samian and imports from other areas, is presumed to have been dumped inside the waterfront from ships, warehouses or shops (p. 98). The non-Lezoux lamps are not thought to be part of this group and probably represent domestic refuse from the city.

1.224 Almost complete *Firmalampe* of Loeschcke Type X. Three unpierced lugs on shoulder. Slightly hollowed concave base. Partially reduced fine silty fabric, oxidised and mica-dusted surfaces. Visually similar to locally made mica-dusted wares of the late 1st to early/mid 2nd centuries (see Green 1980a, Nos. 352–3 for fabric description) and probably a product of the same kilns. AREA IV, unstratified.

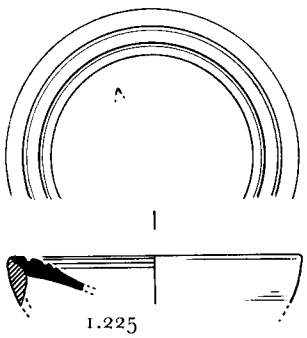
1.225 Fragment of moulded *discus* rim from a volute lamp of Loeschcke type I–IV (identified by D. M. Bailey). Buff micaceous clay; orange-brown slip. Made in Italy *c.* AD 30–80. III.350: Per. 1, Ph. 2.

1.226 Large fragment of *discus* and shoulder from a wheel-made lamp. Buff-grey micaceous fabric. IV.350: Per. 1, Ph. 3.

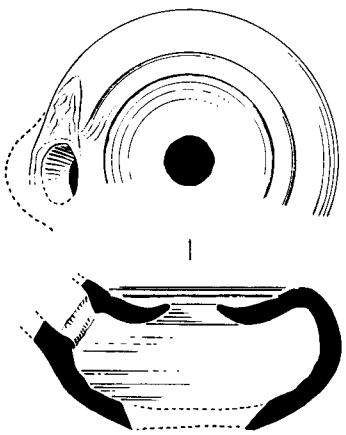
1.227 Complete *Firmalampe* of Loeschcke type X (see p. **14**). Two unpierced lugs on shoulder. 'Ammon' mask on *discus* (blurred). Slightly raised base, stamped VIBIUS. The name Vibius occurs originally on north Italian *Firmalampen* of Trajanic/ Antonine date (Bailey 1980). It occurs also on a samian lamp from the New Fresh Wharf site in the Amherst collection (see No. 4.6 below). Central Gaulish fabric; black-brown slip. Made in Lezoux *c.* AD 180–220. II.525: Per. 1, Ph. 6. Sherds from identical lamps come from III.286: Per. 1, Ph. 2, and from II.109, II.110, II.511: all Per. 1, Ph. 6.



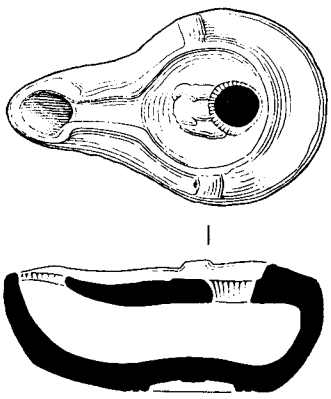
1.224



1.225



1.226



1.227

0 20 mm



0 10 mm

FIGURE 76 Provenance of main pottery types present in Areas II and III
x indicates presence, but less than 0.1 kg

Common Name		Phase 4					Phase 5												
		340	341	519	522		109	110	111	288	289	309	318	319	329	338	511	521	525
Dressel 20 amphorae	EVES					*0.0*		0.8	0.3			0.4	0.2						
1.1–1.3	weight	1.2	0.2			*1.4*	0.7	5.0	1.3	2.1	0.3	0.3	2.6		x	0.5	1.3		
Dressel 30 amphorae	EVES			0.3		*0.3*							0.3						
not illustrated	weight	0.2	0.1	0.5	0.1	*0.9*		0.4	0.2	0.2	0.2	0.5	1.7		0.3	0.1	0.7		0.2
Richborough 527	EVES					*0.0*	1.0												
amphorae 1.4–1.6	weight					*0.0*	3.8	3.2					0.1				0.3		
North African cylindrical	EVES					*0.0*													
amphorae 1.7–1.11	weight			0.1		*0.1*	0.1	0.9	x	0.1			1.1	0.3					
Hollow foot amphorae	EVES					*0.0*													
not illustrated	weight					*0.0*													
Micaceous amphorae/	EVES					*0.0*													
jars 1.14–1.18	weight					*0.0*							x						
Large cylindrical	EVES					*0.0*													
amphorae 1.19–1.20	weight					*0.0*	x			0.1					x				
Amphorae/flagons	EVES					*0.0*													
(cf. Gose 415–8)	weight					*0.0*					0.1					0.1			
1.21–1.24																			
Corrugated amphorae/	EVES					*0.0*		0.4			1.5		0.7						
flagons 1.25–1.28	weight	x	x	0.2		*0.2*		x	x	x	0.4	0.2	1.1			x	x	0.1	
Imported storage jar	EVES					*0.0*													
1.30	weight					*0.0*						0.1							
North Gaulish greyware	EVES		0.3	0.2		*0.5*				0.2			1.1			0.3			
('bandes lustrees')	weight		x	x		*0.0*				x			0.3			x			
1.31–1.42																			
North Gaulish pentice	EVES					*0.0*				0.2			0.1					0.2	
beakers 1.43	weight					*0.0*				0.4	x		0.1		x		0.1	x	0.1
North Gaulish greyware	EVES			0.3		*0.3*							0.2	0.2			1.8		
('hooked rim')	weight			0.9		*0.9*							0.1	x			1.4	0.2	
1.44–1.45																			
North Gaulish flagons	EVES				1.0	*1.0*		1.5									1.0		
1.46–1.48	weight		x		0.2	*0.2*		0.7		0.1			x	x	x	x	0.1		
North Gaulish greyware	EVES		0.2			*0.2*													
('double lipped')	weight		x			*0.0*													
1.53–1.57																			
North Gaulish greywares	EVES					*0.0*		0.2					0.4				0.3		
('other') 1.49–1.52;	weight					*0.0*	x	0.4					0.1	x			0.2		
1.58–1.63																			
Eifelkeramik	EVES					*0.0*						0.3				0.2			
1.64–1.68	weight					*0.0*		0.1				0.1	x	x		0.1			
Eifelkeramik mortaria	EVES			0.2		*0.2*			0.3										
1.69–1.72	weight	0.1	0.2	0.2	0.2	*0.7*			0.2										
Verecundus mortaria	EVES					*0.0*							0.1						
1.73–1.77	weight	0.6				*0.6*							0.3			0.5			

		Phase 6		Phase 7						Post Roman Phases														
586		269		112	136	164	165	166		102	150	194	195	220	221	222	256	258	293	314	348	518		Total
	1.7													0.3					0.2				*0.5*	*2.2*
6.4	*20.5*	1·7	*1.7*	0.7	2.6	0.6		1.4	*5.3*	0.4	2.2		2.3	1.1	0.1		0.4	11.8	8.8	0.6	x		*27.7*	*56.6*
	0.3																							*0.6*
0.2	*4.7*	5.3	*5.3*	0.6	0.1	0.3		0.9	*1.9*	0.2	2.4	x	0.4	1.2	0.3	0.1	0.1	1.3	3.4	0.7	x		*10.1*	*22.9*
	1.0																							*1.0*
	7.4				0.1				*0.1*										x				x	*7.5*
						0.2			*0.2*															*0.2*
0.5	*3.0*	0.7	*0.7*	x		0.4	2.6	0.1	*3.1*		0.3		1.2				0.1		0.4	0.3	0.1	0.1	*2.5*	*9.4*
																		1.0					*1.0*	*1.0*
						0.1			*0.1*									0.8	0.6				*1.4*	*1.5*
																								0.0
	x			x	x			0.2	*0.2*				x						x				x	*0.2*
																								0.0
	0.1					0.1			*0.1*				0.1	0.1			x		0.2				*0.4*	*0.6*
																		1.0	0.2		0.2		*1.4*	*1.4*
	0.2	0.1	*0.1*	0.1			0.1	x	*0.2*		0.3							1.3	0.4		0.6		*2.6*	*3.1*
	2.6			1.0		1.0	1.0		*3.0*										1.0	1.0			*2.0*	*7.6*
	1.8	1.5	*1.5*	1.5	0.1	0.3	0.3	0.3	*2.5*		0.1	0.2		0.1	0.4	x	x	0.1	0.4	0.8	x		*2.1*	*8.1*
														0.1									*0.1*	*0.1*
	0.1													0.3									*0.3*	*0.4*
	1.6	0.4	*0.4*	0.1					*0.1*		0.5		0.4	0.1				0.8					*1.8*	*4.4*
	0.3	0.1	*0.1*	x				x	x		0.1		x	0.1				0.1	x				*0.3*	*0.7*
	0.5	0.3	*0.3*	0.3	0.2	0.3		0.2	*1.0*		0.4		1.3					3.0	0.2				*4.9*	*6.7*
	0.7	0.2	*0.2*	0.1	x	x		x	*0.1*	x	x		0.3	x	0.1		x	0.5	0.4		x		*1.3*	*2.3*
0.6	*2.8*																	0.3		0.3			*0.6*	*3.7*
0.5	*2.2*										x			x				0.1	x	x			*0.1*	*3.2*
	2.5	1.5	*1.5*															2.0					*2.0*	*7.0*
	0.9	1.3	*1.3*	x	x	x		0.1	*0.1*	x	0.1		0.3	0.1				0.9	0.1	x			*1.5*	*4.0*
		1.3	*1.3*								0.9		0.2	0.3									*1.4*	*2.9*
		0.5	*0.5*								0.3		0.3	0.1				0.3					*1.0*	*1.5*
	0.9	1.3	*1.3*					0.3	*0.3*					0.2				0.3	0.2				*0.7*	*3.2*
	0.7	0.9	*0.9*		x			0.2	*0.2*		0.1			0.1	x			x	0.1				*0.3*	*2.1*
	0.5	0.5	*0.5*			0.5			*0.5*					0.2					0.1				*0.3*	*1.8*
	0.3	0.3	*0.3*	x		0.3			*0.3*	x	x			0.2				x	0.5				*0.7*	*1.5*
	0.3													0.1									*0.1*	*0.6*
	0.2													x									x	*0.9*
	0.1	0.6																0.5	1.0				*1.5*	*2.2*
	0.8	3.2	*3.2*									0.2		0.3				3.6	6.3				*10.4*	*15.0*

Common Name		Phase 4					Phase 5											
		340	341	519	522		109	110	111	288	289	309	318	319	329	338	511	521	525
Rhineland mortaria (fine white fabric) 1.78–1.80	EVES	0.2				*0.2*			0.1			0.2							
	weight	0.5				*0.5*			0.3			0.3	x						
Rhineland mortaria ('other') 1.81–1.83	EVES					*0.0*			0.1										
	weight					*0.0*			x						x				
Cologne black colour-coated ware 1.84–1.96	EVES			0.1		*0.1*		0.1	0.2	0.6			1.4			0.3	1.1	0.6	
	weight	x	x	0.5		*0.5*	x	0.6	0.4	0.2	0.1	x	1.7		x	0.1	0.6	0.2	
Central Gaulish black colour-coated ware 1.97–1.116	EVES					*0.0*	2.3	8.3	0.2	0.3							12.1	0.9	
	weight		x	0.1	x	*0.1*	0.6	2.9	0.2	0.1			0.1	x			3.7	0.1	0.2
Moselkeramik 1.117–1.143	EVES	0.1		0.1		*0.2*		1.0	0.1	0.1	0.3		1.1		0.1		2.3	0.3	
	weight	x		x	x	*0.0*	x	0.1	x	1.2	x		0.4	x	x		0.4	0.1	x
BB1 1.164–1.174	EVES		0.1			*0.1*		0.3	0.2	0.1		0.2	0.2		0.1	0.1	0.9	0.2	1.0
	weight	x	x	x		*0.0*		0.2	0.1	1.0	0.1	0.1	0.2	x	x	x	0.8	0.1	0.9
Micaceous black-burnished ware 1.175–1.182	EVES			0.1		*0.1*							0.2	0.1					
	weight	x		x		*0.0*			x				0.8	0.1					
BB2 (fabric 2237) 1.191–1.192; 1.198–1.199	EVES	0.1	0.1	1.1	0.1	*1.4*		0.1	0.8				0.1			0.2	1.1	0.1	
	weight	x	0.2	0.5	x	*0.7*		0.1	0.4	0.4		x	x	x	x	0.1	0.7	0.3	
BB2 (fabric 2238) 1.193–1.197	EVES		0.2	0.1		*0.3*			0.2	0.2			0.2						
	weight	x	x	0.4	x	*0.4*			0.1	x			x		0.1				
'D' rim bowls 1.201	EVES					*0.0*												0.4	
	weight					*0.0*												0.1	
Colchester colour-coated ware not illustrated	EVES					*0.0*													
	weight			x		*0.0*		x					x						
Nene Valley ware ('double slipped') 1.205–1.214	EVES					*0.0*		0.1									1.3		0.4
	weight				0.1	*0.1*		x		x	x		x				0.4	0.1	0.1
Nene Valley ware not illustrated	EVES					*0.0*				0.2									
	weight			x		*0.0*		0.1	0.1	x		x	0.1	x				x	
Late Roman Palestinian amphorae 1.215– 1.217	EVES					*0.0*													
	weight					*0.0*													
A l'eponge ware 1.218–1.221	EVES					*0.0*									0.1				
	weight					*0.0*							x		x				
Oxford white mortaria not illustrated	EVES					*0.0*	0.1												
	weight	x	0.1			*0.1*	x										x		
Oxford red colour-coated ware not illustrated	EVES					*0.0*													
	weight					*0.0*													
Hadham ware not illustrated	EVES					*0.0*													
	weight		x			*0.0*													
Porchester 'D' ware not illustrated	EVES					*0.0*													
	weight					*0.0*													
Alice Holt/Farnham ware not illustrated	EVES					*0.0*													
	weight					*0.0*													

	Phase 6			Phase 7						Post Roman Phases														
586	269			112	136	164	165	166		102	150	194	195	220	221	222	256	258	293	314	348	518		Total
	0.3	0.1	*0.1*					0.1	*0.1*		0.2			0.1				0.1	0.1				*0.5*	*1.2*
	0.6	0.2	*0.2*		x			0.2	*0.2*		0.4		x	0.7				0.2	0.2				*1.5*	*3.0*
	0.1														0.1								*0.1*	*0.2*
	x														x				0.1				*0.1*	*0.1*
0.1	*4.4*	0.5	*0.5*		0.4	0.2		1.3	*1.9*	0.1	1.4			0.5				0.1	0.1				*1.2*	*9.1*
x	*3.9*	0.5	*0.5*	x	0.1	0.1		0.9	*1.1*	x	0.6		0.1	0.2	x	x	x	0.1	0.1	x			*1.1*	*7.1*
	24.1			0.3	0.4	0.3		5.6	*6.6*	0.3	0.2		0.1						0.8				*1.4*	*32.1*
x	*7.9*	0.1	*0.1*	0.2	0.1	0.4		1.5	*2.2*	0.1	0.1		x	x				x	0.1	x			*0.3*	*10.6*
	5.3	0.9	*0.9*	0.1		0.2		0.6	*0.9*	0.1	0.5		0.6	0.3		0.1		2.6	2.9	1.0			*8.1*	*15.4*
x	*2.2*	0.4	*0.4*	x	x	0.1	x	0.3	*0.4*	x	0.2		0.1	0.1		x	x	0.7	1.0	2.7	0.1		*4.9*	*7.9*
0.2	*3.5*	1.0	*1.0*	0.2	0.7	1.0	1.2	1.8	*4.9*	0.4	0.9	0.3	3.1	0.6	0.4	0.1	0.3	2.5	1.4	0.7			*10.7*	*20.2*
0.1	*3.6*	0.9	*0.9*	1.4	0.7	0.6	1.0	1.9	*5.6*	0.4	0.9	0.2	2.6	0.8	0.4	x	0.3	2.5	1.1	0.8	x		*10.0*	*20.1*
	0.3	0.6	*0.6*								0.1		0.4	0.3				0.2					*1.0*	*2.0*
	0.9	0.9	*0.9*								x	0.1	0.3	0.1			0.1	0.1	x				*0.7*	*2.5*
0.1	*1.4*	0.2	*0.2*	0.2	0.3	0.2	0.4	1.2	*2.3*	0.1	0.1		0.1	1.3		0.2	0.1	0.1	0.2				*2.2*	*8.6*
0.1	*2.1*	0.2	*0.2*	0.2	0.2	x	0.1	0.9	*1.4*	0.1	0.3		0.1	0.6		x	x	x	0.1	x			*1.2*	*5.6*
	0.6			0.1	0.1				*0.2*		0.1			0.5									*0.6*	*1.7*
	0.2	x	x	x	0.1				*0.1*		x			0.3	x								*0.3*	*1.0*
	0.4			0.3				0.8	*1.1*									1.3	0.4				*1.7*	*3.2*
	0.1			0.1				0.1	*0.2*									0.2	x				*0.2*	*0.5*
		0.2	*0.2*	0.2					*0.2*									0.1	0.3	0.1	0.2		*0.7*	*1.1*
	x	0.1	*0.1*	0.1	x		x		*0.1*		x					0.1	x	x	x	x	0.1		*0.2*	*0.4*
	1.8			1.5		0.3	0.1		*1.9*				0.2						0.4				*0.6*	*4.3*
	0.6			0.2		x	x	x	*0.2*		x	x	x			x	x	x	0.1	0.3	x		*0.4*	*1.3*
	0.2			0.6		0.4		1.0	*2.0*		0.2								0.5	0.2			*0.9*	*3.1*
	0.3			0.3	x	x	x	0.4	*0.8*	0.1	0.2	x	0.1	0.1		x	0.1	x	0.2	x		x	*0.8*	*1.8*
								x	x										0.1		0.6		*0.7*	*0.0* *0.7*
	0.1																		0.3	1.0			*1.3*	*1.4*
x	x			0.1	x			0.1	*0.2*	x			x	x	x		0.1	x	0.1	x			*0.2*	*0.4*
	0.1							0.2	*0.2*	0.2	0.1		0.2		0.1			0.4	0.2				*1.2*	*1.5*
	x	x	x	0.1	x	0.3	0.1	0.2	*0.7*	0.2	0.1		0.4		0.1			0.5	0.1				*1.4*	*2.2*
						0.1			*0.1*						0.3								*0.3*	*0.4*
				x		x			x	x	x		x		x		x	x		x			x	*0.0*
		x	x	0.1	x	x			*0.1*	x	0.1	x	x	x			x	0.1	x	x	x		*0.2*	*0.0* *0.3*
						0.1			*0.1*		0.1	0.1	0.2						0.1				*0.5*	*0.6*
		x	x		x	0.1		x	*0.1*		0.1	x	0.1			x			x				*0.2*	*0.3*
				0.4		1.0		0.4	*1.8*	0.1	1.3		1.2										*2.6*	*4.4*
				0.1		0.3		0.1	*0.5*	x	0.6		0.3				0.1						*1.0*	*1.5*

FIGURE 77 Concordance list for pottery illustrations. The vessels are referred to by their AREA and context numbers. Some joining sherds derive from more than one context. A full concordance for illustrated and non-illustrated pottery is present in the Department of Urban Archaeology.

1	III.269
2	III.258
3	unstratified
4	II.586
5	II.110
6	II.109,110,586
7	II.165
8	II.29
9	II.164
10	unstratified
11	III.192
12	III.258
13	II.164
16	II.166
17	unstratified
18	III.329,150
19	II.164
20	III.314
21	III.269,150,348
22	III.258
23	II.576,579
24	III.348
25	III.318
26	III.258
27	III.258,269,195
28	II.112,136,164
29	III.269
30	III.220,309
31	III.318
32	III.269
33	III.288
34	III.258
35	III.195
36	III.269
37	II.519
38	III.220
39	III.318
40	III.220
41	III.318
42	II.166
43	III.195,258,269
44	II.511
45	II.511
46	III.258
47	III.269
48	III.220
49	III.195,258,269
50	II.527
51	III.258,269
52	III.269
53	III.269,318
54	III.150
55	III.341
56	III.220
57	III.150
58	unstratified
59	unstratified
60	III.269,293
61	III.220
62	III.220
63	III.220
64	III.220
65	III.338
66	III.269
67	III.269
68	III.309
69	II.522
70	III.101
71	II.520,111
72	II.111
73	II.34
74	III.293
75	III.293
76	III.220
77	III.195,258
78	III.103
79	III.269
80	III.293
81	II.519
82	II.111
83	II.48
84	II.110
85	II.166
86	II.521
87	II.519
88	II.136
89	II.111
90	III.318
91	III.318
92	III.288
93	II.110
94	III.288
95	II.511
96	II.136
97	II.511
98	II.110,511
99	II.109,110,511
100	II.110,511
101	II.109,511
102	II.166
103	II.525
104	II.511
105	II.110,511
106	II.110,511
107	II.511
108	II.511
109	II.166
110	III.288
111	III.269
112	II.110
113	II.511
114	II.511
115	III.288
116	II.166
117	II.511
118	III.289
119	III.258
120	III.258
121	III.258
122	III.258
123	II.166
124	III.293
125	II.122
126	II.525
127	III.258
128	II.521
129	II.136
130	III.293
131	III.150
132	III.269
133	II.511
134	II.511
135	II.136
136	III.293
137	III.293
138	II.511
139	II.110
140	II.511
141	II.164
142	II.511
143	III.250
144	III.338
145	III.269
146	III.269
147	III.309,340
148	II/III.114,166,195
149	II.533
150	II.111
151	III.258,269,314
152	III.269
153	III.350
154	II.166
155	III.293
157	III.150
158	II.102
159	III.220
160	II.110
161	II.521
162	II.511
163	II.511
164	III.258
165	II/III.112,258
166	III.338
167	III.258
168	II.110
169	II.164
170	II.166
171	II.165
172	III.221
173	III.195
174	III.318
175	III.340
176	III.269
177	III.195
178	III.525
179	III.519
180	III.220
181	III.269
182	III.195
183	III.150
184	III.269,318
185	III.150,220,258, 269,293,318,319
186	III.314
187	III.314
188	III.269
189	III.220
190	II.110
191	III.220
192	II.519
193	III.269
194	II.511
195	III.269
196	III.220
197	III.150
198	II.166
199	II.511
200	II.511
201	II.525
202	III.150
205	II.109,110
206	II.166,511
207	II.525
208	II.112,136
209	II.511,523
210	III.288
211	II.164
212	II.164
213	II.166,511
214	II.522
215	III.293
216	II/III unstratified,314
217	III.293,348
218	III.314
219	III.293
220	III.329
221	III.293
222	II.580
223	II.580
224	IV. unstratified
225	III.350
226	IV.350
227	II.525

SAMIAN WARES

Joanna Bird

The following discussion is primarily concerned with the dating and quantification of the New Fresh Wharf samian, to which is appended a catalogue of the decorated sherds and other items of special interest. The samian stamps are separately listed by Brenda Dickinson (pp. 186–97). Beth Richardson considers the significance of the samian as evidence of trade (pp. 96–9). A survey of evidence relating to the activities in Roman London of traders in samian and fine pottery is provided by Michael Rhodes (pp. 199–204) and the implications of the samian dates are considered in the synthesis (pp. 62–4).

The large amount of samian recovered from the excavations at New Fresh Wharf is of considerable importance, both for the interpretation of the site and for the evidence it provides for late samian imports into Britain. Most of this pottery came from the filling of the Roman quay (Period 1, Phases 4–5) and from later levels, and it dates largely from the mid-Antonine period onwards. A high proportion of the samian is clearly fresh and unused, and this new pottery falls into two distinct groups, one of Central and one of East Gaulish origin, for which relatively close date ranges are suggested. Because of the proposed dating, and because many of the unused plain forms are both stamped and complete or virtually complete, a representative selection of the plain wares has been illustrated, as well as the stamps and significant decorated pieces.

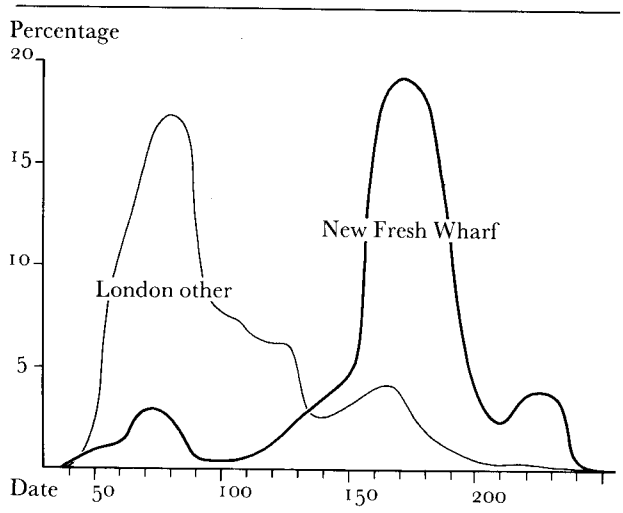
The Central Gaulish group of unused samian, dated below to *c.* AD 170–80, includes much material from within the quay structure. There are many unabraded cross-joins between different levels, indicating that the samian formed part of a deliberate infilling, and the stratigraphical evidence suggests that this infilling formed part of the quay construction. The various possible explanations for the presence of this group of new samian in the 3rd-century quay – that it represents old stock from nearby shops or warehouses, or damaged goods that had been dumped nearby – are not perhaps very satisfactory, but it should be noted that there are other vessels, mostly surviving as sherds, from within the quay which are of the same date and types as the unused Antonine samian but bear signs of considerable use and wear. These include No. 2.159 below, and pieces of Drag. 45 mortaria (Archive Report). This implies that the quay fill incorporates both used and unused Central Gaulish samian of mid- to later Antonine date, together with East Gaulish wares which culminate in a late group of new material that may actually be contemporary with the quay construction.

This group of East Gaulish samian is dated below *c.* AD 235–45; it too includes material from within the quay structure, but much of it comes from later or disturbed layers. The presence of so much new samian, together with the unusual range and quantity of other imported wares from the site, suggests that this stretch of the waterfront was used for the delivery of imported pottery from at least the mid-Antonine period [1].

The high proportion of East Gaulish wares, almost all of which come from Rheinzabern and Trier, is of particular interest, as it largely dates from the second quarter of the 3rd century, when relatively little samian is known to have been imported into Britain [2]. The decorated East Gaulish ware is equivalent to 40 per cent of the total decorated ware from all East Gaulish potteries in the Museum of London collection (Marsh 1981, 181), and forms a far higher proportion of the whole than is normal. At present the only comparable assemblage in Britain comes from the Roman signal-station at Shadwell in East London (Bird forthcoming b); the Shadwell group is smaller but it includes a number of the same potters. The available dating evidence for 3rd-century samian generally allows less precision in dating individual potters than is possible for the 1st and 2nd centuries, and is further complicated by the reuse of old moulds attested at Trier and probably also at Rheinzabern (see below), so that the dating suggested here for the second group of unused samian may be of assistance in dating late samian elsewhere.

The date range of all the samian from the site is shown on a graph, Figure 78. This is based on the dates of the potters represented by the stamped (223) and decorated (between 320 and 352) vessels, and is shown against the graph for decorated samian from London as a whole. Marsh (1981) has demonstrated that the

FIGURE 78 Comparison between the date ranges of the samian pottery from New Fresh Wharf and the decorated samian London in general (the latter after Marsh 1981).



London pattern is common to British and Continental sites where there was continuous occupation, and that the variations in quantity at different periods reflect fluctuations in samian supply rather than consumption. Deviations from this pattern have to be explained by circumstances at the site involved, and at New Fresh Wharf it can be assumed that the samian reflects the period of commercial activity on the waterfront, prior to which there was only a small amount of samian from casual loss or dumping along the riverside.

South Gaul

South Gaulish products make up only a small proportion of the total samian, and derive in part from the lowest silt levels beneath the quays. There are forty-one decorated vessels from La Graufesenque, dated between AD 45 and 110, with forms Drag. 29 and 37 equally represented. Twelve of these bowls are pre-Flavian, and include single vessels in the styles of Bassus-Coelus, Modestus and perhaps Niger and Gallicanus. The early to mid-Flavian bowls are in styles associated with Secundus, Iucundus, Vitalis (two), Meddillus, Sabinus and the 'Large Rosette' potter, and there are later bowls assigned to M Crestio (two) and Mercator. The later products of Montans, *c.* AD 110–45, are represented by two bowls of the Malcio-Chresimus/'Leaf Stamp' potter group.

The three South Gaulish potters' stamps, of Frontinus, Logirnus and Pontus, are all on plain forms and are of immediately pre-Flavian to mid-Flavian date. The bulk of the plain forms are of Neronian to Flavian date, and consist largely of forms Drag. 15/17, 18 and 27. There are only single examples of the pre-Flavian forms Ritt. 8, 9 and 12. For a full list, see Figure 85.

Central Gaul

Pottery from Les Martres-de-Veyre is very sparsely represented. There are only three attributed Trajanic decorated bowls – one probably by Drusus I and two, including a form Drag. 29, by 'Ioenalis-Donnaucus' – and a single bowl in the style of the Hadrianic to early Antonine potter Cettus. The three stamps, of Aelianus and Paterclus (two), are on plain forms and of Trajanic-Hadrianic date. The other plain sherds probably represent no more than twenty vessels, of forms Drag. 18/31, 18/31R and 27.

There is a very large group of samian from Lezoux, including a maximum of 185 attributed decorated bowls (Figure 79) and 173 identified potters' stamps (Figure 80). A high proportion of this – seventy-eight per cent of the decorated ware and eighty-six per cent of the stamps – dates from the mid- to late-Antonine period, a concentration which is supported by the plain wares: the ratio of form Drag. 18/31 to Drag. 31 is 1:39, and that of form Drag. 27 to Drag. 33 is 1:53. Much of this pottery is fresh and unused (see p. 7), suggesting that it may have been rejected or damaged at the quayside; because of the relatively high numbers of stamps of certain potters which were present, and because of the uniformity of some of the plain forms (notably the form Drag. 31 bowls: Nos. 2.172–8), this unused samian is here interpreted as perhaps forming part of a single shipment.

A date within the period *c.* AD 170–80 is suggested for this 'shipment' group. It includes unused vessels of forms Drag. 31, 31R, 33, 38 and Walters 79, bearing stamps dating between AD 155 and 200 (see Figure 80), but the presence of unused form Drag. 45 mortaria (including nine with lion-head spouts) indicates a date after *c.* AD 170, when this form was introduced. This date is also indicated by the stamps of Tituro, Maximinus i, Mercator iv and Paullus v, while the stamps of Cinnamus ii, Titurus, Illixo and Cintusmus i would suggest a terminal date *c.* AD 180. The ratios of form Walters 79 to the slightly later variant Walters 79R (19:1) and of form Drag. 31 to Drag. 31R (approximately 3.5:1) would tend to support this terminal date. There are parallels with the material from Pudding Pan Rock, now thought to date *c.* AD 170–200 (pers. comm., B. R. Hartley), including twenty-two potters in common and a generally similar range of plain forms; there are, however, no decorated bowls or mortaria in the Pudding Pan Rock assemblage [3].

The decorated Lezoux ware includes the styles of a number of Antonine potters (Figure 79), but only a few

FIGURE 79 Summary of attributed decorated Lezoux samian
* stamped or signed in the mould
† bowl with unused footring

Date	Potter	Quantity
Hadrianic to early Antonine	?Libertus/Butrio	1
	Avitus-Vegetus	1
	?X-5	1
	X-6	2
	Attianus	1
	Sacer-Attianus	1
	?Quintilianus	1
Early to mid Antonine	Carantinus	1
	Criciro	2
	Paternus iv	1
	Sacer-Cinnamus	1
	Divixtus	1
	?Divixtus	1
	Cinnamus-Cerialis, Cinnamus ovolo 3	13*
	Cinnamus, other ovolos	13**†††
	?Sissus II	1
Mid to late Antonine	Cantomallus	1*
	Censorinus	3†
	Advocisus	2*
	Advocisus/Laxtucissa/Paternus II	1
	Advocisus/Lastuca/Paternus II	1

Laxtucissa		4
Laxtucissa/Paternus II		3†
Paternus II		15†
Iustus		9
Iullinus		8
Iullinus/Mercator II		3
Iullinus/Severus		1
Severus		1 or 2†
Caletus		1
Servus II		5**
Banvus		2
Casurius		6
Doeccus	(maximum)	68***†
Doeccus-Casurius		8††

FIGURE 80 Summary of identified stamped Lezoux samian
* decorated bowl
† bowl with unused footring

Date of die(s)	Potter	Quantity
AD 140–60	Regulus	1
AD 140–70	Atticus ii	1
	Cinnamus ii	1*
AD 150–70	Cintusmus i	1†
	Regulus	1
AD 150–80	Albucius ii	2
	Cinnamus ii	2**†
	Illixo	6†††
	Macrinus iii	1
	Mercussa i	2
	Secundinus v	2
	Soiellus	1†
	Titurus	1†
	Vitalis vi	2
AD 155–75	Martius iv	2††
AD 155–85	Cantomallus	1*
	Carus ii	1†
	Gippus	1
	Sabinus viii	1†
AD 160–80	Cintusmus i	2†
	Mansuetus ii	1†
AD 160–85	Maior i	3†
	Mammius	1†
	Martius iv	6††††
AD 160–90	Advocisus	1*
	Carussa	3††
	?Celsianus	1
	Clemens ii	1
	Escusius	1†
	Genitor	1
	Iullinus ii	3††
	Iustus	2††
	Macrianus	2
	Magio i	1†
	Mascellio i	2††
	Maximinus i	1†
	Mercator iv	1†
	Potitianus ii	1
	Pottacus	5††††
	Priscus iii	1†
	Servus iv (cursive)	2**
	Verecundus iii	2†
AD 160–200	L. Adn(atius) Adgenus	1†
	Albillus i	1
	Albucianus	3†
	Atilianus	2†
	Caletinus	2
	Genitor	3††
	Iulius Numidus	1†
	Maccalus	1†
	Marcellinus ii	5††††
	Marcus v	1†
	Martinus iii	1†
	Maternianus i	3††
	Namilianus	2
	Paullus v	1
	Primanus iii	3††
	Quadratus iii	3††
	Quintus v	1†
	Rottalus	3†
	Sacrillus	5††
	Saturninus ii	2†
	Saxamus	1
	Severianus i	8††††
	Solinus	4††††
AD 160/170–200	Albusa	1†
AD 165–200	Belsa Arve(rnicus)	2††
	Caletus	1†
	Doeccus i	5***†
AD 170–90	Mercator iv	4††††
	Tituro	6††††
AD 170–200	Maximinus i	6††††
	Paullus v	8††††††
Antonine	Laurianus	1
	Sulpicianus	2†
	Unas	1
Mid to late Antonine	Canpanus	1
	Marcianus i	2††
	November	1
	Secundianus	1

whose work is found in quantity. The second most numerous is the Cinnamus group (twenty-seven bowls, three of them stamped), followed by Paternus II (at least fifteen); both these potters are noted by Marsh (1981, 184) as featuring largely in the decorated ware from London, with the Cinnamus factory responsible for at least a quarter of the Lezoux ware. Also important here are Iustus (at least nine bowls), Iullinus (at least eight), Servus II (five, two of them signed) and Laxtucissa (at least four). The Doeccus-Casurius group was responsible for a possible maximum eighty-two bowls of forms Drag. 30 and 37, including three with stamps. Unfortu-

nately a high proportion of the Doeccus sherds is fragmentary and the style is repetitive, so that despite careful comparison it is not possible to estimate the precise number of bowls present; it is likely to be at least fifty.

The relatively high number of bowls by Iustus, Iullinus and Servus II, as well as those by the larger Doeccus workshop, argues further in favour of regarding much of this material as a single group. It should be noted, however, that most of the decorated bowls are too broken up to be certainly associated with the unused pottery: large pieces of bowls by Laxtucissa, Iullinus, Paternus II and Doeccus seem to be in mint condition, but only three bowls of the Cinnamus group, two each of the Paternus II and Doeccus groups, two by unidentified mid- to late-Antonine potters, and single bowls of Censorinus and Severus definitely have unused footrings. It is possible that the larger decorated bowls were more prone to shatter than the stouter forms Drag. 31 and 33 which made up the bulk of the complete vessels recovered.

There are a number of potters whose stamps occur several times on plain vessels (see Figure 80): these include nine stamps of Paullus v, eight of Martius iv and Severianus i, seven of Maximinus i, six of Illixo and Tituro, five of Marcellinus ii, Mercator iv, Pottacus and Sacrillus, and four of Genitor and Solinus; there are also five stamps from one illiterate die (Nos. 3.225–3.229). Marsh notes (1981, 188) that the large Museum of London collection contains relatively few plain ware stamps for each individual Lezoux potter, in contrast with the earlier factories at La Graufesenque and Les Martres. He gives the most numerous as Tituro, with fifteen stamps [4]; the presence of six further Tituro stamps here, together with the high numbers of the other potters, underlines the singular nature of the New Fresh Wharf group and the probability that it largely represents a single consignment, intended in part for dispersal elsewhere.

In addition to the mould-decorated Lezoux ware, there are four jars of form Déchelette 72 with applied motifs, thirteen with incised decoration, and some thirty further fragments, some with traces of barbotine. These relatively thin-walled vessels are too broken up to be certainly associated with the 'shipment' group, but their Antonine date together with such a concentration of these comparatively uncommon forms is suggestive. Technically, they can be linked with the large group of unused Central Gaulish 'Rhenish' ware beakers and cups from the site (see pp. 115–8); of note in this context are the handle in red samian of a cup normally slipped in black (as Greene 1978b, Figure 46, No. 7), and the spout of a samian lamp which has a stamped black-slipped counterpart here (No. 1.227, p. **14**) [5]. In contrast, there is only one red-slipped example of a form Drag. 40 cup, but several in black (Nos. 1.98–9; and see p. **7**).

East Gaul

The East Gaulish wares include an unusually high proportion of late plain forms (see Figure 85). In addition there are forty-four identified potters' stamps and 182 decorated bowls; of these, forty-one and 171 respectively are Trier and Rheinzabern products dating from the later 2nd century onwards, a period when comparatively little samian was imported into Britain, and that concentrated towards the south and east and the northern military zone (Marsh 1981, Figure 11.14). It is less easy to assign precise dates to the work of individual potters at this period, and for this reason individual dates have not been given for each sherd in the catalogue; however, the German evidence [6], the range of potters and forms represented, and such features as the massive surviving footrings indicate a date of *c.* AD 235–45 for the second main group of unused samian. This is discussed more fully below.

Apart from Trier and Rheinzabern, East Gaulish factories produced very little of the samian recovered, and none of the plain wares could be attributed to the earlier potteries. Two Antonine plain-ware stamps, of Manius and Tocca, could not be assigned to a kiln site. There are four decorated bowls from La Madeleine (none attributable), one by Cambo of Blickweiler, one perhaps in the style of the 'F-Master' at Heiligenberg, and one each by Tocca and by Germanus or an associated potter at Lavoye. There is a small amount of plain ware from the Argonne, notably eight form Drag. 45 mortaria (three of them unused), three of which have the lion-head spout surviving [7]. The spouts have been dated by P.-H. Mitard to the late 2nd to early 3rd century; this agrees with the evidence from the *Classis Britannica* fort at Dover, where it seems that Argonne form Drag. 45 mortaria continued to be imported later than other forms (Bird & Marsh 1981, 178–9, and unpublished Archive Report).

The large group of Trier and Rheinzabern products is interpreted here as largely forming a single group, part of a second 'shipment' load of samian. The reasons for this interpretation are the pristine condition of much of the pottery, including unused footrings where these have survived; the quantity present, particularly of late Trier ware, which is rare in Britain; the uniformity of the fabrics; and the number of decorated bowls by certain potters. To this last point should be added the number of bowls from identical or closely similar moulds, especially from the Afer-Marinus, Julius I and Julius II groups (notably Nos. 2.75–2.76, 2.104–2.106, 2.113, 2.114, 2.116–2.117 and additional items described in the Archive Report).

Despite the difficulty of dating individual late vessels, there are a number of features which indicate a fairly close date range for the second 'shipment' group. Where they survive, the rims of the decorated bowls, which tend to be either very high or very shallow, and their

FIGURE 81 Summary of attributed decorated Trier samian. The dating is based on the chronology in Huld-Zetsche (1971b) Abb. 1; see also discussion and note 8.
* stamped or signed in the mould
† bowl with unused footring

Date	Potter	Quantity
Hadrianic to early Antonine	?Werkstatt I	1
Early to mid Antonine	Werkstatt II Stufe A	1
	Werkstatt II Stufe C	1
Mid to late Antonine	Comitialis	4*
	Dexter	3
	Censor	1
	Dexter/Censor	1
Late second to early third centuries	?Marcellinus	1
	Amator	1
	Criciro	1
First quarter third century	Afer-Marinus	11††
Second quarter third century	Paternianus	1*
	Dubitatus-Dubitus	4†
	Paternianus/Afer/Dubitatus-Dubitus	2
	Primanus-Dignus-Perpetus	4*†

disproportionately heavy footrings indicate a date in the second quarter of the 3rd century. Further evidence is provided by the presence of the Trier Primanus group, who are considered to have begun production *c.* AD 235, and this date is supported by the presence of nineteen bowls of the Julius II-Julianus I group, the largest group of later potters at Rheinzabern, who were clearly producing samian in quantity after AD 233 (Simon 1968, 22; Bernhard 1981, Abb. 3). The ware of many of the plain and decorated Trier products – a pale, usually yellowish, relatively coarse fabric, with a rather matt orange-red slip – is characteristic of the mid-3rd century 'Massenfund' group at Trier, and there are also some parallels among the 'Massenfund' plain forms (Huld-Zetsche 1971a), notably the small dish form Gose 44 and the spouts on two of the Drag. 45 mortaria (Nos. 2.216–2.217). On the whole, however, the plain forms from the 'Massenfund' are likely to be slightly later typologically. A comparison with the Trier and Rheinzabern wares from the fort at Holzhausen, which was probably in use until AD 259/60 (Bernhard 1981, 87), also shows vessels which are similar and others which are typologically a little later than those from New Fresh Wharf (Pferdehirt 1976, Tafn. 8–11). The decorated samian from Holzhausen includes a high proportion of bowls by the Julius II group, but also has bowls from some of the latest Rheinzabern potters such as Victor II-Januco and the Statutus group, who are absent from New Fresh Wharf. The evidence presently available would therefore suggest a date in the decade *c.* AD 235–45 for the New Fresh Wharf group.

The Trier potters present whose work falls within the second quarter of the 3rd century are Paternianus (one stamped bowl), Primanus-Dignus-Perpetus (four bowls, one of them signed by Dignus and Primanus) and Dubitus-Dubitatus (four bowls). There are in addition eleven bowls of the Afer-Marinus group. Their work is normally dated to the first quarter of the century, but the heavy surviving footrings and the ware, which is uniform with bowls by the later potters, indicate that these are products of a later workshop using old moulds [8]. In addition, some at least of the bowls by Dextor-Censor and Comitialis (including Nos. 2.63, 2.64 and 2.68), the bowls of Censor (No. 2.69) and Criciro (No. 2.71) and that of Werkstatt II Stufe A (No. 2.61) are likely to be similarly late products, since they too are in the same rather coarse pale fabric and in some cases bear signs of blurring and damage of the detail, characteristic of the use of old moulds. It is probable, however, that some of the sherds in earlier styles represent general debris from the turn of the 2nd and 3rd centuries: the products of Amator, Dexter-Censor and of Werkstatt II are relatively common in London compared with the later potters, and Nos. 2.66, 2.67 and 2.70 are in good later Antonine ware. The full list of Trier potters represented is shown on Figure 81, where the primary date for each potter is given.

The later Rheinzabern ware includes, in addition to the nineteen bowls (two of which are stamped) by the Julius II group, thirteen bowls, (one stamped) by the Julius I-Lupus-Reginus II group, who were active both before and after AD 233 (Simon 1968, 22; Bernhard 1981, Abbn. 1–3). The bowls with unused footrings

FIGURE 82 Summary of identified stamped Trier samian
* decorated bowl
† bowl with unused footring

Date of die(s)	Potter	Quantity
Early to mid Antonine	Maior ii	1
Later second century	Comitialis	1*
Late second to first half third centuries	Arilira	3†††
	Dessius ii	1†
	Filo	1†
	Iucundus iv	1†
	Iullenus	2†
	Melissus ii	1
	Moricus	1†
	Patruinus ii	1†
	Verus vi	1
First half third century	Dignus (cursive)	1*†
	Paternianus iii	1*
	Primanus (cursive)	1*†

FIGURE 83 Summary of attributed decorated Rheinzabern samian. For dating see also the discussion and Note 9. With the exception of Janu II, potters are arranged as in Ludowici, Ricken and Fischer (1963); see Note 12.
* stamped in the mould
† bowl with unused footring

Date	Potter	Quantity
Antonine	Janu I/Reginus I	1
	Cobnertus I	1
	Cobnertus/Cerialis	2
Later second to early third centuries	B F Atto	2
	Cerialis (I)	1
	Cerialis (III)	1†
	Cerialis IV	1
	Cerialis V	3
	Cerialis	1
	?Cerialis	1
	Cerialis/Comitialis	1
	Comitialis I	1
	Comitialis III	1*
	Comitialis III/Verecundus II	2
	Comitialis V	3
	?Comitialis V	1
	Comitialis V/VI	1
	Comitialis VI	1*
	?Comitialis	1
End second to first half third centuries	?Florentinus	1
	Ware mit E.25.26	3†
	Janu II	2
	Belsus III	1*
	Reginus II	1*
	Julius I-Lupus	7†
	Julius I-Lupus-Reginus II	5
	Lucanus	1†
	Verecundus I	1
	?Helenius	1
	Attillus	2*
	Attillus/Primitivus I	1
Early to mid third century	Primitivus I	1
	Primitivus I/IV	1
	Julius II-Julianus I	14**††
	Julius II-Julianus I/Victorinus II	2
	Julius II-Julianus I/Victorinus II/ Respectinus I	1
	Julius II-Julianus I/Victorinus II/ Respectinus II	1
	Respectinus II/Julius II-Julianus I	1†
	Ware A mit 0.382.383	1
	Ware B mit 0.382.383	1†

include one by the Julius I group, three by the Julius II group and single bowls by Lucanus and the potters of 'Ware mit E.25.26' and 'Ware B mit O.382.383'; as with the Trier group, the footrings are large and heavy. Apart from 'E.25.26', these potters are all present in a waster group from Rheinzabern, interpreted as largely the waste from one firing by a workshop of potters, and provisionally dated broadly to *c.* AD 210/220–60 (Reutti 1983, 54–60).

Among the earlier Rheinzabern products, dating from the later 2nd century onwards, are single bowls of Janu I or Reginus I and Cobnertus I, two of B F Atto and at least seven each of Cerialis and Comitialis (two of the latter stamped). These last two potters were working in the later 2nd century and into the early 3rd (Simon 1968, 23), but it has been suggested that, as at Trier, there was some later production, at least from Comitialis's moulds [9]. So, while it is likely that some of the earlier vessels represent general waterfront debris, it should be borne in mind that some of these Cerialis and Comitialis bowls – and the number is high for a British site – may have formed part of the shipment group. Rheinzabern fabrics are less homogenous than those from Trier, but many of the bowls here (notably by the Julius I and Julius II groups) are in a pale yellowish fabric with coarse orange slip; Nos. 2.94 and 2.98 are in this ware. No. 2.91, however, is in better ware and has an unused footring of a type dated *c.* AD 200–30 [10]. It should be emphasised that the question of reused moulds at Rheinzabern has not yet received full published discussion. The list of Rheinzabern decorated pottery is given on Figure 83.

The Trier potters' stamps on plain ware (Figure 82) include a stamp of an Antonine potter, Maior ii, but the remainder are of later 2nd-century or later date. Those of Arilira, Dessius ii, Filo, Iucundus iv, Iullenus (one), Moricus and Patruinus are on unused vessels,

FIGURE 84 Summary of identified stamped Rheinzabern samian
* decorated bowl
† bowl with unused footring

Date of die(s)	Potter	Quantity
AD 170–200	Iuvenis ii	2††
Late second century	Lucius ix	1
Later Antonine to early third century	Comitialis	2**
Later second to first half third centuries	Aisto/Aistus	1†
	Attillus vi	1*
	Belsus	1*
	Donatus iii	1†
	Fidelis ii	1
	Iulius viii	2**†
	Marinus iii	1
	Paternianus ii	1†
	Paternus viii	1†
	Patricianus	2††
	Perpetus	2††
	Quartinus	2††
	Reginus vi	1*
	Restutus	1
	Severus vii	1†
	Verinus	1†

and the Arilira, Dessius, Filo, Iucundus, Iullenus, Melissus, Moricus and Patruinus stamps are in the pale fabric of the late decorated bowls from Trier. The stamps from Rheinzabern (Figure 84) include stamps of Lucius ix and Juvenis ii (two) dated to the later 2nd century; the rest are not closely datable. Those of Aisto, Juvenis ii, Paternianus ii, Paternus viii, Patricianus, Perpetus, Quartinus, Severus vii and Verinus are on unused vessels, and those of Donatus, Patricianus, Quartinus and Restutus at least are in late ware. The plain forms from both factories (Figure 85) are generally late. Those from Trier include Ludowici form Sa/Sb (form Drag. 31), unstamped form Drag. 33, five form Drag. 45 mortaria with lion-head spouts, and a late variant of form Drag. 35/36 without decoration or footring (Gose form 44; Huld-Zetsche 1971a, type 6ab). The plain Rheinzabern forms include a number which are uncommon in Britain: Ludowici forms Oa, SMb/c, Sh, Tb, Tf, Tk', as well as Ludowici form Sa/Sb (Drag. 31 and 31R), forms Drag. 32, 34 and unstamped Drag. 33. There are also a small number of jar/beaker forms from Rheinzabern with incised or barbotine decoration, including Ludowici forms Vd and VSe.

FIGURE 85 Summary of identified samian forms from each main production area, based on a sherd count, giving the maximum possible number of vessels represented.

Form	South Gaul	Central Gaul	East Gaul	Total of form
Ritt. 8	1			1
Ritt. 9	1			1
Ritt. 12	1			1
Ritt. 13	3	9		12
Drag. 15/17	12			12
Drag. 15/17R	1			1
Drag. 18	41			41
Drag. 18–18/31	4			4
Drag. 18/31		38	2	40
Drag. 18/31R		1		1
Drag. 22	1			1
Drag. 27	36	13		49
Drag. 29	19	1		20
Drag. 30	7	45	4	56
Drag. 31		395		395
Drag. 31/Ludowici Sa			160	160
Drag. 31 or 31R		912	363	1275
Drag. 31R		113		113
Drag. 31R/Ludowici Sb			10	10
Drag. 32			27	27
Drag. 33	1	474	203	678
Drag. 34		1		1
Drag. 35	2	37	1	40
Drag. 36	3	161	23	187
Drag. 36R			1	1
Drag. 37	22	286	228	536
Drag. 37R			1	1
Drag. 38		86	56	142
Drag. 39/Ludowici Oa		2	2	4
Drag. 40		1	3	4
Drag. 42		2		2
Drag. 43 or Curle 21		4		4
Drag. 44		1	3	4
Drag. 45		158	99	257
Drag. 46		6	5	11
Déch. 64		1		1
Déch. 67	5	1		6
Déch. 72		22		22
Curle 11	2	1		3
Curle 15	1	38	13	52
Curle 21		13	8	21
Curle 23		1	2	3
Walters 79		123	2	125
Walters 79R		7		7
Walters 80		14		14
Walters 81		2	2	4
Ludowici Sh			1	1
Ludowici SMb/c			2	2
Ludowici Tb			3	3
Ludowici Tf			1	1
Ludowici Tg		9	1	10
Ludowici TgR		1		1
Ludowici Tk'			1	1
Ludowici Tx		3		3
Ludowici Vd			1	1
Ludowici VSe			3	3
Gose 44			1	1
Jar/Beaker	1	59	41	101
Disc-mouth flagon		1		1
Flagon handle			3	3
Two-handled cup		1		1
Lamp		1		1
Total of identified forms	20	40	34	

The condition of the samian

New samian

It is argued above that much of the samian from the site is new and unused. Certainly a high proportion of it appears fresh and unworn, but there are two particular diagnostic features. The first is the state of the footrings, where sand and clay particles left from the kiln stacking adhere to the base. Normally these fragments are very quickly lost, as they are not firmly stuck to the base [11]. The second feature applies to the Drag. 45 mortaria, where the red slip still completely covers the trituration grits; this slip would flake off immediately it was used.

Samian with a pale or 'marbled' slip

Some thirty-one pieces bore a pale orange/beige or blotched slip, which on some sherds gives the impression of deliberate marbling. However, at least one restored vessel, an unused form Drag. 45 from the Argonne (No. 2.212), is blotched on one side of a break and has the normal red on the other, showing that the colour

of the slip altered after breakage; the gloss is unaffected. The cause of this change is not clear: burning that is hot enough to affect samian normally damages the surfaces and can even cause it to clinker, while a fire in a building usually produces a reducing atmosphere that blackens it (see Jope 1945). Evidence of burning from the other samian is confined to a very few blackened sherds. The affected pots comprise three Central Gaulish and twenty-eight East Gaulish vessels, and include a form Drag. 37 by the Doeccus group at Lezoux, a stamped form Drag. 31 by Melissus of Trier, and form Drag. 37 bowls by the Rheinzabern potters B F Atto, Attilus, Attillus or Primitivus I, Comitialis V, Julius I-Lupus, and the potter of 'Ware B mit O.382.383'. Examples of forms Drag. 31, 32, 33, 35, 36, 45, Ludowici Sh and closed forms were also affected.

Notes

1. For further evidence of pottery warehouses in this vicinity, see pp. 199–202.
2. Tony King (1981, 63–6) has suggested that Lezoux continued exporting samian up to *c.* AD 230, and ceased only shortly before Rheinzabern. While this theory might seem to remove the discrepancy in date between the two suggested 'shipment' groups at New Fresh Wharf, it must be stated that there is at present no evidence to indicate that Lezoux samian was imported into Britain after *c.* AD 200; the reason for these two groups of widely differing dates must therefore be sought in the history of the site. King's suggestion derives from the presence of large quantities of Antonine samian, and especially products of the Cinnamus factory, in deposits dating to the first half of the 3rd century; however, this has a clear parallel with the situation in the first half of the 2nd century, when there was similarly much less contemporary samian in circulation and a much higher proportion of residual (Marsh 1981, 219, Table H). The dating of the Cinnamus group of potters is discussed by Hartley (1972, 49–50), who proposes a range *c.* AD 140–75; to extend this dating into the 230s would argue that this large factory was for some reason exempt from the sequence of stylistic and typological change discernible among the other Lezoux potters. Nor is there any noticeable evidence for the use of old moulds among the Cinnamus output: bowls from old moulds generally bear clear indications of this in the quality of the relief and in other details, and there would probably be differences in fabric and slip (see Note 8 below). At New Fresh Wharf, the numerous bowls of Doeccus show the very high and crisp relief characteristic of his work (Stanfield & Simpson 1958, 255); it is unlikely that such detail would have survived in use until the 230s.

   King's argument depends in part on scepticism regarding the value of 'dated' sites, and he rightly points out the dangers of circular argument. He cites Niederbieber as an example, and here the writer would agree: the blanket date of AD 190–260 applied to all the finds from that site on the basis of stamped tiles from the bath-house has created problems both for the study of late samian and of other wares (*cf.* Bird & Williams 1983). However, he advocates instead the dating of samian from association with coins, and here caution is necessary: while this method can indeed be valuable, it can also be misleading. Simon (1968) has demonstrated that the coin-based chronology of the Rheinzabern potters represented at Ovilava (Karnitsch 1959) in some cases differs considerably from that indicated by other evidence.
3. In addition to the absence of decorated ware and mortaria, there is no full publication of the Pudding Pan Rock finds, which have been widely dispersed; a detailed comparison of the groups is therefore not possible. A comparison of the type series (Smith 1907, 278; 1909, 404) with the New Fresh Wharf plain vessels does show slight variations in detail which might indicate that the Rock material is a little later in date. The most notable of these differences is the absence of barbotine on Smith's forms 4 (a form Drag. 36 variant) and 6 (a form Drag. 35 variant), though his form 5 (form Drag. 36) does carry it.
4. Geoff Marsh has kindly provided the following information on the numbers of stamps in the Museum of London collection by the other potters noted above: Paullus V, 12; Martius iv, none; Severianus i, 1; Maximinus i, 3; Illixo, 4; Marcellinus ii, 9; Mercator iv, 2; Pottacus, 5; Sacrillus, 4; Genitor, 6; Solinus, 2.
5. Donald Bailey tells me he knows of only two other samian lamps from Britain, both of which are probably earlier discoveries from the New Fresh Wharf site (Nos. 4.5–4.6).
6. Most of the available dating for the Rheinzabern potters comes from the German frontier, where a succession of incursions is recorded in the later 2nd and 3rd centuries (for a survey of the German frontier, see Schönberger 1969). It is rarely possible to identify a destruction deposit with any specific attack, but certain sites have yielded useful evidence: these include Böhming, where bowls of Belsus I and Comitialis V were found in a burnt layer predating a rebuilding dated to AD 181 by an inscription (Simon 1968, 23); Kastell Pfünz, destroyed in AD 233 and, from the coin evidence, not subsequently reoccupied (Schönberger 1969, 176); Straubing, probably destroyed at the same time; Butzbach, damaged in AD 233 but rebuilt *c.* 237, with occupation of the *vicus* diminishing thereafter; Lorsch, probably occupied AD 180 to the 240s; and Holzhausen, abandoned *c.* AD 230 but probably regarrisoned until 259/60 (Bernhard 1981, 87). Simon (1968) has compared the potters present at Butzbach and Pfünz, and Bernhard (1981) those at several sites, including Butzbach, Pfünz, Straubing, Lorsch and Holzhausen. Of particular relevance to the dating of the New Fresh Wharf group are the figures for the Julius II–Julianus I group, who largely make up Bernhard's Group IIIA: they account for 5 per cent (of 330 vessels) at Pfünz, 7 per cent (of 233) at Straubing, 9 per cent (of 506) at Butzbach Lagerdorf, 15 per cent (of 541) at Lorsch and 31 per cent (of sixty-seven) at Holzhausen (Bernhard 1981, Abbn. 1–3). The dating evidence for the later Trier potters has not yet received such wide-ranging treatment, and Dr Ingeborg Zetsche has kindly discussed the available evidence (see also Huld-Zetsche 1971b).

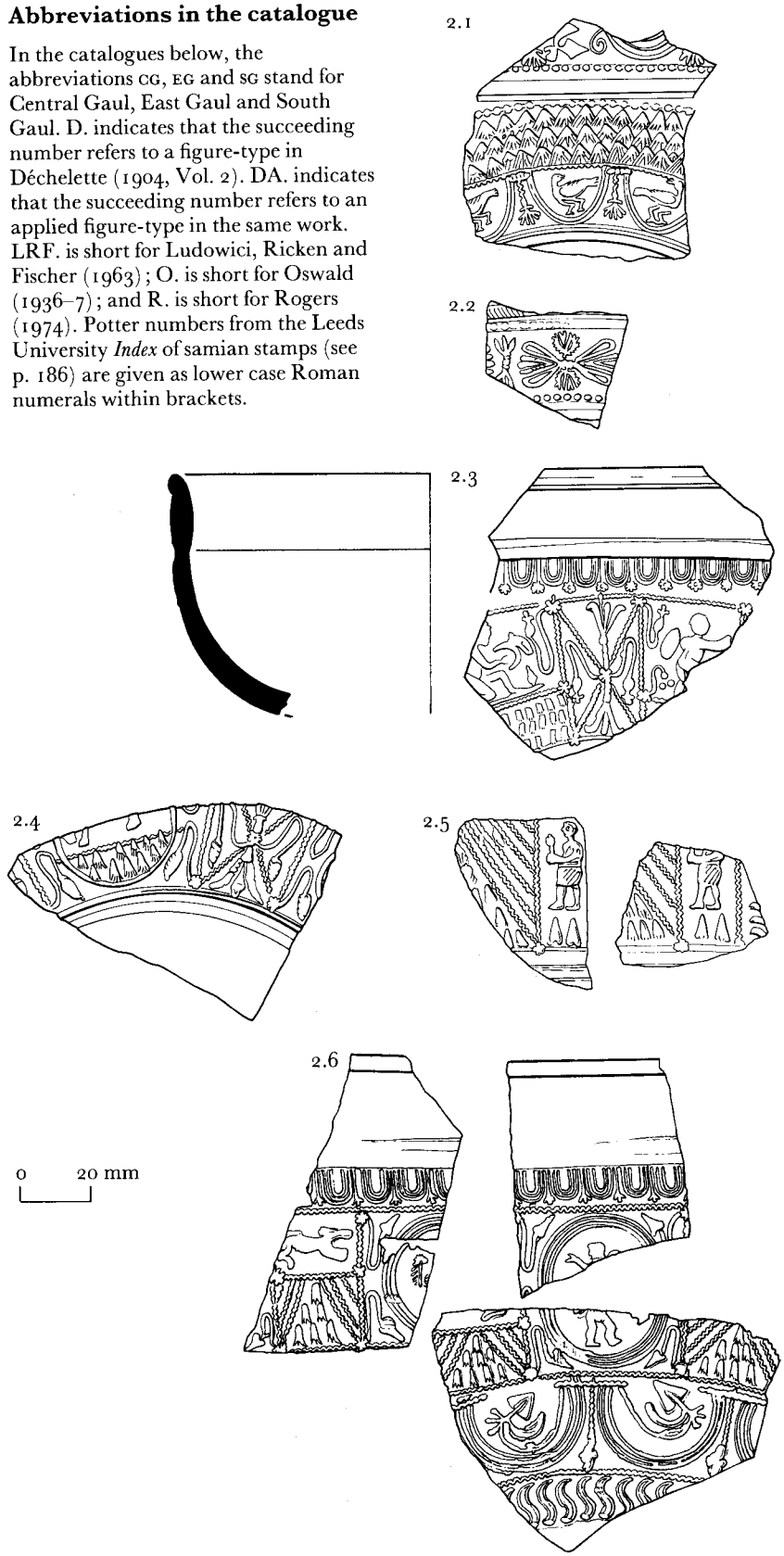
   There is little dating evidence from Britain to add to the German material. The very small amount of late samian published from sites associated with the Severan campaigns in Scotland (i.e. before AD 212 or, as suggested by Wright 1974, perhaps AD 215/16) includes little that can be assigned to the East Gaulish 'shipment' potters.

There is a stamp of Afer of Trier and a small sherd in the style of Reginus II of Rheinzabern from Birrens (Wild 1975). Neither Newstead nor Cramond have samian that need be later than *c.* AD 210 (Hartley 1972; 1974). South Shields, which continued to be occupied after the Severan withdrawal, has two bowls each of Julius I and the Julius II group, and single bowls by Lucanus and the potter of 'Ware B mit 0.382.383', but no late Trier ware (Dore, Greene & Johns 1979, 124–7). It is probable that some Rheinzabern samian was still being circulated *c.* AD 240/50, when the Oxfordshire potters began to manufacture samian and included copies of Rheinzabern forms in their repertoire (Bird & Young 1981).

7. It is possible that these unused Argonne wares belong with the Central Gaulish 'shipment' group, since there are plausible arguments of both safety and cost for the Seine as a route for Lezoux wares (King 1981, 69 and fig. 6.6; Marsh 1981, 201–2). Argonne samian is much more common in north-east France than other East Gaulish wares (Marsh 1981, 203).
8. There is evidence from Trier that old moulds were used by potters of the mid-3rd century (Huld-Zetsche 1972, 81–8). Such later work should usually be discernible from the pottery, in shallow or smudged relief from the use of a worn or damaged mould, in a massive footring characteristic of later date, and also in a difference of fabric. The fabric and slip of Antonine to early 3rd-century Trier ware are generally of a similar colour and quality to contemporary Lezoux products, though lacking the visible mica flakes of Lezoux; as noted above, the description of the fabric and slip from the mid-3rd-century 'Massenfund' matches the late Trier ware from New Fresh Wharf (Huld-Zetsche 1971a, 22; 1972, 85).
9. It has recently been suggested that there may also have been some use of old moulds at Rheinzabern, from the evidence of the waster group mentioned above: in addition to the numerous vessels by late potters there were some fifteen bowls by Comitialis II-VI, who is not normally to be dated beyond the early 3rd century (Reutti 1983, 54–9). Perhaps of relevance here is the mould found by Ludowici (Ludowici & Ricken 1948, Taf. 78, No. 1), which is in the style of Comitialis I, stamped by Comitialis in the base, stamped in the decoration by his associate Secundinus-Avitus, and signed PIIRVINCVS beneath the base, probably after firing. The only known Pervincus at Rheinzabern is a mid-3rd-century potter whose stamped moulds are in very different style, and whose bowls are also present in the waster group.
10. Identified by Herr Friedrich-Karl Bittner, who is currently studying the material from Rheinzabern, including the waster group (see Note 9).
11. It is possible that what is usually interpreted as a sign of heavy ware on the bases of samian bowls may sometimes be the result of deliberate filing down of these rough accretions. The bases of Nos. 2.119 and 2.187 indicate that some of the larger chunks may have been filed off before shipping.
12. It should be noted that Ricken's grouping of potters by number (Ludowici & Ricken 1948) generally though not invariably refers to different modes of decoration by the same potter, sometimes associated with a secondary stamp or signature of the mould-maker. This is the case, for example, with Cerialis I-VI and Comitialis I-VI. However, Janu II and Reginus II seem to be separate potters from Janu I and Reginus I, both on the basis of the few figure-types in common and on the dating evidence (see Simon 1968, 22 and note 72).

Abbreviations in the catalogue

In the catalogues below, the abbreviations CG, EG and SG stand for Central Gaul, East Gaul and South Gaul. D. indicates that the succeeding number refers to a figure-type in Déchelette (1904, Vol. 2). DA. indicates that the succeeding number refers to an applied figure-type in the same work. LRF. is short for Ludowici, Ricken and Fischer (1963); O. is short for Oswald (1936–7); and R. is short for Rogers (1974). Potter numbers from the Leeds University *Index* of samian stamps (see p. 186) are given as lower case Roman numerals within brackets.



Vessels with moulded decoration

Arranged by region of origin, then in approximate chronological order of potter.

2.1 Form Drag. 29, SG. There are links with the series of stamped bowls of Gallicanus from the 'Malaval' group at La Graufesenque (Vernhet *et al*, forthcoming): M195 has the frieze of large arrowheads (also used by Niger; Knorr 1952, Taf. 47, D) and M79 has the spurred bud in a scroll and the double festoons with a smaller bird looking back to left. The same birds were used in similar festoons by Passenus (Knorr 1952, Taf. 48, C). *c.* AD 45–65. III.357: Per. 1. Ph. 1.

2.2 Form Drag. 29, in the style of Bassus-Coelus of La Graufesenque. The three foliage motifs are shown by Knorr (1952, Taf. 10, E and G, with similar general style on D). *c.* AD 55–70. III.286: Per. 1, Ph. 2.

2.3 Form Drag. 37, dia. *c.* 150 mm, a small bowl with the interior undercut below the rim, SG. Neat ovolo with large rosette tongue above panels which include a cupid with helmet and flask (Hermet 1934 Pl. 18, No. 36), a second cupid (*ibid.*, No. 33), small arrowheads and a saltire with triple motifs and bud tendrils. *c.* AD 70–85. III.286: Per. 1, Ph. 2.

2.4 Form Drag. 29, SG. There are links with the work of Secundus, who also used arrowheads in a festoon flanked by tendrils with a saltire including the triple motif (Knorr 1919, Taf. 74, G). He used arrowheads as the lower half of an area, as here (*ibid.*, B). *c.* AD 70–85. III.357: Per. 1, Ph. 1.

2.5 Form Drag. 30, SG. Panel design, including a torchbearer (Hermet 1934, Pl. 19, No. 98) over leaftips, a group of diagonal wavy lines and leaftips, and a vertical wreath. *c.* AD 70–90. Joining sherds from III.286 and III.350: both Per. 1, Ph. 2.

2.6 Form Drag. 37, dia. *c.* 250 mm, SG, with trident tongue ovolo. There are links with the work of Vitalis, who used the cupids (Hermet 1934, Pl. 18, No. 33 and O.436) and triple medallion (Knorr 1919, Taf. 83, Nos. 1, 2 and 5), the s-gadroon (*idem.*, Taf. 84, No. 5) and the bud scrolls (*idem.*, Taf. 83, Nos. 9 and 16); *cf.* a bowl from

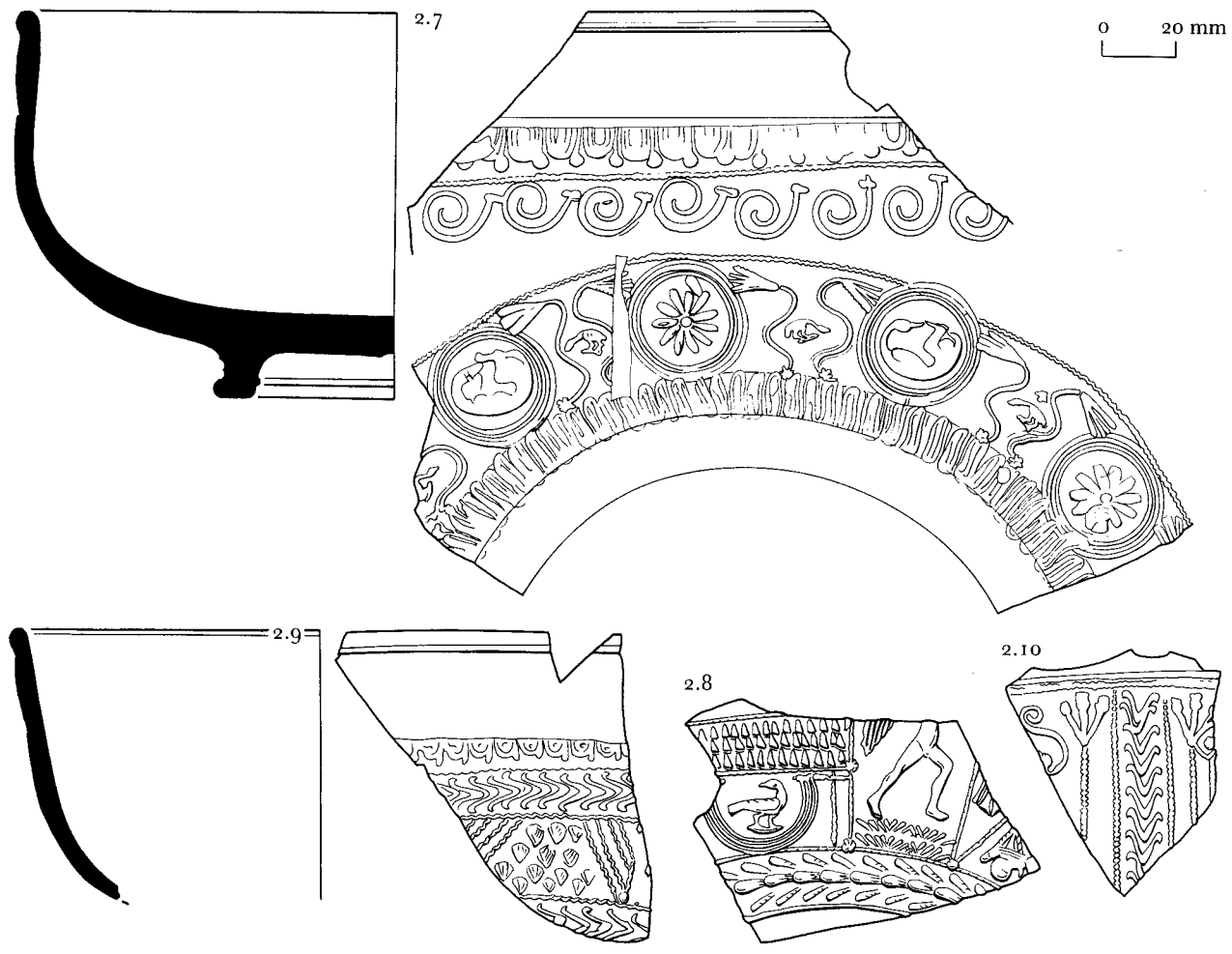
Fishbourne which is attributed to Vitalis and has a similar panel frieze and the s-gadroon (Dannell 1971, Figure 133, No. 73). Sabinus used the gadroon, the bud-scrolls in triple festoons, and similar arrowheads on a form Drag. 29 from Mainz (Knorr 1919, Taf. 69, B). The dog is Hermet (1934) Pl. 26, No. 20. *c.* AD 75–90. Joining sherds from III.286: Per. 1, Ph. 2, and III.314: Per. 2, Ph. 1.

2.7 Form Drag. 37, dia. *c.* 210 mm, with worn foot, SG. The basic style is close to that of the Pompeii hoard, but the frieze of scrolls and the arrangement of the tendrils in the medallion frieze are unusual. The ovolo, short gadroons and small geese occur at Pompeii (Atkinson 1914, Pl. 10, Nos. 51 and 53), as does a similar band of (linked) scrolls (*idem.*, Pl. 13, No. 70). A similar large rosette was used by Meddillus (Knorr 1919, Taf. 55, K). The figure in the medallion, a goose(?), is not identifiable. The details, especially at the base, are blurred, suggesting that the bowl was taken from the mould before it was ready. The Pompeii links, foliage motif and triple medallion suggest a date *c.* AD 75–90. Joining sherds from III.350: Per. 1, Ph. 2, and III.314: Per. 2, Ph. 1.

2.8 Form Drag. 37, SG. Panels: a) divided into three, the lower two having three rows of arrowheads and a bird in a triple festoon; b) cupid (Hermet 1934, Pl. 18, No. 28) on double row of grass-tufts; c) saltire with palmette and trilobe motif. Basal wreath of trilobes. For style *cf.* Hermet (1934) Pl. 87, No. 2, which also has the bird, festoon and wreath; and No. 8, which has the grass and a saltire with the trilobe motif. *c.* AD 80–100. II.533: Per. 1, Ph. 2.

2.9 Form Drag. 37, dia. *c.* 170 mm. The ovolo was used at Montans by the Malcio-Chresimus group, the 'Leaf Stamp' potter, on a bowl signed by Florus (Simpson 1976, 257, ovolo 1), and on a bowl from Regis House stamped by Felicio (Pryce 1945, Figure 8, No. 4). The 'Leaf Stamp' potter also used the large chevrons and massed wavy lines (Simpson 1976, Figure 7, No. 28), and the chevrons were used too by the Malcio-Chresimus group (*idem.*, Figure 4, No. 14). The groove on the interior is present on the Regis House bowl, and on No. 2.10 below. This bowl is in typical Montans ware, with a rather thin matt brownish-orange slip. *c.* AD 110–45. III.286: Per. 1, Ph. 2.

2.10 Form Drag. 37, Montans. The ovolo has been removed in finishing. Probably in the style of the Malcio-Chresimus/'Leaf Stamp' potter group. For the vertical beadrows *cf.* Simpson (1976) Figure 4, No. 12; the large chevrons are also shown by Simpson (1976, Figure 8, No. 28). The fabric and internal groove are similar to those of No. 2.9 above. *c.* AD 110–45. III.286: Per. 1. Ph. 2.

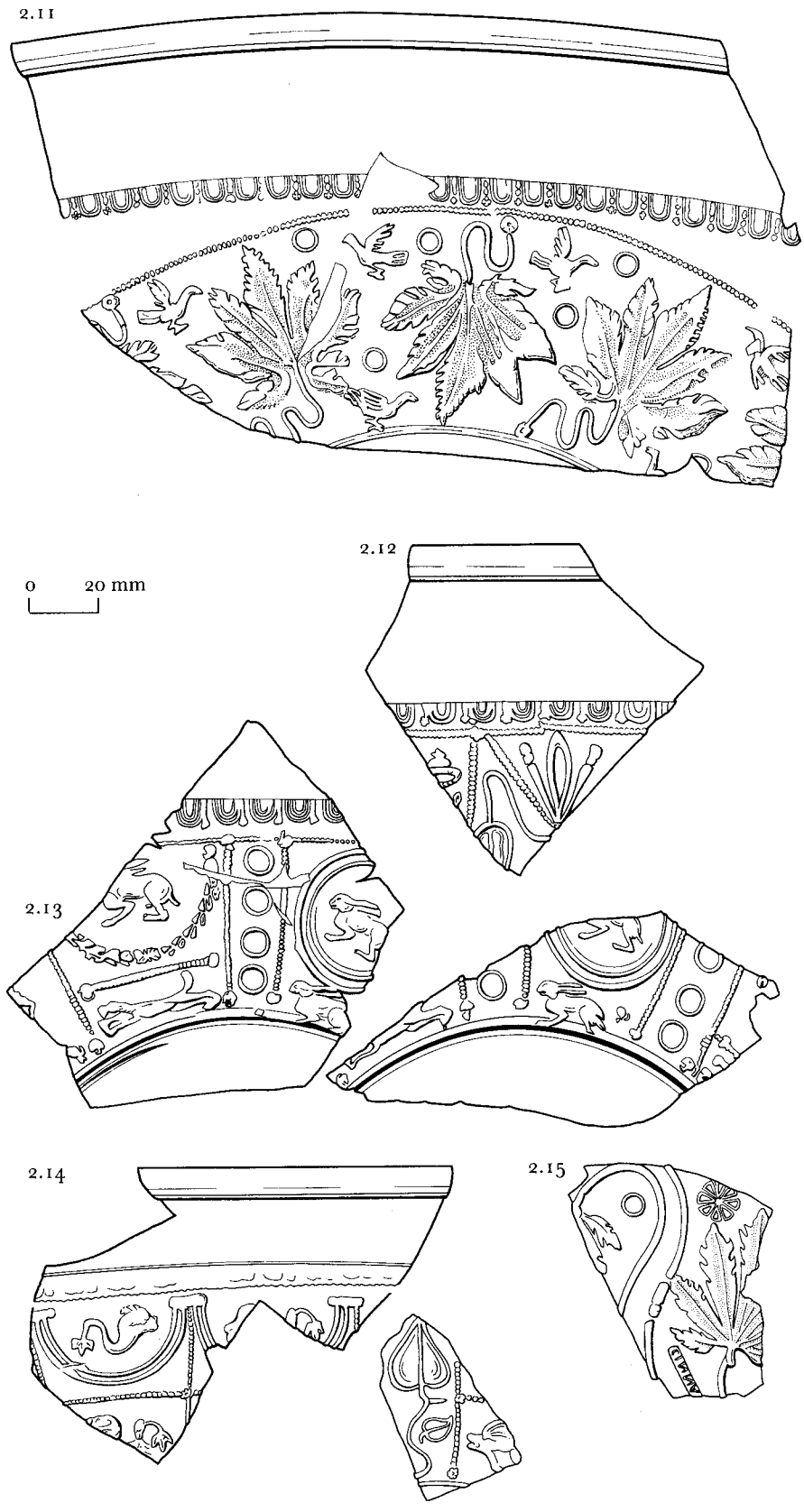


2.11 Form Drag. 37, dia. *c.* 230 mm, in the style of the Sacer-Attianus group at Lezoux. The ovolo is shown by Stanfield and Simpson (1958, Pl. 82, No. 5) with similar beads; the leaf is also illustrated (*idem.*, Pl. 86, No. 18), but it is apparently slightly different or modified at lower right. For the method of attaching the tendrils, *cf. idem.* (Pl. 87, No. 26). The birds are also shown (*idem.*, Pl. 87, No. 21; Pl. 82, No. 7). *c.* AD 125–50. II.527: Per. 1, Ph. 2.

2.12 Form Drag. 37, dia. *c.* 240 mm, in the style of Paternus (iv) of Lezoux. The ovolo, triple motif, large beads and rosette occur on a bowl in his style from Watercrook (pers. comm., Brenda Dickinson); the ornament to the left is probably R.Q10. *c.* AD 135–70. III.286: Per. 1, Ph. 2.

2.13 Form Drag. 37, in the style of Carantinus of Lezoux. The ovolo (R.B114) is on a stamped bowl from Ovilava (Karnitsch 1959, Taf. 61, No. 8), and a second bowl from Ovilava has the ovolo, festoon and dog (Taf. 75, No. 2). A bowl from Camelon has the festoon and small circle, and the medallion is on a stamped bowl from Clermont Ferrand (Brenda Dickinson, pers. comm.). *c.* AD 140–70. Joining sherds from III.269 and III.318: both Per. 1, Ph. 6.

2.14 Form Drag. 37, dia. *c.* 160 mm, CG. The ovolo has been almost smoothed away in finishing; the beads and ring terminals suggest links with the work of Divixtus (Stanfield and Simpson 1958, Pl. 116, No. 8). The dolphins are O.2383 and O.2394A; the leaves have no parallels in R. Mid-Antonine. II.111: Per. 1, Ph. 5.



2.15 Form Drag. 37, stamped in the mould by Cinnamus (ii) of Lezoux (for details see No. 3.32 below). The scroll, astragalus and large leaves are shown by Stanfield and Simpson (1958, Pl. 162, No. 57), as are the rosette (*ibid.*, No. 60), circles (*ibid.*, No. 61) and stamp (*ibid.*, No. 62). *c.* AD 140–70. III.286: Per. 1, Ph. 2.

2.16 Form Drag. 30, unused, stamped in the mould by Cinnamus (ii) of Lezoux (for details see No. 3.33 below). The cushion (Stanfield and Simpson 1958, Pl. 161, No. 50), fringed rosette (*ibid.*,, No. 55), naked figure in double medallion (*idem.*, Pl. 164, No. 7) and trophy (R.Q43) are all known elsewhere in his work. *c.* AD 150–80. II.511: Per. 1, Ph. 5.

2.17 Form Drag. 37, stamped in the mould by Cinnamus (ii) of Lezoux (for details see No. 3.34 below). The stamp and bear are shown by Stanfield and Simpson (1958, Pl. 163, No. 66), here with a leaf in the background. *c.* AD 150–80. III.286: Per. 1, Ph. 2.

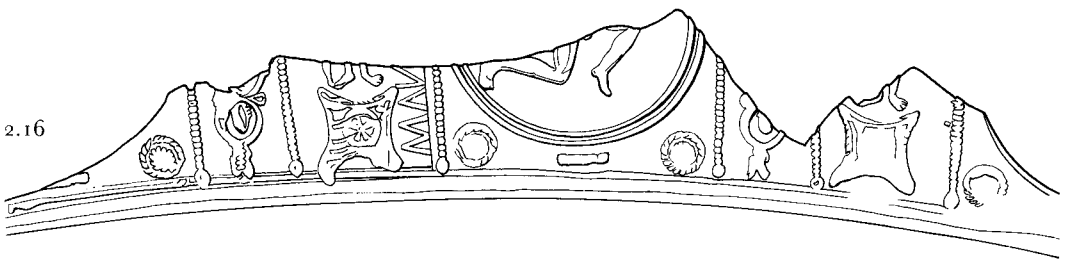
2.18 Form Drag. 37, unused, in the style of Cinnamus of Lezoux. The leopard is shown by Stanfield and Simpson (1958, Pl. 163, No. 67), as are the candelabrum (*idem.*, Pl. 159, No. 25), and the beads and corded motif (*idem.*, Pl. 158, No. 22). The crane is O.2199, the draped figure is not identifiable. *c.* AD 150–80. III.342: Per. 1, Ph. 2.

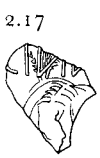
2.19 Form Drag. 37, in the style of Cinnamus of Lezoux. The ovolo, astragalus and large leaf are shown by Stanfield and Simpson (1958, Pl. 162, No. 58) as are the Venus and column and the medallion (*ibid.*, No. 59), the small leaf and bird (*ibid.*, Pl. 161, No. 53) and the lozenge (Pl. 160, No. 42). For the general style see *idem.* (Pl. 162, No. 60). *c.* AD 155–75. II.511: Per. 1, Ph. 5.

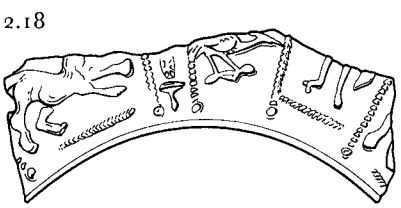
2.20 Form Drag. 37, CG. No potter can be suggested for this well modelled piece. The Mars is O.151, Apollo O.92, the tiny figure of Hercules O.750 and the mask O.1268. The crown motif is similar to R.U64. Antonine. Residual in II.127.

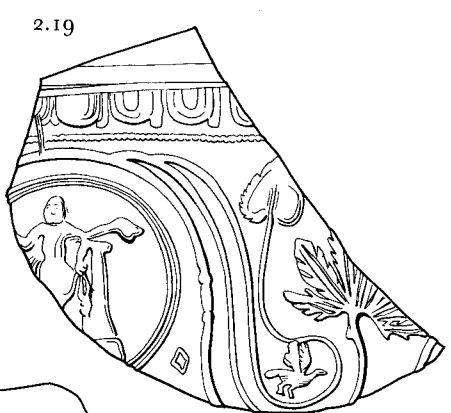
2.21 Form Drag. 37, stamped in the mould by Cantomallus of Lezoux (for details see No. 3.26 below). A cupid (D.265) in a double medallion, ovoid beads. *c.* AD 155–85. Residual in III.101.

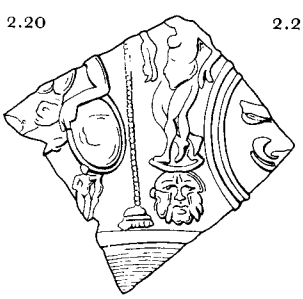
2.22 Form Drag. 30, in the style of Laxtucissa of Lezoux. The ovolo is shown by Stanfield and Simpson (1958, Pl. 99, No. 16), as are the triple motif, beaded and astragalus borders and the medallion (*ibid.*, No. 19), and the rosette (*ibid.*, No. 21). The broken motif appears to be a new version of the corn sheaf, as R.L1–7. *c.* AD 155–85. III.340: Per. 1, Ph. 4.

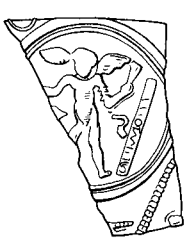


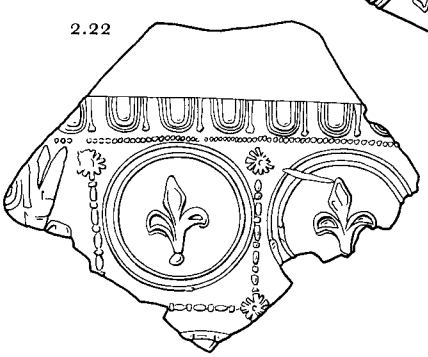












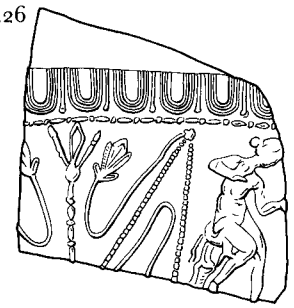
2.23 Form Drag. 37, CG. Ring-tongued ovolo, ovoid beads and dolphin O.2392, shared by several potters (including Paternus II, Laxtucissa and Advocisus). The cupid is O.443B, the vase R.T5. Mid- to late-Antonine. Joining sherds from II.166 and II.136: both Per. 1, Ph. 7.

2.24 Form Drag. 30, stamped in the mould by Advocisus of Lezoux (for details see No. 3.2 below). The Venus with column is shown by Stanfield and Simpson (1958, Pl. 114, No. 34), as are the rosettes and borders (*ibid.*, No. 33); the figure on the mask is a second Venus (O.305), the Apollo is a variant of O.92. The dolphin has no exact parallel in O., but is probably the pair to one shown by Stanfield and Simpson (*ibid.*, No. 28). *c.* AD 160–90. III.340: Per. 1, Ph. 4.

2.25 Form Drag. 37, in the style of Advocisus of Lezoux. The motifs all occur elsewhere in his work: the ovolo, beads and Diana are shown by Stanfield and Simpson (1958, Pl. 112, No. 1), as are the caryatid, twisted motif and rosette terminal (*ibid.*, No. 2), the Victory (*idem.*, Pl. 114, No. 30), the triple motif (*idem.*, Pl. 112, No. 6), the foliage cross (a partial impression: *idem.*, Pl. 113, No. 16), and the double-ended dart (*idem.*, Pl. 112, No. 13). *c.* AD 160–90. Joining sherds from II.164: Per. 1, Ph. 7; II.93: Per. 2, Ph. 4, II.102: (medieval deposit); and AREA I or II unstratified.

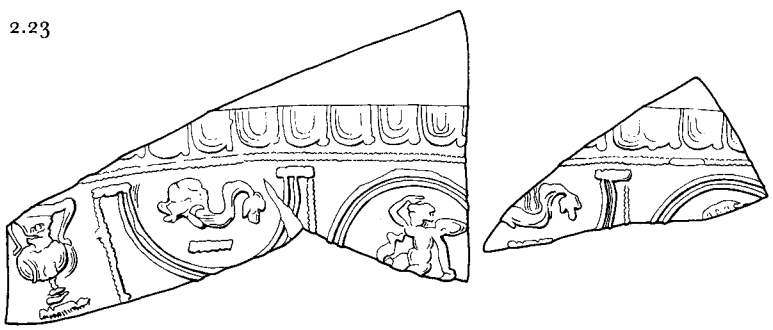
2.26 Form Drag. 37, in the style of Censorinus of Lezoux. The ovolo, astragalus and ovoid beads, leaf and triple motif are shown in a similar saltire by Stanfield and Simpson (1958, Pl. 102, No. 15). The Venus is O.334. *c.* AD 160–90. II.110: Per. 1, Ph. 5.

2.26

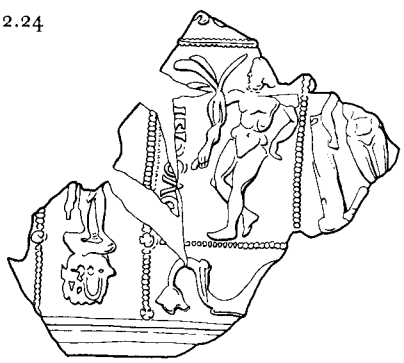


2.27 Form Drag. 30, CG, unused. This is an unusually small thick bowl, clumsily finished, especially on the interior. There are stylistic links with the work of Laxtucissa and of Censorinus, who

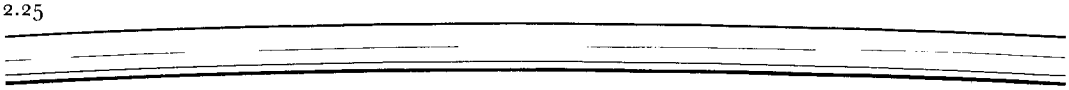
2.23



2.24



2.25





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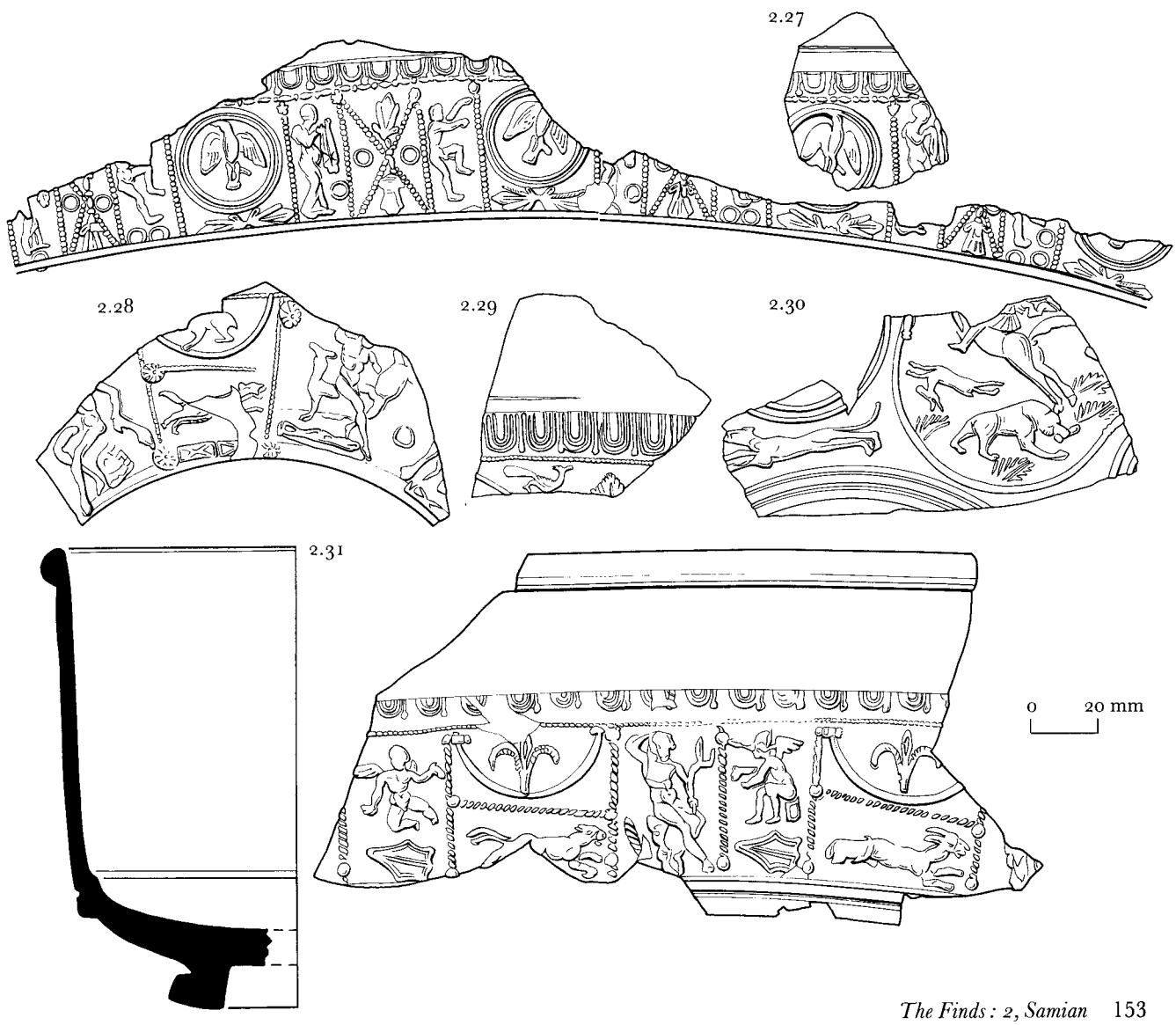
shared the astralagus and fine bead borders, the eagle in a double medallion, the formal leaf and the circles (Stanfield and Simpson 1958, Pl. 97, No. 2; Pl. 98, No. 15; Pl. 99, No. 19; Pl. 102, No. 18). The ovolo was also used by Censorinus, and it is likely that this bowl is his work (*ibid.*, Pl. 103, No. 19). The draped woman is O.931, the pugilist, a larger version of O.648. Mid- to late-Antonine. III.289: Per. 1, Ph. 5.

2.28 Form Drag. 37, CG, unused. There are links with Laxtucissa and Paternus II, who used the rosette (R.C227), column (R.P3, here broken down to two sections) and the panther (O.1509 or 1510). The Apollo is O.83, the satyr a variant of O.571. Mid- to late-Antonine. Joining sherds from III.341: Per. 1, Ph. 4, and III.269: Per. 1, Ph. 6.

2.29 Form Drag. 37, in the style of Paternus II of Lezoux. The ovolo is R.B135; the beads, peacock, scrollery and perhaps the same leaf are shown by Stanfield and Simpson (1958, Pl. 107, No. 26). *c.* AD 160–90. III.342: Per. 1, Ph. 2.

2.30 Form Drag. 37, in the style of Paternus II of Lezoux. The bear (O.1578), stag (O.1732) and hound (O.1984) were used by Paternus and by the associated potters Lastuca and Albucius, the horseman (O.258) apparently only by Lastuca. However, the heavy scroll winding over double medallions and the double groove at the base were regularly used by Paternus (Stanfield and Simpson 1958, Pl. 107, Nos. 26 and 31; Pl. 108, Nos. 37 and 40). The partially impressed leaf may be that shown by Stanfield and Simpson (1958, Pl. 107, No. 28), or the tip of one of his larger leaves. *c.* AD 160–90. III.293: Per. 2, Ph. 1.

2.31 Form Drag. 30, dia. *c.* 160 mm, unused, in the style of Paternus II of Lezoux. The ovolo is R.B114; the panther, beaded and corded borders are shown by Stanfield and Simpson (1958, Pl. 105, No. 13), as are the trilobe motif (*ibid.*, No. 16), the goat and corded motif (*idem.*, Pl. 106, No. 22), and the kneeling and seated cupids (*idem.*, Pl. 104, No. 8). The leaf is R.J85. *c.* AD 160–90. Joining sherds from II.525 and II.526: both Per. 1, Ph. 5, and from II.166: Per. 1, Ph. 7.



2.32 Form Drag. 37, in the style of Paternus II of Lezoux. The ovolo and fine beads are shown by Stanfield and Simpson (1958, Pl. 104, No. 10), as is the cupid (*ibid.*, No. 8); Paternus used the toothed circle (R.E57), the Apollo (D.57) and the Vulcan (D.40). The slip has missed a few of the more deeply impressed places. *c.* AD 160–90. III.269: Per. 1, Ph. 6.

2.33 Form Drag. 37, dia. *c.* 230 mm, in the style of Paternus II of Lezoux. The ovolo is shown by Stanfield and Simpson (1958, Pl. 107, No. 27) as are the corded borders (*idem.*, Pl. 108, No. 36); Paternus used the leaf R.J14. The stag may be that shown by Stanfield and Simpson (1958, Pl. 106, No. 24). *c.* AD 160–90. II.109: Per. 1, Ph. 5.

2.34 Form Drag. 37, in the style of Paternus II of Lezoux. The ovolo is R.B178; the leaf with astragalus border is shown by Stanfield and Simpson (1958, Pl. 104, No. 3), as are the circle and medallion (*ibid.*, No. 8) and the corded motif (*idem.*, Pl. 106, No. 22). *c.* AD 160–90. Joining sherds from III.340 and III.341: both Per. 1, Ph. 4.

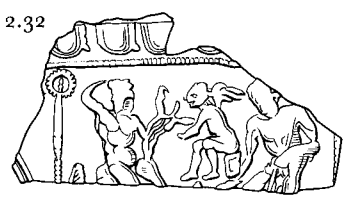
2.35 Form Drag. 37, in the style of Paternus II of Lezoux, who used the ovolo, beads and panther (Stanfield and Simpson 1958, Pl. 105, No. 13), the hare (O.2127) and the twig (R.L22). The other animals are probably deer. *c.* AD 160–90. II.111: Per. 1, Ph. 5.

2.36 Form Drag. 37, dia. *c.* 210 mm, CG. The ovolo is not illustrated by R., but the beads suggest a potter of the Paternus II group. The figure is Jupiter (O.1), the leaf has no parallel in R. *c.* AD 165–200. III.258: Per. 2, Ph. 1.

2.37 Form Drag. 37, CG. The large square beads and general style recall the work of the Doeccus group, but the individual motifs cannot all be paralleled in their work. The ivy leaf may be an incomplete impression of that shown by Stanfield and Simpson (1958, Pl. 148, No. 19). Slightly smaller triple leaves were regularly used as terminals by Laxtucissa and by Paternus II (e.g. Stanfield and Simpson 1958, Pl. 100, No. 24; Pl. 108, No. 35). The column has no exact parallel in R., nor has the astralagus. Mid- to late-Antonine. III.293: Per. 2, Ph. 1.

2.38 Form Drag. 37, by Iustus of Lezoux. The corded scrollery is shown by Stanfield and Simpson (1958, Pl. 110, No. 11), as are the heavy wavy line (*ibid.*, No. 7) and the triple motif (*ibid.*, No. 8). He is listed in R. among the users of the tree (type N13) and leaf (type H77). *c.* AD 160–90. Residual in I.77.

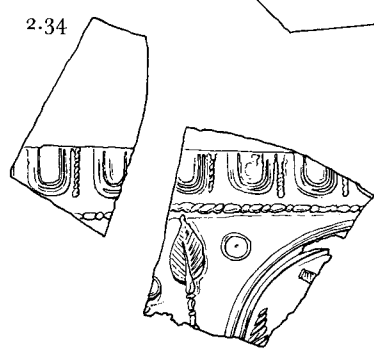
2.39 Form Drag. 37, CG. The ovolo and beadrow (R.A15) may indicate links with such potters as Catussa I, while the lozenge (R.U32) was used by Iustus. The large figure in the medallion is not identifiable, the other is a cupid, O.378. The rosette is probably R.C168, and the scroll fragment in the medallion may be a vase similar to R.T14–15. Mid- to late-Antonine. IV.380: Per. 1, Ph. 3.



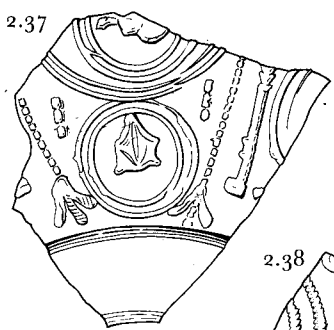


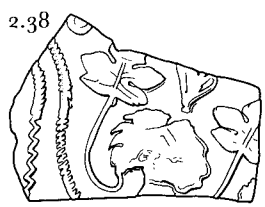
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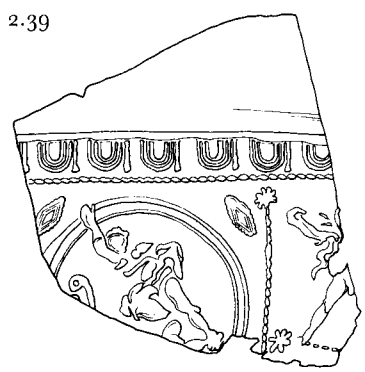












2.40 Form Drag. 37, with cursive signature of Servus II (Servus iv) of Lezoux among the decoration (for details see No. 3.192 below); the motifs are the dolphin basket, R.Q58, a small deer similar to O.1704A, and perhaps the Pan shown by Stanfield and Simpson (1958, Pl. 131, No. 7). *c.* AD 160–90. II.511: Per. 1, Ph. 5.

2.41 Form Drag. 37, signed in the mould by Servus II (Servus iv) of Lezoux (for details see No. 3.191 below). The tripod and sea-bull are shown by Stanfield and Simpson (1958, Pl. 131, No. 6), the trophy (R.Q1) is apparently new to his repertoire. The figure is not identifiable. *c.* AD 160–90. III.340: Per. 1, Ph. 4.

2.42 Form Drag. 37, dia. *c.* 230 mm, in the style of Iullinus of Lezoux. The ovolo, corded borders, column capital, corded column, arcade and warrior are shown by Stanfield and Simpson (1958, Pl. 127, No. 22) together with the circle, which has only been partially impressed on this bowl to give a crescent motif. The second figure(? another warrior) has no apparent parallel. *c.* AD 160–90. Joining sherds from II.519 and II.522: both Per. 1, Ph. 4.

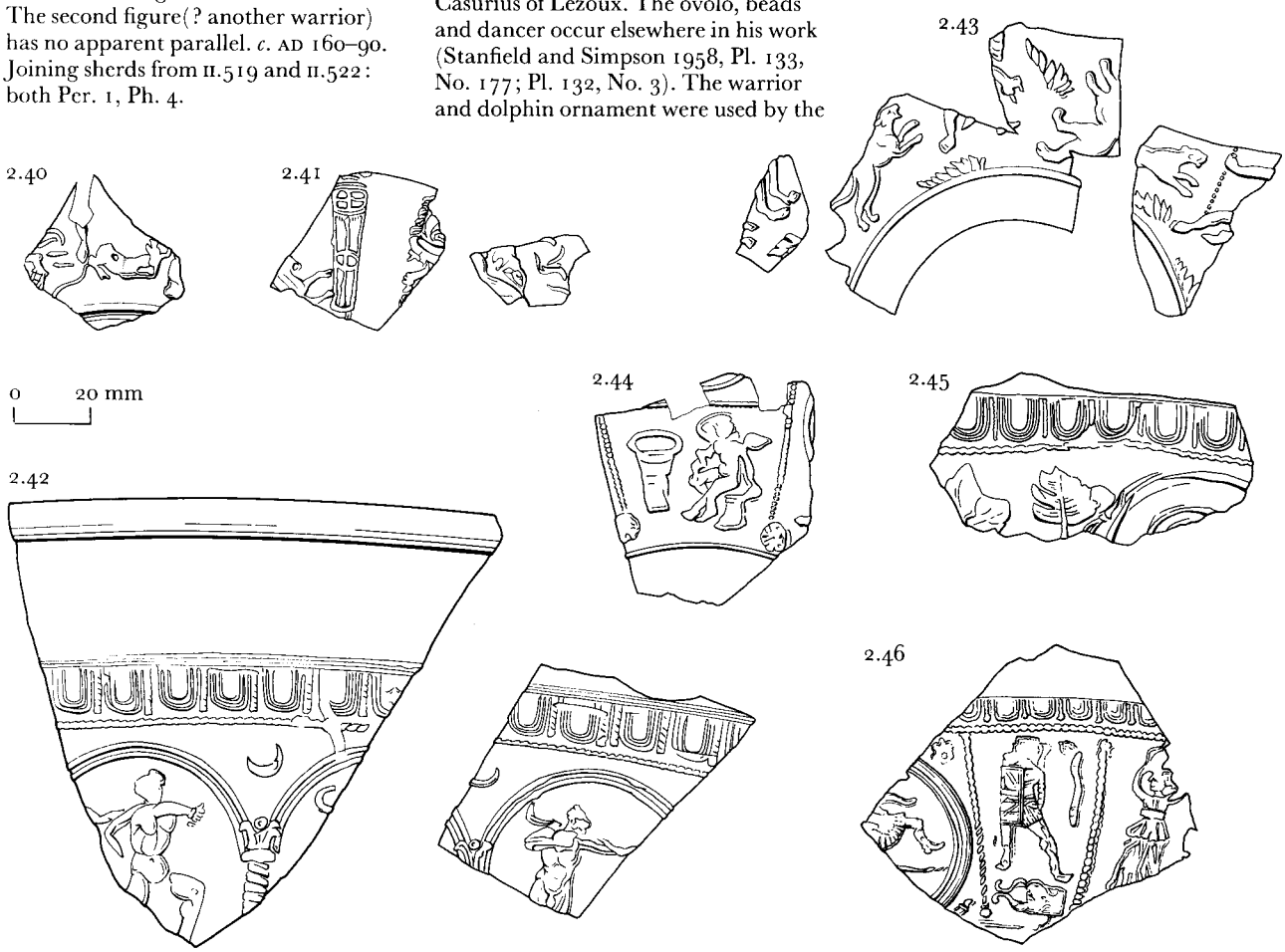
2.43 Form Drag. 37, unused, in the style of Severus of Lezoux. The bear, panther, hunter with added beadrow spear, and the corded motif are shown by Stanfield and Simpson (1958, Pl. 128, No. 2). *c.* AD 165–200. III.341: Per. 1, Ph. 4.

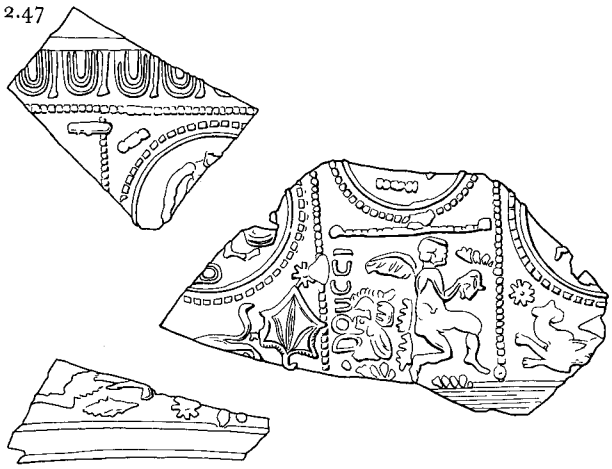
2.44 Form Drag. 37, in the style of Caletus of Lezoux, who used the cupid (O.443B), stand (R.T29) and rosette (R.C39); the beads are similar to those shown by Stanfield and Simpson (1958, Pl. 128, No. 9). *c.* AD 165–200. II.136: Per. 1, Ph. 7

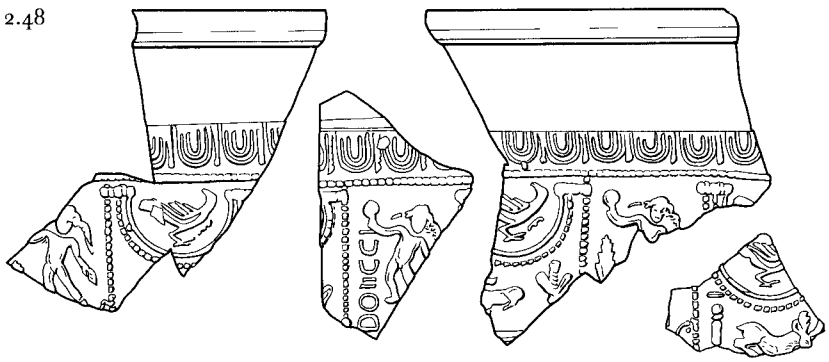
2.45 Form Drag. 37, in the style of Banvus of Lezoux. For the ovolo (on this sherd the tongue is very finely corded) and the corded border see Stanfield and Simpson (1958, Pl. 139, No. 3), which also has the larger leaf and similar scrollery with the separate leaf tendril. For the small leaf see *ibid.* (No. 7). *c.* AD 165–200. III.269: Per. 1, Ph. 6

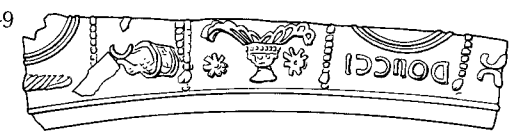
2.46 Form Drag. 37, in the style of Casurius of Lezoux. The ovolo, beads and dancer occur elsewhere in his work (Stanfield and Simpson 1958, Pl. 133, No. 177; Pl. 132, No. 3). The warrior and dolphin ornament were used by the associated potter Doeccus (*ibid.*, Pl. 147, Nos. 6 and 10). The gladiator is O.1002. *c.* AD 165–200. II.110: Per. 1, Ph. 5.

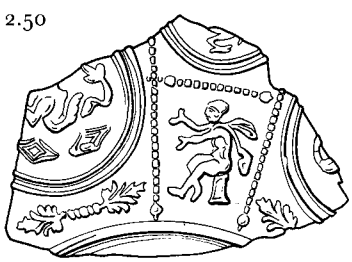
2.47 Form Drag. 30, dia. *c.* 210 mm, stamped in the mould by Doeccus (i) of Lezoux (for details see No. 3.46 below). The large ovolo and beads are shown by Stanfield and Simpson (1958, Pl. 147, No. 10). For the beaded medallion containing the kilted warrior, the monogram and dolphin basket, arranged in the same way above the panther, leaves and rosette, see *idem.* (Pl. 148, No. 19) which might be from the same mould. The cupid and flagon, the stamp and the beaded festoon are also shown by Stanfield and Simpson (1958, Pl. 148, No. 17), as are the foliage motif (*ibid.*, No. 21), and the Ammon mask and astragalus (*idem.*, Pl. 151, No. 62). *c.* AD 165–200. III.293: Per. 2, Ph. 1.

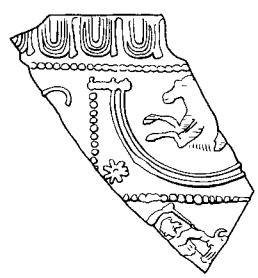


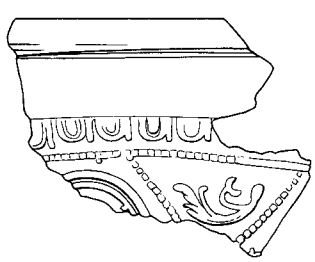


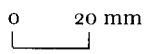












2.48 Form Drag. 30, dia. *c.* 150 mm, stamped in the mould by Doeccus (i) of Lezoux (for details see No. 3.44 below). The ovolo, tendril attachment, astragalus and triple leaf are shown by Stanfield and Simpson (1958, Pl. 147, No. 7), as are the small stag (*idem.*, Pl. 148, No. 14), the leaf and festoon (*ibid.*, No. 19), the stag (*idem.*, Pl. 149, No. 33), and the bird (*idem.*, Pl. 151, No. 60). The cupid is O.432A. *c.* AD 165–200. Joining sherds from II.110 and II.511: both Per. 1, Ph. 5, and from II.164: Per. 1, Ph. 7.

2.49 Form Drag. 30, stamped by Doeccus (i) of Lezoux (for details see No. 3.45 below). The stamp and corded motif are shown by Stanfield and Simpson (1958, Pl. 148, No. 23), as are the rosette and dolphin basket (*idem.*, Pl. 147, No. 10), and the beads and vase (*ibid.*, No. 6). *c.* AD 165–200. II.166: Per. 1, Ph. 7.

2.50 Form Drag. 37, in the style of Doeccus of Lezoux. The sea-horse, lozenge and beads are shown by Stanfield and Simpson (1958, Pl. 149, No. 32), as are the bird (*idem.*, Pl. 151, No. 60) and leaves (*idem.*, Pl. 149, No. 27); the cupid is O.445. *c.* AD 165–200. II.112: Per. 1, Ph. 7.

2.51 Form Drag. 30, in the style of Doeccus of Lezoux. The ovolo, beads, sea-horse, festoon and rosette are shown by Stanfield and Simpson (1958, Pl. 149, No. 32); the figure is a mounted Amazon, O.246. *c.* AD 165–200. II.511: Per. 1, Ph. 5.

2.52 Form Drag. 37, dia. *c.* 160 mm, in the style of Doeccus of Lezoux. The ovolo is shown by Stanfield and Simpson (1958, Pl. 148, No. 14), as are the saltire of square beads and medallion (*idem.*, Pl. 149, No. 33), and the fern (*idem.*, Pl. 150, No. 43). *c.* AD 165–200. II.522: Per. 1, Ph. 4.

2.53 Form Drag. 37, CG. Panels of saltires alternating with Apollo (O.73A) and Minerva (O.126). A similar but larger leaf, the Minerva, rosette, acanthus and a similar astragalus were used by the Casurius-Doeccus group (Stanfield and Simpson 1958, Pl. 134, Nos. 26 and 29; Pl. 147, Nos. 10–11), although the beads (R.A15) and general arrangement are not found in their work. Probably by a contemporary potter, and mid- to late-Antonine in date. Joining sherds from IV.350: Per. 1, Ph. 3, and II.110: Per. 1, Ph. 5.

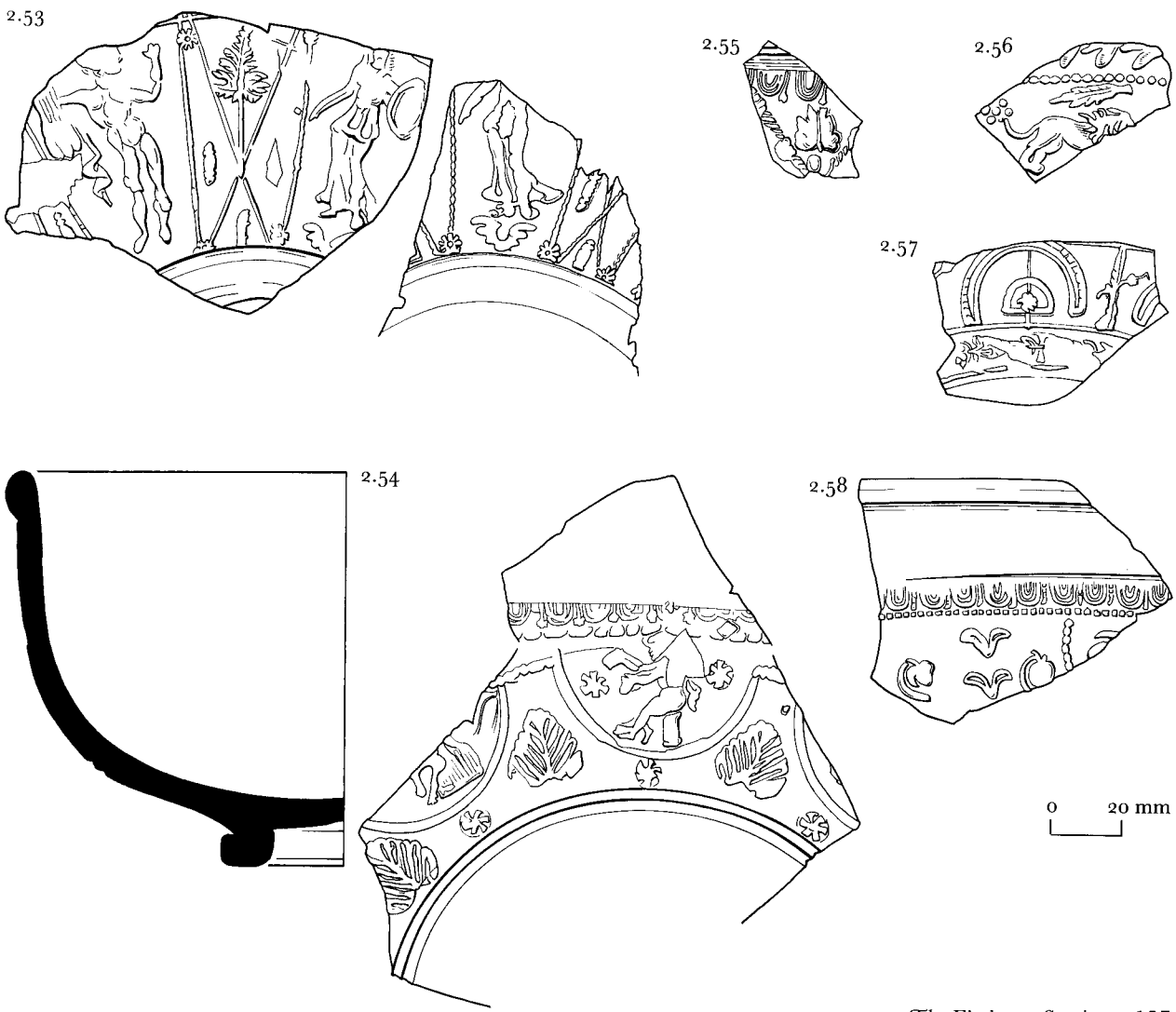
2.54 Form Drag. 37, dia. *c.* 190 mm, CG, probably unused; perhaps lightly burnt. Clumsily modelled but with a small neat ovolo (*cf.* R.B7 and R.B9). The figures are a cupid (O.445) and a seated man (O.915A); the leaf has no parallel in R. There are some parallels with a small late bowl from Neatham which has the rosette and a similar general arrangement (Bird forthcoming a). *c.* AD 170–200. III.258: Per. 2, Ph. 1.

2.55 Form Drag. 37, La Madeleine, neatly made and moulded. The ovolo and corded motif with rosettes (Ricken 1934, Taf. 7, D and No. 39) are shown together by Ricken (*idem.*, Taf. 8, No. 4); the leaf (*idem.*, Taf. 7, No. 44) is incompletely impressed here. Hadrianic to early-Antonine. III.314: Per. 2, Ph. 1.

2.56 Form Drag. 37, La Madeleine. The leaf, rosette and beadrow are shown in a similar animal frieze by Ricken (1934, Taf. 8, No. 13). For the lion see Ricken (*idem.*, Taf. 7, No. 107), but there is no exact parallel shown for the leaf forming the wreath. Hadrianic to early-Antonine. II.165: Per. 1, Ph. 7.

2.57 Form Drag. 37. There are links with the style of the 'F-Master' of Heiligenberg. A similar wreath arcade, semi-circular motif and rosette occur on a mould (Forrer 1911, Taf. 19, No. 5), but the individual motifs are not identical. The basal wreath is made up of a leaf (*cf. ibid.*, Figure 82, t) and pelta (*ibid.*, Figure 82, p: used alone for a wreath on Figure 86). The vertical dividers are made up of a narrow leaf (*ibid.*, Figure 82, 34; as on Figure 88); the motif crossing it has no apparent parallel, but is similar to one found at La Madeleine (Müller 1968, Taf. 11, No. 286). The orange fabric is more characteristic of La Madeleine than Heiligenberg. There are possible traces of a signature at the base. Hadrianic to early-Antonine. Residual in III.62.

2.58 Form Drag. 37, dia. *c.* 180 mm, in the style of Cambo or an associated potter at Blickweiler. The ovolo is shown by Knorr and Sprater (1927) Tafn. 57–9 *cf.* especially Taf. 59, No. 5, with the same vertical arrangement of the bifid leaf; and Taf. 58, No. 5 which has no surviving ovolo but shows the beaded festoon and beadrow. The spurred bud occurs regularly on Cambo's stamped bowls: see e.g. Fölzer (1913) Taf. 6, Nos. 18, 19 and 25. Early- to mid-Antonine. Residual in III.103.



2.59 Form Drag. 37, in the style of Tocca of Lavoye. The lion is shown by Oswald (1945, Figure 9, No. 42), as is the twig motif (*ibid.*, No. 44), which also occurs on a signed mould (Chenet and Gaudron 1955, Figure 57, G). For the chevron column *cf. idem.* (Figure 58, F). Antonine, perhaps to early 3rd century. III.338: Per. 1, Ph. 5.

2.60 Form Drag. 37. The style suggests Trier Werkstatt I, or possibly Sinzig, and the fabric would agree with an origin at Trier, but most of the motifs are without precise parallel there or apparently elsewhere. Similar arcades, columns and beads are shown by Huld-Zetsche (1972, Taf. 3, A18, for example). Probably Hadrianic to early-Antonine. II.519: Per. 1, Ph. 4.

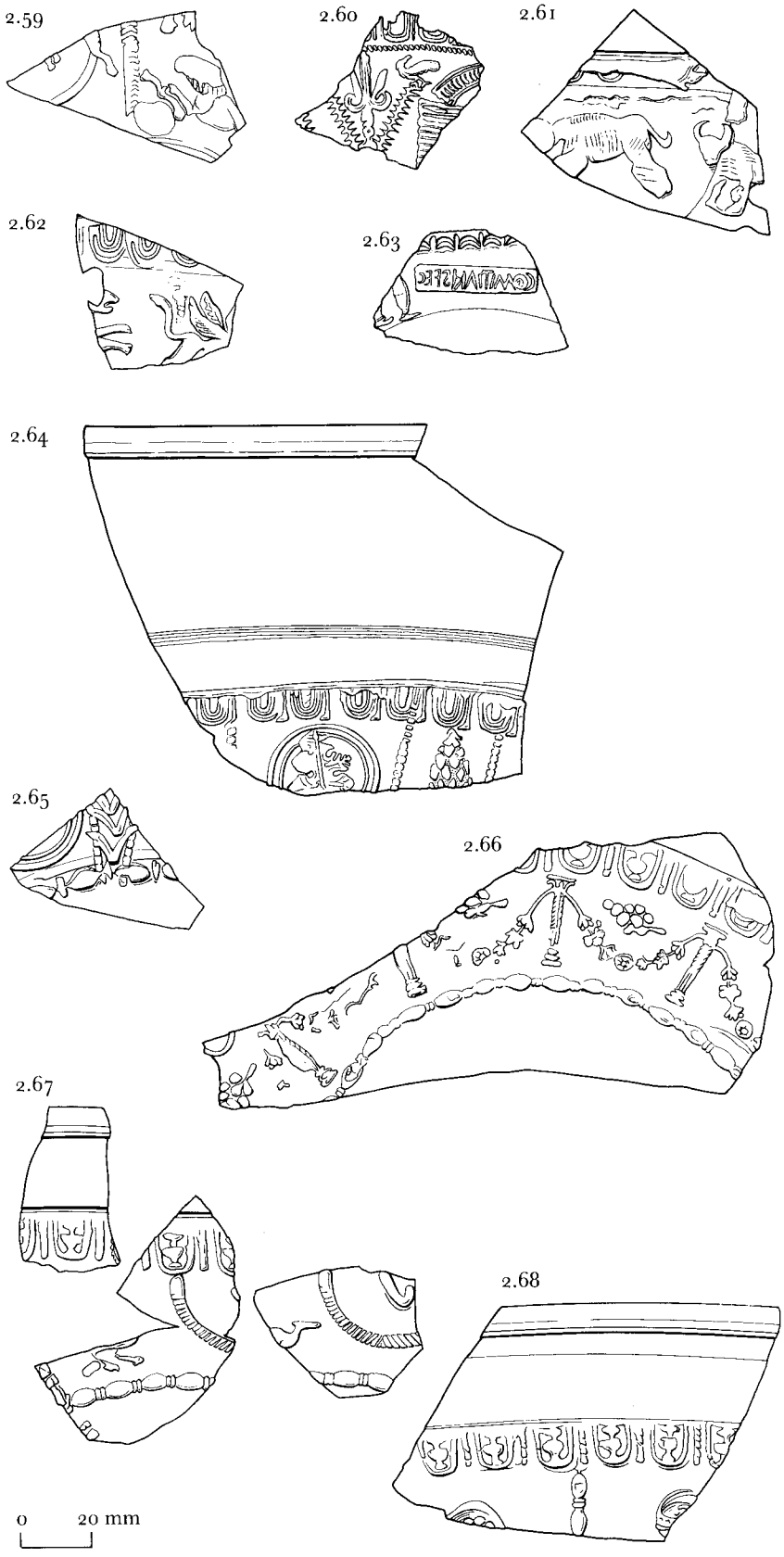
2.61 Form Drag. 37, very badly moulded, Trier Werkstatt II, decoration A117 (Zetsche forthcoming), with ovolo E13. The boar is shown by Fölzer (1913, Taf. 23, No. 17), the ovolo and bull by Knowles (1909, 413, Figure 41). III.256: Per. 2, Ph. 3.

2.62 Form Drag. 37, Trier Werkstatt II, decoration C38 (see Zetsche forthcoming). The ovolo (E14) and simple frieze of griffins are shown by Haalebos (1977, Taf. 46, No. 298). Residual in III.192.

2.63 Form Drag. 37, stamped in the mould by Comitialis of Trier (for details see No. 3.39 below). The pediment is shown with a Comitialis ovolo by Kalee (1972–3, Abb. 8, No. 27); it also occurs with this large astragalus on a bowl in his style from Arentsburg (Holwerda 1923, Afb. 84, No. 12). III.314: Per 2, Ph. 1.

2.64 Form Drag. 37, dia. *c.* 240 mm, in the style of Comitialis of Trier. The ovolo and beadrow are shown by Haalebos (1977, Taf. 50, No. 354). For the leaf and grapes see Holwerda (1923, Afb. 84, Nos. 10 and 11), and for the ovolo and medallion see Kalee (1972–3, Abb. 8, No. 26). III.269: Per. 1, Ph. 6.

2.65 Form Drag. 37, in the style of Comitialis of Trier. The chevrons are shown as a basal wreath by Haalebos (1977, Taf. 49, No. 345), with the same square beads. The astragalus is shown as a terminal by Holwerda (1923, Afb. 84, No. 12), and as a basal wreath below the chevrons and beads by Fölzer (1913, Taf. 17, No. 22). Residual in I.104.



2.66 Form Drag. 37, in the style of Dexter of Trier. The small vase ovolo, floral swags from columns, and astralagus wreath are shown by Fölzer (1913, Taf. 15, No. 14), as is the bunch of grapes (*ibid.*, No. 10). II.110: Per. 1, Ph. 5.

2.67 Form Drag. 37, in the style of Dexter of Trier. The smaller of his vase ovolos with rope festoon (Fölzer 1913, Taf. 15, No. 39), basal astragalus wreath (*ibid.*, No. 14) and crane (*idem.*, type 669). Joining sherds from II.110 and II.111: both Per. 1, Ph. 5.

2.68 Form Drag. 37, dia. *c.* 170 mm, in the style of Dexter of Trier. The smaller of his vase ovolos with a vertical astragalus row (Fölzer 1913, Taf. 15, No. 33). The other motif is a fruit basket (*idem.*, type 733 and Taf. 15, No. 24). III.269: Per. 1, Ph. 6.

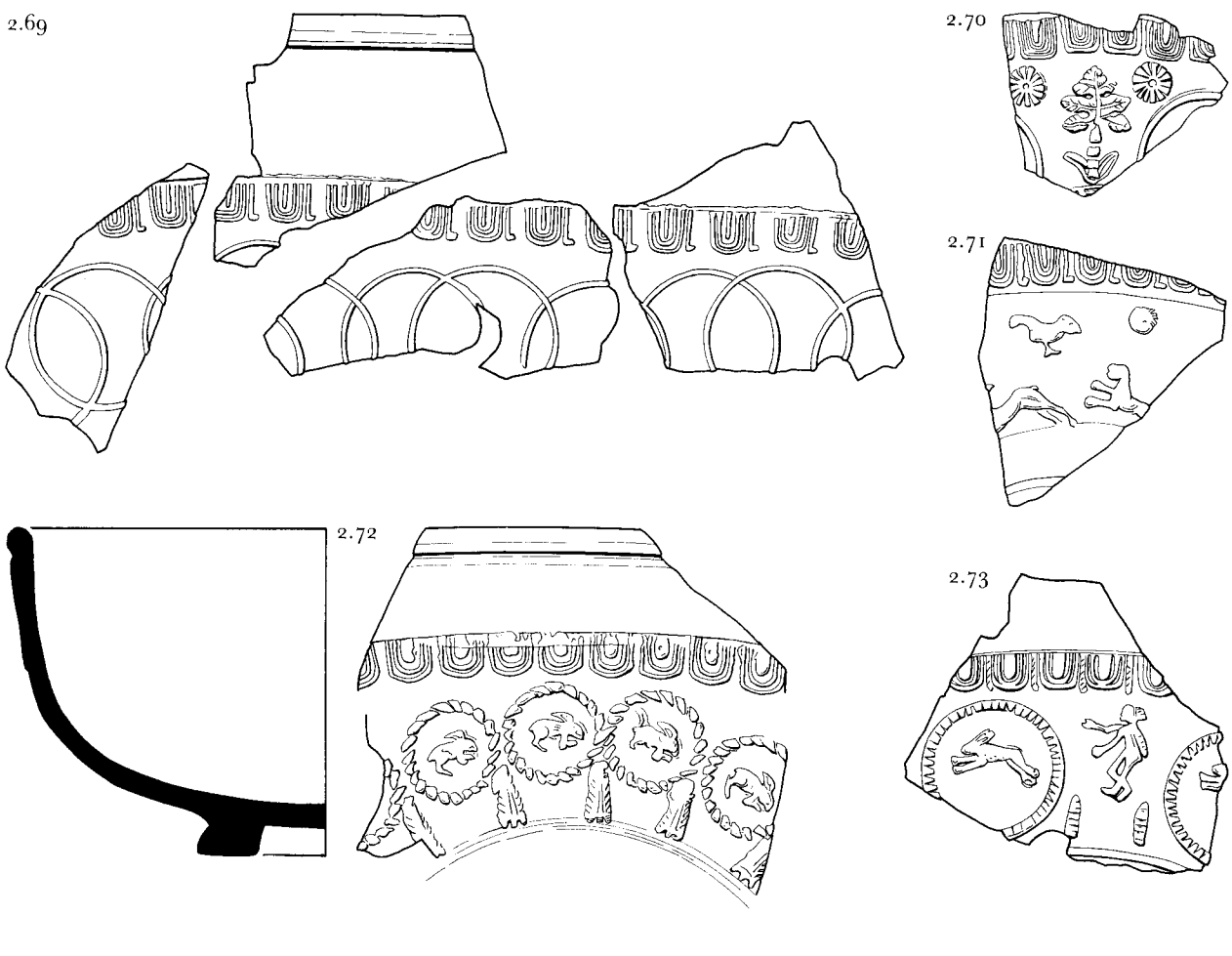
2.69 Form Drag. 37, dia. *c.* 220 mm, in the style of Censor of Trier, who used this ovolo (Fölzer 1913, type 946; Gard 1937, R2). For the circle arrangement with his basal wreath, see Fölzer (1913, Taf. 15, No. 42), and with this ovolo, see Haalebos (1977, Taf. 51, No. 378). III.293: Per. 2, Ph. 1.

2.70 Form Drag. 37, in the style of Amator of Trier. His ovolo (Fölzer 1913, type 952; Gard 1937, R17). The leaf and ornament are shown in a similar arrangement by Fölzer (1913, Taf. 19, No. 26), as are the medallion (*ibid.*, No. 20), and the rosette (*ibid.*, No. 19, in a wreath). II.519: Per. 1, Ph. 4.

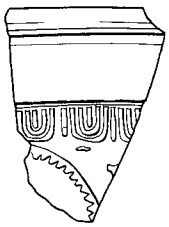
2.71 Form Drag. 37, slightly burnt, in the style of Criciro of Trier. His ovolo, shown with the cockerel on a stamped bowl from Niederbieber (Oelmann 1914, Taf. 6, No. 21); the panther and rosette are shown by Fölzer (1913, Taf. 17, No. 15), as is the deer (*ibid.*, No. 27). II.110; Per. 1, Ph. 5.

2.72 Form Drag. 37, dia. *c.* 170 mm, unused, in the style of Afer of Trier. The ovolo, corded medallion, hare and leaf occur on bowls in his style from Zwammerdam (Haalebos 1977, Taf. 55, Nos. 425 and 428). Joining sherds from III.293 and III.348: both Per. 2, Ph. 1.

2.73 Form Drag. 37, in the style of Afer-Marinus of Trier. The ovolo and medallion were used by Marinus (Gard 1937, Taf. 14, no. 7), the medallion and hare by his associate Afer (*ibid.*, Nos. 16 and 20). The figure is Fölzer (1913) type 560. III.293: Per. 2, Ph. 1.



2.74



2.74 Form Drag. 37, dia. *c.* 180 mm, Trier. The ovolo (Gard 1937, R20) and cogged medallion were used by Afer (*idem.*, Taf. 14, No. 19). III.269: Per. 1, Ph. 6.

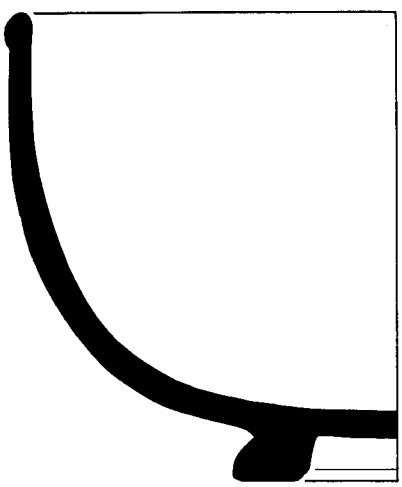
2.75 Form Drag. 37, dia. *c.* 210 mm, unused, Trier. Closely similar to No. 2.76 below, and probably by the same potter; it shares the circles used on a bowl in the style of Afer (Oelmann 1914, Taf. 8, No. 8) and the ovolo, which was used by Marinus. The latter also used the double cogged medallions (Gard 1937, Taf. 14, No. 7), while Afer used the hare (*ibid.*, No. 20). The cupid (O.51B or C) is not shown by Fölzer (1913). Joining sherds from III.269: Per. 1, Ph. 6 and III.258: Per. 2, Ph. 1.

2.76 Form Drag. 37, dia. *c.* 210 mm, Trier. A closely similar bowl from Niederbieber lacks only the leaf (Oelmann 1914, Taf. 8, No. 7), which occurs, with the composite circle but a different ovolo, in the style of Afer (*ibid.*, No. 8). Afer is not known to have used this ovolo (Fölzer 1913, type 941; Gard 1937, R8), but it was used by Marinus, an associated potter, and both this bowl and No. 2.75 above are likely to be products of their workshop. Joining sherds from II.269: Per. 1, Ph. 6, and from III.258 and III.314: both Per. 2, Ph. 1.

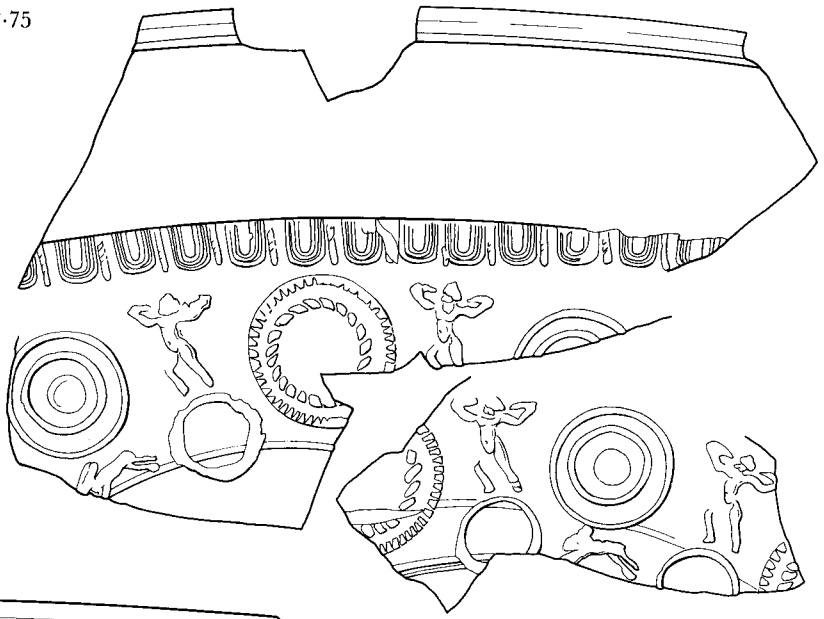
2.77 Form Drag. 37, in the style of Afer-Marinus of Trier. The ovolo and medallion were used by Marinus (Gard 1937, Taf. 14, No. 7), the medallion, hare, leaf and roundel by Afer (*ibid.*, Nos. 13, 16 and 20). III.293: Per. 2, Ph. 1.

2.78 Form Drag. 37 in the style of Afer of Trier. The ovolo and a similar arrangement of arcades are shown by Gard (1937, Taf. 14, No. 14), as are the ovolo and shell (*ibid.*, No. 9). III.314; Per. 2, Ph. 1.

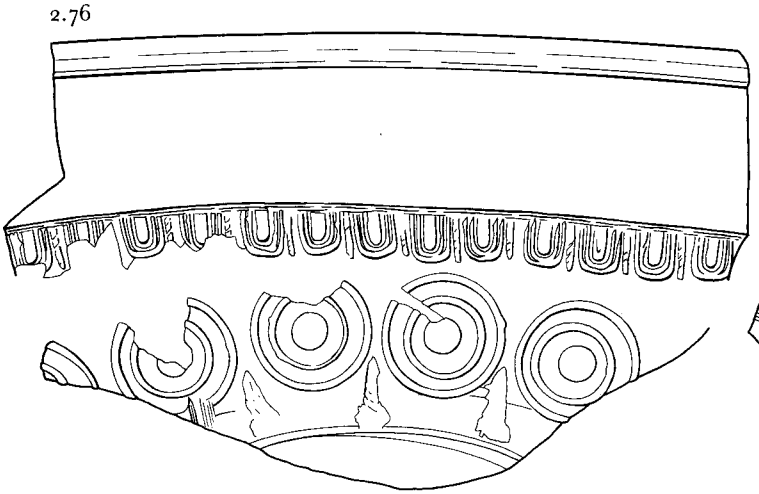
2.79 Form Drag. 37, Trier. For a similar use of the beaded arcade see Gard (1937, Taf. 14, No. 17), in the style of Afer. AREA I or II, unstratified.



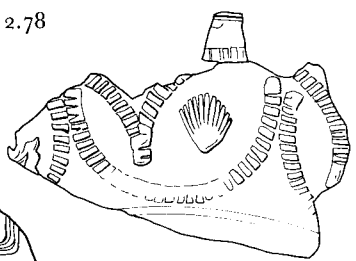
2.75



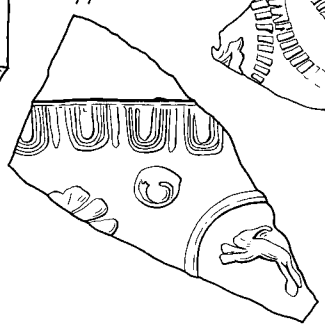
2.76



2.78



2.77



0 20 mm

2.80 Form Drag. 37, in the style of Afer of Trier, who used the ovolo (Gard 1937, R18) and frieze of tall leaves (*idem.*, Taf. 14, No. 12). The horizontal motif is a column, also shown by Gard (*ibid.*, No. 15). III.293: Per. 2, Ph. 1.

2.81 Form Drag. 37, in the style of Afer of Trier. The Diana and bust are shown by Gard (1937, Taf. 14, No. 10); this arrangement is known at Trier (Dr I. Zetsche, pers. comm.). III.293: Per. 2, Ph. 1.

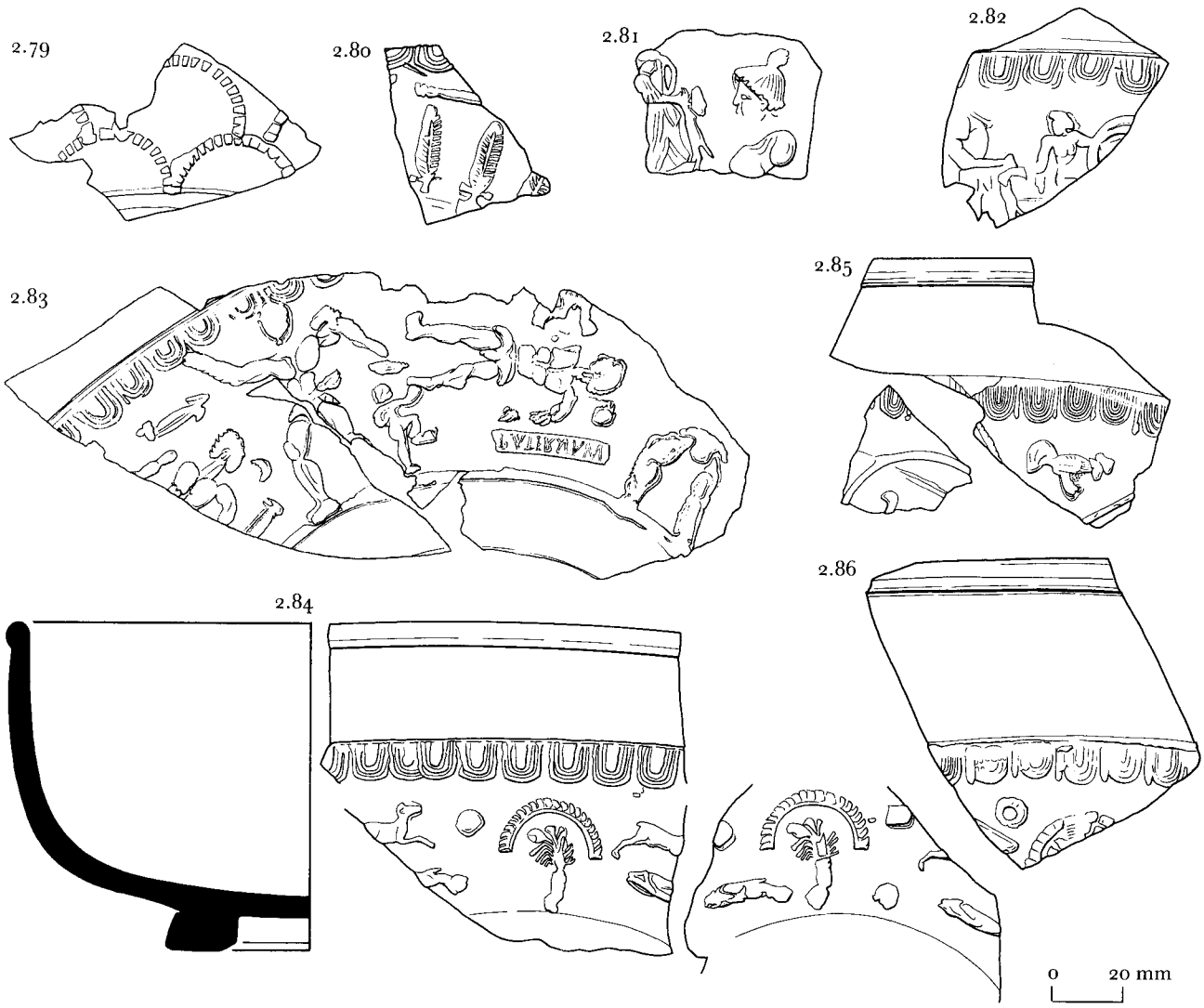
2.82 Form Drag. 37, Trier. Probably by Afer of Trier, who used the ovolo and Diana (Gard 1937, Taf. 14, No. 11); the Venus (O.322 with the right arm broken below the elbow) was regularly used by Primanus-Dignus-Perpetus (Gard 1937, Taf. 25, Nos. 21–6), but they apparently never used this ovolo. Residual in II.124.

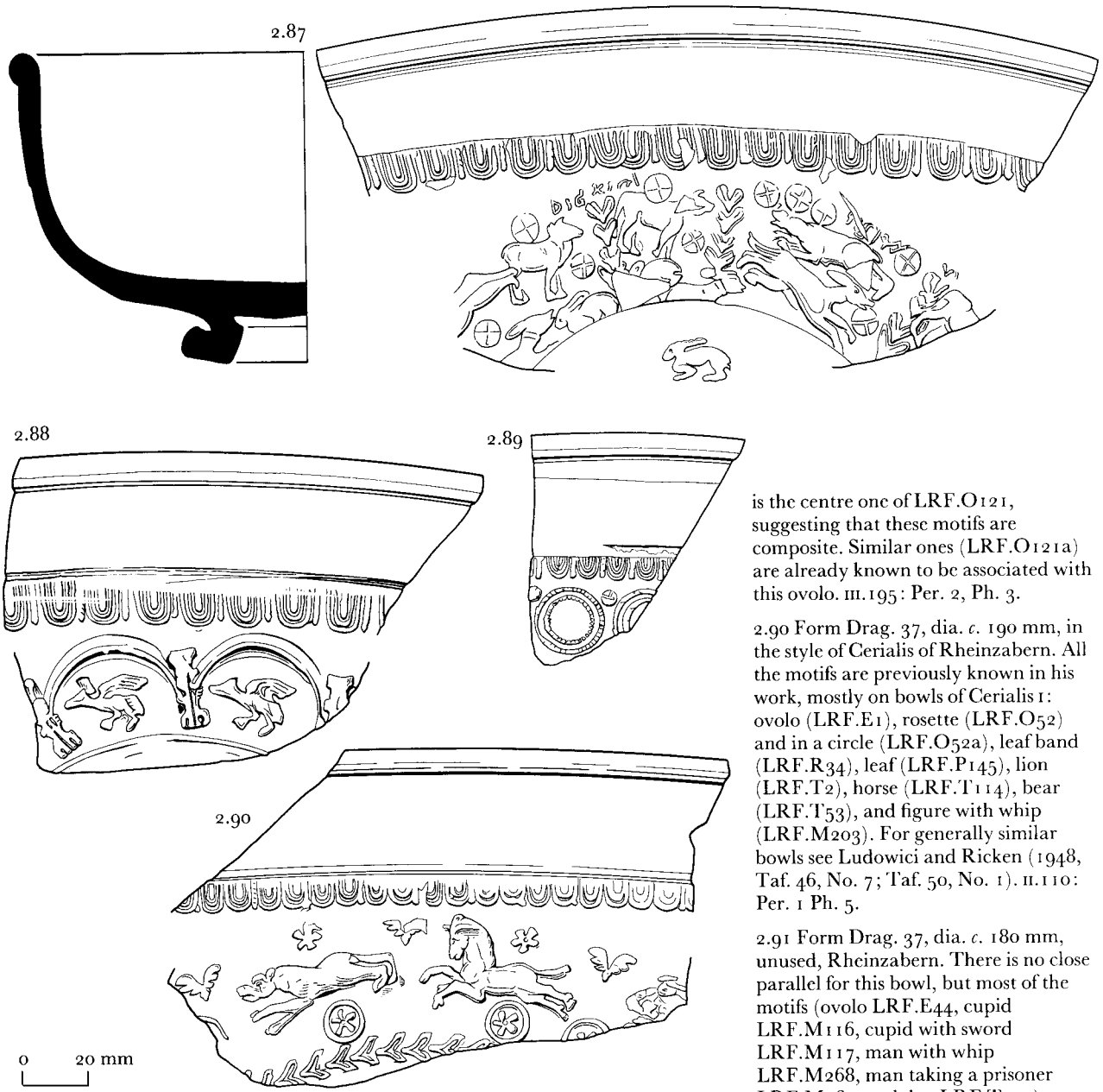
2.83 Form Drag. 37, stamped in the mould by Paternianus (iii) of Trier (for details see No. 3.138 below), who is known to have used this ovolo. The two large figures are not shown by Fölzer (1913), but occur on stamped Paternianus bowls from Vechten (unpublished: information from Dr I. Zetsche); the vertical figure is probably O.1053, a gladiator. The small figure is shown by Fölzer (1913, type 520), as is probably the leaf (*idem.*, type 751). III.318: Per. 1, Ph. 6.

2.84 Form Drag. 37, dia. *c.* 170 mm, unused, Trier. The ovolo was used by Afer, Dubitatus and Paternianus; for its use with the corded arcade, see Oelmann (1914, Taf. 6, No. 8). The hind was used by Afer (Gard 1937, Taf. 14, No. 16), while similar blobs occur in the background of Dubitus-Dubitatus bowls (e.g. *idem.*, Taf. 23, No. 5). The fish is Fölzer (1913) type 702, the squid similar to Fölzer (1913) type 694. This bowl is probably by Dubitatus: *cf.* Gard (1937, Taf. 19, No. 19). Joining sherds from III.269: Per. 1, Ph. 6, and III.258: Per. 2, Ph. 1.

2.85 Form Drag. 37, dia. *c.* 180 mm, in the style of Dubitus-Dubitatus of Trier. The ovolo and cockerel are shown by Gard (1937, Taf. 23, No. 6), as is a similar use of roped borders (*ibid.*, No. 8). III.340: Per. 1, Ph. 4.

2.86 Form Drag. 37, in the style of Dubitus-Dubitatus of Trier. The ovolo, arcade and small wreath are shown by Gard (1937, Taf. 23, No. 15); the other motif may be a bird also shown by Gard (*ibid.*, No. 6a). III.258: Per. 2, Ph. 1.





2.87 Form Drag. 37, dia. *c.* 180 mm, unused, signed by Dignus and Primanus of Trier (for details see Nos. 3.43 and 3.164 below, respectively). They regularly used this ovolo and rosette (Gard 1937, Tafn. 25–6); the bear is also shown by Gard (1937, Taf. 26, Nos. 6 and 7), as is the hound (*ibid.*, No. 2); the hare is shown by Oelmann (1914, Taf. 8, No. 26). The cow is apparently new to their repertoire. Joining sherds from III.269: Per. 1, Ph. 6, and III.293: Per. 2, Ph. 1.

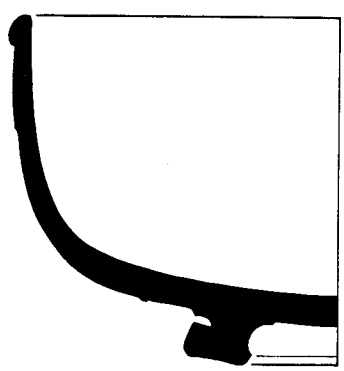
2.88 Form Drag. 37, dia. *c.* 190 mm, in the style of Dignus-Primanus-Perpetus of Trier. The ovolo, column and arcade are shown by Gard (1937, Taf. 26, No. 31), as is probably the crane (*idem.*, Taf. 25, No. 13). III.269: Per. 2, Ph. 1.

2.89 Form Drag. 37, dia. *c.* 190 mm, EG. Ovolo LRF.E30, which is not attributed to a potter. The other motifs on this bowl are associated with Janu(arius) I or Reginus I: the rosette is at the centre of LRF.O123 (and smaller than LRF.O79), the outer circle is the outer of LRF.O122, and the inner circle is the centre one of LRF.O121, suggesting that these motifs are composite. Similar ones (LRF.O121a) are already known to be associated with this ovolo. III.195: Per. 2, Ph. 3.

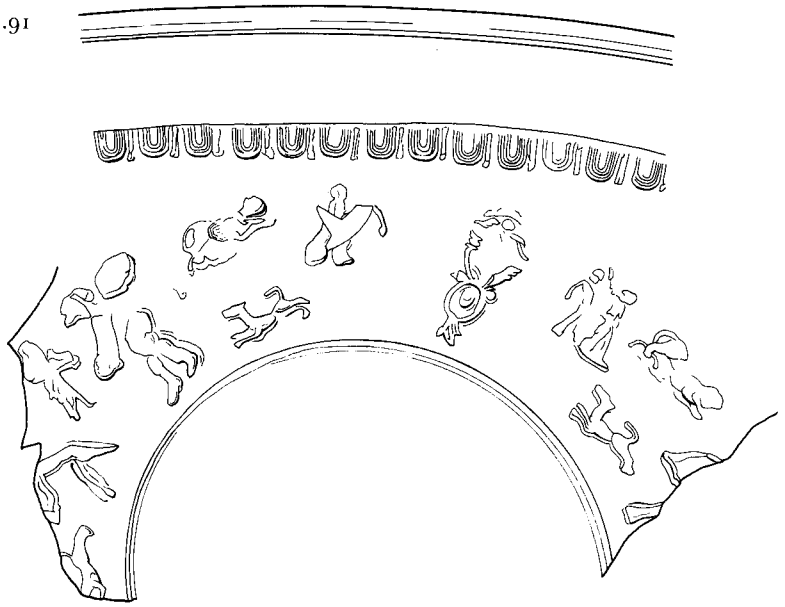
2.90 Form Drag. 37, dia. *c.* 190 mm, in the style of Cerialis of Rheinzabern. All the motifs are previously known in his work, mostly on bowls of Cerialis I: ovolo (LRF.E1), rosette (LRF.O52) and in a circle (LRF.O52a), leaf band (LRF.R34), leaf (LRF.P145), lion (LRF.T2), horse (LRF.T114), bear (LRF.T53), and figure with whip (LRF.M203). For generally similar bowls see Ludowici and Ricken (1948, Taf. 46, No. 7; Taf. 50, No. 1). II.110: Per. 1 Ph. 5.

2.91 Form Drag. 37, dia. *c.* 180 mm, unused, Rheinzabern. There is no close parallel for this bowl, but most of the motifs (ovolo LRF.E44, cupid LRF.M116, cupid with sword LRF.M117, man with whip LRF.M268, man taking a prisoner LRF.M269, and dog LRF.T141) occur in the work of Cerialis, mostly of Cerialis III. The other motifs are a robed figure (LRF.M249), a leopard (LRF.T35a), and a cornucopia (LRF.O160a). Joining sherds from III.341: Per. 1, Ph. 4, from III.319: Per. 1, Ph. 5, and from III.318: Per. 1, Ph. 6.

2.92 Form Drag. 37, dia. *c.* 240 mm, in the style of Cerialis IV of Rheinzabern, with ovolo LRF.E38, leaf LRF.P59a, and medallion LRF.K52. The bird is LRF.T259, recorded for Cerialis II and III. II.110: Per. 1, Ph. 5.

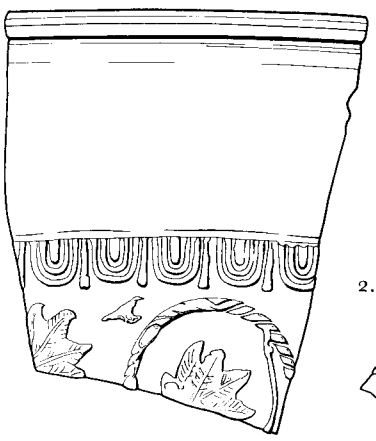


2.91

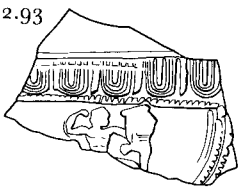


0 20 mm

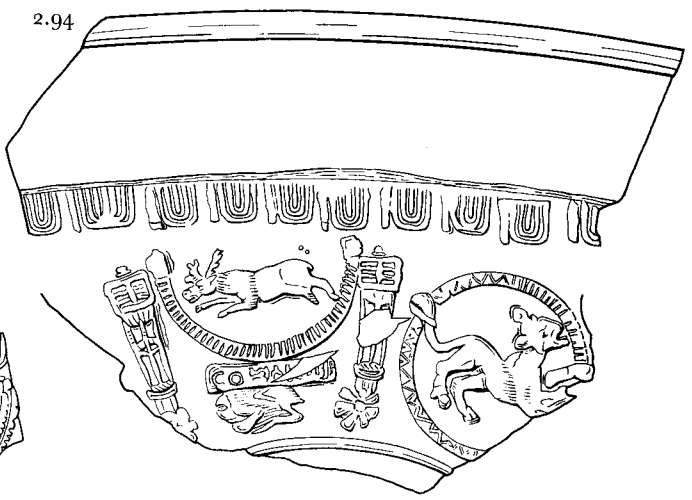
2.92



2.93



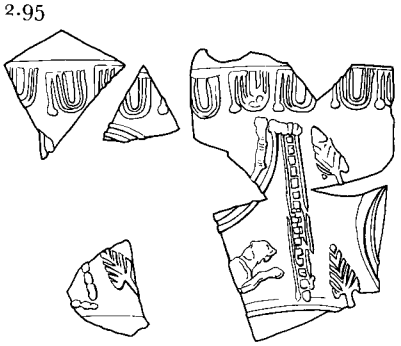
2.94



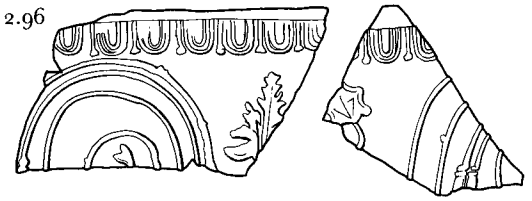
2.93 Form Drag. 37, Rheinzabern. The ovolo (LRF.E40), festoon (LRF.KB133) here impressed twice, and Apollo (LRF.M72) were shared by Cerialis, Comitialis and Attillus. However, the border (LRF.O237) appears only on bowls in Cerialis's style (Ludowici and Ricken 1948, Taf. 71), suggesting that this is his work. III.293: Per. 2, Ph. 1.

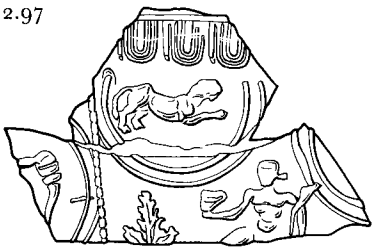
2.94 Form Drag. 37, stamped by Comitialis of Rheinzabern (for details see No. 3.41 below). A mould of Comitialis III (Ludowici and Ricken 1948, Taf. 83, No. 10) has all the motifs including the stamp in the same arrangement. The ovolo is LRF.E10, the panther LRF.T44, the stag LRF.T96, the hare LRF.T163, the tripod LRF.O11, the rosette LRF.O50, the medallion LRF.K48, and the festoon LRF.KB89. Joining sherds from III.269 and III.318: both Per. 1, Ph. 6.

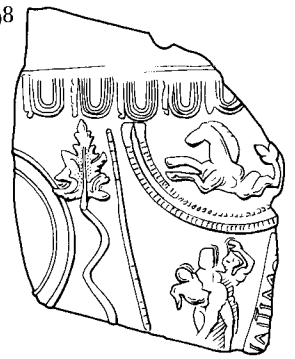
2.95

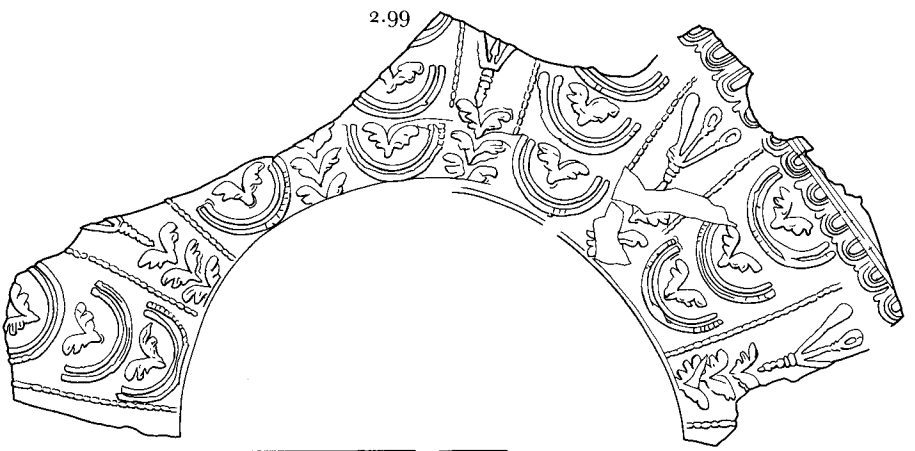


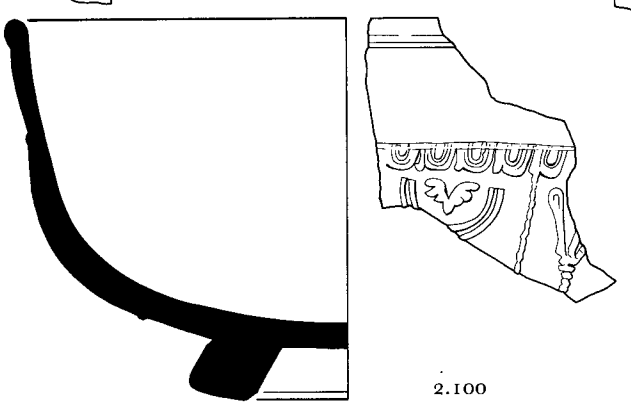
2.95 Form Drag. 37. Comitialis V of Rheinzabern used all the motifs: ovolo LRF.E17, beaded column LRF.O287, beadrow LRF.O262, panther LRF.T35, leaf LRF.P38, circle LRF.K19a, and festoon LRF.KB76. For similar bowls see Ludowici and Ricken (1948, Tafn. 100–1 and 103). II.111: Per. 1, Ph. 5.

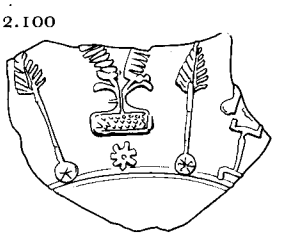












0 20 mm

2.96 Form Drag. 37, Rheinzabern. The motifs (ovolo LRF.E17, leaf LRF.P75, ivyleaf LRF.P96a, arcade LRF.KB76, and astragalus LRF.O196) are all recorded in the work of Comitialis v, but the scroll style of the bowl is closer to bowls of Firmus i, who used the ovolo, leaf and a slightly smaller arcade (LRF.KB75). This bowl probably shows a new arrangement for Comitialis v. III.293: Per. 2, Ph. 1.

2.97 Form Drag. 37, Rheinzabern. All but the cup-bearer (LRF.M100) occur in the work of Comitialis v and VI: i.e. the ovolo LRF.E23, Abundantia LRF.M36, leaf LRF.P75, panther LRF.T35, and beadrow LRF.O262; the festoon seems to be a partial impression of the medallion LRF.K20a. Similar bowls are shown by Ludowici and Ricken (1948, Taf. 103). Joining sherds from II.519: Per. 1, Ph. 4, and II.111: Per. 1, Ph. 5.

2.98 Form Drag. 37, stamped in the mould by Comitialis of Rheinzabern (for details see No. 3.40 below), and in the style of Comitialis VI, for whom all the motifs are recorded. These are ovolo LRF.E25, festoon LRF.KB134, medallion LRF.K20, beadrow LRF.O263, Silenus LRF.M102, seahorse LRF.T188, and leaf LRF.P75a. For a number of bowls in similar style see Ludowici and Ricken (1948, Tafn. 104–5). III.293: Per. 2, Ph. 1.

2.99 Form Drag. 37, dia. *c.* 180 mm, unused, Rheinzabern, 'Ware mit Eierstab E25.26'. The ovolo is LRF.E26, the festoon LRF.KB138, the beadrow LRF.O261, the poppyhead LRF.P116, and the leaf LRF.P145, all used in this style. Closely similar bowls are shown by Ludowici and Ricken (1948, Taf. 114, Nos. 13–7). Joining sherds from III.357: Per. 1, Ph. 1 (intrusive), and from III.293 and III.348: both Per. 2, Ph. 1.

2.100 Form Drag. 37, in the style of Janu(arius) II of Rheinzabern. The pronged pedestal is apparently a new motif, the others are all well known elsewhere in his work: i.e. pedestal LRF.O177, rosettes LRF.O51 and O72, corded motif LRF.O170, and leaf LRF.P34. For a generally similar arrangement see Ludowici and Ricken (1948, Taf. 20). III.150: Per. 2, Ph. 3.

2.101 Form Drag. 37, dia. *c.* 200 mm, stamped in the mould by Belsus of Rheinzabern (for details see No. 3.21

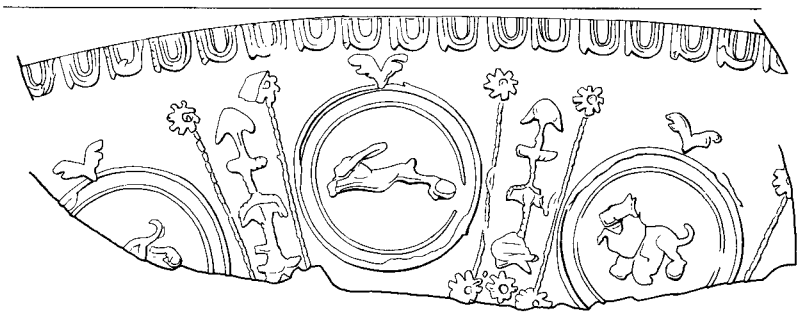
below). A bowl in the style of Belsus III (Ludowici and Ricken 1948, Taf. 126, No. 16) is identical, and presumably from the same mould. The ovolo is LRF.E25, the beads LRF.O263, leaf LRF.P145, hare LRF.T154, hound LRF.T138a, medallion LRF.K20, trophy LRF.O214, rosette LRF.O48. Joining sherds from III.269 and III.318: both Per. 1, Ph. 6, and from III.258 and III.345: both Per. 2, Ph. 1.

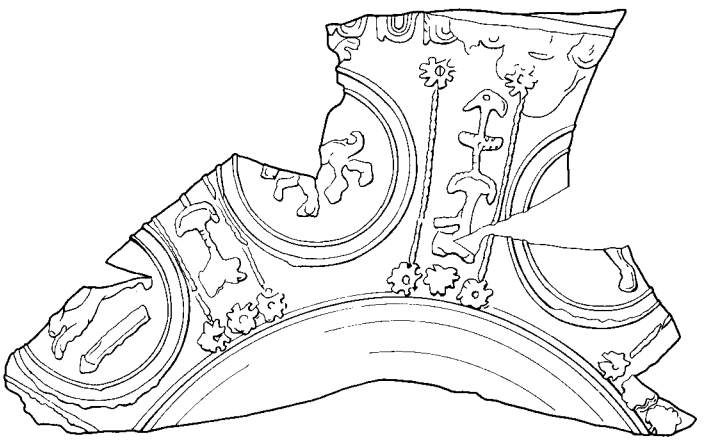
2.102 Form Drag. 37, stamped by Reginus (vi) of Rheinzabern (for details see No. 3.172 below). Reginus II used the ovolo (LRF.E18), wrestler (LRF. M196), and corded medallion (LRF.K53); the double medallion is probably LRF.K21, used by an associated potter, Julius I. For a bowl in similar style, sharing the ovolo, stamp and figure, see Ludowici and Ricken (1948, Taf. 136, No. 6). Joining sherds from III.269 and III.318: both Per. 1, Ph. 6.

2.103 Form Drag. 37, dia. *c.* 260 mm, in the style of Julius I-Lupus of Rheinzabern. The ovolo (LRF.E42), Anubis (LRF.M109) and circle (LRF.O148) were used by them; the leaf is LRF.P62. IV.380: Per. 1, Ph. 3.

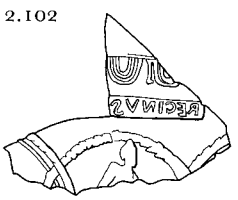
2.104 Form Drag. 37, dia. *c.* 180 mm, unused, in the style of Julius I-Lupus of Rheinzabern. The ovolo (probably LRF.E46), eagle (LRF.T205a), leaf (LRF.P145), cornucopia (LRF.O16a), medallion (LRF.K11) and border (probably LRF.O273) were all used by them; the bird (LRF.T244) is new to them, but occurs here on another bowl in their style (No. 2.105 below). For similar bowls see Ludowici and Ricken (1948, Taf. 156). Joining sherds from III.340: Per. 1, Ph. 4, from III.329: Per. 1, Ph. 5, and from III.293: Per. 2, Ph. 1.

2.101

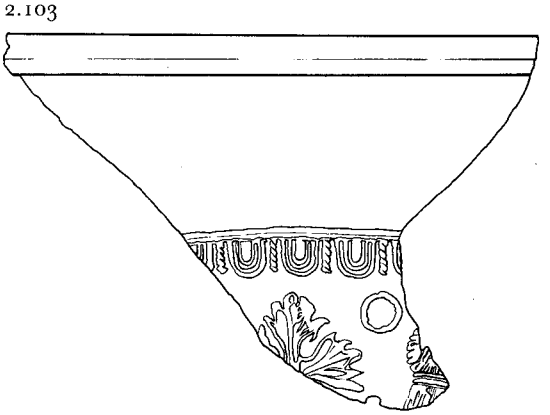




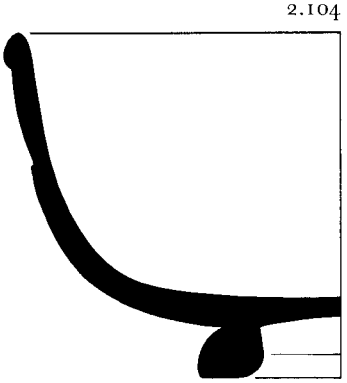
2.102

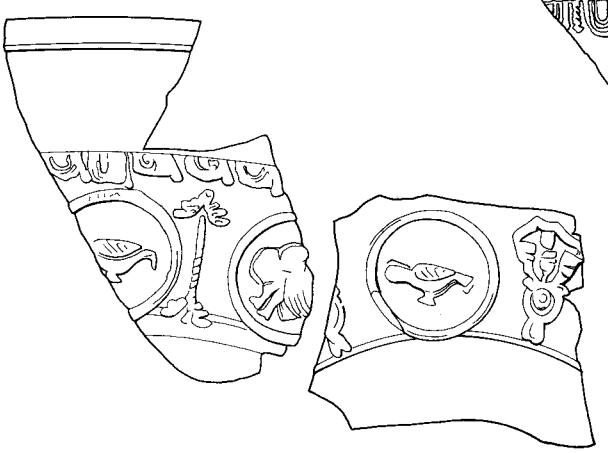


2.103

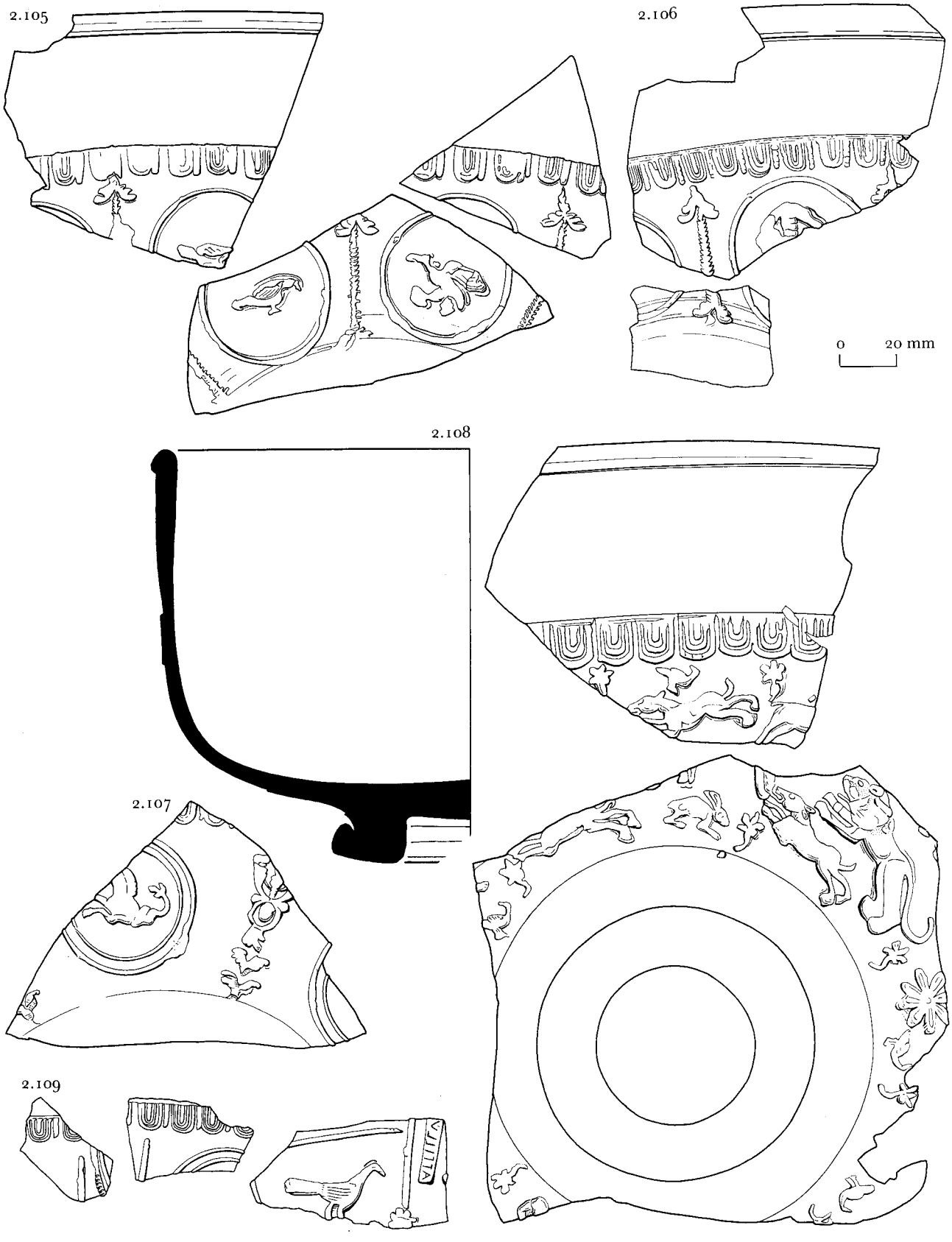


2.104

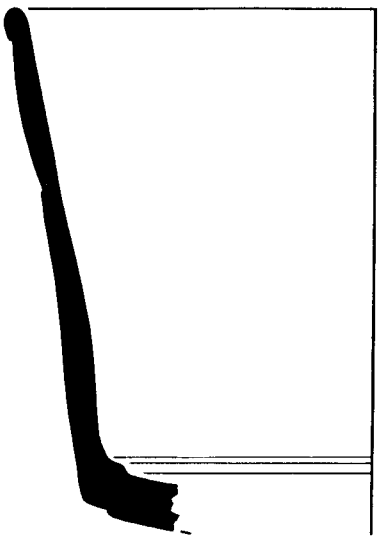


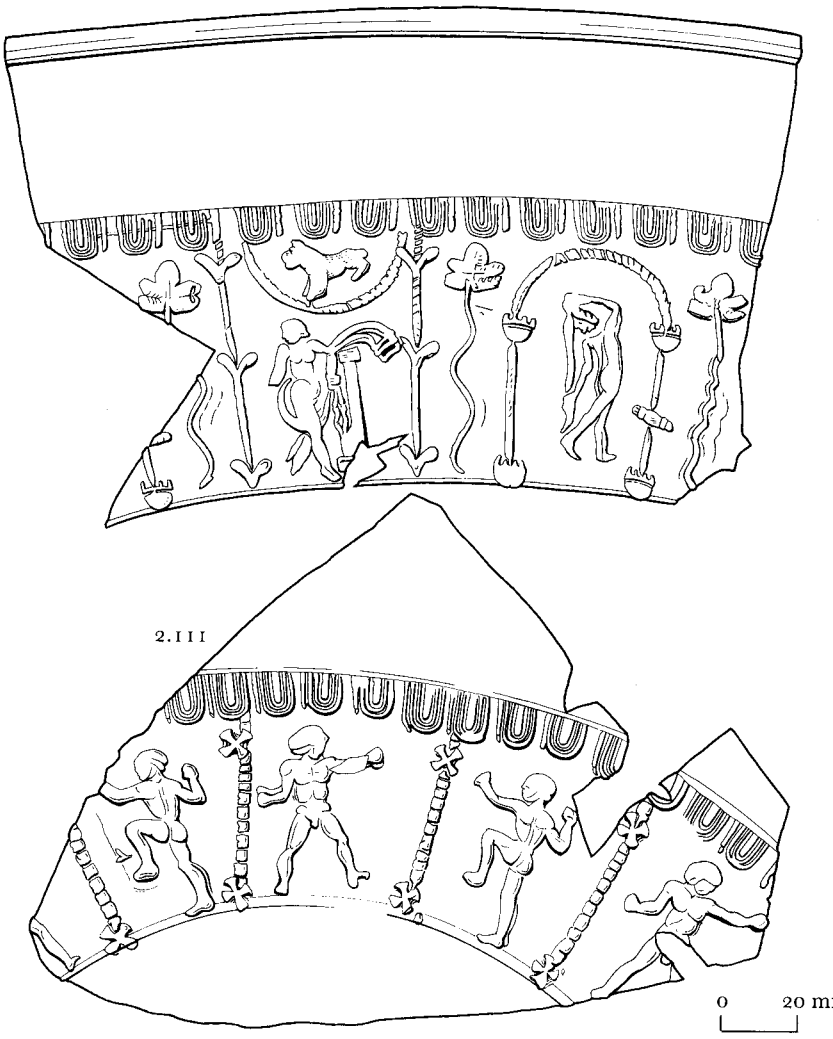


0 20 mm


2.105
2.106
0 20 mm
2.108
2.107
2.109

2.110





2.105 Form Drag. 37, dia. *c.* 210 mm, in the style of Julius I-Lupus of Rheinzabern. They used all the motifs except the bird to left (LRF.T244), which occurs here on another bowl in their style (No. 2.104 above). The ovolo is LRF.E46, the medallion LRF.K6, border LRF.O273, leaf LRF.P145, crane LRF.T214, and bird to right LRF.T254. Closely similar bowls with some of these motifs together are shown by Ludowici and Ricken (1948, Taf. 155, No. 6; Taf. 156, Nos. 1–7; Taf. 157) although this exact arrangement is not included. Joining sherds from III.269: Per. 1, Ph. 6, and III.348: Per. 2, Ph. 1.

2.106 Form Drag. 37, dia. *c.* 200 mm, in the style of Julius I-Lupus of Rheinzabern, who used the ovolo (LRF.E46), chevron border (LRF.O273), leaf (LRF.P145), cornucopia (LRF.O160a) and medallion (LRF.K6). For generally similar bowls see Ludowici and Ricken (1948, Taf. 155, No. 6; Taf. 157, No. 1). III.329: Per. 1, Ph. 5.

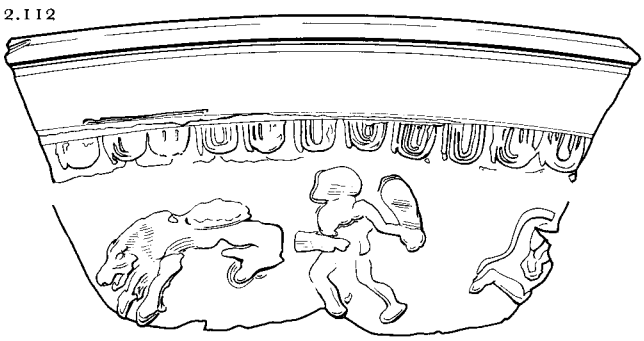
2.107 Form Drag. 37, with slight marbling on interior (see discussion p. 145), in the style of Julius I-Lupus of Rheinzabern. The sea-horse (LRF.T188) occurs on a bowl assigned to their style, the other motifs (leaf LRF.P145, medallion LRF.K20, cornucopia LRF.O160a) occur on their bowls. The ovolo is probably LRF.E46. For similar bowls see Ludowici and Ricken (1948, Taf. 154, Nos. 4–8; Taf. 157, No. 7). III.314: Per. 2, Ph. 1.

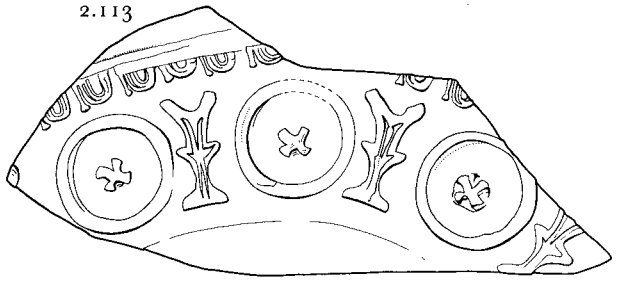
2.108 Form Drag. 37, dia *c.* 230 mm, unused, in the style of Lucanus of Rheinzabern. Apart from the stag at bay (LRF.T84), the motifs all occur elsewhere in his work (i.e. the ovolo LRF.E53, leaf LRF.P99, rosette LRF.O37, bird LRF.T258, lion LRF.T2, hound LRF.T133, and hare LRF.T168b). For a generally similar bowl see Ludowici and Ricken (1948, Taf. 162, No. 7). Joining sherds from II.511 and II.521: both Per. 1, Ph. 5, and from II.166: Per. 1, Ph. 7.

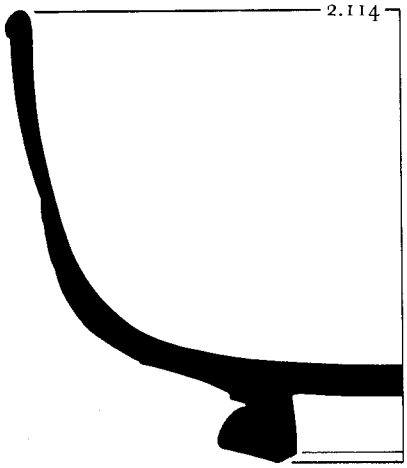
2.109 Form Drag. 37, stamped in the mould by Attillus (vi) of Rheinzabern (for details see No. 3.18 below). He used all the motifs (ovolo LRF.E40, bird LRF.T229, rosette LRF.O47, medallion LRF.K20a, festoon LRF.KB133, and borders LRF.O239) with this stamp on a closely similar bowl (Ludowici and Ricken 1948, Taf. 178, No. 16a). III.293: Per. 2, Ph. 1.

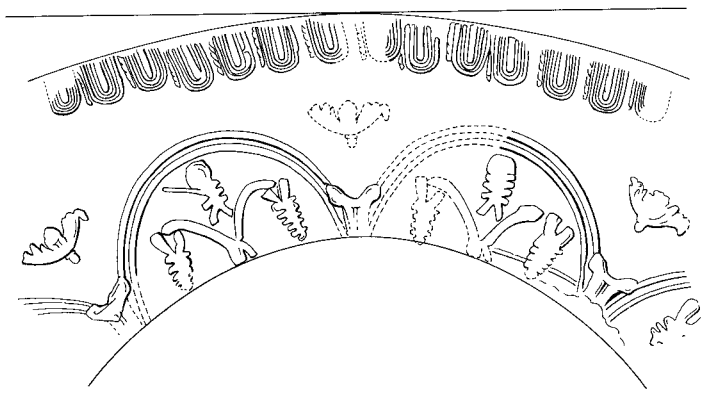
2.110 Form Drag. 30, dia. *c.* 200 mm, in the style of Primitivus I of Rheinzabern. Apart from the dog (LRF.T144) and leaf (LRF.P81a) the motifs are all recorded in the work of Primitivus and, except for the dancer (LRF.M97a, Primitivus II), in that of Primitivus I. The ovolo is LRF.E40, the Venus LRF.M60b, crown LRF.O113, arcade LRF.KB108, border LRF.O242, astragalus LRF.O196, and small leaf LRF.P142a. For similar bowls see Ludowici and Ricken (1948, Taf. 190, Nos. 10–11; Taf. 191, Nos. 1, 7 and 10; Taf. 192, No. 6). III.318: Per. 1, Ph. 6.

2.111 Form Drag. 37, in the style of Julius II-Julianus I of Rheinzabern: Ludowici and Ricken (1948, Taf. 211, No. 2) is the same, and shows the ovolo LRF.E23), cross (LRF.O53), beads (LRF.O256) and boxers (LRF.M191 and M194). III.293: Per. 2, Ph. 1.

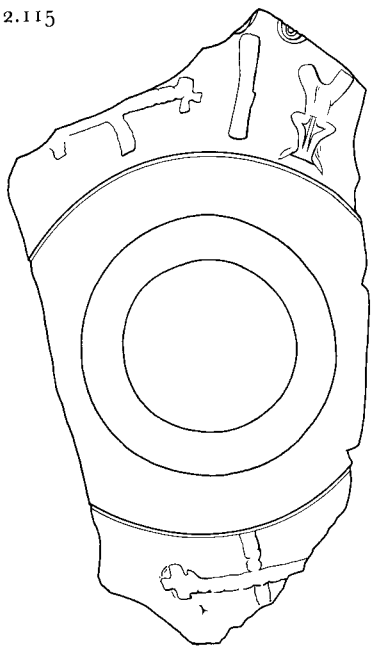








0 20 mm



2.112 Form Drag. 37, dia. *c.* 180 mm, in the style of Julius II-Julianus I of Rheinzabern. They used all the motifs except the figure with a whip (LRF.M201a). The ovolo is LRF.E23, second figure with a whip LRF.M202, bear LRF.T51. For similar bowls *cf.* Ludowici and Ricken (1948, Tafn. 213–5). III.258: Per. 2, Ph. 1, and III.195: Per. 2, Ph. 3.

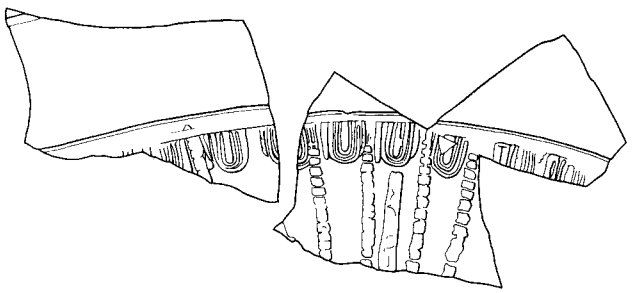
2.113 Form Drag. 37, in the style of Julius II-Julianus I of Rheinzabern. Ovolo LRF.E17, pedestal LRF.O151 alternating with circle LRF.K11 containing cross LRF.O53; the same frieze, rather more widely spaced, is found here on a sherd from III.314 (see Archive Report). For generally similar bowls see Ludowici and Ricken (1948, Taf. 204). III.318: Per. 1, Ph. 6.

2.114 Form Drag. 37, dia. *c.* 210 mm, unused, in the style of Julius II-Julianus I of Rheinzabern. The motifs (ovolo LRF.E23, corded motif on a chevron LRF.O169, corded motif LRF.O170, pedestal LRF.O179, acanthus LRF.P111, and arcade LRF.KB73) are shown in the same arrangement by Ludowici and Ricken (1948, Taf. 205, No. 4), which is probably from the same mould, as is another sherd from III.314 (for details see Archive Report). III.318: Per. 1, Ph. 6.

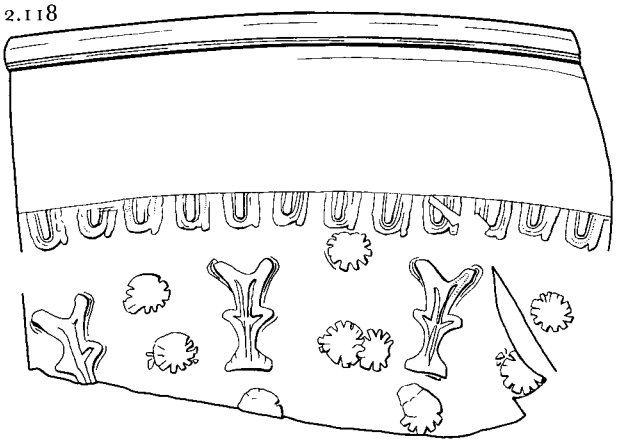
2.115 Form Drag. 37, unused, stamped in the mould by Julius II (Julius viii) of Rheinzabern (for details see No. 3.66 below). Pedestal LRF.O161 apparently alternating with a cross made from the beadrow LRF.O256, its horizontal ending in a cross LRF.O53. For generally similar bowls see Ludowici and Ricken (1948, Taf. 212). III.348: Per. 2, Ph. 1.

2.116 Form Drag. 37, stamped in the mould by Julius II (Julius viii) of Rheinzabern (for details see No. 3.67 below). The ovolo is LRF.E23, the vertical beadrows LRF.O256: see Ludowici and Ricken (1948, Taf. 212, Nos. 13, 15, 19 and 23), also a redeposited sherd in III.293 (Archive Report) and No. 2.117 below, which has a different ovolo. II.340: Per. 1, Ph. 4, and III.293: Per. 2, Ph. 1.

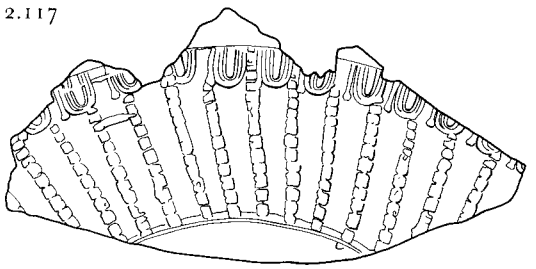
2.116

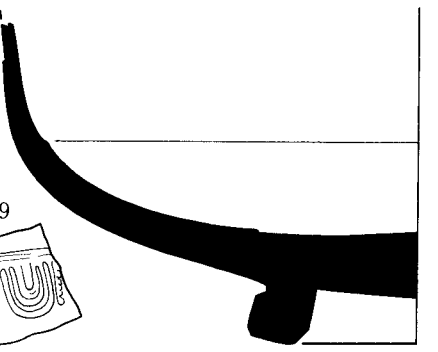


2.118



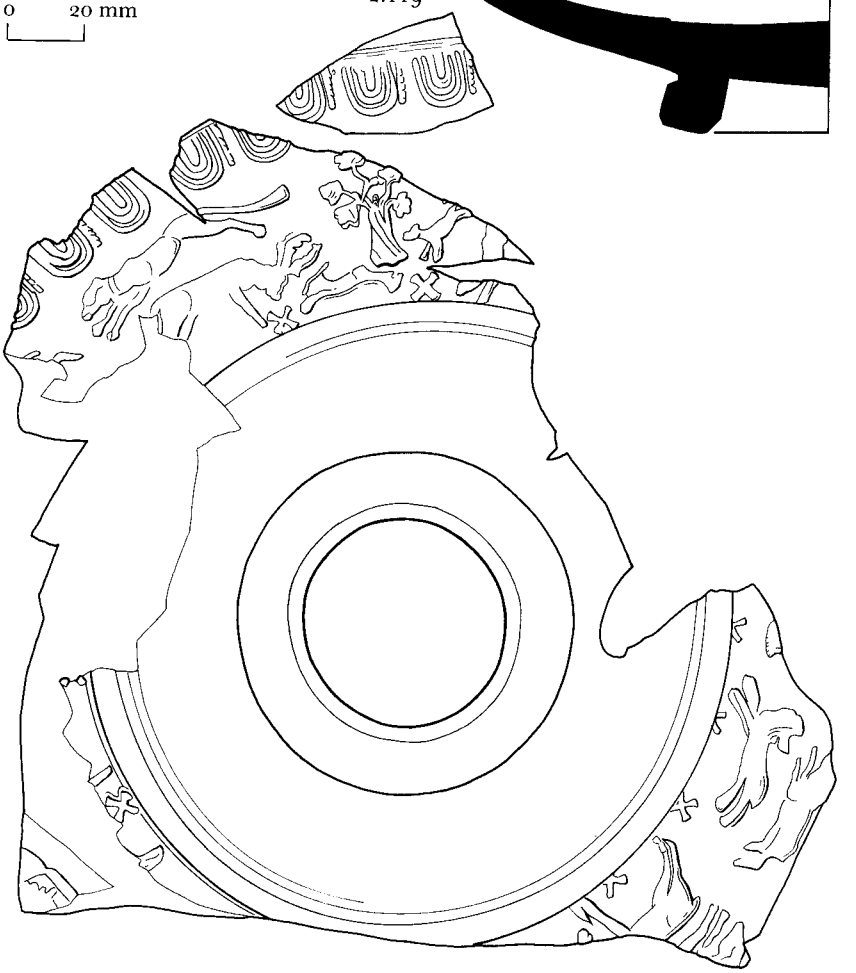
2.117





0 20 mm

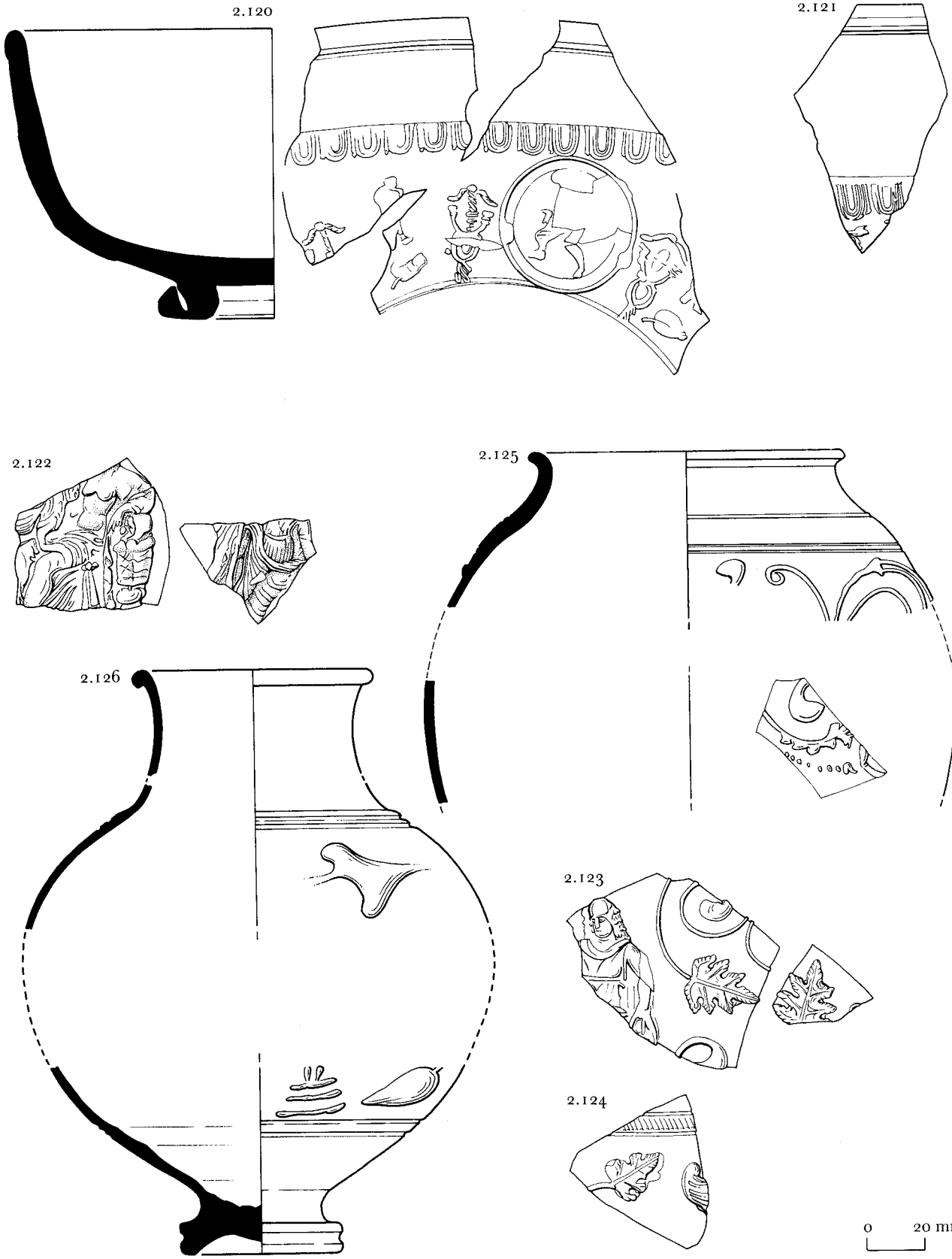
2.119



2.117 Form Drag. 37, in the style of Julius II-Julianus I of Rheinzabern: ovolo LRF.E17, beadrows LRF.O256, as shown by Ludowici and Ricken (1948, Taf. 212, No. 15), and *cf.* No. 2.116 above, which has a different ovolo. III.293: Per. 2, Ph. 1.

2.118 Form Drag. 37, dia. *c.* 200 mm, in the style of Julius II-Julianus I and Victorinus II of Rheinzabern. They shared the ovolo (LRF.E45) and the pedestal (LRF.O161); only Victorinus is recorded as a user of the rosette (LRF.O58). For similar bowls *cf.* Ludowici and Ricken (1948, Taf. 219, Nos. 1–2). III.195: Per. 2, Ph. 3.

2.119 Form Drag. 37 (a large bowl, dia *c.* 220 mm at top of ovolo), unused, Rheinzabern. The ovolo is LRF.E37, apparently used only by Respectinus II, who also used the tree (LRF.P2a) and small dog (LRF.T141b). Apart from the ovolo and what may be a lion (perhaps LRF.T10), the motifs and figures were all used by the associated Julius II-Julianus I: the tree, small dog, cross (LRF.O53), hound (LRF.T130), stag at bay (LRF.T84), stag (LRF.T96), hind (LRF.T106b), and hare (LRF.T154a). The freestyle arrangement is more characteristic of Julius II than of Respectinus II: *cf.* closely similar bowls shown by Ludowici and Ricken (1948, Taf. 213). Joining sherds from III.293 and III.348: both Per. 2, Ph. 1.


2.120
2.121
2.122
2.125
2.126
2.123
2.124
0 20 mm

2.120 Form Drag. 37, dia. *c.* 190 mm, unused, Rheinzabern, pale and slightly blotched surface (see discussion, p. 145 above). There are links with 'Ware B mit Zierglied O382.383' in which style occur the ovolo (LRF.E25), deer (LRF.T110a), medallion (LRF.K20), and cornucopia (LRF.O160); for similar bowls *cf.* Ludowici and Ricken (1948, Taf. 228). The Apollo is LRF.M72a, the robed figure LRF.M249 or 249a. Joining sherds from III.293 and III.348: both Per. 2, Ph. 1.

2.121 Form Drag. 37, dia. *c.* 240 mm, EG and probably Rheinzabern. There is apparently no exact parallel for the ovolo, which has probably been impressed from a broken poinçon, but it is similar in style to LRF.E40–3. II.165: Per. 1, Ph. 7.

Vessels with applied decoration

2.122 Form Déch. 72, CG, with applied figures of Leda (DA.4) and Minerva (DA.15). Antonine. Sherds probably of same vessel from II.525: Per. 1, Ph. 5, and residual in II.102.

2.123 Form Déch. 72, CG, with appliqué motifs: a robed seated male figure (DA.90) and a leaf (longer and more narrow than DA.157), and barbotine tendrils. Antonine. III.150: Per. 2, Ph. 3.

2.124 Form Déch. 72, CG, with rouletted band at the shoulder and appliqué motifs: part of a wing (perhaps a sphinx), and a leaf (smaller than DA.157) with barbotine. Antonine. III.150: Per. 2, Ph. 3.

2.125 Form Déch. 72, dia. *c.* 110 mm, CG, decorated with barbotine scrolls and berries. Antonine. Sherds, probably of same vessel, from III.288 and III.329: both Per. 1, Ph. 5.

2.126 Beaker, dia. *c.* 90 mm, unused, *cf.* Oswald and Pryce (1920, Pl. 79, Nos. 9–13) with barbotine leaves and tendrils. EG, later 2nd to mid 3rd centuries. Sherds, probably from one vessel, from III.357: Per. 1, Ph. 1 (intrusive), from III.340: Per. 1, Ph. 4, from III.293 and III.348: both Per. 2, Ph. 1, and from III.256: Per. 2, Ph. 3.

Vessels with incised decoration

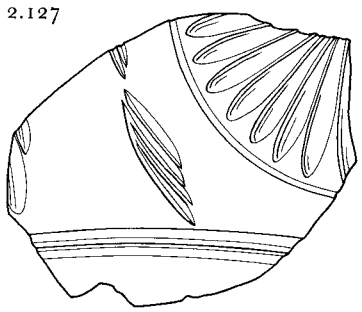
2.127 Form Déch. 72, CG. Incised daisy motif within a plain circle flanked by foliage. Antonine. II.166: Per. 1, Ph. 7.

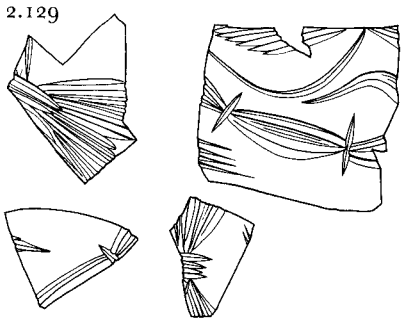
2.128 Form Déch. 72, CG. Incised roundel containing floral motifs and flanked by leaves. Antonine. Joining sherds residual in III.258: Per. 2, Ph. 1, and in III.195 and III.150 both Per. 2, Ph. 3.

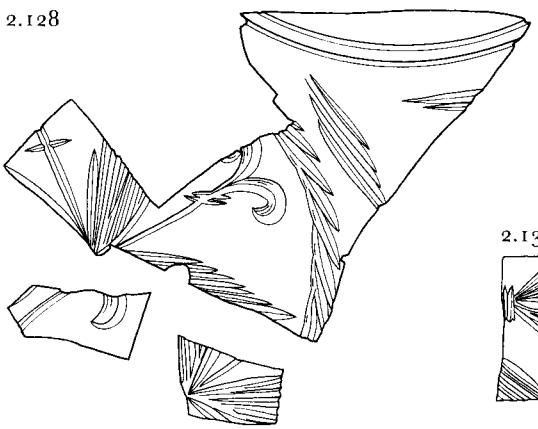
2.129 Form Déch. 72, CG, brown slip. Incised roundel containing floral motifs. Antonine. Joining sherds from III.329: Per. 1, Ph. 5, from II.164: Per. 1, Ph. 7, and from III.150: Per. 1, Ph. 7.

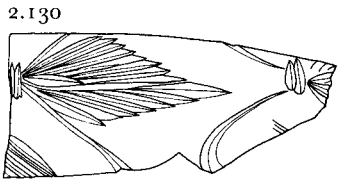
2.130 Form Déch. 72, CG. Incised leaves and tendrils. Antonine. II.511: Per. 1, Ph. 5.

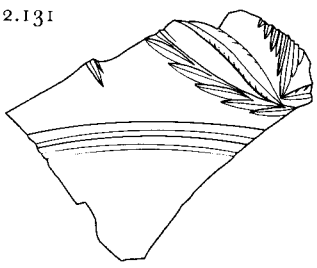
2.131 Form Déch. 72, CG. Incised roundel containing foliage: *cf.* Oswald and Pryce (1920, Pl. 77, No. 3). Antonine. II.164: Per. 1, Ph. 7.

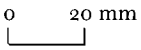












Plain vessels

These items are arranged according to form type, then in approximate chronological order. The lion-head spouts on the form 45 mortaria (Nos. 2.202–2.218) have been examined by Pierre-Henri Mitard, whose comments on their type, source and dating have been translated and incorporated into the text. The type classification quoted refers to his forthcoming study.

2.132 Plain beaker, form Ludowici Vd (Oswald and Pryce 1920, Pl. 79, No. 3), dia. *c.* 80 mm, EG, late 2nd to mid 3rd centuries. III.314: Per. 2, Ph. 1.

2.133 Beaker, dia. *c.* 50 mm, unused; for the form *cf.* Oswald and Pryce (1920, Pl. 80, No. 4), but the present example is undecorated, with a cordon instead of grooves on the shoulder and ungrooved foot. Probably EG, late 2nd to mid 3rd centuries. II.511: Per. 1, Ph. 5.

2.134 Cup, dia. *c.* 90 mm, unused, profile as shown by Oswald and Pryce (1920, Pl. 52, No. 8; a form Drag. 34 variant), but no handles survive. CG, Antonine. III.340: Per. 1, Ph. 4.

2.135 Form Ludowici Tx, dia. *c.* 110 mm, stamped by Martius iv of Lezoux (for details see No. 3.103 below). Joining sherds from II.110 and II.525: both Per. 1, Ph. 5.

2.136 Form Drag. 33, dia. *c.* 100 mm, unused, stamped by Martius iv of Lezoux (for details see No. 3.105 below). II.511: Per. 1, Ph. 5.

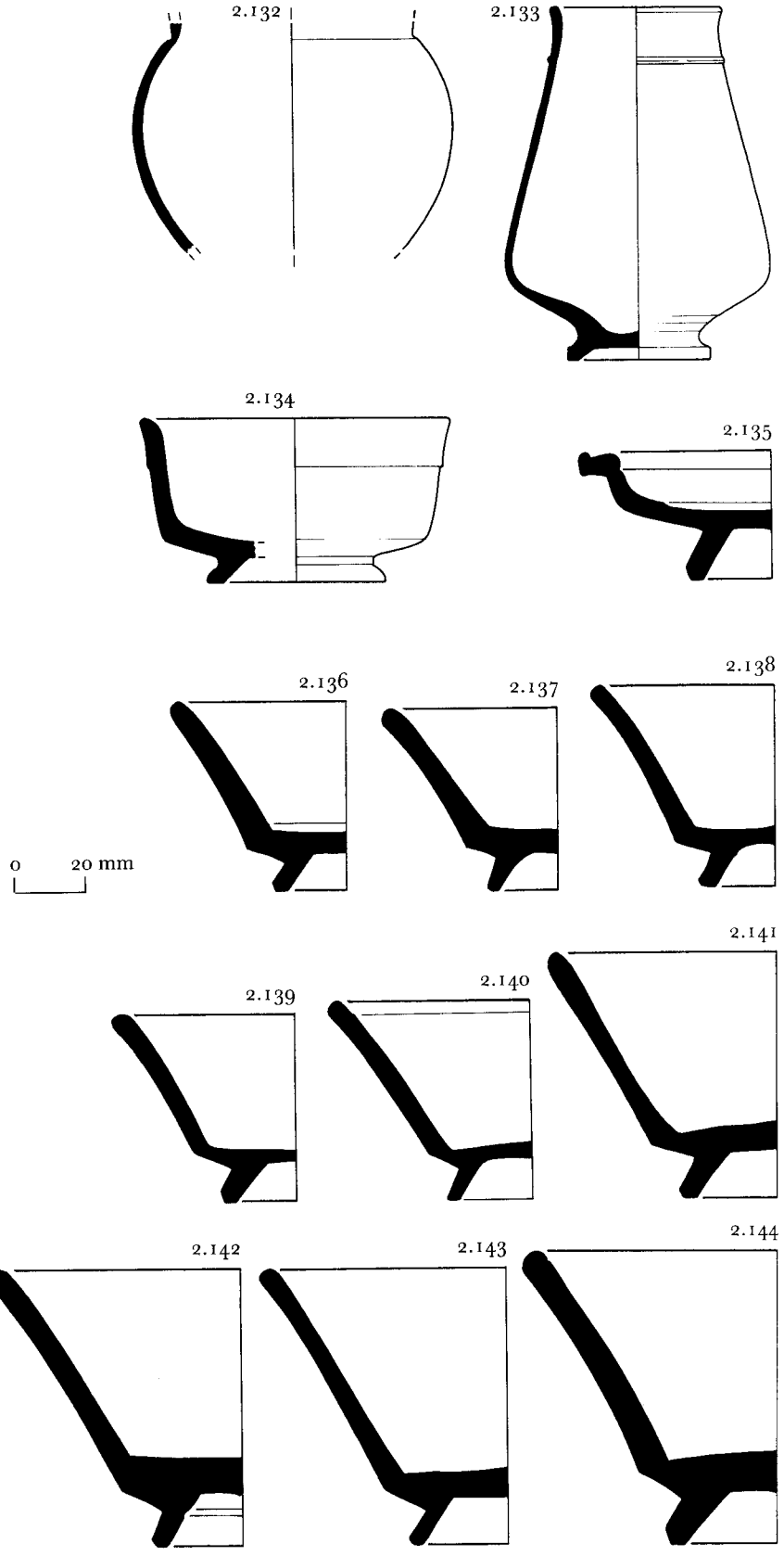
2.137 Form Drag. 33, dia. *c.* 100 mm, unused, stamped by L. Adn(atius?) Adgenus of Lezoux (for details see No. 3.1 below). III.318: Per. 1, Ph. 6.

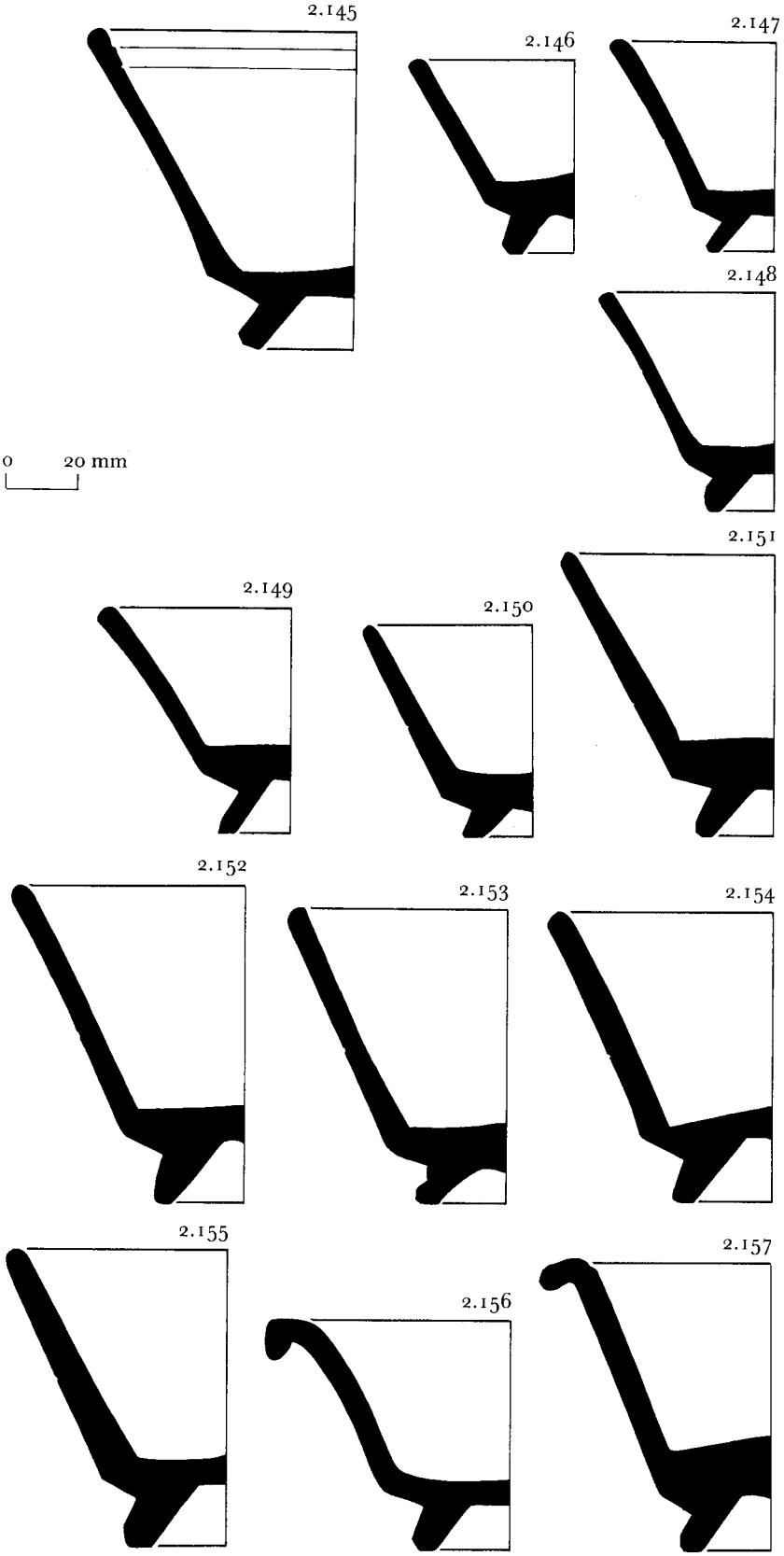
2.138 Form Drag. 33, dia. *c.* 100 mm, unused, stamped by Primanus iii of Lezoux (for details see No. 3.162 below). III.269: Per. 1, Ph. 6.

2.139 Form Drag. 33, dia. *c.* 100 mm, unused, stamped by Severianus i of Lezoux (for details see No. 3.200 below). II.511: Per. 1, Ph. 5.

2.140 Form Drag. 33, dia. *c.* 110 mm, with illiterate stamp (for details see No. 3.232 below), CG. II.110: Per. 1, Ph. 5.

2.141 Form Drag. 33, dia. *c.* 130 mm, unused, stamped by Mascellio i of Lezoux (for details see No. 3.112 below). III.293: Per. 2, Ph. 1.





2.142 Form Drag. 33, dia. *c.* 140 mm, unused, stamped by Verecundus iii of Lezoux (for details see No. 3.218 below). II.511: Per. 1, Ph. 5.

2.143 Form Drag. 33, dia. *c.* 140 mm, worn foot, stamped by Canpanus of Lezoux (for details see No. 3.25 below). III.269: Per. 1, Ph. 6.

2.144 Form Drag. 33, dia. *c.* 140 mm, unused, stamped by Pottacus of Lezoux (for details see No. 3.158 below). II.511: Per. 1, Ph. 5.

2.145 Form Drag. 33, dia. *c.* 150 mm, unused, stamped by Prisscus iii of Lezoux (for details see No. 3.165 below). II.511: Per. 1, Ph. 5.

2.146 Form Drag. 33, dia. *c.* 100 mm, unused, unstamped, EG, late 2nd to mid 3rd centuries. III.269: Per. 1, Ph. 6.

2.147 Form Drag. 33, dia. *c.* 90 mm, unstamped, EG, late 2nd to mid 3rd centuries. III.318: Per. 1, Ph. 6.

2.148 Form Drag. 33, dia. *c.* 100 mm, unused, unstamped, Trier, late 2nd to mid 3rd centuries. III.269: Per. 1, Ph. 6.

2.149 Form Drag. 33, dia. *c.* 100 mm, unused, unstamped, EG (probably Trier), late 2nd to mid 3rd centuries. II.109: Per. 1, Ph. 5.

2.150 Form Drag. 33, dia. *c.* 110 mm, unused, unstamped, Trier, late 2nd to mid 3rd centuries. III.293: Per. 2, Ph. 1.

2.151 Form Drag. 33, dia. *c.* 120 mm, unused, unstamped, Trier, late 2nd to mid 3rd centuries. III.269: Per. 1, Ph. 6.

2.152 Form Drag. 33, dia. *c.* 140 mm, unused, unstamped, Trier, late 2nd to mid 3rd centuries. III.293: Per. 2, Ph. 1.

2.153 Form Drag. 33 mm, dia. *c.* 130, unused, unstamped, EG, late 2nd to mid 3rd centuries. III.195: Per. 2 Ph. 3.

2.154 Form Drag. 33, dia. *c.* 130 mm, unused, unstamped, Trier, late 2nd to mid 3rd centuries. III.269: Per. 1, Ph. 6.

2.155 Form Drag. 33, dia. *c.* 130 mm, unstamped, EG (probably Trier), late 2nd to mid 3rd centuries, II.269: Per. 1, Ph. 6.

2.156 Form Drag. 46, dia. *c.* 140 mm, CG, Antonine. II.111: Per. 1, Ph. 5.

2.157 Form Drag. 46, dia. *c.* 130 mm, probably unused, with barbotine, as shown by Oswald and Pryce (1920, Pl. 55, No. 24), Trier, late 2nd to mid 3rd centuries. III.318: Per. 1, Ph. 6.

2.158 Form Drag. 35, dia. *c.* 110 mm, unused CG, some traces of beige blotching on exterior (see discussion p. 145). Four leaves. Mid- to late-Antonine. Joining sherds from II.109 and II.511: both Per. 1, Ph. 5.

2.159 Form Drag. 35, dia. *c.* 110 mm, worn, the slip removed on lower interior, CG. Four leaves. Mid- to late-Antonine. II.511: Per. 1, Ph. 5.

2.160 Form Drag. 36, dia. *c.* 190 mm, unused, CG, Antonine. II.511: Per. 1, Ph. 5.

2.161 Large form Drag. 36 (dia. *c.* 260 mm), unused, with rounded foot (as on form Drag. 38 etc.), CG, mid- to late-Antonine. III.269: Per. 1, Ph. 6.

2.162 Form Drag. 36, dia. *c.* 200 mm, EG, pale brown blotches (see discussion p. 145). Late 2nd to mid 3rd centuries. Joining sherds from II.511: Per. 1, Ph. 5, and II.166: Per. 1, Ph. 7.

2.163 Form Drag. 36 variant, dia. *c.* 280 mm, combining the heavy flange and barbotine decoration of a late form 36, with the body and roulctted circle on floor of a form Ludowici TgR. Rheinzabern, late 2nd to mid 3rd centuries. II.166: Per. 1, Ph. 7.

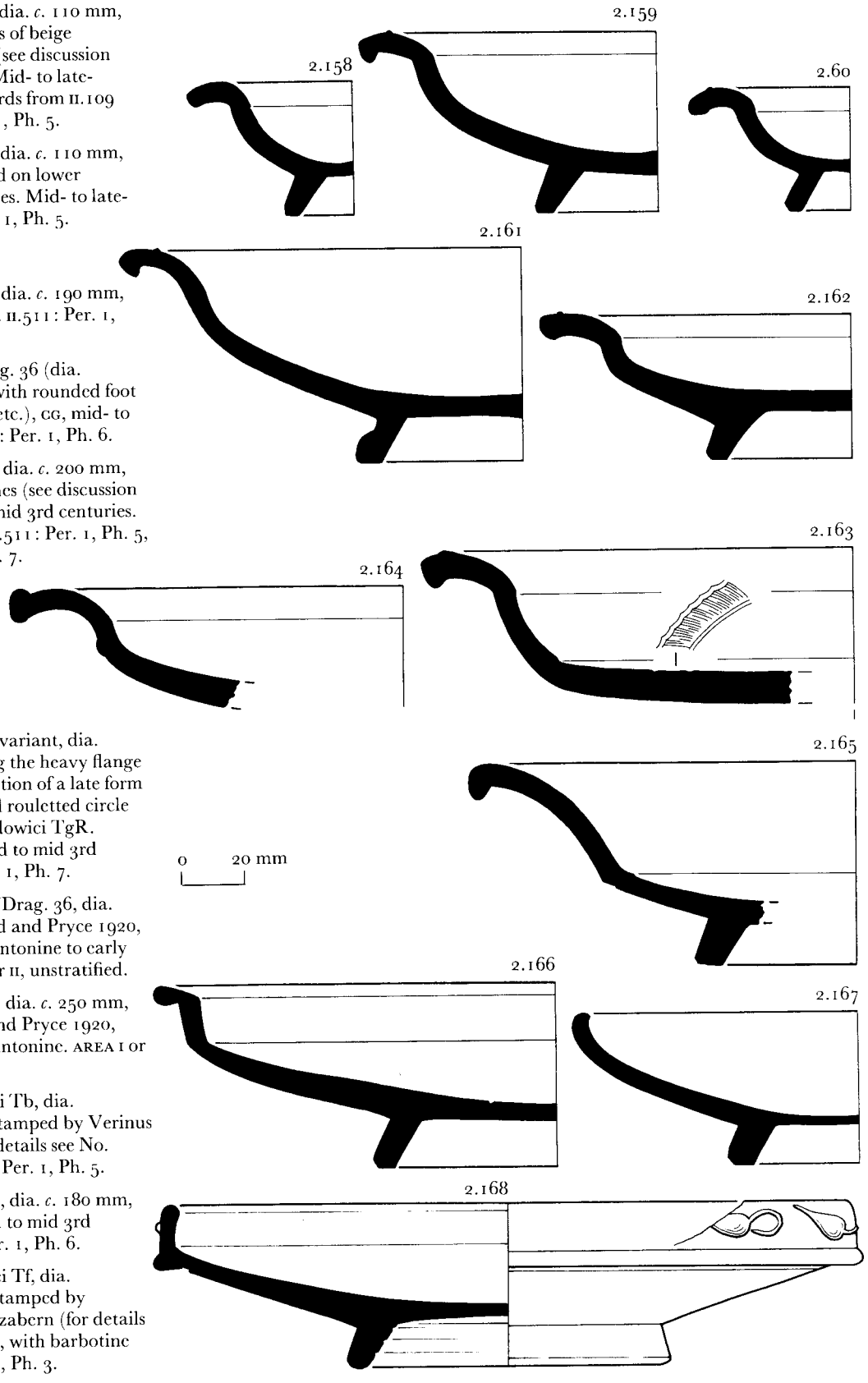
2.164 Form Curle 15/Drag. 36, dia. *c.* 260 mm (*cf.* Oswald and Pryce 1920, Pl. 56, No. 13), EG, Antonine to early 3rd century. AREA I or II, unstratified.

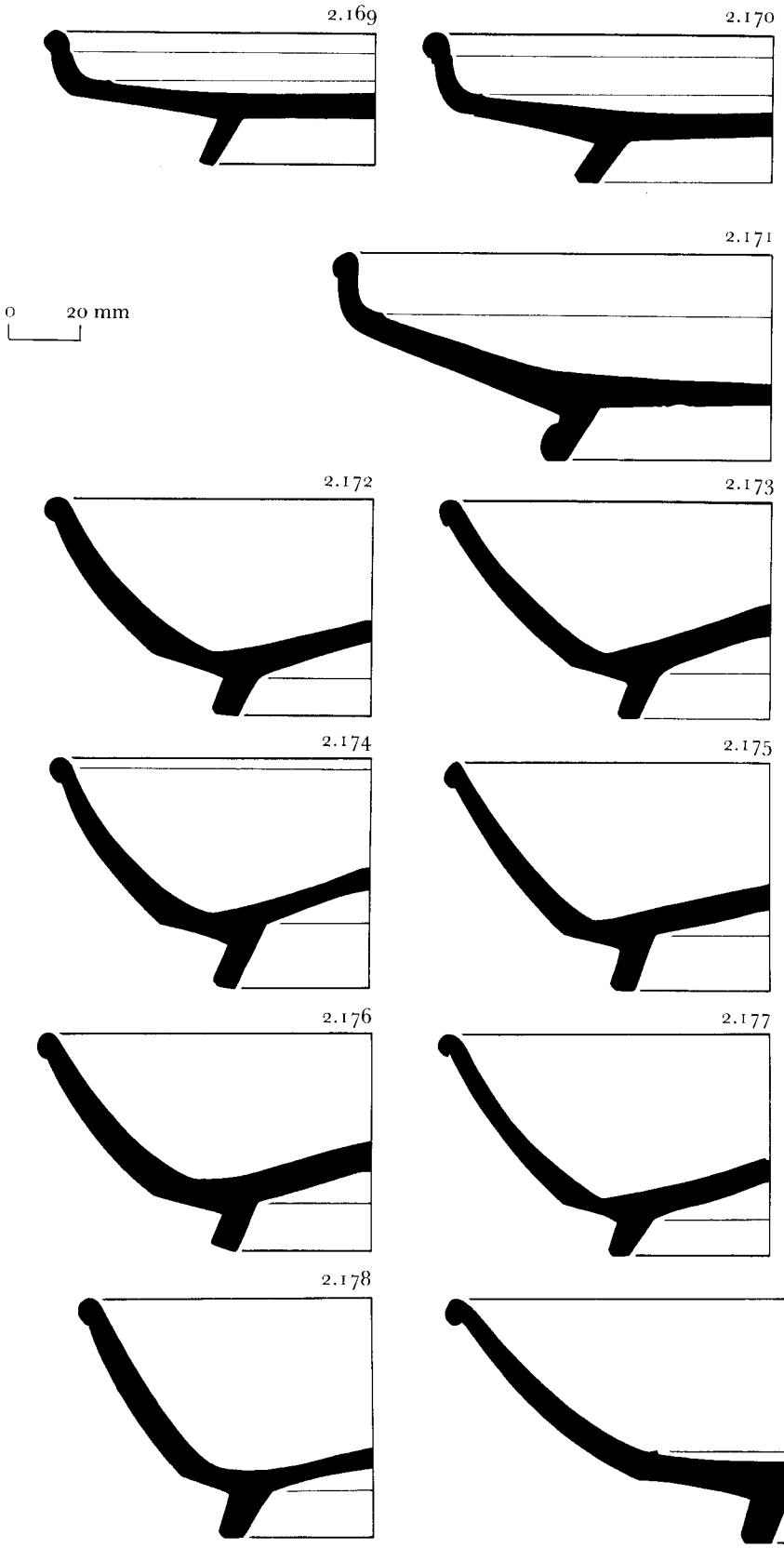
2.165 Form Curle 15, dia. *c.* 250 mm, unused (as Oswald and Pryce 1920, Pl. 56, No. 14), CG, Antonine. AREA I or II, unstratified.

2.166 Form Ludowici Tb, dia. *c.* 260 mm, unused, stamped by Verinus of Rheinzabern (for details see No. 3.220 below). II.109: Per. 1, Ph. 5.

2.167 Form Drag. 32, dia. *c.* 180 mm, unused, EG. Late 2nd to mid 3rd centuries. III.318: Per. 1, Ph. 6.

2.168 Form Ludowici Tf, dia. *c.* 220 mm, unused, stamped by Patricianus of Rheinzabern (for details see No. 3.141 below), with barbotine leaves. IV.444: Per. 1, Ph. 3.





2.169 Form Walters 79, dia. *c.* 190 mm, unused, stamped by Carussa of Lezoux (for details see No. 3.30 below). II.511: Per. 1, Ph. 5.

2.170 Form Walters 79, dia. *c.* 200 mm, stamped by Secundianus of Lezoux (for details see No. 3.188 below). AREA I or II, unstratified.

2.171 Form Walters 79R, dia. *c.* 250 mm, unused, stamped by Marcianus i of Lezoux (for details see No. 3.99 below). II.110: Per. 1, Ph. 5.

2.172 Form Drag. 31, dia. *c.* 190 mm, unused, stamped by Severianus i of Lezoux (for details see No. 3.199 below). II.511: Per. 1, Ph. 5.

2.173 Form Drag. 31, dia. *c.* 190 mm, unused, stamped by Albusa of Lezoux (for details see No. 3.11 below). Residual in I.5.

2.174 Form Drag. 31, dia. *c.* 180 mm, unused, stamped by Illixo of Lezoux (for details see No. 3.61 below). II.511: Per. 1, Ph. 5.

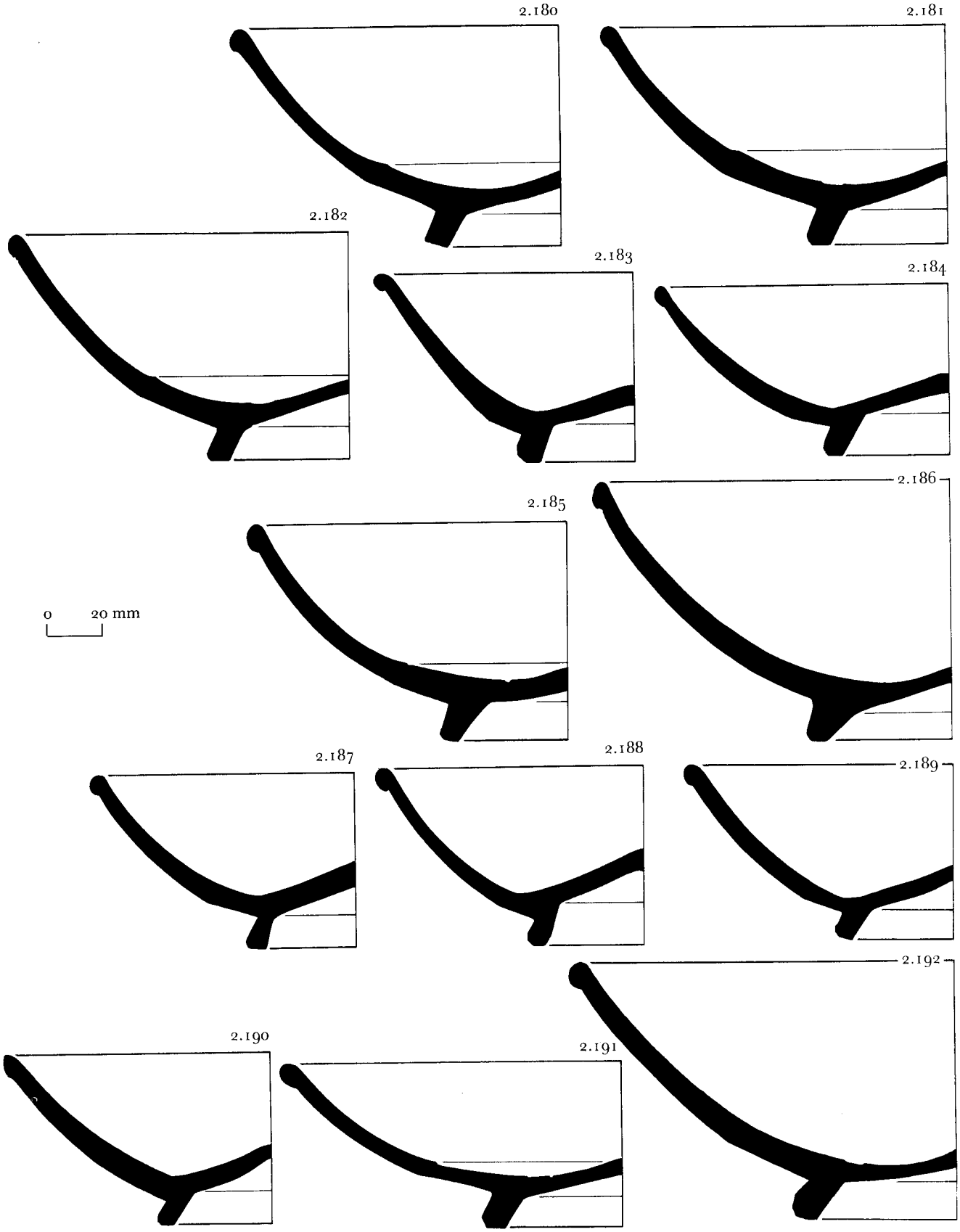
2.175 Form Drag. 31, dia. *c.* 190 mm, unused, stamped by Pottacus of Lezoux (for details see No. 3. 156 below). II.511: Per. 1, Ph. 5.

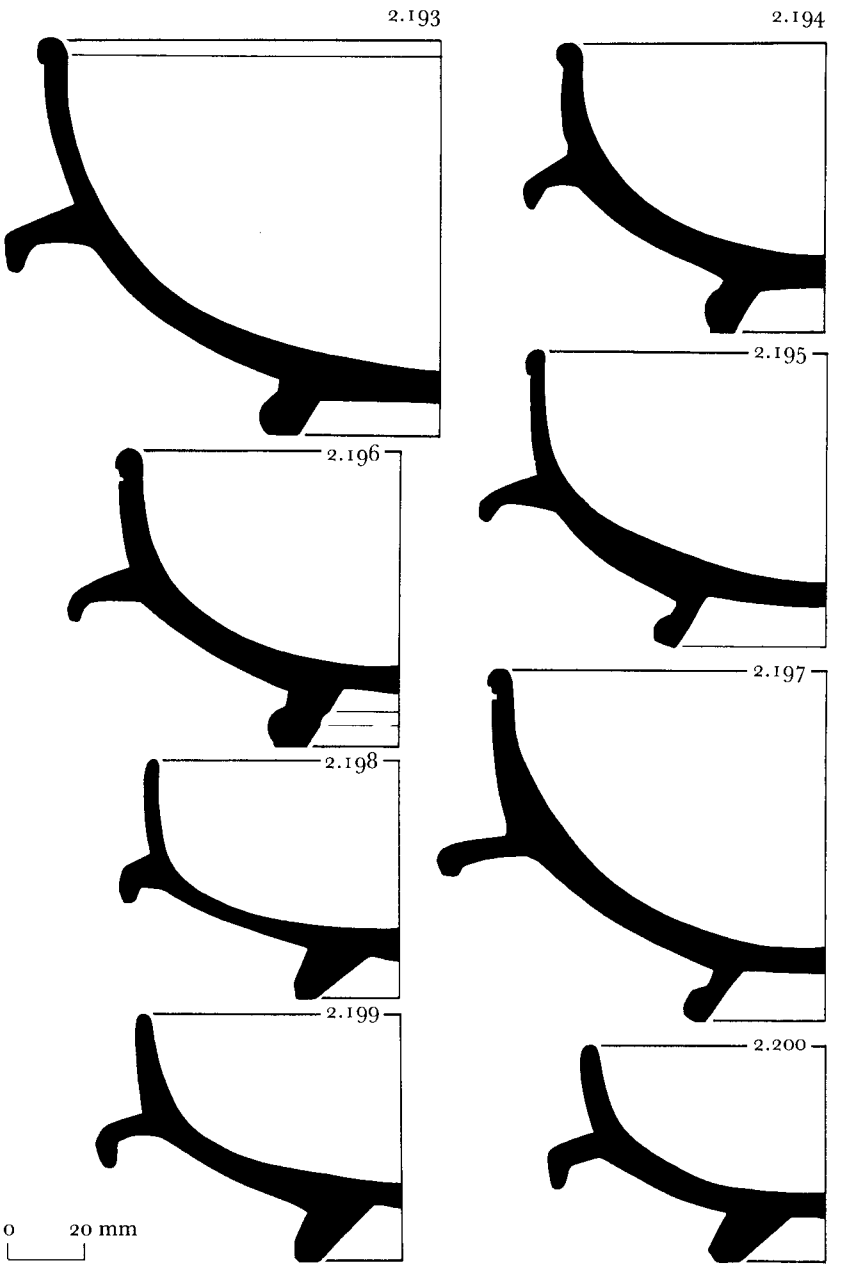
2.176 Form Drag. 31, dia. *c.* 190 mm, unused, stamped by Sacrillus of Lezoux (for details see No. 3.182 below). II.110: Per. 1, Ph. 5.

2.177 Form Drag. 31, dia. *c.* 190 mm, unused, stamped by Solinus of Lezoux (for details see No. 3.204 below). II.511: Per. 1, Ph. 5.

2.178 Form Drag. 31, dia. *c.* 170 mm, stamped by Carussa of Lezoux (for details see No. 3.28 below). II.166: Per. 1, Ph. 7.

2.179 Form Drag. 31R, dia. *c.* 280 mm, unused, stamped by Mercator iv of Lezoux (for details see No. 3.128 below). III.341: Per. 1, Ph. 4.


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0 20 mm
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2.180 Form Drag. 31R, dia. *c.* 240 mm, unused, stamped by Carus ii of Lezoux (for details see No. 3.27 below). II.511: Per. 1, Ph. 5.

2.181 Form Drag. 31R, dia. *c.* 250 mm, unused, stamped by Atilianus of Lezoux (for details see No. 3.15 below). II.110: Per. 1, Ph. 5.

2.182 Form Drag. 31R, dia. *c.* 250 mm, unused, stamped by Martinus iii of Lezoux (for details see No. 3.102 below). II.110: Per. 1, Ph. 5.

2.183 Form Drag. 31, dia. *c.* 190 mm, unused, stamped by Dessius ii of Trier (for details see No. 3.42 below). III.293: Per. 2, Ph. 1.

2.184 Form Drag. 31, dia. *c.* 210 mm, unused, stamped by Iucundus iv of Trier (for details see No. 3.65 below). III.269: Per. 1, Ph. 6.

2.185 Form Drag. 31, dia. *c.* 240 mm, unused, stamped by illiterate(?) potter (for details see No. 3.270 below), in Trier fabric. III.269: Per. 1, Ph. 6.

2.186 Form Drag. 31R, dia. *c.* 260 mm, unused, stamped by Arilira(?) of Trier (for details see No. 3.14 below). III.269: Per. 1, Ph. 6.

2.187 Form Drag. 31, dia. *c.* 190 mm, unused, stamped by Patricianus of Rheinzabern (for details see No. 3.140 below). III.318: Per. 1, Ph. 6.

2.188 Form Drag. 31, dia. *c.* 200 mm, unused, stamped by Iuvenis ii of Rheinzabern (for details see No. 3.76 below). III.269: Per. 1, Ph. 6.

2.189 Form Drag. 31, dia. *c.* 200 mm, unused, stamped by Quartinus of Rheinzabern (for details see No. 3.170 below). III.318: Per. 1, Ph. 6.

2.190 Form Drag. 31, dia. *c.* 200 mm, unused, stamped by Quartinus of Rheinzabern (for details see No. 3.169 below). III.318: Per. 1, Ph. 6.

2.191 Form Drag. 31R, dia. *c.* 250 mm, unused, stamped by Paternus viii of Rheinzabern (for details see No. 3.139 below). III.511: Per. 1, Ph. 5.

2.192 Form Drag. 31R, dia. *c.* 280 mm, unused, stamped by Severus viii of Rheinzabern and Kräherwald (for details see No. 3.201 below). Joining sherds from II.110 and II.511: both Per. 1, Ph. 5.

2.193 Form Drag. 38, dia. *c.* 210 mm, unused, stamped by Cintusmus i of Lezoux (for details see No. 3.36 below). III.220: Per. 2, Ph. 1.

2.194 Form Drag. 38, dia. *c.* 140 mm, unused, stamped by Severianus i of Lezoux (for details see No. 3.193 below). II.511: Per. 1, Ph. 5.

2.195 Form Drag. 38, dia. *c.* 160 mm, unused, stamped by Tituro of Lezoux (for details see No. 3.214 below). AREA I or II unstratified.

2.196 Form Drag. 38, dia. *c.* 150 mm, unused, stamped by Albucianus of Lezoux (for details see No. 3.8 below). II.511: Per. 1, Ph. 5.

2.197 Form Drag. 38, dia. *c.* 180 mm, unused, stamped by Carussa of Lezoux (for details see No. 3.29 below). II.511: Per. 1, Ph. 5.

2.198 Form Drag. 38, dia. *c.* 130 mm, unused, unstamped, Rheinzabern, late 2nd to mid 3rd centuries. III.269: Per. 1, Ph. 6.

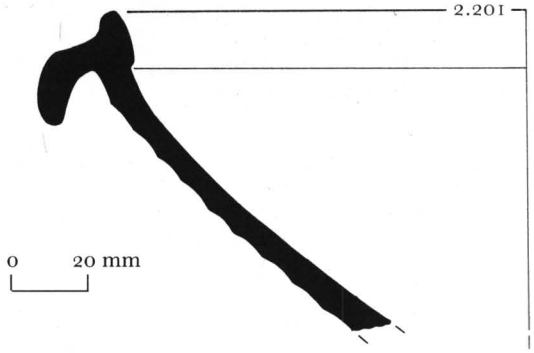
2.199 Form Drag. 38, dia. *c.* 140 mm, unused, unstamped, EG, late 2nd to mid 3rd centuries. III.318: Per. 1, Ph. 6.

2.200 As for No. 2.199, dia. *c.* 130 mm, probably unused.

2.201 Form Curle 21, dia. *c.* 220 mm, EG, later 2nd to mid 3rd centuries. III.342: Per. 1, Ph. 2.

2.202 Form Drag. 45, unused, with lion-head spout. The spout is a Lezoux type sometimes found with a stamp, here in version *b*, a *surmoulage*. Late 2nd to early 3rd centuries. II.136: Per. 1, Ph. 7.

2.203 As for No. 2.202, but the spout is here in version *b*' or *b*'', a *surmoulage* with retouching on the mane. Late 2nd century. II.522: Per. 1, Ph. 4.



2.202





2.203

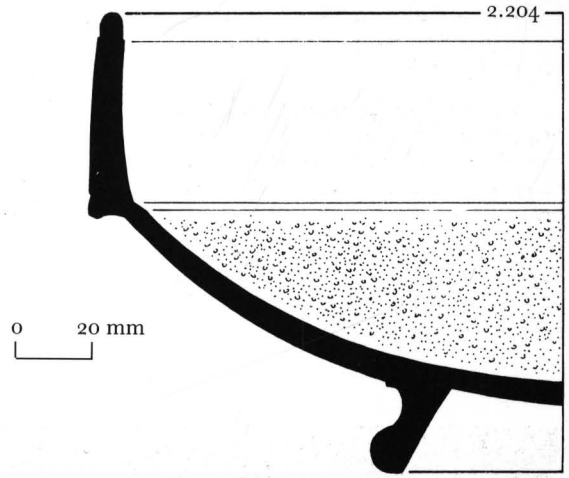




0 10 mm

2.204 Form Drag. 45, dia. *c.* 250 mm, with lion-head spout. The spout is version *a* of the most widely distributed type at Lezoux. Late 2nd century. II.110: Per. 1, Ph. 5.

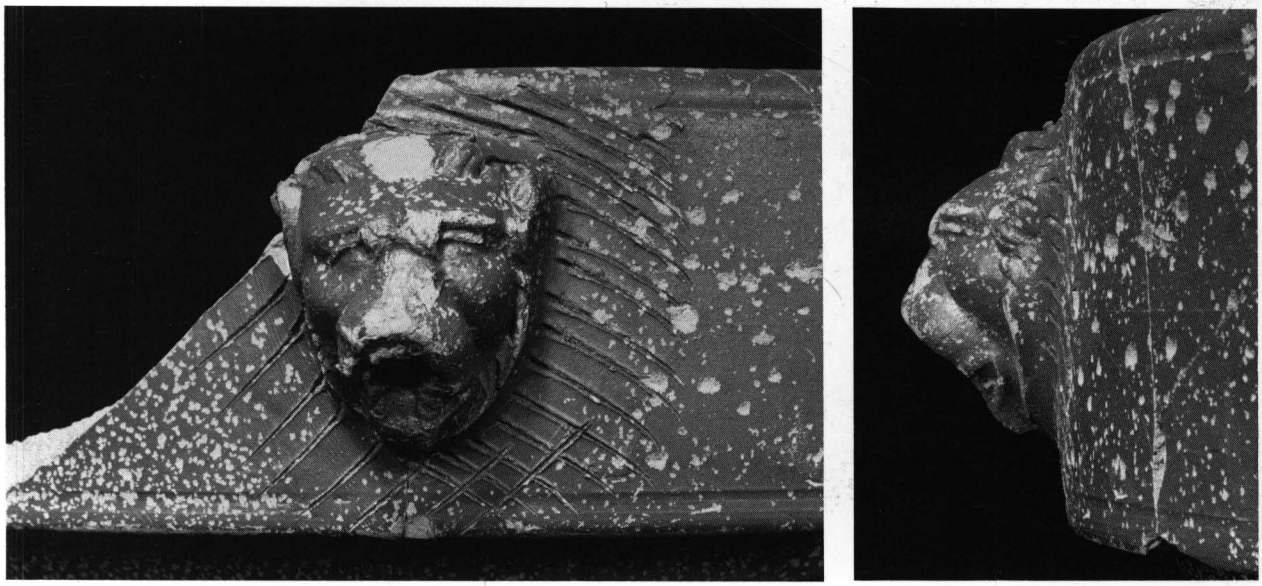
2.205 As for No. 2.204, but dia. *c.* 280 mm, and unused. Joining sherds from II.511 and II.525: both Per. 1, Ph. 5 and from II.164 and II.166: both Per. 1, Ph. 7.



2.204

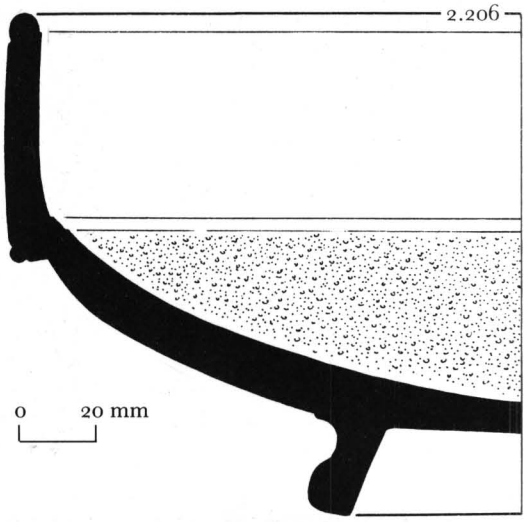


2.205

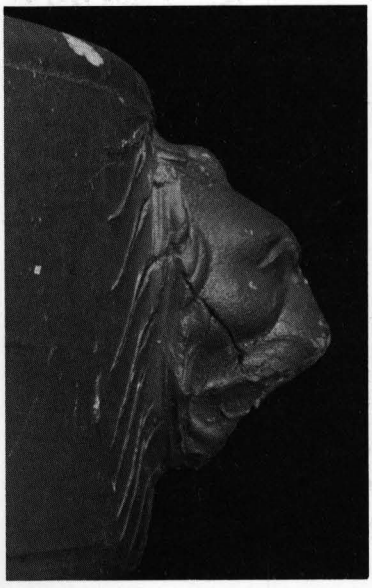


2.206 As for No. 2.204, but dia. *c.* 270 mm, and unused. From II.511: Per. 1, Ph. 5.

2.207 Form Drag. 45, dia. *c.* 190 mm, unused, with lion-head spout. The spout is version *b* of the Lezoux factory's most widely distributed type, made by a *surmoulage* from the original. It is sometimes associated with a stamp. Late 2nd to early 3rd centuries. AREA I or II, unstratified.



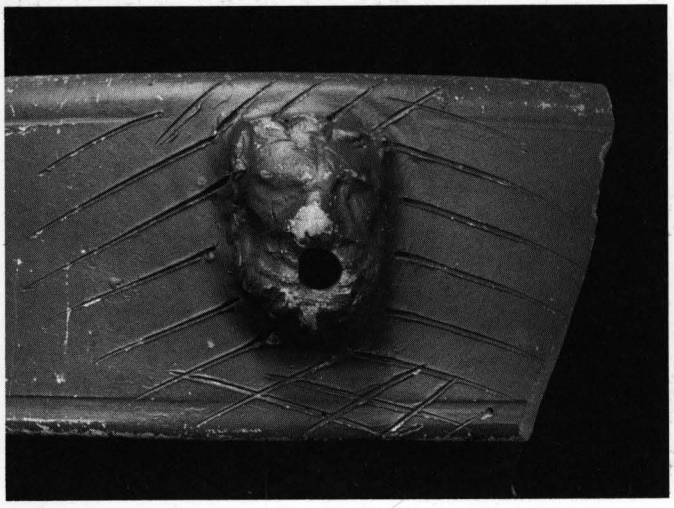
2.206

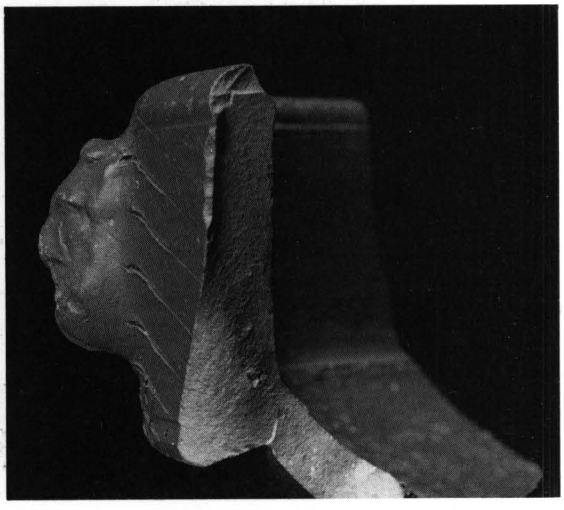




0 10 mm

2.207



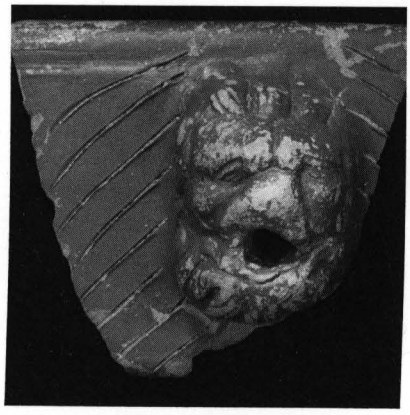


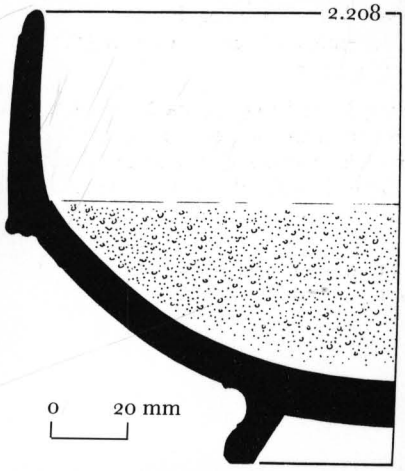
2.208 As for No. 2.207. End of 2nd to beginning of 3rd centuries. II.111: Per. 1, Ph. 5.

2.209 Form Drag. 45, dia. *c.* 280 mm, unused, with lion-head spout. The spout is another version, *b'*, of the most common type at Lezoux, a *surmoulage* with retouching to the eyes. It is sometimes associated with a stamp. Late 2nd century. Joining sherds from II.110 and II.525: Per. 1, Ph. 5.

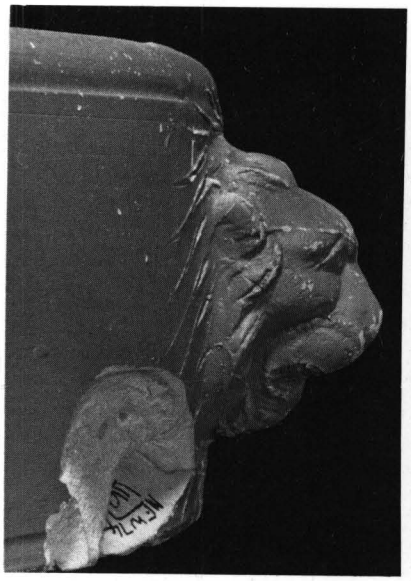
2.210 Form Drag. 45, dia. *c.* 200 mm, unused, with lion-head spout. The spout is a very rare Lezoux type, version *b'*. First half of 3rd century. III.318: Per. 1, Ph. 6.

2.208





2.209

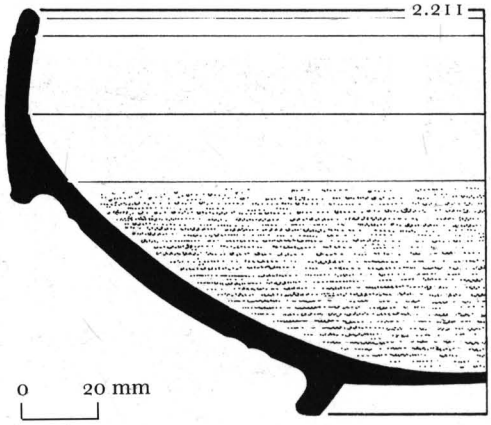




2.210





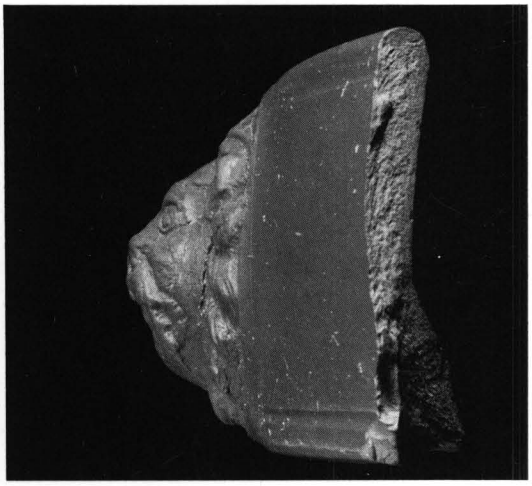


2.211 Form Drag. 45, dia. *c.* 240 mm, unused, with lion-head spout. The spout is an Argonne type, probably Les Allieux-Clairière or Avocourt-Forêt de Hesse, version *a*. Late 2nd century. Joining sherds from II.519: Per. 1, Ph. 4, and II.111: Per. 1, Ph. 5.

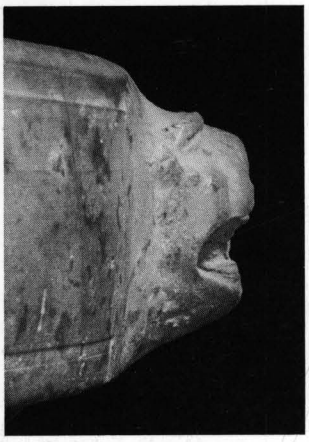
2.212 Form Drag, 45, dia. *c.* 220 mm, unused, with lion-head spout. Argonne fabric, but the slip is partially normal and partially blotched with orange-beige. Since this variation follows a broken edge, it seems clear that the marbled effect occurred after breakage (see discussion, p. 145). Translucent quartz trituration grits, and some of red ironstone. The spout type is Avocourt-Forêt de Hesse, version *b*. Late 2nd to early 3rd centuries. III.338: Per. 1, Ph. 5.

2.211

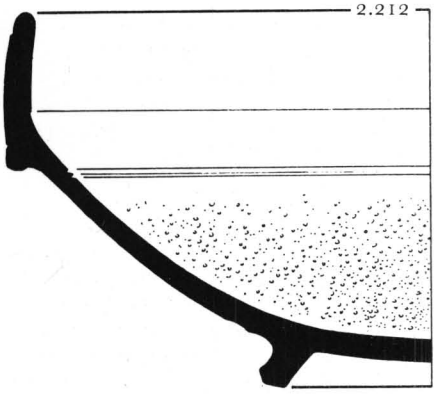




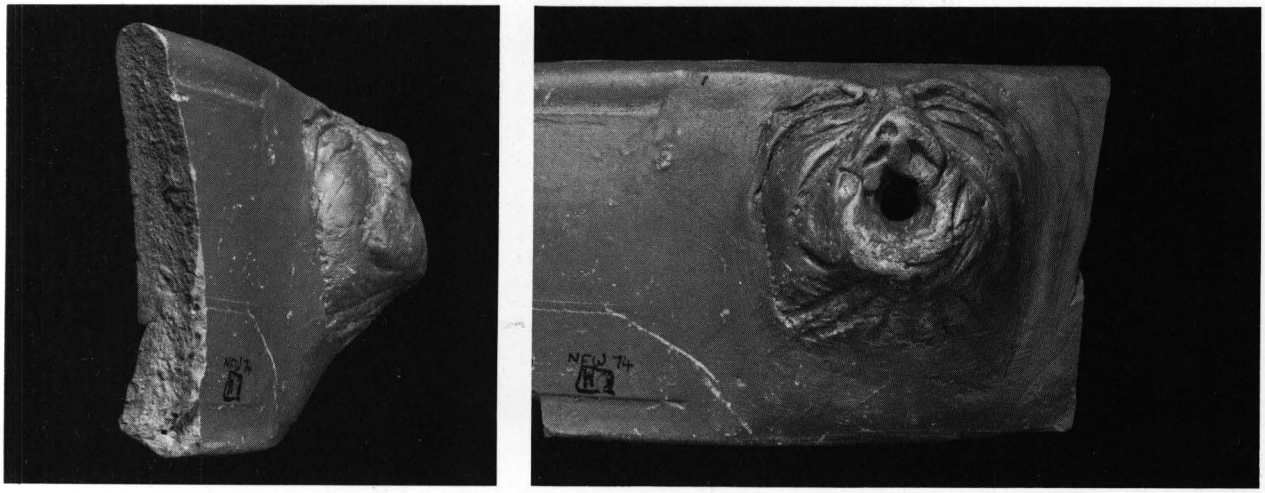
2.212







2.213

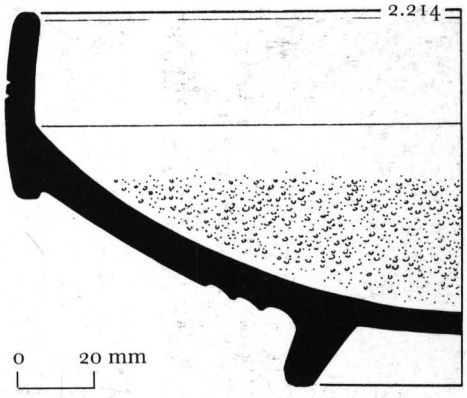


2.214



2.213 Form Drag. 45, dia. *c.* 240 mm, with lion-head spout. The spout is an Argonne type, the only other example being in the Museum of London (Acc. No. A.5294). Late 2nd to early 3rd centuries. II.110: Per. 1, Ph. 5.

2.214 Form Drag. 45, dia. *c.* 240 mm, unused, with lion-head spout. The spout is a widely distributed Trier type, which has a number of versions made from *surmoulages* with retouching; this is version *d*''. First half 3rd century. Joining sherds from II.110 and II.511: both Per. 1, Ph. 5.



2.215 Form Drag. 45, with lion-head spout of Trier type. First half 3rd century. III.318: Per. 1, Ph. 6.

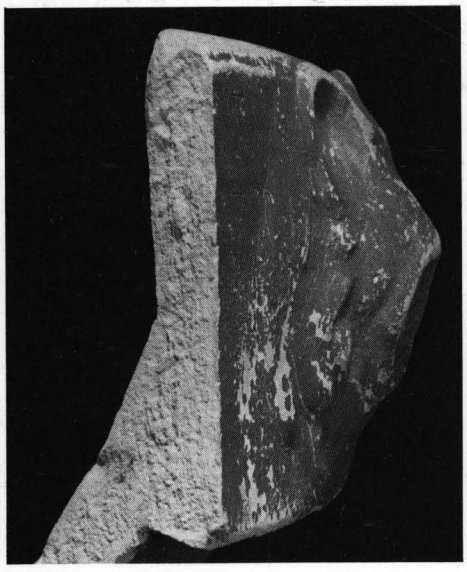
2.216 Form Drag. 45, dia. *c.* 300 mm, with lion-head spout. The spout is a Trier type, similar to that of No. 2.217, and probably also of mid-3rd-century date. III.269: Per. 1, Ph. 6.

2.217 Form Drag. 45, with lion-head spout. The spout is a Trier type and occurs in the mid-3rd century 'Massenfund' group. From III.318: Per. 1, Ph. 6.

2.215

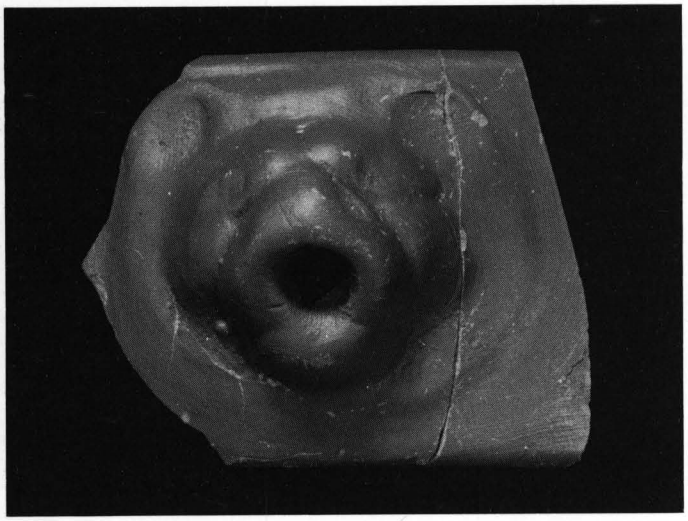


2.216





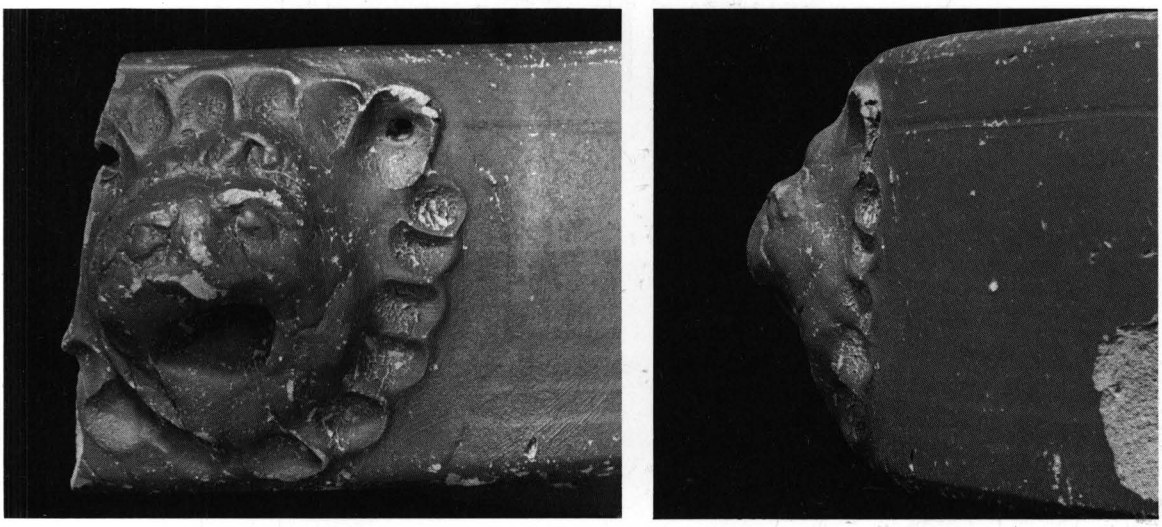
2.217



0 10 mm

2.218 Form Drag. 45, dia. *c.* 250 mm, unused, with lion-head spout. The fabric is Trier, and the spout is a new type or version. 3rd century. III.258: Per. 2, Ph. 1.

2.218



0 10 mm

POTTERS' STAMPS AND SIGNATURES ON THE SAMIAN

Brenda Dickinson

These stamps are discussed by Joanna Bird in the preceding report (pp. 139–45), and are summarized in Figures 80, 82 and 84.

The potters are numbered according to the system adopted for the Leeds University *Index* of samian potters' stamps. In this, potters bearing the same name are distinguished by lower case Roman numerals. It should be noted that these numbers are quite separate from the Arabic and upper case Roman numerals used to distinguish makers of decorated ware in Stanfield and Simpson (1958), and different styles of individual potters in Ludowici and Ricken (1948).

The critical conventions used here are those defined by Collingwood and Wright (1965, xxxiv). The abbreviations are the same as those used in the main samian report (see p. 148), with the following additions.

Superscript [a] indicates attested at the kiln in question;
Superscript [b] indicates not attested at the kiln in question, but other stamps of the same potter known there;
Superscript [c] indicates assigned to the kiln on the evidence of form, fabric etc.
Ligatures are not shown in the transcripts.

0 10 mm

Legible stamps



3.1 (SM 602) [L·ADN·]ADGENI on form Drag. 33 (for details of profile see No. 2.137 above). Die 1a, L. Adn(atius ?) Adgenus of Lezoux.[c] Probably the stamp of a Roman citizen using *tria nomina*. The site evidence for it (Hadrian's Wall, Malton, the Brougham cemetery) and the forms (Drag. 31R and Walters forms 79, 79R and 80) suggest a date *c.* AD 160–200. III.318: Per. 1, Ph. 6.

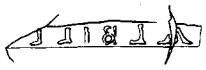
3.2 (SM 759) ADVOCISI in the mould, on form Drag. 30. Die 8a, Advocisus of Lezoux.[a] Decorated bowls with this stamp are common at forts in the Hadrian's Wall system, but there is only one from Scotland (Kelso). Advocisus's plain ware includes forms Drag. 31R, and Walters 79 and 80. *c.* AD 160–90. III.340: Per. 1, Ph. 4. For illustration and details of decoration see No. 2.24 above.



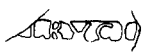
3.3 (NFW 631) [AELIA]NI·M on form Drag. 18/31. Die 2a, Aelianus of Les Martres-de-Veyre.[b] Aelianus's forms include a variant of form Drag. 15/17, which is presumably Trajanic, but also several examples of 18/31 verging on 31. He may have ended his career at Lezoux, to judge by some of his fabrics, but the bulk of his output comes from Les Martres. His distribution is mainly to Britain, which would be normal for a potter working in the earlier part of the 2nd century. *c.* AD 100–40. II.110: Per. 1, Ph. 5.



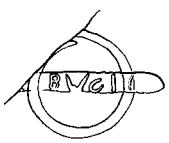
3.4 (NFW 551) ·AISTVS·FECIT in a circle, on a flat dish. Die 7a, Aisto/Aistus of Rheinzabern.[a] Like most Rheinzabern potters, he is best dated by his forms, which include Drag. 32, 36 and Ludowici Tf with this particular stamp, and Drag. 31R and Ludowici Tb with some of his others. Late 2nd to first half 3rd century. II.511: Per. 1, Ph. 5.



3.5 (NFW 586) ALBILL[IM] retrograde on form Drag. 33. Die 2b. Albillus i of Lezoux.[a] A stamp used mainly on form Drag. 33, though noted once on form Drag. 31. The site record includes Chesterholm and the Corbridge Pottery Store (five examples). His forms include Drag. 15/31, 31R and 38, and Walters 79. *c.* AD 160–200. II.519: Per. 1, Ph. 4.



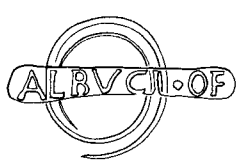
3.6 (NFW 596) [A]LBVCI[ANI] on form Drag. 31 or 31R. Die 6a, Albucianus of Lezoux.[a] One of his stamps which occurs at Pudding Pan Rock. There is also an example at Catterick. His work is common at forts in the north of Britain reoccupied *c.* AD 160. *c.* AD 160–200. II.111: Per. 1, Ph. 5.



3.7 (FRE 54) [A]LBVCIANI on form Walters 79R etc. Die 6g, Albucianus of Lezoux.[a] A stamp recorded from Pudding Pan Rock and on forms Drag. 31R, and Walters 79 and 80. *c.* AD 160–200. IV.380: Per. 1, Ph. 3.



3.8 (NFW 558) ALBVCIA[on form Drag. 38 (for details of profile see No. 2.196 above). Incomplete Die 1, Albucianus of Lezoux.[b] No other examples have been noted from this die. *c.* AD 160–200. II.511: Per. 1, Ph. 5.

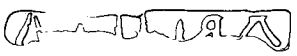


3.9 (NFW 581) [ALB]VCI·OF on form Drag. 31 or 31R. Die 3c, Albucius ii of Lezoux.[b] A stamp used on forms Drag. 27 and 31R, and Walters 79 and 80. Albucius's wares occur both on Hadrian's Wall and in Antonine Scotland. *c.* AD 150–80. II.529: Per. 1, Ph. 2 (illustration is of No. 3.10).

3.10 (FRE 46) ALBVCI·OF on form Drag. 38 or 44. Die as for No. 3.9. IV.380 Per. 1, Ph. 3.

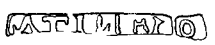


3.11 (NFW 439) ΛLBVSA on form Drag. 31 (for details of profile see No. 2.173 above). Die 1a, Albusa of Lezoux.[a] A minor CG potter, who apparently only used one die. Many of the stamps come from a kiln-dump at Lezoux, and are on standard late-Antonine forms. Also in the dump were wasters of potters including Belsa Arve(rnicus) and Severus iv, whose decorated ware is mid- to late-Antonine. *c.* AD 160–200 or, more probably, 170–200. 15 (unstratified).



3.12–3.13 (SM 605 and SM 589) ΛRILIRA and ΛRI[--]RA respectively on two vessels of form Drag. 31. Die 1a, Arilira(?) of Trier.[a] A palindromic effect was presumably intended, but whether the potter's name was Arilira or Arilus or something similar is not clear. The stamp occurs on forms Drag. 31, 31R and 32 etc. There is one example from Bainbridge. Late 2nd to first half 3rd century. Both items from II.269: Per. 1, Ph. 6 (illustration is of No. 3.12).

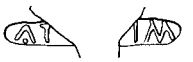
3.14 (SM 588)]ILIRA on form Drag. 31R (for details of profile see No. 2.186 above). Die and provenance as for Nos. 3.12–3.13.



3.15 (NFW 308) ATILIANIO on form Drag. 31R (for details of profile see No. 2.181 above). Die 2b, Atilianus of Lezoux.[a] A stamp used on forms Drag. 31 and 31R, and Walters 79 and 80. *c.* AD 160–200. II.110: Per. 1, Ph. 5.



3.16 (SM 639) ΛIILIAVN[IM] on form Drag. 33 (burnt). Die 5c, Atilianus of Lezoux.[b] Although there is no cross-bar to the T, this stamp can hardly belong to Aelianus, in view of the forms (mainly Drag. 33, but including Walters 79R and 80) and the occurrence of two examples in the destruction of the Wroxeter forum. It is therefore assigned to Atilianus, on the assumption that the T-bar on the die became filled up with clay. The date would not be inconsistent for a potter whose work turns up at Pudding Pan Rock. *c.* AD 160–200. Residual in III.37.



3.17 (SM 623) AT[TIC]IM on form Drag. 31. Die 2f, Atticus ii. The other recorded examples of this stamp, which occur on forms Drag. 33 (three examples) and Walters 80, all come from Lezoux. Some of his other stamps occur in the Rhineland and in an early-Antonine context at Castleford. His forms include Drag. 18/31 and 27, and Walters 79R. *c.* AD 140–70. III.269: Per. 1, Ph. 6.

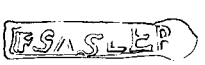


3.18 (SM 488) Mould stamp on a form Drag. 37 from Rheinzabern (for details of decoration see No. 2.109 above). The letters in the stamp-label are scarcely visible, but the decoration suggests the work of Attillus vi, and it would be possible to read ATTILLV[retrograde (Ludowici 1927, 239, a). Late 2nd or first half of 3rd century. III.293: Per. 2, Ph. 1.

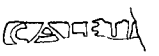


3.19 (NFW 603) BELSA·ARVEF on form Drag. 31. Die 1a, Belsa Arve(rnicus ?) of Lezoux.[a] A potter belonging to the Paternus v group, who made both plain and decorated ware. Many of the recorded examples of the stamp are from a kiln of *c.* AD 170–80. It also comes from Halton Chesters, South Shields and Pudding Pan Rock, and appears on forms Walters 79 and 79R. *c.* AD 165–200. II.112: Per. 1, Ph. 7.

3.20 (SM 646) BELS[on form Drag. 31R. Die as for No. 3.19. III.258: Per. 2, Ph. 1.



3.21 (SM 758) BELSVSF retrograde, in the mould, on form Drag. 37 (for details of decoration see No. 2.101 above). Die 3c, Belsus of Rheinzabern.[a] Belsus's decorated ware suggests that he belonged to the middle range of Rheinzabern potters, although his plain ware includes the late forms Drag. 31R (Sb), 40 and Ludowici Tb. *c.* AD 180–240. Joining fragments from III.318 and III.269: both Per. 1, Ph. 6, and from III.258 and III.345: both Per. 2, Ph. 1.



3.22 (SM 620) CALETI[NI] on form Drag. 31. Die 1b, Caletinus of Lezoux.[c] The forms recorded for Caletinus are Drag. 31, 33 and 38. The proportions of the dishes are close to those from Pudding Pan Rock, suggesting a range *c.* AD 160–200. III.269: Per. 1, Ph. 6.



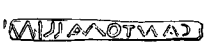
3.23 (NFW 582) [C]ALETINI on form Drag. 33. Die 1d, Caletinus of Lezoux.[c] For evidence of date see No. 3.22. II.527: Per. 1, Ph. 2.



3.24 (NFW 449) CAL·ETIM on form Drag. 33. Die 2a, Caletus of Lezoux,[b] and Vichy (Terre-Franche).[b] The distribution of this stamp is almost entirely confined to Britain, suggesting that it came from a die used only at Lezoux. There are examples from Bainbridge, Catterick and Malton, and many from Pudding Pan Rock. His decorated style is similar to that of Do[v]eccus i. *c.* AD 165–200. II.111: Per. 1, Ph. 5.



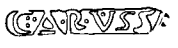
3.25 (SM 546) CANPANI retrograde on form Drag. 33 (for details of profile see No. 2.143 above). Die 1a, Canpanus of Lezoux.[c] Possibly a stamp of Campanus ii, but considered separately because there is no evidence of a connection. The site record (including Chesterholm and Malton) and the type of form Drag. 33 he produced suggest a mid- or late-Antonine date. III.269: Per. 1, Ph. 6.



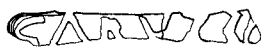
3.26 (SM 751) CANTOMALLIM retrograde, in the mould on form Drag. 37 (for details of decoration see No. 2.21 above). Die 1b, Cantomallus of Lezoux.[a] A stamp also used on forms Drag. 18/31 and 38, Walters 79R and 80, and Ludowici Tg and Tx. *c.* AD 155–85. Residual in III.101.



3.27 (NFW 685) ·C·A·[R·I·M·A·] on form Drag. 31R (for details of profile see No. 2.180 above). Die 1a, Carus ii of Lezoux.[a] A stamp which occurs at Ilkley and South Shields. It was used on forms Drag. 31R and Walters 79 or Ludowici Tg, but also on form Drag. 27. *c.* AD 155–85. Joining sherds from II.511 and II.525: both Per. 1, Ph. 5.



3.28 (NFW 602) C:·A·RVSSA on form Drag. 31 (for details of profile see No. 2.178 above). Die 3a, Carussa of Lezoux.[a] Carussa's stamps, including this one, are known from sites in the Hadrian's Wall system. His forms include Drag. 31R and Walters 79. *c.* AD 160–90. II.166: Per. 1, Ph. 7.



3.29 (NFW 573) CARVSSA on form Drag. 38 (for details of profile see No. 2.197 above). Die 3c, Carussa of Lezoux.[b] A stamp noted from Catterick and on form Walters 79. *c.* AD 160–90. II.511: Per. 1, Ph. 5 (illustrated).

3.30 (NFW 569) CARVSSA on form Walters 79 (for details of profile see No. 2.169 above). Die and provenance as for No. 3.29.



3.31 (NFW 591) C[ELSIANIF] on form Drag. 38. Possibly Die 8a, Celsianus of Lezoux.[a] An Antonine piece in any case but, if by Celsianus, belonging to the period *c.* AD 160–90. The site evidence for stamps from Die 8a (South Shields, Chester-le-Street) and the forms (Drag. 31R, and Walters 79 and 80) point to mid- to late-Antonine date. II.111: Per. 1, Ph. 5.



3.32 (SM 635) CINNA[MI] retrograde, in the mould on form Drag. 37 (for details of decoration see No. 2.15 above). Die 5a, Cinnamus ii of Lezoux.[a] This bowl, and many others with the same stamp, is in the earlier Cinnamus-Cerialis ii style. The stamp was also used on plain ware, and occurs on form Drag. 18/31R. *c.* AD 140–70. III.286: Per. 1, Ph. 2.

3.33 (NFW 574) [CIN]NAMI retrograde on form Drag. 30 (for illustration and details of decoration see No. 2.16 above). Die 5b, Cinnamus ii of Lezoux.[a] The commonest of Cinnamus's stamps on decorated ware. It occurs on both Hadrian's Wall and the Antonine Wall, but is more common on the latter. *c.* AD 150–80. II.511: Per. 1, Ph. 5.

3.34 (SM 766) CINN[AMI] retrograde, in the mould on form Drag. 37. Die as for No. 3.33. III.286: Per. 1, Ph. 2. For illustration and details of decoration see No. 2.17 above.



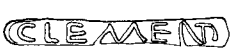
3.35 (SM 662) CINTVSMIX on form Drag. 31. Die 1b, Cintusmus i of Lezoux.[a] One of his later stamps, to judge by the forms (Drag. 31 and 31R, and Walters 79R). Others appear on the rims of decorated bowls by Antonine potters, particularly Cinnamus ii. His output includes occasional examples of forms 18/31R and 27. *c.* AD 160–80. III.293: Per. 2, Ph. 1.



3.36 (SM 444) CINTVSMIM on form Drag. 38 (for details of profile see No. 2.193 above). Die 2d, Cintusmus i of Lezoux.[b] A stamp recorded on form Drag. 18/31R, and from Old Penrith. *c.* AD 150–70. III.220: Per. 2, Ph. 1.



3.37 (NFW 580) [CI]NTVSM on form Drag. 31 or 31R. Die 5a, Cintusmus i of Lezoux.[a] One of his later stamps, which occurs at South Shields and Pudding Pan Rock. It was used on forms Drag. 31R and Walters 79. *c.* AD 160–80. II.511: Per. 1, Ph. 5.



3.38 (NFW 426) CLEMENTI on form Drag. 33. Die 2a, Clemens ii of Lezoux.[a] Also used on forms Drag. 31, 31R and Ludowici Tg, and recorded from Piercebridge and South Shields. One of his other stamps occurs on a decorated mould from Lezoux which also has a stamp of Priscus iii. *c.* AD 160–90. Residual in II.127.



3.39 (SM 441) COMITIALISFEC retrograde, in the mould on form Drag. 37 (for details of decoration see No. 2.63 above). Die 1a, Comitialis of Trier.[a] All the decorated bowls with this stamp seem to have been made at Trier, to judge by their style, but the lettering is so much like that of the Comitialis stamps at Rheinzabern that there is no reason to suppose that it belongs to another potter. Although the quality of the decoration on the Trier Comitialis bowls is in general inferior to that of his Rheinzabern products, there is no way of telling whether the Trier style is the later. Later 2nd or early 3rd century. III.314: Per. 2, Ph. 1.



3.40 (SM 753) [C]OMITIAL[ISF] retrograde, in the mould on form Drag. 37 (for details of decoration see No. 2.98 above). Die 5d, Comitialis of Rheinzabern.[a] Only four other examples of this stamp have been noted, all on decorated ware. Later 2nd or early 3rd century. III.293: Per. 2, Ph. 1.



3.41 (SM 677) COMITIALIF retrograde, in the mould on form Drag. 37 (for details of decoration see No. 2.94 above). Die 7a, Comitialis of Rheinzabern.[a] A stamp used almost exclusively on decorated ware, but noted on a dish from Niederbieber. Later 2nd or early 3rd century. Joining sherds from III.269 and III.318: both Per. 1, Ph. 6.



3.42 (SM 666) DESSIVS on form Drag. 31 (for details of profile see No. 2.183 above). Die 2a, Dessius ii of Trier.[c] Two unprovenanced examples of this stamp in the Landesmuseum at Trier and the fabrics associated with it make origin at Trier almost certain. It appears on forms Drag. 31R and 32. Late 2nd to first half 3rd century. III.293: Per 2, Ph. 1.

3.43 (SM 756) Dignucf in cursive script on form Drag. 37, signed in the mould among the decoration, together with a signature of Primanus (No. 3.164 below). Dignus of Trier; *cf.* Gard (1937, Taf. 25, Nos. 13–14) which have similar signatures. The potter is not otherwise known, but Dignus i was an East Gaulish maker of plain ware who may have worked at Trier, and may therefore be the same man. Probably after *c.* AD 235. Joining sherds from III.269: Per. 1, Ph. 6 and III.293: Per. 2, Ph. 1. For illustration and details of profile and decoration see No. 2.87 above.

3.44–3.46 (NFW 544, NFW 532 and SM 491) DOIICCI in the mould, on form Drag. 30 (three examples). Die 5a, Do(v)eccus i of Lezoux,[a] and Lubié-la-Palisse.[a] There are many decorated bowls with this stamp at forts on Hadrian's Wall, and two are among a large quantity of late-Antonine material from the Brougham cemetery. *c.* AD 165–200. No. 3.44 consists of joining sherds from II.110 and II.511: both Per. 1, Ph. 5, and from II.164: Per. 1, Ph. 7. No. 3.45 comes from II.166: Per. 1, Ph. 7, and No. 3.46 comes from III.293: Per. 2, Ph. 1. For illustrations and details of decoration see Nos. 2.48, 2.49 and 2.47 above, respectively.

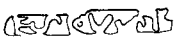


3.47 (NFW 427) DOVIICCVS on form Drag. 31. Die 11b, Do(v)eccus i of Lezoux.[a] A stamp used on both decorated and plain forms, including Drag. 31R and Walters 79. Known from Catterick, Malton (two examples) and Hadrian's Wall. *c.* AD 165–200. AREA I or II, unstratified (illustrated).

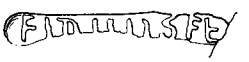
3.48 (FRE 35) DOVIICCVS on form Drag. 38 or 44. Die as for No. 3.47. IV.380: Per. 1, Ph. 3.



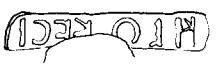
3.49 (SM 665) DONATVSF on form Drag. 31. Die 1d, Donatus iii of Rheinzabern.[a] Donatus is best dated by his forms. This particular stamp occurs on forms Drag. 31, 31R and 32; others are on forms Drag. 36, 40 and Ludowici Tn. Late 2nd to first half 3rd century. III.293: Per. 2, Ph. 1.



3.50 (NFW 436) ESC·VSI⟨·M⟩ on form Drag. 33. Die 2a', Escusius of Lezoux.[c] A stamp from a die which continued in use after one of the ends had been broken. Examples from the original die occur on forms Drag. 31 and 31R, Walters 79, Ludowici Tg, and Drag. 37 (on the rim of a bowl with decoration in the style of Do[v]eccus i). *c.* AD 160–90. AREAS I or II, unstratified.



3.51 (SM 471) FIDIILISFE on form Drag. 31. Die 2a, Fidelis ii of Rheinzabern.[a] A stamp used on forms Drag. 31R, 32, 32R, 36 and Ludowici Tb. Late 2nd to first half 3rd century. III.222: Per. 2, Ph. 3.



3.52 (SM 645) FILO·FECI retrograde on form Drag. 38. Die 1a, Filo of Trier.[a] Also noted on forms Drag. 31 (Sa) and 32. One of his other stamps occur on form Drag. 31R (Sb). Late 2nd to first half 3rd century. III.258: Per. 2, Ph. 1.



3.53 (SM 614) OFFRONTINI on form Drag. 18(?). Die 1a Frontinus of La Graufesenque.[a] A stamp used on form Drag. 29 and on plain ware. It has been noted from Camelon and Rottweil. *c.* AD 70–85. III.286: Per. 1, Ph. 2.

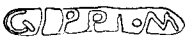


3.54 (NFW 442) G·E·N·I·T·O[·R·F] on form Drag. 31 or 31R. Die 5a, Genitor ii of Lezoux.[a] A stamp noted from Birdoswald and Catterick (two examples), and on form Drag. 31R. *c.* AD 160–90.II.136: Per. 1, Ph. 7.

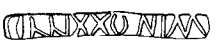


3.55–3.56 (NFW 443 and NFW 590) [GE]NITORF and [GEN]ITORF on form Drag. 31R (two examples). Die 5b, Genitor ii of Lezoux.[a] A stamp common at sites in the north of Britain reoccupied *c.* AD 160. There is also an example from a late-Antonine pottery store at Corbridge (Haverfield 1908, 271, Figure 10). *c.* AD 160–200. From II.111: Per. 1, Ph. 5, and II.519: Per. 1, Ph. 4, respectively (illustration is of No. 3.57).

3.57 (SM 608) GENITORF on form Drag. 33. Die as for Nos. 3.55–3.56. III.269: Per. 1, Ph. 6.

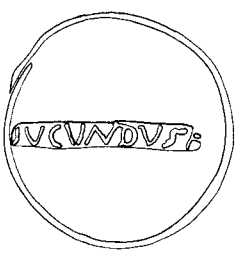


3.58 (SM 618) GIPPI·M on form Drag. 31. Die 2a, Gippus of Lezoux.[a] A stamp noted in the Aquincum Hoard and in a group of burnt samian of *c.* AD 170 at Tác (Hungary). It occurs on forms Drag. 18/31R–31R and 31R. *c.* AD 155–85. III.350: Per. 1, Ph. 2.



3.59–3.63 (FRE 52, FRE 55, NFW 307, NFW 535 and SM 626 respectively).]M; and ILLIXXONIM (four examples) respectively, on five examples of form Drag. 31 (for details of profile of No. 3.61, see No. 2.174 above). Die 3a, Illixo of Lezoux[b]. Illixo made plain forms, including Drag. 18/31, 18/31R, 27 and 42, Walters 79 and 80, Ludowici Tx, and decorated ware of the mid- to late-Antonine period. His stamps have been recorded from Chesters and Old Kilpatrick. *c.* AD 150–80. Nos. 3.59 and 3.60 both come from IV.380: Per. 1, Ph. 3: No. 3.61 consists of joining sherds from II.110 and II.511: both Per. 1, Ph. 5; Nos. 3.62 and 3.63 come from II.511: Per. 1, Ph. 5, and III 269: Per. 1, Ph. 6, respectively (illustration is of No. 3.61).

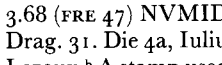
3.64 (NFW 529) ILLIXXONIM on form Drag. 33. Die as for Nos. 3.59–3.63. AREA I or II, unstratified.



3.65 (SM 541) IVCVNDVSF on form Drag. 31 (for details of profile see No. 2.184 above). Die 2a, Iucundus iv of Trier.[c] Other stamps of this potter, from different dies, occur on form Drag. 31R. Late 2nd to first half 3rd century. III.269: Per. 1, Ph. 6.

3.66 (SM 342) IVLIVSL retrograde, in the mould on form Drag. 37 (for illustration and details of decoration see No. 2.115 above). Die 3f, Iulius viii of Rheinzabern.[a] A stamp which appears on both decorated and, to a lesser extent, plain ware. The motifs and the quality of the decoration suggest that most of his bowls are of 3rd century date. III.348: Per. 2, Ph. 1.

3.67 (SM 764) IVLIVSE retrograde, in the mould on form Drag. 37 (for illustration and details of decoration see No. 2.116 above). Die 3g, Iulius viii of Rheinzabern.[a] This stamp is common on decorated bowls at Rheinzabern, although it is not illustrated by Ludowici. It also appears occasionally on plain ware. There is no site dating, but the decoration suggests that this piece is late 2nd or, more probably, early to mid 3rd century. Joining sherds from III.340: Per. 1, Ph. 4, and III.293: Per. 2, Ph. 1.



3.68 (FRE 47) NVMIDI·MA on form Drag. 31. Die 4a, Iulius Numidus of Lezoux.[b] A stamp used on forms Drag. 31R, and Walters 79, 79 etc. R and 80. His wares occur on Hadrian's Wall. *c.* AD 160–200. IV.380: Per. 1, Ph. 3.



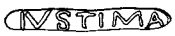
3.69 (SM 595) IVLLENV[S · F] on form Drag. 31 or 31R. Die 1a, Iullenus of Trier.[b] Only two other examples of this stamp have been noted, on forms Drag. 31 and 31R. Late 2nd to first half 3rd century. III.269: Per. 1, Ph. 6.

3.70 (SM 637) . .LLENV[S · F] on form Drag. 31. Die as for No. 3.69. III.342: Per. 1, Ph. 2.



3.71–3.72 (NFW 452 and NFW 592) IVLLINIM and]LLINIM on form Drag. 33 (two examples). Die 3a, Iullinus ii of Lezoux.[a] A stamp used on both decorated and plain ware, and noted from Chesterholm, South Shields and Pudding Pan Rock. The plain forms include Drag. 31R, and Walters 79 and 80. *c.* AD 160–90. Both examples come from II.111: Per. 1, Ph. 5 (illustration is of No. 3.71).

3.73 (SM 638)]NIM on form Drag. 38. Die as for Nos. 3.71–3.72. III.338: Per. 1, Ph. 5.



3.74 (NFW 543) IVSTIMA on form Drag. 31. Die 2c, Iustus ii of Lezoux.[b] Also used on forms Drag. 31R, and Walters 79/80 and 80. Iustus's stamps have been recorded from Hadrian's Wall and its hinterland forts and from Pudding Pan Rock. His decorated ware belongs to the mid- to late-Antonine period. *c.* AD 160–90. II.164: Per. 1, Ph. 7.

3.75 (NFW 599)]VSTIMA on form Drag. 33. Die as for No. 3.74. II.112: Per. 1, Ph. 7.



3.76–3.77 (SM 543 and SM 596) IUUENISFE on two examples of form Drag. 31 (for details of profile of No. 3.76 see No. 2.188 above). Die 4b, Iuvenis ii of Rheinzabern.[a] All the other examples of this stamp are from Rheinzabern and include dishes of form Drag. 31 (Sa). His work occurs at Niederbieber and in a grave at Sompting, Sussex, with stamps of Lezoux and Rheinzabern potters and a scarcely-worn coin of Geta as Caesar, see Ainsworth and Ratcliffe-Densham (1974, 312). His decorated ware suggests a 2nd century date. *c.* AD 170–200. Both examples come from III.269: Per. 1, Ph. 6 (illustration is of No. 3.76).



3.78 (SM 600) LAVRIANI·OF on form Drag. 31. Die 1a, Laurianus of Lezoux.[c] No other examples of this potter's work are known. Antonine, on the evidence of the form. III.329: Per. 1, Ph. 5.



3.79 (SM 621) LOGIRNI on form Drag. 18(?). Die 5a, Logirnus of La Graufesenque.[a] The later of his common stamps, occurring in Scotland (Camelon and Inchtuthil), but also at Burghöfe and Risstissen (before *c.* AD 75). There is no suggestion that it was current in the pre-Flavian period. *c.* AD 70–90. III.350: Per. 1, Ph. 2.



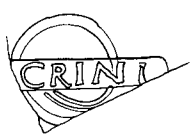
3.80 (SM 644) LUCI[USFCIT] on a flat base. Die 1a, Lucius ix of Rheinzabern.[a] Used on forms Drag. 32 and 32R. Other Lucius stamps occur on the rims of decorated bowls, including one from a mould stamped by Arvernicus ii and with a cursive signature of Lutaeus. Late 2nd century. III.258: Per. 2, Ph. 1.



3.81 (NFW 431) MACCALIM on form Drag. 33. Die 3a, Maccalus of Lezoux.[a] A stamp recorded from Housesteads (at least two examples), Ebchester and Pudding Pan Rock. Another, from a different die, comes from Chester-le-Street. *c.* AD 160–200. Residual in II.124.



3.82–3.83 (FRE 27 and SM 539) [MACR]IANIA and MAC[RIANIA] respectively on two examples of form Drag. 31. Die 1a, Macrianus of Lezoux.[c] The site record for this stamp includes Bainbridge, Malton, South Shields and Pudding Pan Rock, and it appears on forms Drag. 31R and Walters 79R. Another stamp, which probably belongs to the same potter, was used occasionally on form Drag. 27. *c.* AD 160–90. From IV.350: Per. 1, Ph. 3, and III.269: Per. 1, Ph. 6, respectively.



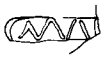
3.84 (NFW 585) [MA]CRINI on form Walters 79 etc. Die 5d, Macrinus iii of Lezoux.[a] A stamp recorded from South Shields and Bainbridge and on forms Drag. 31R and Walters 79. His forms include Drag. 31 and 31R, and Walters 80, but he also occasionally made forms Drag. 18/31 and 27. *c.* AD 150–80. II.519: Per. 1, Ph. 4.



3.85 (SM 607) ·MAGION[I·] on form Drag. 31R. Die 1a, Magio i of Lezoux.[c] Magio's wares, including vessels with this stamp, occur at sites in northern Britain reoccupied *c.* AD 160. Die 1a was used on forms Drag. 31 (including one of the type found at Pudding Pan Rock) and 31R. There are several of his stamps in the Plicque Collection, which are almost certainly from Lezoux. *c.* AD 160–90. III.342: Per. 1, Ph. 2.



3.86 (NFW 545) MAIORIS on form Drag. 33. Die 6b, Maior i of Lezoux.[a] Maior's wares turn up on Hadrian's Wall, at northern forts reoccupied *c.* AD 160 and at Pudding Pan Rock. This particular stamp occurs at Piercebridge (two examples) and South Shields, and on forms Drag. 31 and Walters 80. His output consists mainly of the later Antonine forms, but includes a few examples of Drag. 27. *c.* AD 160–85. II.165: Per. 1, Ph. 7.



3.87 (SM 755) MAI[ORIM] on form Drag. 31R. Die 9c, Maior i of Lezoux.[b] A stamp used on forms Drag. 31 and 31R, and Walters 79R. *c.* AD 160–85. III.293: Per. 2, Ph. 1.



3.88 (NFW 597) MA[IO·RI bird°] on form Drag. 31 or 31R. Perhaps Die 11b, Maior of Lezoux.[b] Antonine. *c.* AD 160–85 if stamp is of Maior. II.111: Per. 1, Ph. 5.



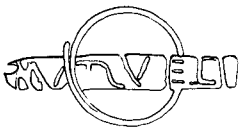
3.89 (SM 636) MAIO·R·[E] on form Drag. 31. Die 1a, Maior ii of Blickweiler[a] and Trier.[a] In view of the rarity of Blickweiler ware in Britain, this piece is likely to have been made at Trier. All the examples recorded are on dishes, mainly form Drag. 18/31, but with an occasional 18/31R and 31. The other two stamps from Britain (from Colchester) are both, significantly, on form Drag. 31, and presumably come from Trier. Early- to mid-Antonine. III.286: Per. 1, Ph. 2.



3.90 (SM 589) [MAMM]I·OF on form Drag. 31. Die 1a", Mammius of Lezoux. This die underwent two successive modifications after fracture. All three versions of the die were used on form Walters 80 and stamps from the final version (1a") occur at Benwell, Ilkley and Chester-le-Street. His output includes decorated ware of the mid- to late-Antonine period and a few examples of form Drag. 27. *c.* AD 160–85. II.519: Per. 1, Ph. 4.



3.91 (SM 676) MAN[II] on form Drag. 31. Die 1a of Manius i(?). EG. Perhaps an illiterate stamp. *Cf.* MANIIF and MANII from Les Allieux, which have been attributed to Manerenus (Oswald 1931, 182), although most unlikely to belong to him. Presumably Antonine. III.318: Per. 1, Ph. 6.



3.92 (NFW 301) MASVETI on form Drag. 33. Die 4d, Mansuetus ii of Lezoux.[b] A stamp not previously recorded for Mansuetus. His wares turn up on Hadrian's Wall and at Verulamium (Period IID, after AD 150). His forms include Walters 79 and 80, but also Drag. 18/31R and, fairly frequently, Drag. 27. *c.* AD 150–80. II.110: Per. 1, Ph. 5.



3.93 (NFW 547) MARCELLINIF on form Drag. 31. Die 2a, Marcellinus ii of Lezoux.[a] A stamp which occurs at Chesters, South Shields and Pudding Pan Rock, and on forms Drag. 15/31 and Walters 80. *c.* AD 160–200. II.166: Per. 1, Ph. 7.

3.94–3.96 (FRE 149, NFW 616 and NFW 612) [MARCELL]INIF, MA[and]ELLINIF respectively on three examples of form Drag. 31R. Die as for No. 3.93. From IV.380: Per. 1, Ph. 3, II.166 and II.164: both Per. 1, Ph. 7, respectively.

3.97 (FRE 66)]NIF on form Drag. 38. Die as for No. 3.93. IV.467: Per. 1, Ph. 3.



3.98 (SM 442) MARCIAN[I] on form Drag. 31R. Die 2a, Marcianus i of Lezoux.[c] There is no site dating for this potter but his forms suggest that he worked in the mid- to late-Antonine period. III.314: Per. 2, Ph. 1.

3.99 (NFW 583) [MAR]CIANI on form Walters 79R (for details of profile see No. 2.171 above). Die as for No. 3.98. Joining sherds from II.110 and II.511: both Per. 1, Ph. 5.



3.100 (NFW 600) ·MAR[CIM·] retrograde on form Drag. 33. Die 5a, Marcus v of Lezoux.[a] A potter whose wares are attested at Pudding Pan Rock and at forts in the Hadrian's Wall system. This particular stamp occurs at South Shields and on forms Drag. 31R, Walters 79 and 79R, and Ludowici TgR. *c.* AD 160–200. II.166: Per. 1, Ph. 7.



3.101 (SM 669) MARINVS on form Drag. 31 or 31R. Die 3d, Marinus iii of Rheinzabern.[a] Marinus iii seems to have been an itinerant potter, who also stamped plain ware at Heiligenberg. Ittenweiler, Kräherwald and Waiblingen-Beinstein. However, Die 3d seems to have been used only at Rheinzabern, and is probably one of his latest ones. Since he was producing forms Drag. 31R and Ludowici Tb elsewhere, this particular stamp can scarcely be earlier than the late-Antonine period, and could belong to the first half of the 3rd century. III.293: Per. 2, Ph. 1.



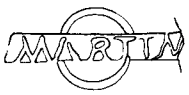
3.102 (NFW 303) MARTIN[IM] on form Drag. 31R (for details of profile see No. 2.182 above). Die 3d, Martinus iii of Lezoux.[b] A stamp noted at Malton and Pudding Pan Rock and on forms Drag. 31 and 31R, and Walters 79. His stamps occur frequently on Hadrian's Wall and at its hinterland forts. *c.* AD 160–200. II.110: Per. 1, Ph. 5.



3.103 (NFW 300) MARTIM on form Ludowici Tx (for details of profile see No. 2.135 above). Die 1b, Martius iv of Lezoux.[a] There are many examples of this stamp from Hadrian's Wall and its hinterland forts, including Brougham, where the material from the cemetery is mostly late-Antonine. It was used mainly on form Drag. 33, but turns up occasionally on forms Walters 80 and Ludowici Tx. *c.* AD 160–85. Joining sherds from II.110 and II.525: both Per. 1, Ph. 5 (illustration is of No. 3.105).

3.104–3.107 (NFW 563, NFW 566, NFW 565 and SM 760) MARTIM on four examples of form Drag. 33 (for profile details of No. 3.105 see No. 2.136 above). Die as for No. 3.103. Nos. 3.104–3.106 come from II.511: Per. 1, Ph. 5, and No. 3.107 comes from III.269: Per. 1, Ph. 6.

3.108 (NFW 564) MARTIM on form Walters 80. Die as for No. 3.103. II.511: Per. 1, Ph. 5.



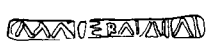
3.109 (SM 659) MARTIM on form Drag. 33. Die 1h, Martius iv of Lezoux.[b] A slightly earlier stamp than Die 1b (see Nos. 3.104–3.108), in view of its use on form Drag. 18/31R. *c.* AD 155–75. III.293: Per. 2, Ph. 1 (illustration is of No. 3.110).

3.110 (NFW 450) MARTIM on form Walters 80. Die as for No. 3.109. II.111: Per. 1, Ph. 5.

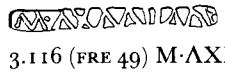


3.111 (NFW 435) MASCIILLIO on form Drag. 31R. Die 4b, Mascellio i of Lezoux.[a] A stamp noted from Catterick, Halton Chesters, South Shields and Wallsend, and on forms Drag. 31R and Walters 79R. *c.* AD 160-90. AREA I OR II, unstratified.

3.112 (SM 659) MASCIILLIO on form Drag. 33 (for details of profile see No. 2.141 above). Die as for No. 3.111. III.293: Per. 2, Ph. 1.



3.113–3.115 (FRE 145, NFW 423 and NFW 437) MATERNIIIAI on form Drag. 33 (three examples). Die 3a, Maternianus i of Lezoux.[a] A high proportion of the stamps recorded from this die come from Pudding Pan Rock. There are also examples from Hadrian's Wall. The precise reading is not clear, but Matern[n]iaf may have been intended. *c.* AD 160–200. Respectively from IV.380: Per. 1, Ph. 3, II.109: Per. 1, Ph. 5, and AREA I OR II, unstratified (illustration is of No. 3.114).

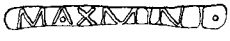


3.116 (FRE 49) M·AXMIIMF on form Drag. 31. Die 2a, Maximinus i of Lezoux.[b] This stamp occurs in the grave-group from Sompting, Sussex, mentioned above (see Nos. 3.76–3.77). It was used on forms Drag. 31R, Walters 79 and 80, and Ludowici TgR. *c.* AD 170–200. IV.380: Per. 1, Ph. 3.

3.117 (NFW 425) M . . . MIIMF on form Drag. 31R. Die as for No. 3.116. Joining sherds from II.109 and II.511: both Per. 1, Ph. 5.

3.118–3.119 (FRE 28 and NFW 528) M·AXMIIMF on two examples of form Drag. 33. Die as for No. 3.116. Respectively, from IV.467: Per. 1, Ph. 3, and AREA I or II, unstratified.

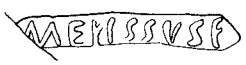
3.120 (NFW 568) M·AXMIIMF on form Ludowici TgR (probably). Die as for No. 3.116. II.511: Per. 1, Ph. 5.



3.121 (SM 509) MAXMINI· on form Drag. 33 (burnt). Die 4a, Maximinus i of Lezoux.[b] Recorded on form Walters 80 and (once) on Drag. 27. *c.* AD 160–90. Residual in III.192.



3.122 (NFW 454) MAXMIN on form Walters 79. Die 9a, Maximinus i of Lezoux.[a] Recorded at Cramond and South Shields and on form Drag. 31R. *c.* AD 170–200. II.111: Per. 1, Ph. 5.



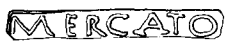
3.123 (NFW 542) MELISSVSF on a form Drag. 31 dish of yellowish fabric with a curious, slightly blotchy beige-orange slip (see discussion p. 145). Die 3a, Melissus ii of Trier.[a] The stamp occurs at Niederbieber and Zwammerdam (Period III), and on forms Drag. 31R and 32. Late 2nd to first half 3rd century. Residual in I.119.



3.124 (SM 668)]RCATO⟨R⟩ on form Drag. 31. Die 5a', Mercator iv of Lezoux.[a] Stamps from the complete die occur at Chesterholm and Pudding Pan Rock and on forms Drag. 27 and 37 (as a rim-stamp on a stamped bowl of Cinnamus ii). *c.* AD 170–90. III.293: Per. 2, Ph. 1 (illustration is of No. 125).

3.125–3.126 (NFW 613 and NFW 546) MERCATO⟨R⟩ and MERCAT[respectively on two examples of form Drag. 31R. Die as for No. 3.124. From II.164 and II.166: both Per. 1, Ph. 7, respectively (illustration is of No. 3.125).

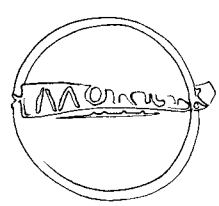
3.127 (NFW 298) MERCATO⟨R⟩ on form Drag. 33. Die as for No. 3.124. II.110: Per. 1, Ph. 5.



3.128 (SM 591) MERCATO⟨R⟩ on form Drag. 31R (for details of profile see No. 2.179 above). Die 5c', Mercator iv of Lezoux.[b] From a die which in its original version was used on form Walters 80. *c.* AD 160–90. III.341: Per. 1, Ph. 4.



3.129–3.130 (FRE 111 and 112) MERCVSSEM on form Drag. 33 (two examples). Die 4a, Mercussa i of Lezoux.[a] This stamp was used on forms Drag. 18/31R and 27 and has been recorded from Chester-le-Street (after *c.* AD 160). Mercussa also made forms Walters 79 and 80. *c.* AD 150–80. Both examples come from IV.467: Per. 1, Ph. 3 (illustration is of No. 3.129).



3.131 (SM 647) FMORICIF or MORICIF on form Drag. 31. Die 1a or 1a', Moricus of Trier.[a] Either an incomplete impression or from a broken die. A stamp used on forms Drag. 31, 31R and 32. There is one example from Niederbieber. Late 2nd to first half 3rd century. III.258: Per 2, Ph. 1.



3.132 (SM 597) [NAM]ILIANI on form Drag. 33. Die 3a, Namilianus of Lezoux.[b] Namilianus's stamps, including this one, occur at sites in the north of Britain reoccupied *c.* AD 160. One of his others comes from Pudding Pan Rock. *c.* AD 160–200. III.342: Per 1, Ph. 2.

3.133 (NFW 588)]NI on form Drag. 31. Die probably as for No. 3.132. II.519: Per 1, Ph. 4.



3.134 NFW 447) NOVEMBRIM on form Drag. 38. Die 2a, November of Lezoux.[c] November's use of forms Drag. 31R, Walters 79 and Walters 79/80 suggests that he worked in the mid- to late-Antonine period. II.111: Per 1, Ph. 5.



3.135 (NFW 607) PATERCLIM on form Drag. 18/31. Die 6a, Paterclus ii, a potter whose career began at Les Martres-de-Veyre and ended at Lezoux. Some of his dies were used at both centres, but the fabrics associated with this stamp, when recorded, consistently belong to the Les Martres range. *c.* AD 110–25. II.112: Per 1, Ph. 7.



3.136 (NFW 438) [PATE]RCLVSF on form Drag. 18/31. Die 12a, Paterclus ii of Les Martres-de-Veyre.[a] Also from a die which was probably only used at Les Martres. Stamps from both the complete and broken versions of the die are in the London 'Second Fire' deposits. *c.* AD 110–25. AREA I or II, unstratified.



3.137 (SM 540) [PAT]ERNIANVS on form Drag. 31R. Die 1a, Paternianus ii of Rheinzabern.[a] Paternianus ii is only datable by his forms which, as well as Drag. 31R, include Drag. 32 etc. Late 2nd to first half 3rd century. III.269: Per 1, Ph. 6.



3.138 (SM 609) PATERNIANVS retrograde, in the mould on form Drag. 37 (for details of decoration see No. 2.83 above). Die 1a, Paternianus iii of Trier.[a] A stamp also used on plain ware (form Drag. 32 etc.). His decorated ware probably dates from the first half of the 3rd century. III.318: Per 1, Ph. 6.



3.139 (NFW 555) [PATIIR]NVSFII on form Drag. 31R (for details of profile see No. 2.191 above). Die 3a, Paternus viii of Rheinzabern.[a] His forms include Drag. 32 and 32R (both with this particular stamp) and form Drag. 31 (Sa). Late 2nd to first half 3rd century. II.511: Per 1, Ph. 5.



3.140 (SM 603) PATRI[CIANVSF] on form Drag. 31 (for details of profile see No. 2.187 above). Die 2b, Patricianus of Rheinzabern.[a] A stamp also used on forms Drag. 31R and 32. Late 2nd to first half 3rd century. III.318: Per 1, Ph. 6.



3.141 (FRE 150) [PA]TRICIAF on form Ludowici Tf (for details of profile see No. 2.168 above). Die 4a, Patricianus of Rheinzabern.[a] This stamp was also used on forms Drag. 31 (Sa) and 31R. Late 2nd to first half 3rd century. IV.444: Per 1, Ph. 3.



3.142 (SM 633) PATRVINVSFE (in guide lines) on form Drag. 31. Die 1a, Patruinus ii of Trier.[a] A stamp which also appears on forms Drag. 31R, 32 and 36. Late 2nd to first half 3rd century. III.293: Per 2, Ph. 1.



3.143 (SM 765) PA[ΛΛL·LI] or PA[ΛΛL·HI] on form Walters 79. Die 8c or 8c', Paullus v of Lezoux.[b] Several vessels with stamps from the first version of the die come from Pudding Pan Rock; the modified die was used on form Walters 79. Paullus v's wares are common at forts in the Hadrian's Wall system. In view of the site evidence, he is unlikely to be the potter who made decorated ware at Lezoux in the early- and mid-Antonine periods. A range *c.* AD 160–200 is likely. Residual in III.37.



3.144–3.147 (FRE 44, FRE 34, NFW 304 and NFW 605) PAΛΛL·HI;]ΛL·HI; PAΛΛL·HI and PAΛΛ[on four examples of form Drag. 31. Die 8c', Paullus v of Lezoux.[b] For date range of both versions of the die see No. 3.143. Stamps from the modified version are more common, and probably belong to the period *c.* AD 170–200. From IV.380, IV.380: Per 1, Ph. 3, II.110: Per 1, Ph. 5, and II.112: Per 1, Ph. 7, respectively (illustration is of No. 3.146).

3.148 (SM 613) PAΛΛL·HI on form Drag. 33. Die as for Nos. 3.144–3.147. III.341: Per 1, Ph. 4.

3.149–3.150 (FRE 45 and SM 508) PAΛΛL·HI and]ΛΛL·HI respectively on two examples of form Walters 79 or Ludowici Tg. Die as for Nos. 3.144–3.147. From IV.380: Per 1, Ph. 3 and residual in III.85 respectively.

3.151 (NFW 611 and NFW 610) PAΛΛL·HI on form Walters 79 etc. Die as for Nos. 3.144–3.147. Joining sherds from II.164 and II.112: both Per 1, Ph. 7.



3.152 (NFW 689) PE[on form Drag. 31. Die 5a, Perpetus of Rheinzabern.[a] Perpetus made both plain and decorated ware. This stamp appears on plain forms only, including Drag. 31 (Sa), Drag. 32 and Ludowici Tb. Late 2nd to first half 3rd century. AREA I or II, unstratified (illustration is of No. 3.153).

3.153 (NFW 595) PERPETV[S] on form Drag. 31 or 31R. Die as for No. 3.152. II.111: Per 1, Ph. 5.



3.154 (SM 609) OFPONTI on form Drag. 27g. Die 8h, Pontus of La Graufesenque.[b] Probably a stamp of Pontus, rather than Frontinus. All the examples noted are on cups, all of form Drag. 27, with the exception of one or two of form Drag. 24. He made both forms Drag. 29 and 37, and his wares reached sites founded under Domitian (Cappuck, Inchtuthil and the Saalburg). *c.* AD 65–90. III.357: Per 1, Ph. 1.



3.155 (FRE 26) POTITIAN or POTITIANI on form Drag. 31. Die 4a, Potitianus ii of Lezoux.[a] A stamp used on forms Drag. 31R and Walters 79. Several of Potitianus's stamps, including this one, occur on Hadrian's Wall. *c.* AD 160–90. IV.350: Per 1, Ph. 3.



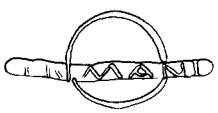
3.156 (NFW 579) POTTACI on form Drag. 31 (for details of profile see No. 2.175 above). Die 2a, Pottacus of Lezoux.[a] Noted at Chesterholm, Malton and South Shields and on forms Drag. 31R and Walters 80. One of his other stamps occurs in the Wroxeter Gutter. *c.* AD 160–90. II.511: Per 1, Ph. 5 (illustration is of No. 3.159).

3.157–3.159 (NFW 587, NFW 538 and NFW 559 respectively) POTTACI on three examples of form Drag. 33 (for profile details of No. 3.158 see No. 2.144 above). Die as for No. 3.156. From II.519: Per 1, Ph. 4, II.511 and II.511: Per 1, Ph. 5, respectively (illustration is of No. 3.159).

3.160 (NFW 609)]TTACI on form Walters 79 etc. Die as for No. 3.156. II.112: Per 1, Ph. 7.



3.161–3.162 (SM 544 and SM 545) PRIMANI on two examples of form Drag. 33 (for profile details of No. 3.162 see No. 2.138 above). Die 6d, Primanus iii of Lezoux.[a] A stamp noted at Pudding Pan Rock and in the predominantly late-Antonine material from the Brougham cemetery. It is mainly on form Drag. 33, but appears occasionally on form Walters 80. *c.* AD 160–200. Both examples come from III.269: Per 1, Ph. 6 (illustration is of No. 3.162).



3.163 (SM 443) PRIMANI on form Drag. 33. Die 6h, Primanus iii of Lezoux.[b] Not yet noted in a dated context. His other stamps occur at Bainbridge, Benwell and in the Wroxeter Gutter, and see Nos. 3.161–3.162. *c.* AD 160–200. III.220: Per 2, Ph. 1.

3.164 (SM 756) Primani in cursive script on form Drag. 37, signed in the mould among the decoration together with a signature of Dignus (No. 3.43 above). Primanus of Trier; *cf.* Gard (1937, Taf. 25, Nos. 11, 12 and 14) which have similar signatures. The potter cannot be identified with any otherwise recorded Primanus. Probably after *c.* AD 235. Joining sherds from III.269: Per 1, Ph. 6 and III.293: Per 2, Ph. 1. For illustration and details of profile and decoration see No. 2.87 above.



3.165 (NFW 548) PRISSCI on form Drag. 33 (for details of profile see No. 2.145 above). Die 10a, Priscus iii of Lezoux.[b] Only otherwise recorded from York, on form Drag. 33. Priscus iii made both plain and decorated ware. His plain forms include Drag. 31R, and Walters 79 and 80. His decorated ware belongs to the mid- to late-Antonine period. His stamps occur at Castlecary and Chesterholm. *c.* AD 160–90. Joining sherds from II.511 and II.525: both Per 1, Ph. 5.



3.166 (NFW 618)]ATI on form Drag. 31 or 31R. Die 1b, Quadratus iii of Lezoux.[b] Also used on form Ludowici Tg. His site record includes Malton, Wallsend and the Brougham cemetery. *c.* AD 160–200. AREA I or II, unstratified.

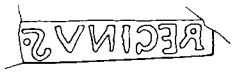
3.167–3.168 (NFW 451 and NFW 453) QVADRATI and QV[on two examples of form Drag. 31R. Die as for No. 3.166. Both examples from II.111: Per 1, Ph. 5 (illustration is of No. 3.167).



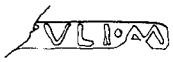
3.169–3.170 (SM 601 and SM 604) QVARTINVSF on two examples of form Drag. 31 (for details of profiles see Nos. 2.190 and 2.189 respectively). Die 1a, Quartinus of Rheinzabern.[a] A stamp used on forms Drag. 31R, 32 and 32R. Late 2nd to first half 3rd century. Both examples from III.318: Per 1, Ph. 6 (illustration is of No. 3.170).



3.171 (SM 675) [QVI]NTIM on form Drag. 31R. Die 5a, Quintus v of Lezoux.[a] One of his most common stamps. It occurs at forts in the north of Britain reoccupied *c.* AD 160, and there are many examples from Pudding Pan Rock. *c.* AD 160–200. III.318: Per 1, Ph. 6.



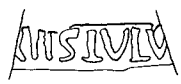
3.172 (SM 611) REGINVS[FECIT] retrograde on form Drag. 37 (for details of decoration see No. 2.102 above). Die 1a, Reginus vi of Rheinzabern.[a] A stamp used only on decorated ware, although a broken version of it occurs on plain forms (Drag. 32 etc.). There is one example on a mould from Heiligenberg, but most of the examples noted so far come from Rheinzabern. Late 2nd to first half 3rd century. III.269: Per 1, Ph. 6.



3.173 (SM 615) [REG]VLI·M on form Drag. 27. Die 4c, Regulus of Lezoux.[b] Over half of the examples noted are in the Rhineland, which suggests use in the first half of the 2nd century. The stamp occurs on forms Drag. 18/31 and 31. *c.* AD 140–60. III.286: Per 1, Ph. 2.



3.174 (NFW 428) REGVLIM on form Drag. 31. Die 4e, Regulus of Lezoux.[a] A slightly later stamp than No. 3.173, used on forms Drag. 15/31R, 18/31R, and 31R, and Walters 80. *c.* AD 150–70. AREA I or II, unstratified.



3.175 (NFW 606) [R]IISTVTV[SF] on form Drag. 31 or 31R. Die 3a, Restutus of Rheinzabern.[a] Also used on form Drag. 32 etc. His other stamps appear on forms Drag. 31R and 32. Late 2nd to first half 3rd century. II.112: Per 1, Ph. 7.



3.176–3.177 (FRE 36 and NFW 614) ROTTALIM and]IM respectively on two examples of form Drag. 31. Die 1a, Rottalus of Lezoux.[a] Recorded from Benwell, Chesters and the Brougham cemetery, and on forms Walters 79, 79R and 80, and Ludowici Tg. *c.* AD 160–200. From IV.380: Per 1, Ph. 3, and II.164: Per 1, Ph. 7, respectively (illustration is of No. 3.178).

3.178 (NFW 429) ROTTALIM on form Drag. 31R. Die as for Nos. 3.176–3.177. AREA I or II, unstratified.



3.179 (NFW 608) SABINI·MA on form Drag. 31R. Die 7b, Sabinus viii of Lezoux.[a] The bulk of his output consists of form Drag. 33, but Sabinus also made forms Drag. 31, 31R and 38, and Walters 79, 79R and 80. His site record includes Bainbridge and Chesterholm. *c.* AD 155–85. II.166: Per 1, Ph. 7.



3.180–3.182 (FRE 31, FRE 151 and NFW 306 respectively) SACRILL·I·MAN;]CRILL·I·MAN and SACRILL·I·MAN respectively on three examples of form Drag. 31 (for profile details of No. 3.182 see No. 2.176 above). Die 3a, Sacrillus of Lezoux.[a]. A stamp noted from Carrawburgh and Pudding Pan Rock and on forms Drag. 31R, 37 (on the rim of a stamped bowl of Do(v)eccus i), and Walters 79, 79R and 80. *c.* AD 160–200. From IV. 467 and IV.380: both Per 1, Ph. 3 and II.110: Per 1, Ph. 5, respectively (illustration is of No. 3.182).

3.183 (FRE 33)]MAN on form Drag. 31R. Die as for Nos. 3.180–3.182. IV.444: Per 1, Ph. 3.



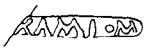
3.184 (SM 657) SACRILLI on form Drag. 33. Die 5a, Sacrillus of Lezoux.[b] A stamp recorded several times from Hadrian's Wall and its hinterland forts. *c.* AD 160–200. III.293: Per 2, Ph. 1.



3.185 (SM 592) SATVRNINIOF on form Drag. 33. Die 1b, Saturninus ii of Lezoux.[b] Noted at Binchester and Catterick and on form 31R. *c.* AD 160–200. III.338: Per 1, Ph. 5.



3.186 (SM 619) SATVRNINI on form Drag. 33. Die 8a, Saturninus ii of Lezoux.[a] A stamp used on forms Drag. 31R, and Walters 79R and 80. There are many examples from Pudding Pan Rock. *c.* AD 160–200. III.338: Per 1, Ph. 5.



3.187 (SM 593) [SA]XAMI·M on form Drag. 31R. Die 1b, Saxamus of Lezoux.[c] A stamp which appears frequently on form Drag. 31R. It has been noted from Piercebridge and from Turret 45a of Hadrian's Wall. *c.* AD 160–200. III.269: Per 1, Ph. 6.



3.188 (NFW 430) SECVNDIANI on form Walters 79 (for details of profile see No. 2.170 above). Die 1a, Secundianus of Lezoux.[c] Also recorded on forms Drag. 31 and 31R. Mid- to late-Antonine. From AREA I or II, unstratified.



3.189–3.190 (SM 631 and SM 641) [SIIC]VNDINIM and SIICV[NDINIM] respectively on two examples of form Walters 79 etc. Die 3a, Secundinus v of Lezoux.[a] Used mainly on plain ware, including forms Walters 79 and 80, and Ludowici Tg, but appearing occasionally on decorated bowls. One of these, from Richborough, has details used in the mid- to late-Antonine period. *c.* AD 150–80. From III.301: Per 1, Ph. 5 and III.314: Per 2, Ph. 1, respectively.

3.191–3.192 (SM 767 and NFW 698)]erv[and Ser[respectively, in retrograde cursive script on two examples of form Drag. 37. Signed in the mould, before firing, among the decoration. A signature of the latest Lezoux Servus, Servus iv,who worked in the mid- to late-Antonine period (Stanfield and Simpson 1958, Pl. 131). *c.* AD 160–90. From III.340 and II.511 respectively. For details of the decoration and illustration see Nos. 2.41 and 2.40 above, respectively.



3.193 (NFW 550) SEVERIANI·MA on form Drag. 38 (for details of profile see No. 2.194 above). Die 2a, Severianus i of Lezoux.[a] Recorded from Pudding Pan Rock and on forms Drag. 31R and Walters 79R. *c.* AD 160–200. II.511: Per 1, Ph. 5 (illustrated).

3.194 (NFW 688)]NI·MA on form Drag. 31. Die as for No. 3.193. II.164: Per 1, Ph. 7.

3.195–3.196 (NFW 598 and NFW 594) SEVERIANI·MA and]RIAN[respectively on two examples of form Walters 79 etc. Die as for No. 3.193. Both examples from II.111: Per 1, Ph. 5.

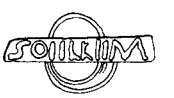


3.197–3.199 (FRE 50, FRE 51 and NFW 552 respectively) SEVERIANI·W on three examples of form Drag. 31 (for profile details of No. 3.199 see No. 2.172 above). Die 3a, Severianus i of Lezoux.[a] A stamp also recorded from Stanwix. *c.* AD 160-200. From IV.380, IV.380: Per 1, Ph. 3, and II.511: Per 1, Ph. 5, respectively (illustration is of No. 3.199).

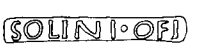
3.200 (NFW 561) SEVERIANI·W on form Drag. 33 (for details of profile see No. 2.139 above). Die as for Nos. 3.197–3.199. From II.511: Per 1, Ph. 5.



3.201 (NFW 305) SIIVIIRVSFII[C] on form Drag. 31R (for details of profile see No. 2.192 above). Die 7a, Severus vii of Rheinzabern[a] and Kräherwald.[b] Also used on forms Drag. 32 and 39, and Walters 80. Late 2nd to first half 3rd century. Joining sherds from II.110 and II.511: both Per 1, Ph. 5.



3.202 (NFW 549) SOIILLIIM on form Drag. 33. Die 2a, Soiellus(?) of Lezoux.[c] This stamp and several similar ones have been attributed to one potter, whose name is probably Soiellus or Soellus. It was used exclusively on form Drag. 33, but his others appear on form Drag. 31R and (once) on form Drag. 27. His site record includes Catterick and Wallsend. *c.* AD 150–80. Residual in II.516.



3.203–3.206 (NFW 570, NFW 567.1, NFW 539 and NFW 567.2 respectively) SOLINI·OFI on four examples of form Drag. 31 (for profile details of No. 3.204 see No. 2.177 above). Die 1a, Solinus of Lezoux.[a] Used on forms Drag. 31R and 45, Walters 79 and 79R, and on decorated ware of the mid- to late-

Antonine period. *c.* AD 160–200. No. 3.203 consists of joining sherds from II.527: Per 1, Ph. 2, and from II.109 and II.511: both Per 1, Ph. 5. Nos. 3.204 and 3.206 both come from II.511: Per 1, Ph. 5, and No. 3.205 consists of joining sherds from II.511, II.525 and II.528: all Per 1, Ph. 5 (illustration is of No. 3.206).





3.207–3.208 (NFW 577 and SM 632)]PICIANI and SVL[PICIANI] respectively on two examples of form Drag. 31. Die 1a, Sulpicianus of Lezoux.[a] A stamp of a potter who apparently only used one die. It occurs at Halton Chesters and on form Drag. 38. Antonine. From II.525 and III.288: both Per 1, Ph. 5, respectively.



3.209–3.210 (FRE 29 and NFW 604) TITVRO·NIS·OF on form Drag. 31 (two examples). Die 1a, Tituro of Lezoux.[a] Both these examples and Nos. 3.211–3.214 below are from a worn die with stops in the Os, which are not present on sharper impressions. The later form of the stamp occurs at Benwell, Chesters and Wallsend. All the examples from the Wroxeter Gutter seem to be from the original die. *c.* AD 170–90. From IV.467: Per 1, Ph. 3 and II.112: Per 1, Ph. 7, respectively (illustration is of No. 3.210).

3.211–3.212 (NFW 444 and NFW 432) TITVRO·NIS·OF on form Drag. 33 (two examples). Die as for Nos. 3.209–3.210. Respectively from II.111: Per 1, Ph. 5, and AREA I or II, unstratified.

3.213–3.214 (SM 642 and NFW 520) TITVR[and TITVRO·NIS[respectively on two examples of form Drag. 38 (for profile details of No. 3.214 see No. 2.195 above). Die as for Nos. 3.209–3.210. From III.314: Per 2, Ph. 1, and unstratified in AREA I or II, respectively (illustration is of No. 3.214).



3.215 (SM 612) TITVR[I·M] on form Drag. 33. Die 2a', Titurus of Lezoux.[c] From a broken die; the original had the letters in an ansate panel. Both versions occur on Hadrian's Wall and were used on form Drag. 18/31R. 2a is also on form Drag. 31. *c.* AD 150–80. III.286: Per 1, Ph. 2.



3.216 (SM 617) TOCCA·FEC· in a circle, on a small bowl. Die 10a of Tocca, who worked at various times at Blickweiler, Rheinzabern, Trier and in the Argonne. The distribution of this stamp suggests that the die was not used in the Argonne, and its consistent appearance on form Drag. 32 makes origin at either Rheinzabern or Trier likely. Late 2nd century. III.342: Per 1, Ph. 2.



3.217 (NFW 601) VA[IAS] on form Drag. 33. Die 1a, Unas(?) of Lezoux.[c] Perhaps illiterate. Six other examples are known, all on form Drag. 33, and all Antonine. One comes from South Shields, suggesting that the die was in use *c.* AD 160. II.112: Per 1, Ph. 7.



3.218–3.219 (NFW 572 and SM 640) VERECVNDI on two examples of form Drag. 33 (for profile details of No. 3.218 see No. 2.142 above). Die 1a, Verecundus iii of Lezoux.[b] Verecundus's stamps occur at sites in the north of Britain founded, or reoccupied, *c.* AD 160. This particular one occurs at Chesters, Malton and South Shields, and on forms Drag. 31R and Walters 79. *c.* AD 160–90. From II.511: Per 1, Ph. 5, and III.258: Per 2, Ph. 1, respectively (illustration is of No. 3.218).



3.220 (NFW 424) VIIRINVS on form Ludowici Tb (for details of profile see No. 2.166 above). Die 5c, Verinus of Rheinzabern.[a] A stamp used on the later Rheinzabern forms Ludowici RSa, RSc and Tg. Late 2nd to first half 3rd century. II.109: Per 1, Ph. 5.



3.221 (SM 622) VER[VSFEC] in guide lines, on form Drag. 31. Probably Die 2c, Verus vi of Rheinzabern,[a] Trier[a] and Westerndorf.[a] The fabric of this piece suggests that it originated at Trier. There is no way of telling whether Verus started his career at Rheinzabern or Trier, but he presumably ended it at Westerndorf. The stamp was used mainly on form Drag. 31R (Sb) and 32. There is one example from Niederbieber. Late 2nd to first half 3rd century. III.269: Per 1, Ph. 6.



3.222–3.223 (FRE 147 and FRE 48) VITALISF and]LISF respectively on two examples of form Drag. 38 or 44. Die 2a, Vitalis vi of Lezoux.[c] The stamp of a minor Central Gaulish potter who made forms Drag. 31, 33 and 38. It occurs at Malton. Some of his other stamps come from Chesterholm (two examples) and Ilkley. *c.* AD 150–80. Both from IV.380: Per 1, Ph. 3 (illustration is of No. 3.222).

Illiterate

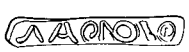
Arranged by region of origin, then in approximate chronological order.

3.224 (FRE 71) IIIILNI on form Drag. 27g, SG. Flavian. IV.381: Per 1, Ph. 2.

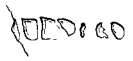


3.225–3.228 (FRE 37, FRE 38, FRE 39 and NFW 530 respectively) OMONO; OMONO;]MONO and OMONO respectively, on four examples of form Drag. 31. CG. Antonine. Nos. 3.225–3.227 come from IV.380: Per 1, Ph. 3, and No. 3.228 comes from AREA I or II, unstratified (illustration is of No. 3.228).

3.229 (FRE 30)]QM[on form Drag. 31R. Die probably as for Nos. 3.224–3.227. IV.467: Per 1, Ph. 3.



3.230 (FRE 42) ΛΑΟΡΙΟΙΟ on form Drag. 31, CG. Almost certainly illiterate, though the potter may have been attempting a name, such as Maior. Antonine. IV.380: Per 1, Ph. 3.



3.231 (SM 633)]IIVA on form Drag. 31, CG. Antonine. III.269: Per 1, Ph. 6.



3.232 (NFW 302) DIOPOIF on form Drag. 33 (for details of profile see No. 2.140 above), CG. Apparently from a broken die. The only other example of the stamp recorded, from Wroxeter, has a longer end to the frame. Antonine. II.110: Per 1, Ph. 5.



3.233(NFW 560) IUISISI on form Drag. 33, CG. Previously noted at Corbridge, also on form Drag. 33. Antonine. II.511: Per 1, Ph. 5.



3.234 (NFW 554) IIIIIVIVI on form Drag. 33. CG. Antonine II.511: Per 1, Ph. 5.



3.235 (SM 658) OSLAXOXX on form Drag. 33, CG. Antonine. III.293: Per 1, Ph. 1.



3.236 (SM 542) IIIVI on form Drag. 33, CG. Antonine. III.269: Per 1, Ph. 6.



3.237 (NFW 299) SOIILKAII retrograde on form Drag. 33, CG. Just possibly a stamp of So(i)ellus, but more likely to be illiterate. Antonine. II.110: Per 1, Ph. 5.



3.238 (NFW 556) CEALICC[·M] on form Drag. 33, CG. Antonine. A complete example of this stamp comes from Chedworth (form unknown). II.511: Per 1, Ph. 5.



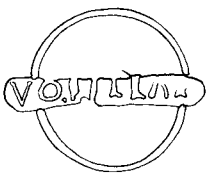
3.239 (NFW 433)]VINS on form Drag. 33, CG. Antonine. From AREA I or II, unstratified.



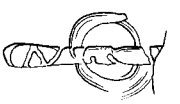
3.240 (NFW 562) AVII on form Drag. 33, CG. Antonine. II.511: Per 1, Ph. 5.



3.241 (SM 616) IIA·IFICI (?) on form Drag. 38, CG. Antonine. III.341: Per 1, Ph. 4.



3.242 (NFW 537) VOPILLM on form Walters 79R, CG. Just possibly from a broken die of Uxopillus, but equally likely to be illiterate. Mid- to late-Antonine. II.110: Per 1, Ph. 5.



3.243 (SM 661) NII[on form Walters 79R, CG. Mid- to late-Antonine. III.293: Per 2, Ph. 1.



3.244 (SM 648) AVAIINX[–] on form Drag. 31. A stamp recorded from the Trier kilns. Most of the other examples noted are on Ludowici form Sa. Late 2nd to first half 3rd century. III.258: Per 2, Ph. 1.



3.245 (SM 667) XXLN·X on form Drag. 31, probably from Trier. Late 2nd to first half 3rd century. III.293: Per. 2, Ph. 1.

Unidentified

Arranged by region of origin, then in approximate chronological order.

3.246 (SM 624)]M on form Drag. 27g, SG. Pre- or early-Flavian. III.286: Per 1, Ph. 2.

3.247 (NFW 687)]SA on form Drag. 31, CG. Antonine. Residual in II.176.



3.248 (SM 750)]CII· on form Drag. 31, CG. Antonine. III.293: Per 2, Ph. 1.

3.249 (NFW 617)]AC. . . on form Drag. 31 or 31R, CG. Antonine. AREA I or II, unstratified.

3.250 (SM 763)]N[on form Drag. 31 or 31R, CG. Antonine. III.221: Per 2, Ph. 1.

3.251 (NFW 695)]A[on form Drag. 31 or 31R, CG. Antonine. II.111: Per 1, Ph. 5.



3.252 (SM 749)]NTV.[on form Drag. 31 or 31R, CG. Antonine. III.314: Per 2, Ph. 1.

3.253 (NFW 686) AA[on form Drag. 31 or 31R, CG. Antonine. II.166: Per 1, Ph. 7.



3.254 (NFW 684) AAI[on form Drag. 33, CG. Just possibly illiterate. Antonine. II.111: Per 1, Ph. 5.

3.255 (NFW 697) NV[(?) on form Drag. 33, CG. Antonine. II.111: Per 1, Ph. 5.

3.256 (SM 761)]I or]F (?) on form Drag. 33, CG. Antonine. III.286: Per 1, Ph. 2.



3.257 (SM 643) CAII[on form Drag. 33, CG. Antonine. III.314: Per 2, Ph. 1.



3.258 (NFW 683) MAI[on rim of form Drag. 37(?), CG. Antonine. II.522: Per 1, Ph. 4.

3.259 (NFW 557) Illegible on form Drag. 38, CG. Antonine. II.511: Per 1, Ph. 5.

3.260 (FRE 53)]S or P[on form Drag. 31R, CG. Mid- to late-Antonine. IV.380: Per 1, Ph. 3.

3.261 (FRE 152)]N[on form Drag. 31R, CG. Mid- to late-Antonine. IV.380: Per 1, Ph. 3.

3.262 (FRE 41)]NI or]MI on form Drag. 31R, CG. Mid- to late-Antonine. IV.380: Per 1, Ph. 3.

3.263 (NFW 619)]M on form Drag. 31R, CG. Mid- to late-Antonine. AREA I or II, unstratified.

3.264 (NFW 422)]VṢ on form Walters 79, CG. Mid- to late-Antonine. II.511: Per 1, Ph. 5.

3.265 (NFW 422)]IM on form Walters 79R, CG. Mid- to late-Antonine. II.109: Per 1, Ph. 5.

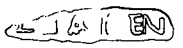


3.266 (SM 754)]FEC(?) on form Drag. 31, EG. Antonine or later. III.258: Per 2, Ph. 1.

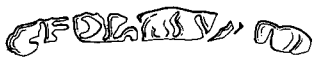


3.267 (SM 757) REG[on form Drag. 31, EG. Antonine or later. III.293: Per 2, Ph. 1.

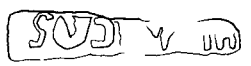
3.268 (NFW 696) Illegible on form Drag. 31, EG. Antonine or later. II.112: Per 1, Ph. 7.



3.269 (SM 664) Ḷ. . . .Λ.ẸN on form Drag. 31 (Sa), EG. Late 2nd to first half 3rd century. III.293: Per 2, Ph. 1.



3.270 (SM 606) ..VṢV..AICEL retrograde on form Drag. 31 (31R-sized, but without rouletting; for profile and further details see No. 2.185 above). In Trier fabric. Perhaps illiterate. Late 2nd to first half 3rd century. III.269: Per 1, Ph. 6.



3.271–3.272 (SM 590 and SM 599) SVC . . . . . on form Drag. 31 (Sa) two examples), in Trier fabric. Late 2nd to first half 3rd century. Both from III.269: Per 1, Ph. 6 (illustration is of No. 3.271).

DUMPS OF UNUSED POTTERY NEAR LONDON BRIDGE

Michael Rhodes

In addition to the dumps of unused samian excavated at New Fresh Wharf, similar groups or collections from the same general locality deserve consideration. One of these appears actually to have belonged to the same quay group as that recently excavated. It comprises a small group of samian vessels and lamps (catalogued on p. 204) apparently discovered in December 1880 (see label on M.O.L. Acc. No. A 23830). They come from the collection of Lord Amherst and were divided between the Guildhall and British Museums at a Sotheby's sale on 17 June, 1921. Whereas the Guildhall Museum objects are stated to be from 'Fresh Wharf', the British Museum items are recorded as having come from 'Billingsgate', the name of the locality. This was probably used in the British Museum registers because it was better known; their character and common history make it almost certain that all these items were found together. They are important not only because of the extreme rarity of the two samian lamps (Nos. 4.5–4.6), but because of their generally complete and unblemished condition. This serves to confirm the impression that a considerable number of the damaged vessels from the excavations (many of which can be reconstructed) were broken as a result of being thrown away, rather than the reverse. The two new and unblemished vessels in the Amherst Collection, are matched by three vessels and a lamp in similar condition from the excavations. They comprise an East Gaulish form 33 of the later 2nd to mid 3rd centuries from III.318, a form 33 by Martius iv of Lezoux, datable to AD 160–85 from II.511 (No. 2.136) and, from the same context, a two handled Lezoux black colour-coat cup (No. 1.197). The lamp (No. 1.218), which comes from II.525, is in a similar fabric. The collections also include two used samian vessels in virtually complete condition, namely a Lezoux form 33, complete if slightly chipped from II.511, and a complete but worn Central Gaulish form 45 from the Amherst Collection.

The remainder is of a different character, being represented by a wide range of information from various sources dating from *c.* 1830 to the present day, and all deriving from a well-defined area in the general vicinity of New Fresh Wharf. These other finds are chiefly important because they show that large quantities of unused samian are a marked characteristic of the Roman bridgehead area, and have no parallel elsewhere in the City. Although the Museum of London collections contain much additional samian, including complete and possibly unused vessels, most are from the Walbrook valley and the more central areas of the settlement; none is represented by a group large enough to be of any particular significance or interest. This body of evidence is best set out under its two main constituents:

London Bridge excavations, c. 1830

A series of important discoveries was made in or about 1830, during the construction of the northern approaches to the New London Bridge. This involved building a road bridge over Thames Street, creating a new road from the Bank to the bridgehead, known as King William Street (see Figure 2, p. 27), and laying a particularly deep sewer down the centre of this road; its course is recorded on a plan by Kelsey and Haywood (1848).

The excavations were closely observed, and produced a large number of Roman and medieval finds (see Kempe 1832; Knight 1834; Herbert n.d., 13–18). Some of the most notable were recovered from waterfront deposits on the New London Bridge site, and are recorded in a series of illustrations by W. H. Brooke. These comprise four large water-colours which form part of the 'Brooke Collection' of *c.* 200 drawings, etchings and letters, now in the library of the Sussex Archaeological Society, and two small ink and wash sketches in the Guildhall Library, City of London (Pr. 361/LON(2)). The latter are accompanied by a sheet of paper bearing a key to the illustrations. Two of the large water-colours are devoted to large sherds of decorated, mostly 1st-century samian. Another depicts a variety of finds including an almost complete Roman lamp and the lion-head spout of a form 45 mortarium. A similar spout (probably the same object) appears in one of the small sketches in the Guildhall Library. Here the significant information is provided by the key, which describes it as a 'Lions head attached to a vessel of the Roman Samian ware found amidst a vast quantity of similar pottery near the S[outh] abutment'. This abutment formed the southern end of the land arch across Thames Street (Knight 1834, 601; see Figure 2, p. 27).

Proceeding northward from the river wall, the sewer trench had penetrated the former river bed, which shelved upwards as it approached Thames Street. It was at this point, beneath the abutment, that the massive 'oak and chestnut' timbers of the southernmost Roman embankment were found, extending from about ten feet below the surface to a depth of more than twenty feet. Knight (*ibid.*, 601–2) confirms the discovery here of a large quantity of samian which he says was at an average depth of about eighteen feet and was associated 'with fragments of Roman amphorae, vases, tazzas, crucibles, lamps, bottles of glass'. This waterfront may have been contemporary with the revetment and the quay found at New Fresh Wharf (Period 1, Phases 3–5). Not only are the structures on roughly the same alignment, but the lion-head mortaria spout in

the Brooke illustrations has been identified by P.-H. Mitard as the commonest Lezoux type, probably in variant *a*, and datable to the late 2nd century. Several identical spouts have been recovered from the New Fresh Wharf excavations (Nos. 2.203, 2.204, 2.205). It is not possible to show that the London Bridge pottery was unused, but the size of the deposit suggests that this was something other than a normal waterfront accumulation.

Evidence for other large samian deposits along the London Bridge approaches is provided by Herbert (n.d., 26) who states that:

'fragments of Roman pottery or earthenware, and other antiquities of the Roman era, were found throughout the whole line of the excavation, as well as beneath St Michael's Church. . . . The samian ware (which was mostly broken) was in such quantities as almost to induce a belief that it must have been made or sold here'.

Many of the samian vessels retained by collectors seem to have come from between St Michael's Church and the corner of Eastcheap (*ibid.*, 31; see Figure 2, p. 27). Kempe (1832, 192) states that the samian from St Michael's bore potters' stamps matching those from Pudding Pan Rock, which suggests that they were of mid-late Antonine date. With regard to samian from near Eastcheap, he reports that:

'as the excavations drew near the line of the street of Eastcheap . . . the fragments of the fine red ware, commonly called Samian, became very plentiful; several mortars of baked whitish clay, of various dimensions, each furnished with a lip, and half an inch in thickness; portions of earthern bottles; handles and bottoms of amphorae of different forms; and party walls, composed of ragstone, of buildings which had evidently aligned with the present street, were discovered. These walls were covered with wood ashes, and about them were found many portions of green moulten glass and of the red samian ware, *discoloured by fire*.'

An illustration of one of the mortars suggests that it was complete when found (*ibid.*, Pl. XLIV, Nos. 2–3). Its form and the presence of trituration grits suggests that it belongs to the mid 1st to early 2nd centuries, although the latter part of the range is probable (P. Tyers, pers. comm.). Kempe concluded that he had discovered the remains of shops, including a bakery, which had been destroyed by fire, although the description of burnt samian in association with molten glass calls to mind the published account of one of the pottery shops at Colchester (Hull 1958, 153–8, Site 127). Kempe believed that the shops had been destroyed during the Boudiccan rebellion, although the mortar suggests that they may have been destroyed in the Hadrianic fire. However, Kempe may have been right as a large quantity of Neronian samian was recovered in *c.* 1920 from the site of 61–66 King William Street, also on the corner with Eastcheap (Marsh 1981, 176 and Figure 11.6; see Figure 2, p. 27), and a concentration of early samian in this locality has been noted by other writers (e.g. R.C.H.M. 1928, 186).

'Regis House', King William Street, 1920

A huge deposit of samian in a Roman building discovered on the nearby Regis House site is now thought to be the remains of samian store which was destroyed in the Hadrianic fire. It was excavated in 1930 by Dunning (1945), originally reported by Waddington (1930, 391–3), and has been recently re-interpreted by Marsh (1981, Appendix I, 221–4). The site is situated on the eastern side of Fish Street Hill, on the line of the road leading from the Roman bridgehead to the Forum (see Figure 2, p. 27). At the south end of the site the wall of a building running north–south for a distance of at least 8.5 metres was cut into the underlying timbers of the Flavian(?) quay. A short length of wall parallel to the first was found *c.* 5.5 metres to the west. Piled against the western side of the long wall and extending over most of the site was a huge dump of burnt building debris up to 1.2 metres thick which contained 'thousands of sherds' of burnt samian (Waddington 1930, 393). A large quantity of this material has survived, including 922 decorated sherds, and has been re-dated to *c.* AD 120–5 (Marsh *ibid.*, 222).

Marsh comments that the position and shape of the building suggest that it was a long narrow warehouse, or store-room attached to a shop, situated end on to the Roman quayside. Similar early structures have been found to the west at Miles Lane (Lambert 1921, 63–72; Miller 1982, Building A; see Figure 2, p. 27). The pottery includes only a dozen or so coarseware vessels, at least two of which are imports, the foot-rings are unworn, and several pieces are fused together, indicating that they were burnt while stacked in piles (*ibid.*).

Several points emerge from all this. It has already been noticed that no other significant groups of unused samian have been recovered elsewhere in London, and all the findings just reviewed, as well as those from New Fresh Wharf, lie within a radius of 80 m of the probable site of the Roman bridge across the Thames (Milne 1982; Merrifield and Sheldon 1974). Outlying finds occur within a radius of 120 m. The northern limit is represented by the corner of Eastcheap and King William Street, the western limit by sherds from recent excavations at Swan Lane (P. Tyers, pers. comm.; for site summary see Richardson 1983, 275–6), and the eastern, by sherds from the Billingsgate Lorry Park excavation of 1982–3 (for site summary, see Richardson 1983, 274; see Figure 2, p. 27). No unused samian was recovered further east on the Customs House site of 1973 (Bird 1974). Even within the inner arc, the large deposits of unused samian appear to be a very localised phenomenon. Despite careful methods of recovery, they

were not found on the Peninsular House site of 1979 (for site summary see Richardson 1981, 44), at Pudding Lane in 1981–2 (Bateman and Milne 1983), or on the western side of Miles Lane in 1979 (Miller 1982; see Figure 2, p. 27).

A further consideration arises from a study, undertaken during the preparation of this report, of samian stamps in deposits of pottery lost *en route* from kiln sites to the consumer (i.e. from wrecks, warehouses, shops etc.). This has revealed that the average numbers of stamps per potter from such deposits are usually significantly higher than would be expected in samian groups derived from other sources (Rhodes forthcoming c). However, the New Fresh Wharf assemblage contains a relatively low number of stamps per potter, showing that the bulk of the samian cannot be derived from damaged cargoes discarded on the quayside. There is a striking contrast between the average number of 2.16 stamps per potter (173 legible stamps; see Figure 80) for the Lezoux samian in and around the quay, and those for the Lezoux shipment group at Pudding Pan Rock (5.84 stamps per potter; 216 known legible stamps; see Smith 1907, 281).

If the bulk of the samian was not derived from damaged cargoes, it must be from nearby shops or warehouses. A study of the decorated samian reveals evidence for batches of pots within the assemblage, which might be expected from a shop or warehouse (p. 139). However, the average number of stamps per potter is again much lower than might be anticipated on the evidence of Lezoux samian from shop deposits of comparable size at Castleford (7.05 stamps per potter; 416 stamps and signatures; information from Brenda Dickinson) and Wroxeter (*c.* 6.65 stamps per potter; 173 stamps; Atkinson 1942, 129 ff. and 138 ff.). It is even markedly less than the composite figure of 3.1 stamps per potter for London sites in general (Marsh 1981, 188). The same is true for the East Gaulish samian, which provides an average of 1.21 stamps per potter for the Trier samian (17 stamps), and 1.31 for the Rheinzabern samian (25 stamps). These may be compared with the composite figure of 1.7 stamps per potter for all varieties of East Gaulish samian from London (*ibid.*), although the comparison is not entirely valid as the Museum of London holds large quantities of material from the earlier East Gaulish factories, not represented at New Fresh Wharf. It cannot be argued, however, that the comparison is invalidated by the absence at New Fresh Wharf of stamped vessels of form Drag. 33, one of the commonest East Gaulish forms. These were stamped by the earlier East Gaulish factories although not from the late second century onwards, which accounts for their absence at New Fresh Wharf (J. Bird, pers. comm.). A re-examination of the Museum of London's samian stamp index (prepared by Geoff Marsh) shows that even when stamps from vessels of form Drag. 33 are excluded, the composite number of East Gaulish stamps per potter in London is scarcely altered (it falls by a statistically insignificant amount to 1.6, based on 132 stamps) and remains notably higher than the figures for the East Gaulish samian from New Fresh Wharf. The numbers of stamps per potter at New Fresh Wharf do not rise significantly when the statistics are based on stamps from vessels with unused footrings. This confirms that the figures are not artificially depressed due to contamination of the unused samian with stamps from used vessels derived from city refuse. Since the figures are too low for a warehouse or shop group which was lost or discarded at one time, we must conclude that the bulk of the material represents breakages, from shops or warehouses, which accumulated over a period of time before being eventually discarded in the quay fill (an alternative explanation must be sought for the complete vessels, see p. 203). This is seemingly confirmed by the long date range covered by the unused pottery.

The evidence is strongly in favour of warehouses as the source of this material as there is no evidence for the existence of retail shops on Roman waterfronts. Where, as was usual, Roman towns were situated upon navigable rivers, shops were almost without exception located centrally along a major road, often near the forum (Wacher 1974, 271; Meiggs 1973, 275). This is particularly true of pottery shops which seem always to have been centrally located, as at Colchester (Hull 1958, Sites 127 and 171), Corbridge (Brassington 1975), and Wroxeter (Atkinson 1942, 129). At both *Aquincum* (Szilágyi 1956, Bild 1; Juhász 1936) and Cosa (Grose 1974, 32), where there were important harbours, the pottery shops also lay in the town centres.

On the other hand, there is ample evidence from both London and elsewhere for the presence of warehouses on the waterfront, and there is the direct evidence from Regis House that in one of these several pieces of samian were found fused together by fire while stacked in piles. Several more warehouses have been found on other sites in the bridgehead area in recent years, directly north of and facing the Roman waterfront at Miles and Pudding Lanes (Bateman and Milne 1983). This compares with evidence from Gauting (*Bratananium*) in Germany, where two waterfront pottery depots have been identified, one containing large numbers of unused flagons and some statuettes, another containing unused samian (Ulbert 1966, 82), while at Trinquetaille, near Arles, a considerable amount of unused samian has been found near the remains of the Roman harbour, adjoined by warehouses (Grenier 1934, 498; Huart 1875, 599–60; Constans 1921, 146–7).

There may also be a further point of comparison between these places and London. One of the warehouses(?) at Gauting stood close to the Würm bridge and to an important cross-roads, while Arles was an essential point of transfer between the Mediterranean and the Rhône. At London, the warehouses were

similarly placed at a vital distribution point, where goods could either be sent further upstream along the Thames, or by road directly from the nearby bridgehead to North Kent, the Midlands and the North. For either purpose, the provision of warehouses as a depot for goods awaiting further distribution would be an essential part of the process, just as at Ostia goods destined for Rome were held in warehouses on the waterfront, while small depots for Ostia's own supplies were scattered throughout the town (Meiggs 1973, 276–7).

London's role in the supply of samian to the Province

The unusually large quantities of samian recovered from London have for many years led to speculation that the city may have played a special role in its redistribution. Nonetheless, London has produced large quantities of all types of pottery, and it is only by comparing the relative quantities of samian against other varieties that its special position may be demonstrated. Recent statistical studies confirm that in 1st- and early 2nd-century London, samian formed a high proportion of the pottery, being the largest single fabric type when measured in EVES (see Figure 86).

The figures show that used samian forms a higher proportion of pottery on sites near the waterfront and the forum when compared with other city sites. Although no statistics are available, the same pattern may be observed in foreshore deposits on the Swan Lane and Billingsgate Lorry Park sites mentioned above, and on the Public Cleansing Depot site of 1959 (M.O.L. Reg. No. ER 546; for site details see Merrifield 1965, Site 262) which produced enormous quantities of Flavian and Hadrianic samian (used and water-worn). This could simply be an indication of the relative prosperity of these parts of the city. It could also reflect the use of samian by pottery merchants and other international traders, who having obtained samian cheaply abroad, might use it for a variety of purposes usually reserved for coarse-wares.

Unfortunately there are at present virtually no comparable statistics from non-London sites. We may however contrast the London figures with those from Chelmsford, *Caesaromagus* (see Going forthcoming) which show that in the 1st century, samian was several times more common in London. The difference between 10.7% EVES in the pre-Boudiccan levels on the GPO site of 1975 (which is remote from the waterfront where special conditions may have prevailed) and 1.42% EVES in pre-Boudiccan assemblages at Chelmsford is particularly striking. However, on the evidence so far available from London, there seems to be a tendency towards convergence during the 2nd century. The figure of 7.43% within Hadrianic fire deposits on the GPO site is not a great deal more than 4.69% for deposits of *c.* AD 125–160/70 at Chelmsford, and the Chelmsford figures continue to rise, reaching a peak of 9.6 EVES during the period AD 160/75 to 200/10. Although these figures do not prove that London was a major centre of re-distribution during the 1st century, they are the sort of figures we might expect if it were. The relatively high figures during the 1st century undoubtedly reflect London's importance as a port during this period.

The question of how samian was distributed throughout the province, and when other ports of entry may have been involved, would call for a comprehensive study of samian stamps from British sites, many of which remain unpublished. So far as London's role in this trade is concerned, however, some further comment seems appropriate here, and particularly on the coincidence and non-coincidence, with samian finds, of local wares originating from remote parts of Britain. These may throw light on the distribution of samian since it was probably not viable to trade coarse-wares over long distances unless in association with the more profitable samian or fine-wares (Peacock 1982, 156).

An example of this is provided by one of the most

FIGURE 86 Samian as a proportion of all pottery from various London sites.

Site	Location	Date	Percentage group by EVES	Percentage group by weight	Source of information
GPO site 1975, Phases 1–3	North-West of City	pre-Boudiccan	10.7	1.3	Chadburn and Tyers (1984, 36)
Birchin Lane 1983	Near the Forum	"	26.8	7.8	" " " (1984, 34)
Lime Street 1983	"	"	20.7	2.4	" " " (1984, 34)
Fenchurch Street 1983	"	AD 50–65	24.0	3.7	" " " (1984, 34)
Billingsgate Buildings 1974	Waterfront by London Bridge	late first-early second century	*c.* 28	?	Green (1980, 82)
GPO Site 1975, fire deposit	North-West of City	Hadrianic	7.43	3.2	P. Tyers, pers comm

important Romano-British pottery industries of the 1st century, situated just north of London on Watling Street between Brockley Hill and *Verulamium*. From *c.* AD 65, these kilns supplied *Verulamium* and London with flagons and coarse-wares, and their mortaria are found over much of the country. Indeed, the bulk of 1st-century mortaria in North Kent, the Midlands and the North are from this source (Fulford 1977b, 302; 1982, 411 *ff.*; for distribution map of the products of one potter, see Castle 1972, Figure 7). Mortaria seem often to have been retailed alongside samian, for example at Wroxeter (Atkinson 1942, 129), Corbridge (Brassington 1975, 62–75) and Castleford (J. Keighley, pers. comm.), and it is notable that these *Verulamium* region mortaria are not generally found in areas which are unlikely to have obtained supplied of imported wares from London. Thus they are scarce in south-east Kent and in the South, regions which would have been served by harbours established primarily to supply the fleet (Cleere 1977): there is no clear evidence of samian importation at *Clausentum* in the form of unused breakages (R. Thompson, pers. comm.), while Dannell (1977, 231) has suggested that pottery was imported in the Chichester area. Nor do the *Verulamium* region mortaria appear to have been traded along the East coast, perhaps because there was a pottery base in or around Colchester in the 1st and early 2nd centuries.

This eastern supply route seems to have persisted through the 2nd century (Fulford 1977b, 304; 1982, 411 *ff.*), and may have been responsible for the samian and Colchester mortaria found in the pottery shop at Castleford, although there is evidence at Corbridge (Stanfield and Simpson 1958, xlix) and York (Dickinson and Hartley 1971, 130) to suggest that the northern military zone was supplied direct from the continent, a trade link between the Rhineland and York being confirmed by inscriptions (Frere 1967, 301). The northern military market may also have been supplied from the West coast from the end of the 1st century, as is suggested by the distribution of 'Severn Valley ware' (Carrington 1977) and BB1 pottery (Fulford 1977b, 304).

By this date however, and doubtless in response to the growing needs of the northern military zone, the relative status of the *Verulamium* region mortarium industry had changed. Mortaria are especially heavy and bulky, and would have been particularly expensive to transport. It is therefore remarkable that not until the early 2nd century was an alternative source of supply for the northern market provided by new mortaria kilns at Mancetter and Hartshill (Hartley 1973, 42 and Figure 1). Their location is especially significant because it emphasises the importance of an extensive and well organised road network to the success of the mortarium trade. However, it is interesting to note that with the rise of the Mancetter and Hartshill industries, the *Verulamium* region mortaria lost their position in the northern market from the early 2nd century, a period which saw a sharp decline in the amount of samian entering the country (Marsh 1981, Figures 11.6 and 11.7). Taken together, these developments suggest that in the 1st century much of the Midlands and North were supplied by London with samian (together with mortaria whose carriage costs were thus reduced), but that when samian became difficult to obtain, *Verulamium* region mortaria became so expensive or scarce in consequence that the establishment of new coarse-ware industries became not only economically viable, but essential.

There is little to indicate to what extent London regained its earlier role in samian supply when imports recovered in the Antonine period. It would have continued to supply *Verulamium* and the Thames basin, and it is possible that supplies for the Midlands were also channelled through the capital. A re-examination of the petrology of the hone hoard found in the Wroxeter forum gutter, undertaken during the preparation of this report, shows that they belong to a newly identified and very large-scale Kentish Rag industry, other instances of which were found at New Fresh Wharf, where many have a fresh appearance (pp. 240–3). The association of both the London and Wroxeter finds with quantities of unused samian raises the questions whether the Wroxeter hones were not sold as a sideline by a samian merchant, and whether both products had not been brought together along Watling Street from London.

By the end of the Antonine period, samian supplies to Britain had again greatly declined, and it is probable that some of the pottery merchants based in London had gone out of business. This may assist in providing an explanation for the presence of unused and unblemished pots in the quay fill, some of which appear (on current dating) to have been at least thirty years old when they were discarded. If the quay was constructed as part of a wider re-development, as suggested by the building materials (see pp. 247–8), it is not inconceivable that this might have involved the clearance of disused pottery warehouses to the north of the site. It is perhaps unlikely that a fully operational warehouse would have contained large quantities of old stock, although detailed work on warehouse and related assemblages is required to investigate this point. The same problem has emerged at Gauting, where numerous fragments of burnt late South Gaulish bowls by the Natalis group (probably Hadrianic; information from Brenda Dickinson) have been recovered from a samian depot which was apparently destroyed by fire during the second half of the 2nd century (Ulbert 1966, 84–7); another possibility is that they could have come from an earlier warehouse which stood on the same spot. The Regis House deposit also contained earlier samian, although relatively few fragments were substantially earlier than the main warehouse group (G. Marsh, pers. comm.).

Samian from the Amherst Collection

VESSELS

(not illustrated)

4.1 (Brit. Mus. Acc. No. 1921.7–22.2) Form Drag. 30, Lezoux, stamped MERCATOR.M, *c.* AD 170–95. Unused and unblemished; published by Stanfield and Simpson (1958, 250 and Pl. 145, No. 9), and *cf.* Nos. 3.124–3.128.

4.2 (M.O.L. Acc. No. A.23830) Form Drag. 38, Lezoux, stamped CLEMEN̂T[I, *c.* AD 160–90, unused and unblemished, *cf.* No. 3.38.

4.3 (Brit. Mus. Acc. No. 1921.7–22.3) Form Drag. 45, CG, late Antonine, complete, well worn, but quite undamaged apart from a superficial chip to the rim (identification by Catherine Johns; see also Johns 1971, Pl. 11b).

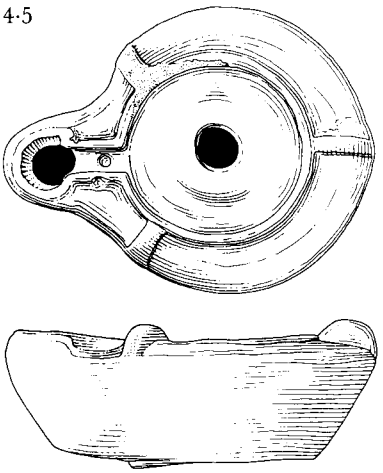
4.4 (M.O.L. Acc. No. A.23831) Form Drag. 46, EG, Antonine, unused but slightly chipped (identified by G. Marsh).

LAMPS

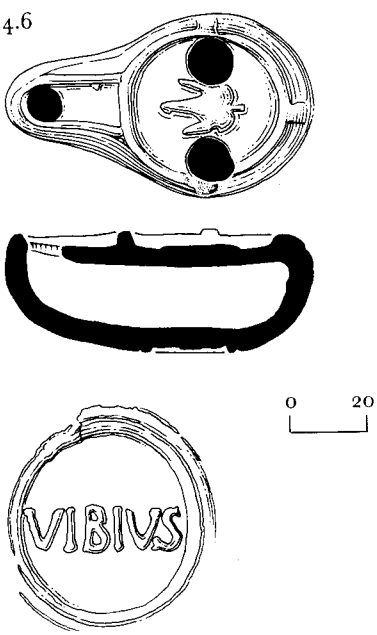
4.5 (M.O.L. Acc. No. A.23833) *Firmalampe*, Lezoux, unused and unblemished apart from superficial chip. F. Grew comments as follows: 'Loeschcke Type X, with a prominent rib around the discus and nozzle. The moulding, however, is poor and it exhibits considerable evidence of knife-trimming. There are three unperforated lugs on the shoulder (one broken off), and a large filling-hole in the centre of the discus, but no handle. In the channel leading to the nozzle is a mark caused by an air-hole on the exemplar from which the lamp was copied; but in this instance, the air hole has not been pierced. On the base, in a circular recess framed by two grooves, is OPTATI in relief. Optatus is not included by Bailey (1982) in his catalogue of Italian lamp-makers, but Loeschcke (1919, 297) lists several of his lamps from the German *limes* and the Central European provinces, dating his work to the 2nd century. The present example is probably mid-Antonine (J. Bird, pers. comm.).'

4.6 (M.O.L. Acc. No. A.23834) *Firmalampe*, Lezoux, probably unused. F. Grew comments: 'In this unusual variant of Loeschcke's type X, the raised rib continues in a complete circle around the discus and, in the channel leading to the nozzle, is absolutely straight, not flaring at the end. The lamp has no handle, but three unpierced lugs on the shoulder (one broken) and two large filling-holes, one on either side of a moulding which Joanna Bird identifies as an ivy leaf. Although much later in date (probably mid-Antonine), she compares it with a motif used by the Neronian SG potter, Senecio, towards the base of his form 29s. On the base, in a circular recess framed by two grooves, is the name VIBIUS, in relief. The original Vibius was a north Italian lamp-maker (Bailey 1982, 102), but the name also occurs on a Lezoux, black colour-coated lamp from the New Fresh Wharf excavations (No. 1.218, above).'

4.5



4.6



CERAMIC FIGURINES

Frank Jenkins

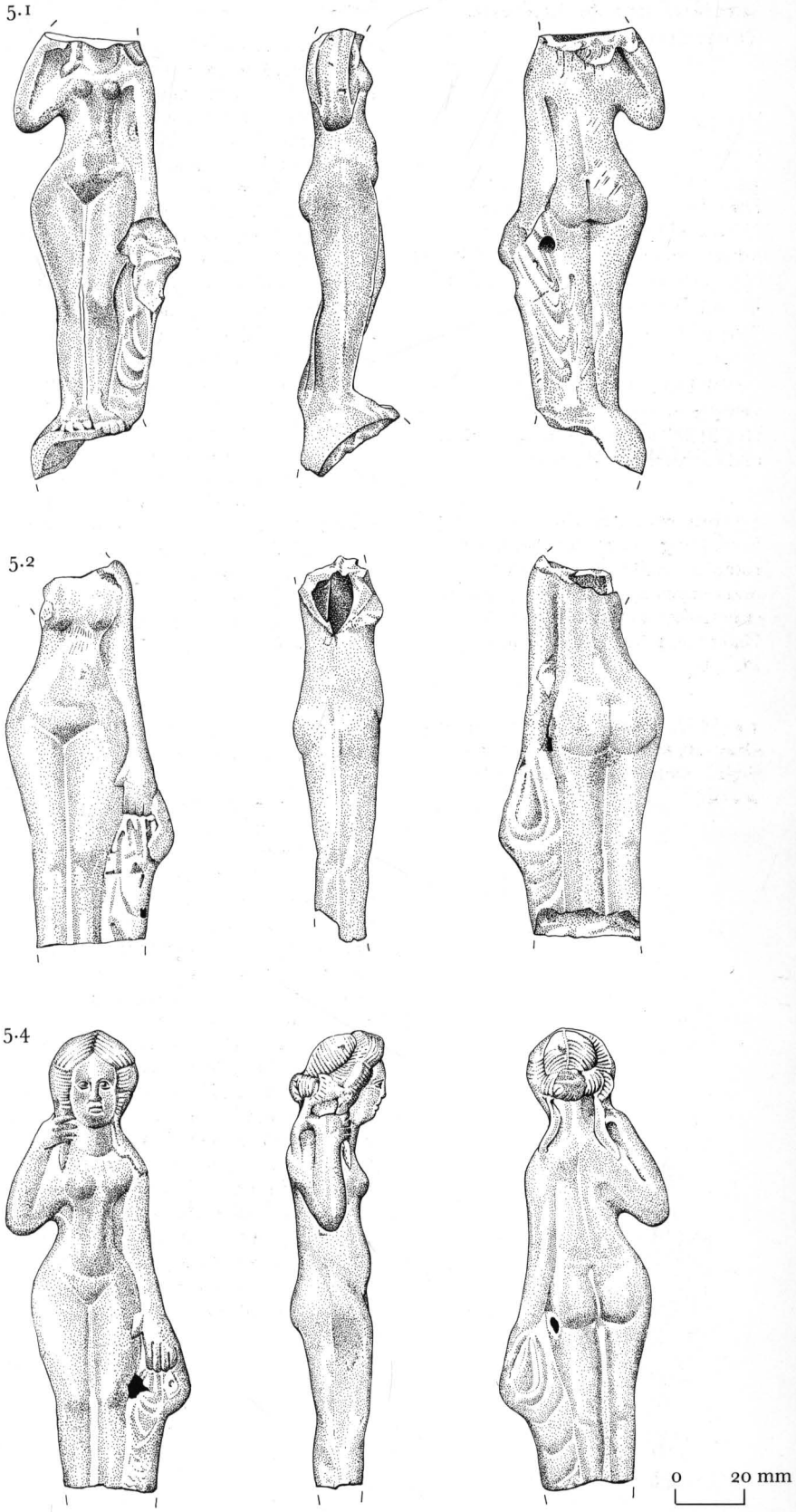
The twelve fragments of figurine described here belong to a class of statuette known to have been produced at various *officinae* in Central Gaul during the Trajanic-Antonine period (De Laet 1950). They were manufactured from white clay in moulds, and were evidently mass-produced to meet the increasing demand for a cheap substitute for the more expensive *ex votos* presented to the gods at temples and household shrines, and with burials.

One half of the figurines are of Venus, a type which unfortunately is not closely dated, here or elsewhere. A dozen complete examples had evidently reached *Bratananium* (Gauting, Bavaria) prior to a fire which devastated part of the town, destroying the depot of a potter in which the statuettes were found with many complete pots. On the evidence of the coinage, the disaster seems to have occurred in the reign of Hadrian (Kellner 1971, 53, Abbs. 17 and 48). Evidence from Britain suggests that these statuettes arrived in this country during the Hadrianic-Antonine period: see Jenkins (1958).

Also present are two fragments of '*dea nutrix*' figurines. In both cases the basketry is indicated by impressed lines in a herring-bone pattern – a typical feature of '*dea nutrix*' clay figurines from Britain, of which about fifty are now known.

Statuettes of this type, with the rather schematic basketry, were a speciality of the clay statuette modellers who worked in the *officinae* of Central Gaul along the banks of the Allier and its tributaries, where the white clay used for this kind of statuette occurs naturally.

Over fifty examples of clay Venus statuettes have been found within the Roman city of London and its immediate environs, including Southwark. This strongly suggests that the cult had become popular among certain sections of the community during the 2nd century AD. At least seven *dea nutrix* statuettes have also been found, and in time perhaps further examples will indicate a similar



popularity. For a discussion of the religious significance of both these types see Jenkins (1958). There the appended catalogue and distribution in Britain are out of date, but the general conclusions still appear to be valid.

Venus Figurines

5.1 (NFW 348) Statuette of Venus, now lacking the head and most of the plinth. The arrangement of the folds on the front and the back of the *tunica* is very closely paralleled on several statuettes from the Central Gaulish *officinae*, e.g. Toulon-sur-Allier and St Pourçain-sur-Besbre, see Rouvier-Jeanlin (1972, 115–7, Nos. 90–98). The style is that of IOPPILLO (Ioppillus), one of whose Venus statuettes has been found at *Verulamium* (Wheeler and Wheeler 1936, 203 and Pl. LXI, No. 3). Another similarity is that the latter has eight tresses of hair falling over the back of the shoulders, slight traces of which may be seen on the New Fresh Wharf example. II.112: Per. 1, Ph. 7 (see p. **15**).

5.2 (NFW 253) Statuette of Venus lacking the head, right arm, feet and plinth. The folds of the *tunica* at the back are very similar in arrangement to those on an example from St Pourçain-sur-Besbre, see Rouvier-Jeanlin (1972, No. 70). II.109: Per. 1, Ph. 5.

5.3 (SM 51) Small fragment from the rear half of a Venus statuette. All that survives is the back of the left forearm, the wrist held close against the left thigh, and the left buttock. The small hole (*c.* 2 mm dia.) between the wrist and the buttock was made by piercing the clay with a circular rod from the outer to inner surface. The hole functioned as a vent to allow the expanding gases within the hollow interior of the statuette to escape during the kiln firing process, thus preventing disintegration at high temperatures. The clay is greyish, rather than white, which suggests that the statuettes may have been made in the Gironde region around the middle of the 2nd century. III.195: Per. 2. Ph. 3.

5.4 (NFW 461) Statuette of Venus, now lacking the feet and the small, hollow domed plinth on which it was mounted. Although it displays the naivety in presentation common to the whole series of this type, it is certainly of better quality than many. The modeller has made some attempt to avoid a stiffness in the pose; for example the spinal column, which is indicated by a groove, has a slight curvature to the left, and the consequent movement of the shoulders is followed by the way the wayward tresses lie on the shoulders at the back. As usual with this type, the left hand is much larger than the right and the left arm is disproportionately longer.

The face is framed by the hair which is arranged in deep waves with a central parting, rolled up to encircle the head, and secured in a small bun at the nape of the neck. Wayward tresses hang down over the front and back of the shoulders.

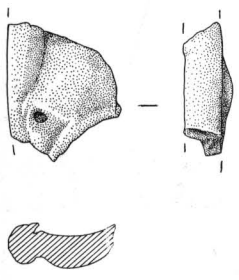
This statuette is closely similar to an example found at St Pourçain-sur-Besbre in Central Gaul, where the *officina* produced clay statuettes of identical type. This is demonstrated by a fragment of mould bearing the name SIIXTVS SIICT (*Sextus Sect. . .*), in which the folds on the back of the *tunica* held by the goddess correspond exactly with the folds on this example, see Rouvier-Jeanlin (1972, Nos. 70 and 135: St Germain-en-Laye Museum Inv. Nos. 28012 and 28162 respectively). AREA I and II, unstratified (see p. **15**).

5.5 (NFW 462) Fragment of Venus statuette, showing the lower part of the legs and *tunica*. The feet are missing. AREA I and II, unstratified.

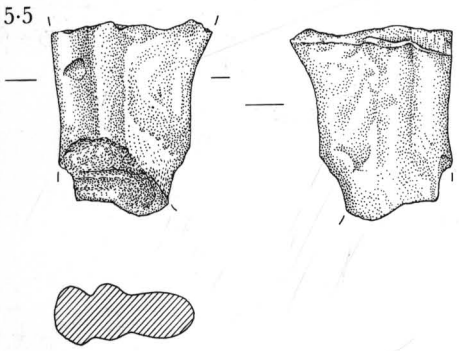
5.6 (NFW 531) Fragment of Venus statuette. All that survives are the legs from the knees to the feet. The lower part of the *tunica* normally held by the goddess hangs by the left leg. The deep-moulded, V-shaped folds on the front of the garment were evidently blurred by subsequent smoothing of the surface while the clay was still plastic. The folds are fairly well moulded on the back, and the edging of the sleeve of the garment may be seen on the top.

The surface of the statuette does not appear to have been carefully burnished, for it bears traces of rough smoothing either by the potter's fingers, or perhaps by a cloth. The front half of the left leg, the *tunica* and a small part of the right leg bear an orange-buff pigmentation. If this is not staining due to contact with the soil in which the statuette was found, it is possible that the statuette was originally painted. The practise of colouring clay statuettes of Romano-Gaulish origin is well known, and shows that the native potters followed the conventions of decorating stone sculpture developed much earlier by the Greeks and later adopted by the Romans. AREA I and II, unstratified.

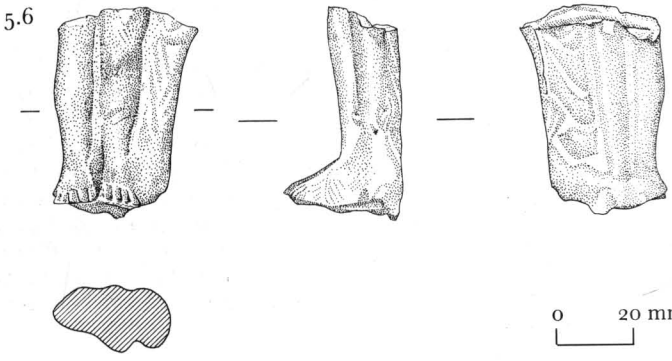
5.3



5.5



5.6



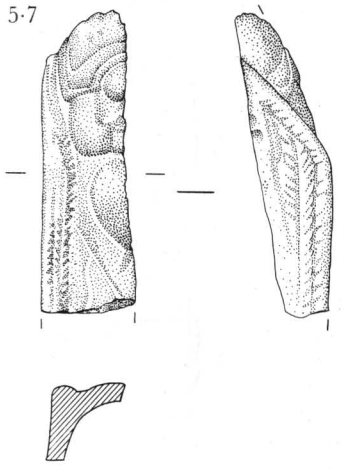
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'Dea Nutrix' Figurines

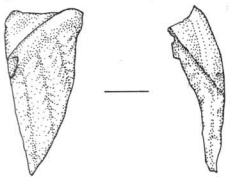
5.7 (NFW 284) Fragment of a statuette of a matron seated in a basket chair suckling either one or two infants (not enough survives to clarify this point). The fragment comes from the front of the right side of the statuette and shows the arm of the chair, the right arm of the matron, the back of the head of the infant (which was held to the right breast), and a portion of the skirt of the robe worn by the matron. II.166: Per. 1, Ph. 7.

5.8 (NFW 389) Fragment of a statuette similar to No. 5.7. It comes from the left side of the basket chair showing the rounded top. II.511: Per. 1, Ph. 5.

5.7



5.8



Other Types

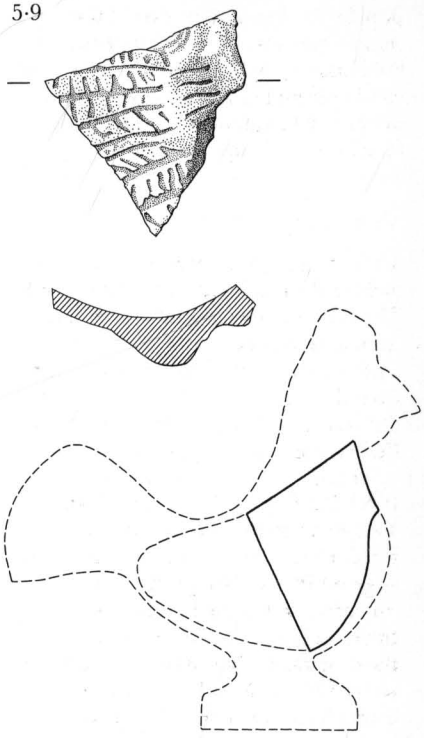
5.9 (SM 342) Fragment of statuette in a hard-fired white clay. The outer surface is decorated with deeply-impressed, short, oblique lines, arranged on either side of longer, similarly impressed lines to form bands of herringbone pattern. The overall shape of the fragment makes it virtually certain that these impressions are not a stylised representation of basketry from the chair of a *dea nutrix* statuette. However, similar bands of impressed herringbone patterns were used to represent the wing feathers of birds such as cockerels, doves, pigeons and peacocks. It is therefore suggested that the fragment may come from the right hand side of a bird statuette, the bulge being at the shoulder, to the left of which are the stylised wing feathers. To the right are the four deeply incised lines and traces of plain mouldings which are all that survive of the feathers of the bird's neck. The positions of these mouldings suggest that the bird was portrayed standing with its head erect. Similar but not identical examples have been found at Amiens (Somme) (Ashmolean Museum Inv. No. 243), Vichy (Allier), and Clermont Ferrand (Puy de Dome) Musée des Antiquités Nationales, St Germain-en-Laye, Inv. Nos. 25477 and 1674 respectively).

The presence of a joint in the form of a crack in the thicker part of the fragment, at the base of the neck, shows that the plastic clay was pressed into the mould in two stages at this point.

The statuette is evidently Central Gaulish and may be dated to the Trajanic-Antonine period. III.342: Per. 1, Ph. 2.

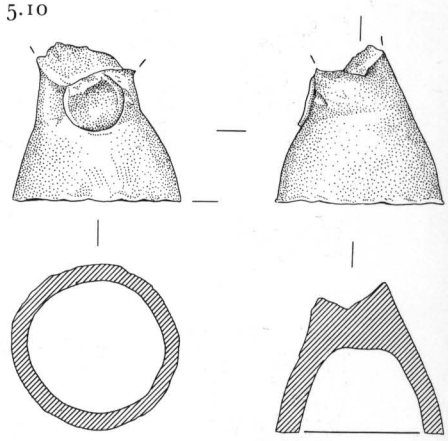
5.10 (NFW 388) Small, hollow domed plinth, with a flat disc attached to the front, and a painted band around the lower edge. Plinths of this type with a disc are sometimes surmounted by a bird such as a cockerel, dove or hen. In this case, however, there are no signs of the moulded claws, and a pronounced thickening of the clay at the fracture suggests that the plinth supported a human bust. Statuettes of this variety, which depicted various unknown persons, are termed 'portrait busts' and were made in the *officinae* of Central Gaul. The small disc attached to the front is a typical feature.

5.9

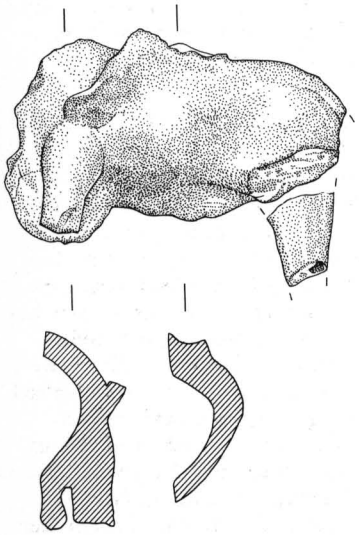


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5.10

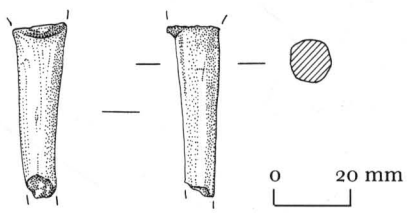


The decoration of clay statuettes with pigments is discussed briefly above (see No. 5.6). For examples of portrait busts with this type of plinth and disc attachment see Wilson (1965, Pl. XVI, No. 4) and Kindersley (1922, Pl. V, Figures 1, 2 and 3). II.511: Per. 1, Ph. 5.



5.11 (NFW 279) Fragment of moulded statuette in a fine, white pipe-clay, from the left side of the body of a quadruped, retaining the stump of the foreleg. The animal is not a horse for there are no traces of a mane, and there is a pronounced dew-lap which hangs down from the throat of the animal and strongly suggests that it is a bull. Other features support this identification.

Attached to the back is the stump of some object, and there is an S-shaped moulding on the shoulder. In its complete state, therefore, this statuette would be closely similar, if not identical, to a statuette of a bull moulded in fine white pipe-clay, found at Chantenay in the commune of St Imbert (Nièvre), which is now in the museum at Moulins (Allier), see Rouvier-Jeanlin (1972, No. 1031). This statuette has a small vase-like object, having an ogee profile, in the same position as the stump of the broken-off object on the New Fresh Wharf example. The S-shaped moulding on the shoulder of the latter also occurs on the Chantenay example which is more complete, and shows that there were two such mouldings on each side of the bull, the one on the flank being in the form of a retrograde S. The size of the Chantenay statuette (height 85 mm, length 100 mm) is comparable with the example from New Fresh Wharf, and both may have been produced in the same mould. Although no other parallels are known there is every reason for ascribing them to one of the *officinae* situated in the Allier region of Central Gaul which specialised in the production of statuettes in fine white pipe-clay by the mould technique during the 2nd century. II.166: Per. 1, Ph. 7.



5.12 (SM 457) The upper part of the left fore-leg from a statuette of a quadruped. As the leg is rather too slender for a bull, it probably belongs to a horse. In its complete state the statuette was probably comparable with an example found at Banassac (Lozère) (Musée des Antiquités, St Germain-en-Laye, Inv. No. 19611), which is recorded as having been found in the habitation and kiln of a potter. The clay is white and well fired, and is characteristic of the fabrics of Central Gaul. III.222: Per. 2, Ph. 3.

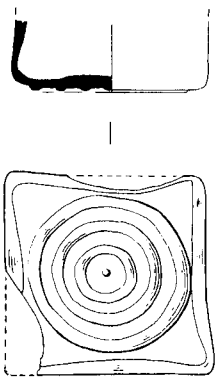
GLASS

J. D. Shepherd

The glass is best discussed as two groups – a small, but apparently quite homogeneous group from the early foreshore (Period 1, Phase 2) datable to the Hadrianic period, with some intrusive material of the late 2nd to early 3rd centuries (p. 88), and a large, but much more disparate group associated with the dispersed fill of the early to mid 3rd-century quay (Period 1, Phases 5–7; Period 2, Phases 1–3). An Archive report, containing a full catalogue, may be consulted on request; the aim of the present section is to describe in detail only the more unusual or important sherds, to summarise the main characteristics of the remainder and to point out their relevance to the interpretation of the site.

Glass from Period 1, Phase 2

In addition to the illustrated sherds (Nos. 6.1–6.3), this group contains the only fragment of coloured glass from the site (part of an amber bowl or flask) and several fragments from cylindrical storage bottles (Isings 1957, form 51). Since coloured glass was popular in the 1st century but rare in the 2nd, its presence here is appropriate, as is that of another typically late 1st- or early 2nd-century vessel, a ribbed globular flagon or jar (Isings 1957, forms 52 or 67c; Price 1978, 74). There is a single sherd of window-glass.



6.1 (SM 134.1) Square storage bottle. Mould-blown. Base decorated in relief with three concentric circles and a faint central dot (Shepherd 1978, 14, type III.3). Blue, self-coloured. III.286.



6.2 (SM 140) Bowl. Blown. Thick base with pontil mark. Green, self-coloured glass with many air bubbles. A late 1st- or 2nd-century type. III.286.



6.3 (SM 558.1) Bowl or beaker. Blown. Rim folded inwards and outsplayed. Dull green, self-coloured. A 2nd-century type. III.286.

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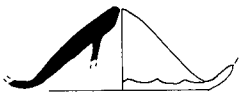
Period 1, Phases 5–7; Period 2, Phases 1–3

Of the three vessel fragments securely stratified in the quay infilling (Period 1, Phase 5) only the beaker (No. 6.4) can be securely identified, but this is a vessel of some interest. It is a type which was to become especially common in the 4th century and ultimately was to develop into the cone beaker of Saxon Europe. Here must be one of its earliest occurrences.

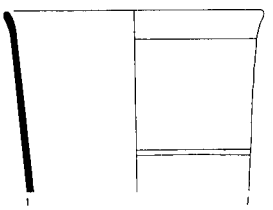
A much larger number of sherds were found in the disturbed upper levels of the quay and in the deposits overlying it (Period 1, Phase 7; Period 2, Phases 1–3). Most are probably contemporary with the pottery, belonging to the late 2nd to mid 3rd centuries. Of these the most diagnostic are fragments from four 'Airlie' cups (II.102; II.136; II.166; III.220; none illustrated), a distinctive and standardised form with double-coil base-ring which seems to have been manufactured only in the period *c.* AD 160–250 (Isings 1957, form 85b; Charlesworth 1959, 44–6). A few vessels, including the wheel-cut beaker (No. 6.5) and the trailed flask (No. 6.9), are clearly earlier, whereas others, notably the bowl (No. 6.8), which belongs to a well-known 3rd- or 4th-century series decorated with wheel-cut and incised figurative scenes (Fremersdorf 1967), are probably later. Other sherds, such as plain bowl bases, flagon handles and parts of storage bottles (all of which, where this can be determined, appear to be straight-sided, rather than cylindrical), are not themselves susceptible to close dating and are not described further, since the group does not have sufficient integrity to provide reliable evidence about their date or function.

Window-glass, all of the matt-glossy variety, was found in some quantity, although nowhere did more than one edge survive. Window-glass is very sparse on 1st-century sites in London, but became increasingly common in the 2nd and 3rd centuries (F. Grew, Archive Report: *Glass from first and second-century contexts from Pudding Lane* Museum of London, 1983). The most important individual find is the gold-in-glass bead (No. 6.11). Such beads are rare in Britain – this is the first example from London – and Boon (1977) has shown that they belong to two clearly defined chronological groups: one of the

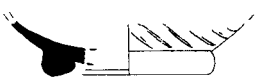
Antonine-Severan period (appropriate here), the other of the late 3rd and 4th centuries. The beads are not found in Italy, Spain, Gaul or Germany before the 4th century, and appear to have been imported from the Euxine, around the Upper Danube and the Black Sea.



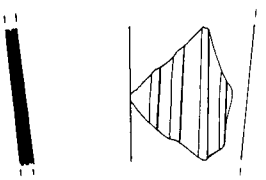
6.4 (NFW 364) Base of tall conical beaker (Isings 1957, form 106). Blown, with high pointed 'kick' and rough pontil mark. Dull green self-coloured glass with many air-bubbles. II.525: Per. 1, Ph. 5.



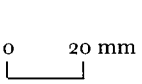
6.5 (NFW 359) Beaker (Isings 1957, form 34). Blown. Exterior ground and polished; decorated with nine closely-grouped horizontal wheel-cut lines. Colourless. II.112: Per. 1, Ph. 7.

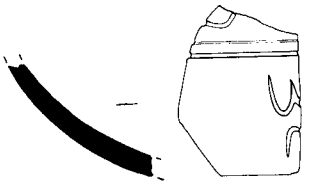


6.6 (NFW 71) Bowl or beaker. Mould-blown and reinflated, with applied solid base-ring; decorated with low-relief diagonal ribbing. Colourless, with greenish-blue tinge. II.166: Per. 1, Ph. 7.

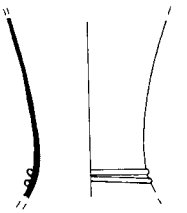


6.7 (NFW 353) Beaker. Mould-blown and reinflated; decorated with faint vertical ribbing. Green, self-coloured. II.136: Per. 1, Ph. 7.

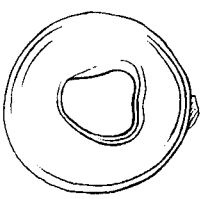


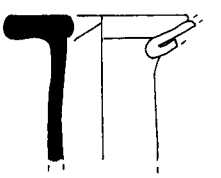


6.8 (NFW 363) Two fragments from the side of possibly the same bowl (Isings 1957, form 116b). One is decorated with a horizontal wheel-cut line with one incised circular element above and two below, the other with an incised zig-zag line. Blown. Colourless. II.112: Per. 1, Ph. 7.

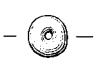


6.9 (NFW 362) Flask. Blown, decorated with two applied colourless trails. Thick colourless glass. II.112: Per. 1, Ph. 7.





6.10 (SM 141) Bottle. Blown, with very poorly made irregular rim. Green-blue, self-coloured. III.258: Per. 2, Ph. 1.



6.11 (SM 189) Bead. Gold in colourless glass. III.269: Per. 1, Ph. 6 (see also p. **16**).

LEATHER OBJECTS

Michael Rhodes

The leather objects are of considerable importance because they include pieces of waste from garments which were cut and torn up to salvage the leather. These provide a variety of constructional details which are of exceptional interest in view of the extreme rarity of Roman leather clothing. Not one garment has been identified amongst all the leatherwork from Valkenburg (Groenman-van Waateringe 1967, 211), and although over one thousand fragments of leather clothing have been reported from *Vindonissa* (Gansser-Burckhardt 1942, 121) only a few have been described in print, and serious doubts have been raised over their identification as items of clothing (Groenman-van Waateringe 1975, 80–81). Although mentioned by the latin writers, items of leather clothing other than cloaks are also rarely depicted on sculptures. This may be because they were primarily worn in the Northern provinces, where waterproof materials would have been more popular than in the Mediterranean, or because they were often closely fitted to the body, whereas traditional Roman dress, worn on formal occasions, was loosely draped.

The majority of identifiable clothing fragments from New Fresh Wharf seem to be from cattle-hide jackets (Nos. 7.1, 7.5–7.10). Other items may belong with them, namely a possible sleeve (No. 7.10), a fragment of edge-binding (Archive Report No. 7.19), other fragments of hems and seams, and perhaps some of the other reinforcement patches. On the evidence of the shoulder fragments, at least four garments are represented. Although leather jackets have been recovered from a number of other sites, New Fresh Wharf alone provides evidence of jackets with external reinforcement patches. It is tempting to interpret them as military garments, particularly in view of the inscription on one of the shoulders (No. 7.7).

The identification of one leather fragment as part of a pair of breeches is of particular interest (No. 7.15). Prior to the end of the 2nd century, trousers and breeches were a standard item of dress in the barbarian North, including Britain, although they were ridiculed by the latin writers (see M. Valeri Martialis *Epigrammaton* XI, XXI). Despite this prejudice, practical considerations ensured that short leather breeches, reaching just below the knee, became part of the legionary's regular outfit, and they were an absolute necessity for cavalrymen (Wild 1968, 181–3 and 227).

It is possible that some of the many unidentified garment(?) fragments belong to the several named varieties of cloaks. The waterproof properties of leather would make it ideally suitable for this purpose, and it is known to have been used to make the *paenula* (M. Valeri Martialis *Epigrammaton* xiv, cxxx). The unidentified fragments described in the Archive Report consist mostly of hems and seams. These include a few varieties not represented in the catalogue below, namely one example of a type Va hem, and three examples with seams of McIntyre and Richmond (1934) type 6a. This seam was used to join tent segments at Birdoswald (*ibid.*), but at least two of the present examples are definitely not from tents as they appear to have been stained purple, and one has decorative stitching.

At least five items appear to have been stained in some way (Nos. 7.10–7.12; Archive Report Nos. 7.34–7.35); the colour is only visible on the grain surface under bright illumination. They were submitted to C. Calnan who attempted to analyse any dyes which may have been present using methods based on the procedures used to detect dyes in textiles (Taylor 1983), but with inconclusive results.

The breeches(?) (No. 7.11) and one of the jackets (No. 7.1) are decorated with bands or stripes, as are two of the unidentified fragments (Nos. 7.2 and 7.12). The stripes are not immediately apparent, showing merely as slightly darker bands. In some places they seem to be sunken into the surface, in others are generally less worn than the surrounding leather; some are visible also on the flesh side. They seem to have been impressed onto the leather, perhaps to provide a compact surface for adhesive to hold on a strip of embroidery, or maybe even gilding. Similar stripes have been observed on fragments of jackets(?) from Billingsgate Buildings (Miller and Rhodes 1980, No. 509), and *Vindonissa* (Gansser-Burckhardt 1942, 37, Abb. 22), where some occur on shields and shield-covers (Gansser-Burckhardt 1949, 36–7, Abb. 6–7).

In addition to these items of clothing, which were undoubtedly made by skilled leather-workers, comes evidence of two amateur repairs, characterised by the application of irregularly cut patches (No. 7.3), one using equally irregular leather thonging (Archive report, No. 7.24).

The remaining material consists of pieces of unused leather, with cut edges, discarded during the manufacture of shoes and other artifacts. It includes off-cuts from the manufacture of both nailed and one-piece shoes, and provides the first conclusive evidence that London shoe-makers were still active in the late 2nd to mid 3rd centuries (Rhodes forthcoming b). Three off-cuts from Period 1, Phase 2 are inscribed with tanners(?) marks. These are of exceptional interest, and will be published separately (Rhodes forthcoming a; for further comments, see p. 89).

The collection is summarised in Figure 87 (for details of terminology see Miller and Rhodes 1980, 95). A table showing quantities of leather waste arranged by Context and Phase is included in the Archive Report. It demonstrates that the various categories of waste are distributed fairly evenly through the stratigraphic sequence, which together with evidence from the Billingsgate Buildings excavations (Miller and

FIGURE 87 Details of leather waste

Unused leather	
Cattle hide discards	12
Shoe-sole cut-outs	103
Shoe-sole trimmings	46
Shoe-sole upper cut-outs	1
Trimmings of supple cattle hide	*c.* 4
Trimmings of sheep/goat hide	37
Total	203

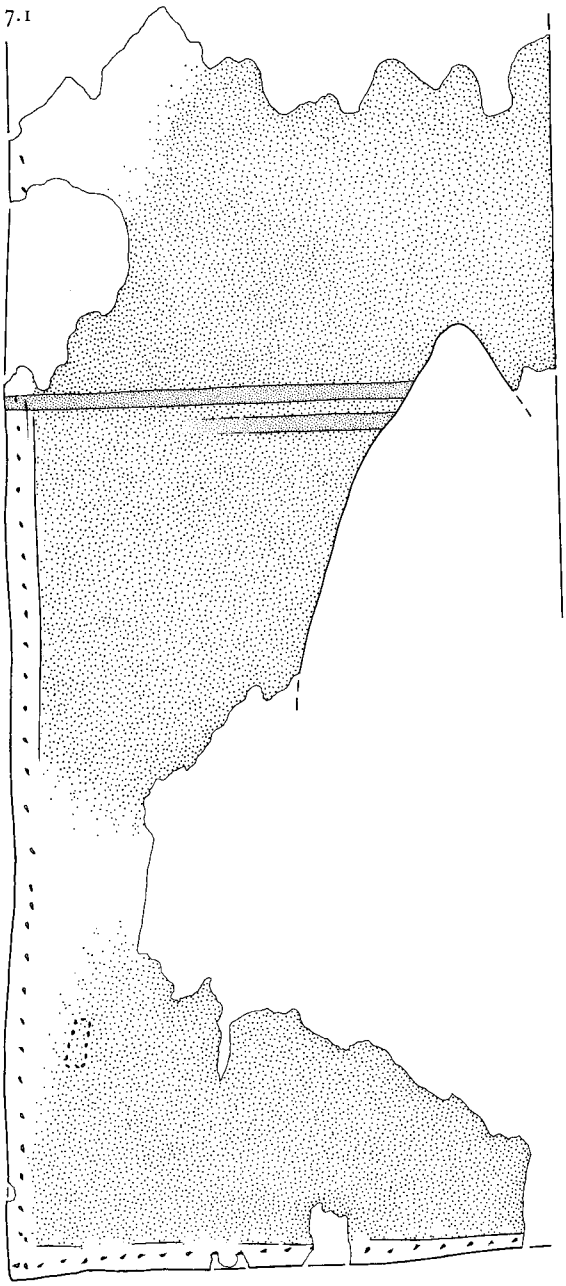
Leather from artifacts cut/torn for reuse	
From a re-used shoe sole	1
In supple cattle hide	54
In sheep/goat hide	1
Total	56

Rhodes *ibid.*) points to a continuing tradition of leather working in the area from the late 1st to mid 3rd centuries.

Unless otherwise stated, the seam and hem types are those devised by Dr W. Groenman-van Waateringe (1967, Figures 5–6). The leather species have been determined by Dr P. A. Armitage.

7.1 (NFW 201) Large fragment of thin, supple cattle hide from the bottom and vertical centre opening of the left flap of a leather jacket. Torn and cut at the top and side; a waste fragment, discarded when the jacket was cut up for reuse. The two original edges, which are at right angles, have hems of type IVa. The edge-binding on the longer vertical hem was *c.* 10 mm wide with stitch holes *c.* 13 mm apart; the binding on the bottom edge was narrower, *c.* 7–8 mm, with stitches *c.* 8 mm apart. On both hems the stitch holes are 2.5 mm long. A dark stripe, *c.* 17 mm wide, runs across the jacket parallel to and *c.* 340 mm from the bottom edge. This probably marked the waist; if so, the jacket would have reached almost to the mid-point of the thighs. A cluster of stitch holes, *c.* 2.5 mm long, in the form of an elongated oval, reveals the position of an attachment located *c.* 30 mm from the vertical hem and *c.* 95 mm from the bottom of the garment. The leather is noticeably much less worn to the left of this feature, which presumably took the form of a reinforcement patch on the inside, stitched to a device for closing the garment on the outside (there are no thread impressions on either side of the leather).

7.1

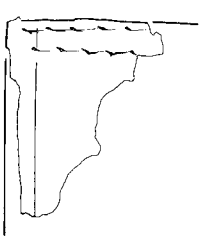


0 30 mm

The only supporting evidence for front-opening leather jackets comes in the form of a small number of fragments from *Vindonissa* (Gansser-Burckhardt 1942, 37, Abb. 22, and pp. 121–3; Gansser-Burckhardt 1947). One of the *Vindonissa* jackets was apparently closed by thongs, one of which was sewn to the grain surface of the leather at the top of the chest, with a reinforcement patch on the underside of the jacket (Gansser-Burckhardt 1947, 77, Abb. 2). The attachment on the present example seems very low in comparison but Gansser-Burckhardt (1947, 77) also reports a tombstone from Neumagen, which depicts a man dressed in a long-sleeved jacket, reaching beneath the knees, which could be closed at five points, the lower three of which are unfastened.

At least one of the *Vindonissa* jackets also has a type IVa hem along the bottom (Vindonissa Museum Acc. No. CCCLXIII, see Gansser-Burckhardt 1942), but both this and another jacket from *Vindonissa* have an applied reinforcement strip down the front opening instead of a hem, and in this respect are quite different. II.533: Per. 1, Ph. 2.

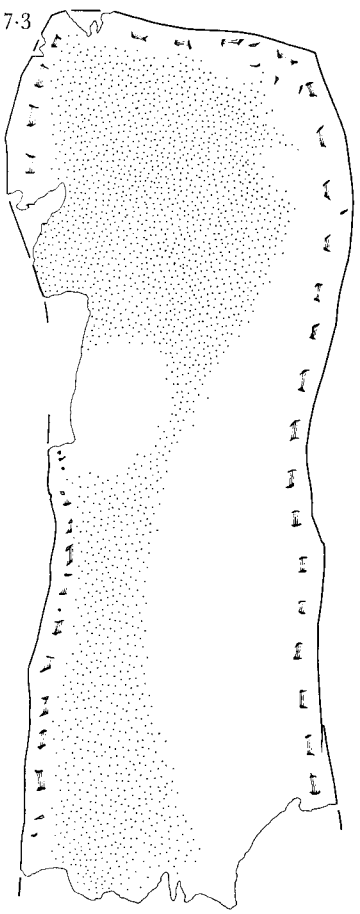
7.2



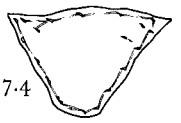
7.2 (SM 306) Small piece of thin (*c.* 1mm), supple cattle hide, with straight hem of type Vb – fold 13 mm, type 3 stitches, stitch holes 1.5 mm long,

oblique to the edge, 10 mm apart, in rows 4 and 13 mm from the edge. An impressed decorative band, apparently 10 mm wide, but perhaps even wider, runs at right angles to the hem. Probably from a garment. III.340: Per. 1, Ph. 4.

7.3



7.3 (SM 354.2) Wide strip of *c.* 1 mm thick, supple cattle hide; torn at one end, widening at the other; edges roughly cut. Pairs of irregularly spaced, 2.5–3 mm wide thong slots around edge, more regular down one side than the other. On the less regular side, the thonging was pulled so tightly that the leather bunched up underneath. Apparently a seam as the thong marks do not appear on the underside. The surface is slightly worn, especially on one side. Probably a reinforcement patch, and if so indicative of an amateur repair as this is clearly not the work of a professional leather-craftsman. III.269: Per. 1, Ph. 6.



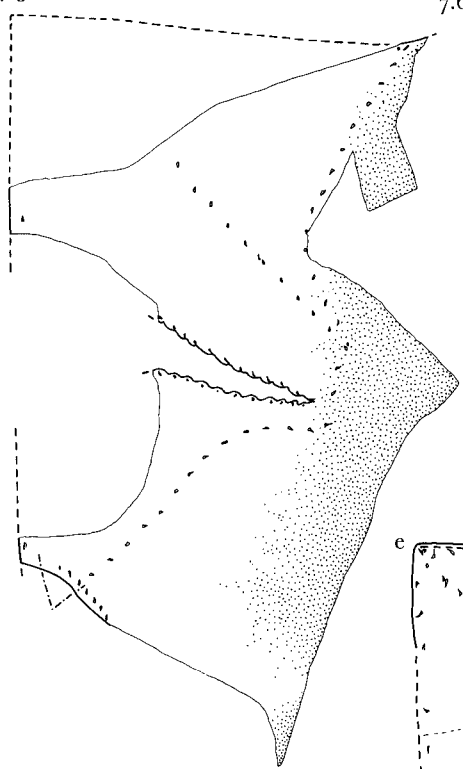
7.4

7.4 (SM 706) Small, approximately triangular patch of thin cattle hide. Type 2 stitching around edges, 2 mm slits, *c.* 10 mm apart. Probably used either to repair a tear (*cf.* Ganssser-Burckhardt 1947, 77, Abb. 2), or to reinforce a seam or point of attachment (*cf.* Gansser-Burckhardt 1942, 119–21), but similar shapes were used as decorative appliqués on shields at *Vindonissa* (*ibid.*, 89, Abb. 65, esp. 65c). III.221: Per. 2, Ph. 1.

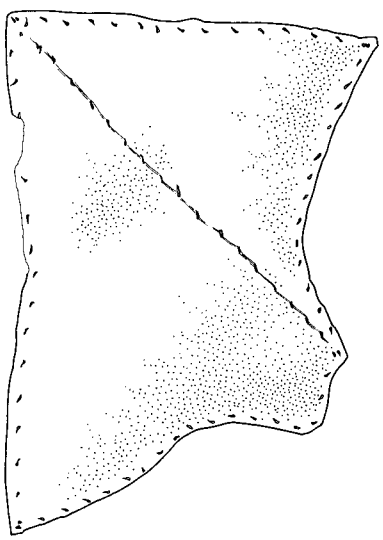
7.5–7.6 (SM 312.1 and SM 312.2) Two pieces of leather, originally sewn together, from the left shoulder of a leather jacket. No. 7.5, a piece of thin (*c.* 1 mm thick), supple cattle hide, shows that both pieces were thrown away as waste when the garment was cut up for re-use, most of the original edges having been removed.

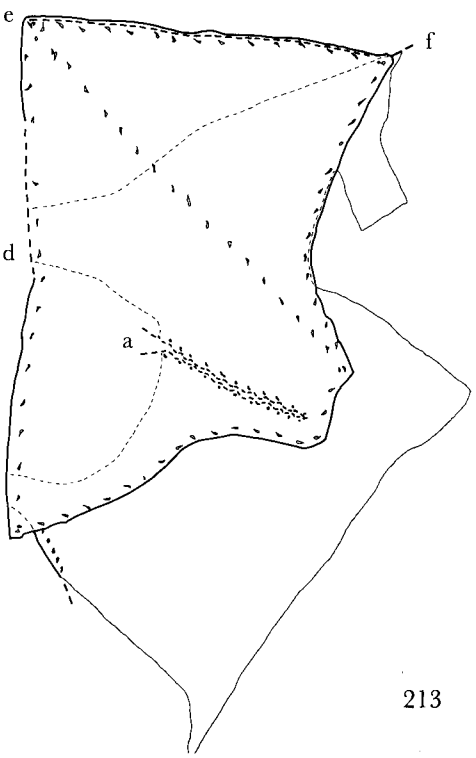
In order to shape the leather over the shoulder, a wedge-shaped piece of leather was removed from over the front of the shoulder (point a on illustration) and the edges closed using a spiral-stiched butt seam. This extended to the neck opening, part of which survives at

7.5



7.6





0 30 mm

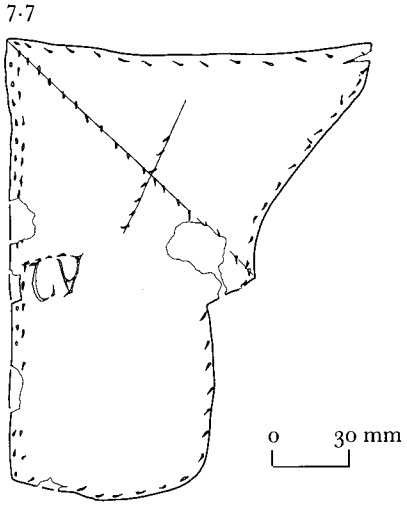
point d. The neck opening was hemmed using a type va hem, the stitching of which incorporated the edge of the reinforcement patch, No. 7.6 below (fold width 7 mm, 2 mm stitch holes *c.* 15 mm apart, *c.* 5 mm from the fold). From point d the neck-line extended in a straight line to point c as indicated by the reinforcement patch. Point c would have been situated roughly over the inner end of the clavicle. Here the hem ends and the edge turned outwards and curved down, on the evidence of a line of stitching 3 mm from and parallel to the edge. This stitching ran underneath the reinforcement patch as thread impressions appear on the upper grain surface. It indicates a lap seam joining this edge to another segment of the garment. There are two pieces of evidence in support of this. Firstly no stitch impressions appear on the flesh side of the leather as would be the case if these stitches were merely intended to reinforce the edge. Secondly, there are no stitch impressions on the underside of the reinforcement piece which extended beyond the surviving segment, so this too must have been attached to a now missing piece of leather at this point. Three curvilinear lines of stitch holes (*c.* 2.5 mm long, type 3 stitching), with thread impressions on the underside, but not the grain surface, together with patches of wear over and around the top of the arm (but not within the boundary of these stitch holes) reveal the position of a shoulder reinforcement patch, which by great good fortune was also recovered (No. 7.6).

This consists of a much coarser, although no thicker, piece of cattle hide, stitched on at the edges, and in the centre by a diagonal line of stitches. A short flap on one side covered the top of the shoulder, including the butt seam of No. 7.5. The front edge then roughly followed the line of the clavicle to point b, where it protruded beyond the edge of No. 7.5, but, as we have seen, must have been attached to another segment of the garment (now missing). From point b the edge ran in a straight line immediately above the neck line (incorporated into the stitching of the hem below) to point e, which must have been situated somewhere near the middle of the lower part of the back of the neck. From point e it ran at a sloping angle across the top of the shoulder-blade to point f (a single stitch hole from the seam at this point survives on No. 7.5) from where it ran almost vertically upwards to the top of the shoulder. The 'diagonal' row of stitching from the shoulder to point e would have lain horizontally, approximately over the 'spine' of the *scapula*.

Apart from shoulder patch No. 7.7 below, no parallels are known to these important fragments of leather. The shoulder parts of Gansser-Burckhardt's reconstruction of a legionary's jacket from *Vindonissa* are totally different (Gansser-Burckhardt 1942, 122, Abb. 103); in jackets discovered elsewhere the shoulders are missing. III.314: Per. 2, Ph. 1.

7.7 (SM 380.1) Reinforcement patch in medium thick (*c.* 1.2 mm), but supple cattle hide. Two straight edges at right angles to each other, with a third curvilinear side. The patch was attached to the garment by a series of 3–5 mm stitch holes, 10–13 mm apart, which run all the way around the edge at an oblique angle to it, and also by three internal lines of stitching. These consist of a straight line from the right angle-corner to half way along the curvilinear side, a short row of seven stitch holes which crosses this first line more or less at its mid-point, and a second short row comprising six(?) stitch holes which runs at right-angles to the mid-point of the long-straight side. All three internal rows of stitching were marked out with lightly scratched ruled lines. On the long straight edge is a second row of stitches, which runs outside the stitch holes already mentioned. It consists of smaller (2 mm), rather closer (7 mm), and more rounded stitch holes, for a type IVa hem.

7.7



Just below the mid-point of the long straight edge, and at right angles to it, is a stamped(?) inscription in *c.* 14 mm high incised letters which appears to read LV. The L has large serifs at the top and at the end of the foot, and its vertical stroke is slightly curved as in a C; it may be that a ligature was intended, or that the stamp was damaged in some way prior to use. The inscription lies quite close to the edge, which appears to have broken away along an incised line. This raises the possibility that there may have been a letter to the left of the L, but if so it would have been obscured by the edge binding.

The shape of this item is so closely similar to No. 7.6 that it must also be interpreted as a reinforcement patch from the left shoulder of a jacket. By analogy, the hem on the long straight side must represent a neck opening in which both the main garment and reinforcement patch were bound together within the same section of edge binding, and the diagonal row of stitching must represent a line of reinforcement over the *scapula*. The inscription would have been located exactly at the top of the shoulder.

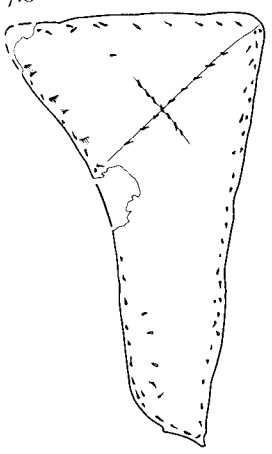
There are two main possibilities regarding this inscription. Firstly it could be a tanner's mark (Rhodes forthcoming a) which for the sake of economy was not removed from the leather before use. If so it may represent merely the last two characters of a longer inscription. Tanners' mark do occasionally occur on better parts of the leather, both at *Vindonissa* (Gansser-Burckhardt 1942, 100) and at London (Rhodes *ibid.*). It nonetheless seems most unlikely that a blemished piece of leather would have been used at one of the most prominent places on the garment. A more likely alternative is that the inscription was added to the completed garment, and related to its owner. If so, the inscription must be complete as the edge-binding would have covered any characters to the left, and is therefore likely to be the numeral for fifty-five. The apparent use of a number raises the possibility that this may be from an item of military clothing. It is known that soldiers' arms and armour were usually marked with their owner's name and unit (MacMullen 1960), however the number fifty-five is too high for a legion or cohort number. III.318: Per. 1, Ph. 6.

7.8 (SM 586) Reinforcement patch of cattle hide, *c.* 1.5 mm thick. Two straight edges at right angles to each other, with a third curvilinear side. The patch was attached to the garment by a series of 3 mm, oblique stitch slots, 8–13 mm apart, which ran all the way around the edge, and also by two internal lines of stitching. These consist of a straight line from the right angle corner to half way along the curvilinear side, and a short row of seven stitch holes which crosses this first line more or less at its mid point. Both rows of stitching were marked out with lightly scratched ruled lines.

On the long straight edge is a second row of stitches which runs outside the stitch slots already mentioned. It consists of smaller (*c.* 1.5 mm), rather closer (7 mm) holes, evidently intended for a type IVa hem. A series of rather irregularly placed pairs of 3.5 mm wide thong slots runs inside and more or less parallel to the curved edge.

Although more slender and a 'mirror image' in terms of general shape to item No. 7.7, it is closely similar in respect of the hem on the long straight edge, and the crossing rows of reinforcement stitches in the centre. It is therefore interpreted as a shoulder reinforcement patch from the right side of a jacket; perhaps a rather smaller jacket than No. 7.7, for a young adult. A number of features, for example the scratched marking-out lines for the crossing rows of reinforcement stitches, are so closely similar that it is probably a product of the same workshop. III.269: Per. 1, Ph. 6.

7.8

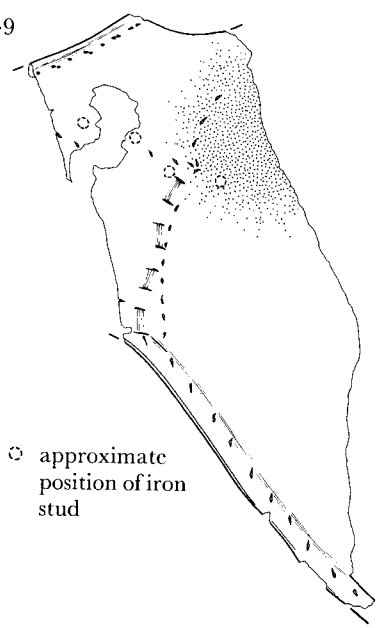


0 30 mm

7.9 (SM 380.2) Waste from an artefact which was cut and torn up for re-use, in thin, fairly supple cattle hide; two original edges, both curvilinear. The longer (a–b on the illustration) has a hem of type Va: fold 9 mm, 4 mm oblique slots at a distance of 7 mm from the fold. The other (c–d) is a hem of type Va, originally with some form of binding as there are no stitch impressions on either side. The fold is 8 mm wide, with 1.5–2 mm stitch holes, *c.* 5 mm from the fold. A line of 2.5 mm stitch holes with a parallel row of 4.5 mm thong slots runs from the torn end of the first hem (b–e). Half way along this row at roughly right angles is an irregular row of 4 mm stitch slots, accompanied by traces of iron suggestive of a row of studs.

This item is also thought to have come from the shoulder of a leather jacket, probably from the back of the left shoulder, although it could perhaps be from the front of the right shoulder. In both cases hem a–b would have gone around the arm and up to the shoulder (at point b), showing that it comes from a sleeveless jacket. Hem c–d would have formed part of the neck opening and, with the line of thonging and stitching (b–e), would have marked the boundaries of the reinforcement patch. It should be noted that the curved edge of patch No. 7.8 was fixed in place by a line of thonging and stitching, and that the straight edge was incorporated into an edge-bound hem. The reinforcement patch on this item must have been bound into a similar hem around the neck between points c–d. Beyond this the similarities end, and the two pieces do not belong together.

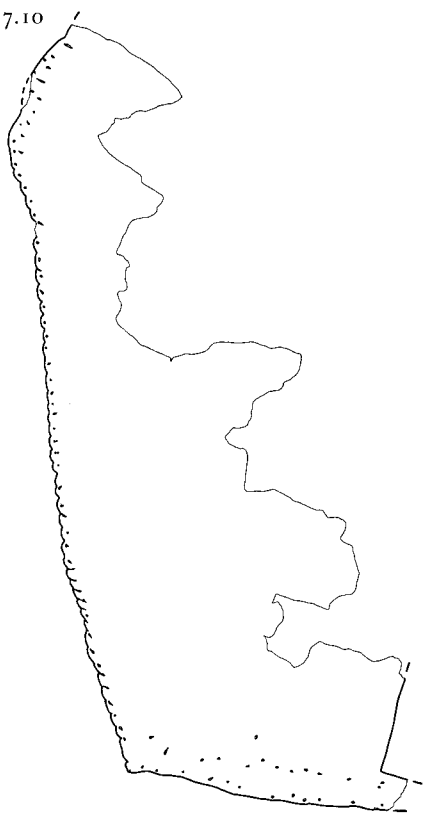
7.9



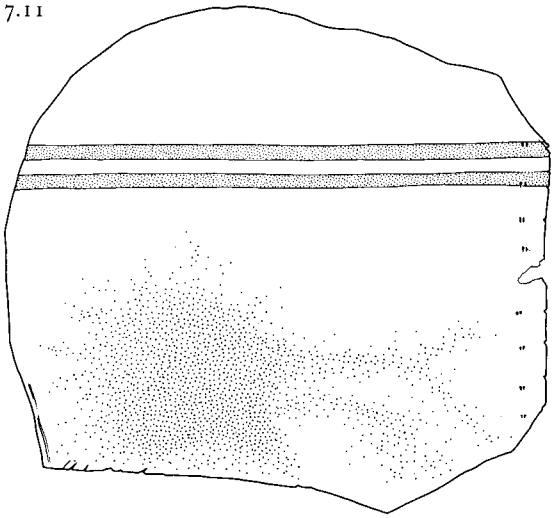
Two of the *Vindonissa* jackets are thought to have been sleeveless (Gansser-Burckhardt 1947, 74) and the same may apply to a jerkin(?) from Fectio near Utrecht (Van Hoorn 1953). III.318: Per. 1, Ph. 6.

7.10 (NFW 456) Waste piece from artefact of thin, supple cattle hide, which was cut and torn up for re-use. A slightly maroon hue on the grain surface suggests it may have been stained. The longest edge comprises a spiral stitched butt seam with 1 mm stitch holes every 5–6 mm. At the 'top' end of this seam the edge of the leather curves, the stitching becomes irregular and the leather bunched. At the bottom end of the seam is a straight hem of type IVb, rows *c.* 3 and 12 mm from the edge, employing 1 mm stitch holes, irregularly spaced every 4–8 mm. The other side is cut and torn. Probably part of a garment, perhaps part of an elbow length sleeve. Residual in II.576.

7.10



7.11



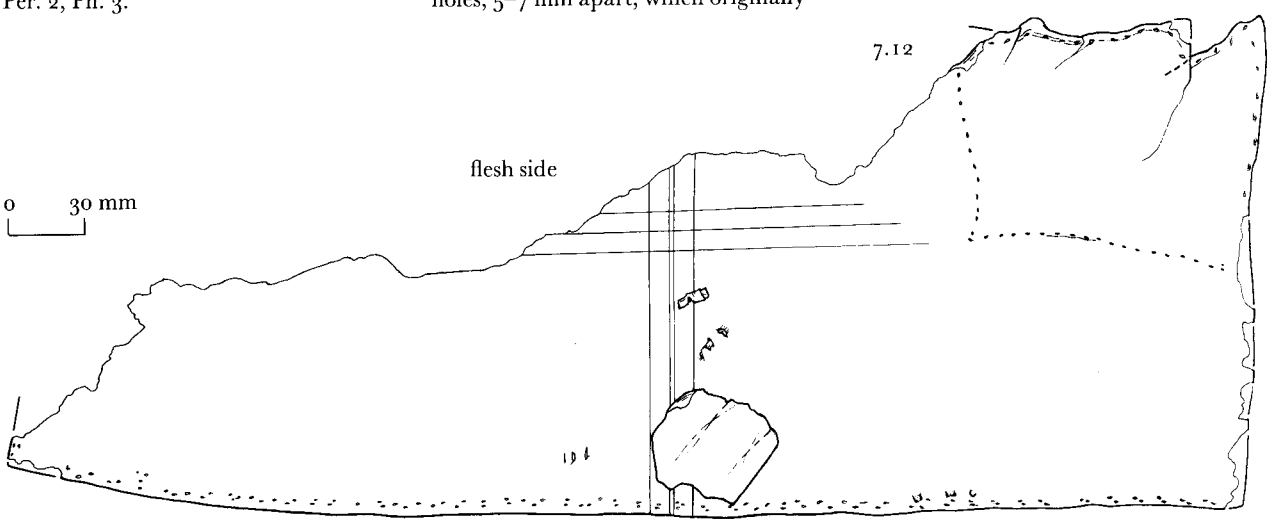
7.11 (SM 521) Part of a large artefact in 1 mm thick, supple cattle hide. Secondary cuts on all sides except one; a waste piece discarded when the artefact was cut up for reuse. The grain surface of the leather has a purple tint and may have been stained. The one original edge has a straight seam of McIntyre and Richmond (1934) stitch 5: fold 6 mm wide, stitches 15 mm apart, slits 2.5 mm long, felling stitches penetrating to the grain surface, *c.* 10 mm from the fold. A pair of dark, 5 mm – wide parallel stripes, 7 mm apart, run across the leather at right angles to the seam. A roughly circular patch of wear is highly suggestive of a knee. If so this must be part of a pair of breeches since (assuming the seam to have run down the side of the garment) the worn patch is too close to the seam for it to be from a long jerkin. III.150: Per. 2, Ph. 3.

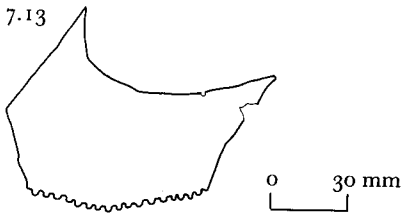
7.12 (NFW 386) Large piece of a thin, fine-grained cattle hide artefact, apparently stained dark maroon on the upper grain surface; torn along one edge. The long straight edge formed the lower half of a lap seam which employed two rows of stitches, *c.* 2 and 3.5 mm from the edge, holes *c.* 1 mm, spaced at 9–11 mm intervals. A very short length of a similar seam occurs on the 'right' (as illustrated) side of the artefact at right angles to the long seam. At the other end ('left' side, as illustrated, p. 217), also at right angles to the long seam, is part of the straight edge of a type IVa hem (1 mm stitch holes, spaced every 10 mm, *c.* 3 mm from the edge). This was torn away at the 'bottom' end, leaving a jagged tear. The 'top' corner at this end is separated from the rest of the leather by an angled, curvilinear row of 2 mm awl holes, 5–7 mm apart, which originally held some form of appliqué in place. This was applied to the grain surface, as there are clear stitch impressions on the flesh side of the leather, but not the grain side. Within the boundary of these stitch holes it is clear that the leather was deliberately stretched; the once-straight surviving fragment of the 'top' edge, which is pierced by stitch holes for the appliqué, is crinkled and folded when lying flat.

On the surface of the leather are traces of two decorative(?) impressed bands (see discussion on p. 211), both *c.* 16 mm wide. One runs parallel to the long, seamed edge at a distance of *c.* 105 mm, the second runs at right-angles to the first approximately half way along the seamed edge. Traces of leather thongs 3 mm wide, clinging to the leather by tunnel stitches, occur in three places on the flesh side, at about the mid-point of the length. All three are visible on the grain surface, though probably more by accident than design. Four small holes, probably blemishes in the original leather occur in the same region, and are patched by a small piece of leather apparently glued to the flesh side (there is no other obvious means of attachment).

In the absence of any parallels, the identity of this item is unknown, but the fine quality dyed(?) leather, complete with decorative stripes, would appear to indicate a quality garment of some kind. AREA I or II, unstratified.

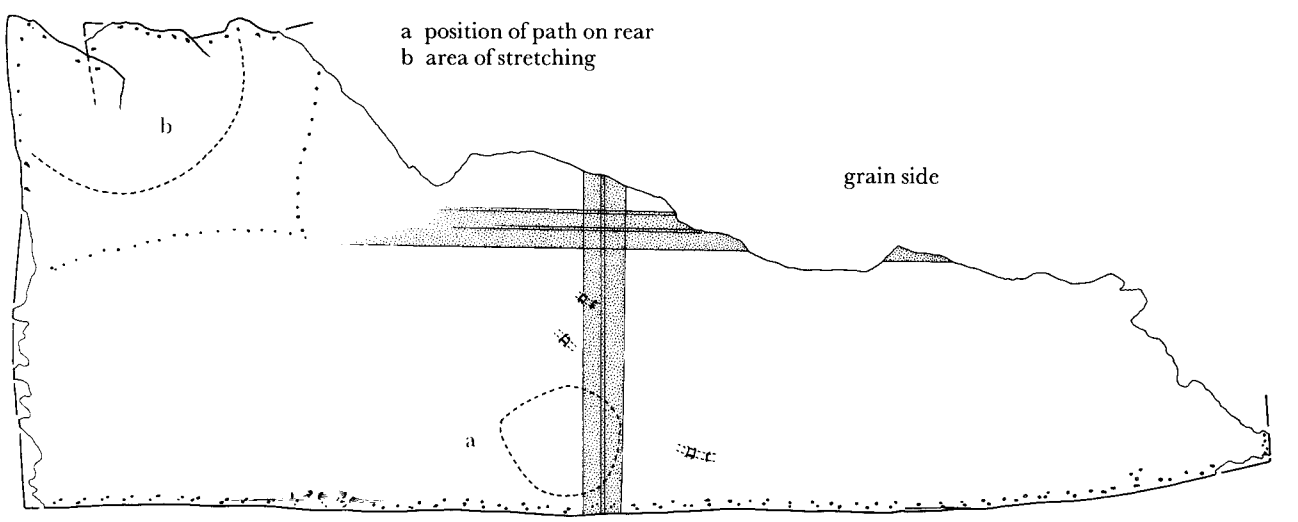
7.12





7.13 (SM 722) Fragment of thin goat/sheep leather from a decorative border made apparently using some kind of stamp. Waste from a leather artefact, probably a garment, discarded when it was cut up for re-use. Decoratively cut edges are generally extremely rare (Van Driel-Murray 1977b, 278). Pinked borders are known on leather bags from Vechten (Van Driel-Murray 1980, 354, and on two fragments of clothing(?) from London (Waterer 1977, 74, No. 525; Miller and Rhodes 1980, 95–6, Nos. 494 and 509), although here the borders were formed by knife cuts, not stamping.

The only close parallel occurs on a small fragment of embossed leather from Billingsgate Buildings (*ibid.*, No. 494). The same site produced what appears to be a trial piece for a stamped(?) decorative edge, suggesting that the technique may have been practised by local craftsmen (*ibid.*, No. 497). III.195; Per. 2, Ph. 3.



FOOTWEAR

Penny MacConnoran

About 150 leather shoes were recovered from waterlogged deposits in and around the early to mid 3rd century quay (Per. 1, Phases 4–7; Per. 2, Phases 1–3). These represent a very considerable advance in our knowledge of Roman footwear, being one of the largest, best preserved, and probably the best dated later Roman assemblages from the whole of the Empire. Excavations in 1974 on the adjacent Billingsgate Buildings site produced a collection, similar in size to that from New Fresh Wharf, of late 1st to mid 2nd century shoes (Rhodes 1980b). Comparisons between the two groups reveal important constructional and stylistic changes.

A detailed account of the shoes is to be published elsewhere (MacConnoran forthcoming); this report aims to summarise the principal findings. Each different shoe type is briefly discussed with regard to style and construction and, where appropriate, contrasts are made with earlier material. A detailed catalogue of the shoes is available in the form of an Archival Report (see p. 267).

To avoid the difficulties inherent in attempting to relate these London shoes to classical prototypes, the descriptive English terms used by Rhodes (1980b) are employed here. As at Billingsgate Buildings, four main classes of shoe can be identified, namely (in order of quantity): nailed shoes (corresponding to *calcei* and *caligae*), sandals (*soleae*), stitched shoes (*socci*) and one-piece shoes (*carbatinae* ?). The one-piece shoes consist of only three small fragments which are unworthy of further description.

The shoes vary greatly in general condition and completeness. Most are represented by bottom units alone, many of which have survived intact (i.e. the various sole layers are still joined by nails); others comprise no more than a fragment of an individual layer. Although no uppers survived at Billingsgate Buildings (Rhodes 1980b, 100–1), the New Fresh Wharf collection includes a number of upper parts, albeit mainly fragmentary, from both nailed and stitched shoes. Some of the stitched shoe uppers are gilded, and rank not only as the most outstanding in terms of workmanship and quality, but also as the most socially significant of the entire collection (p. 95).

Nailed shoes

Approximately one hundred nailed shoes were recovered, representing 66% of the total assemblage. Although the majority consist of bottom units alone, approximately a quarter retain upper parts. These are mostly insubstantial but, nonetheless, are sometimes of assistance in establishing the method of construction (i.e. the technique of uniting sole and upper) and whether the shoe was of a closed or open variety. Unfortunately the three most substantial uppers, Nos. 8.7, 8.10 and 8.11, are not attached to a bottom unit.

Construction

With two notable exceptions (Nos. 8.8 and 8.9), the uppers were attached to the bottom units by means of lasting margins, in which the lower edge of the upper is sandwiched between the sole and insole. Although this mode of construction is known at Billingsgate Buildings, the majority of the 1st to 2nd century nailed shoes from that site employed uppers of one-piece or 'moccasin' construction, which is regarded as typical of the *caliga* or military boot (Groenman-van-Waateringe 1967, Figure 47; Rhodes 1980b, 113–4). Only two of the shoes from New Fresh Wharf definitely have this construction (Nos. 8.8 and 8.9), the looped upper of the latter reinforcing its identification as an army boot.

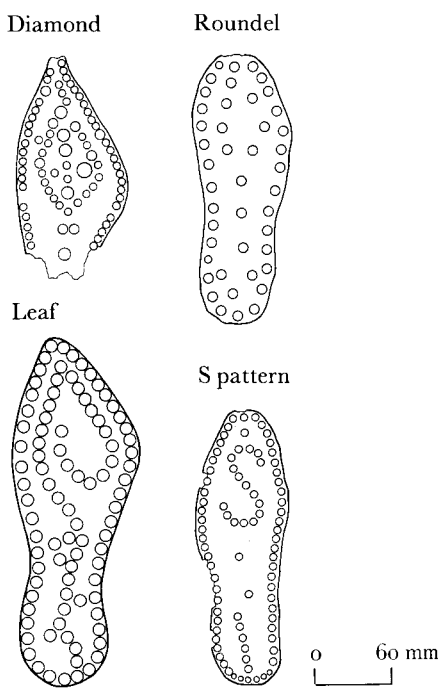
Bottom unit: nailing and sizes

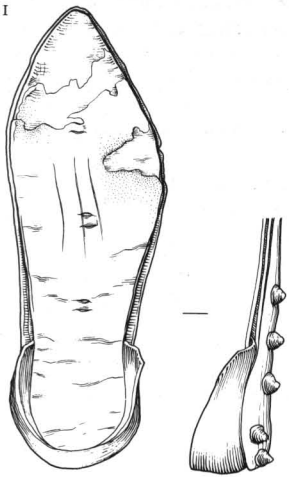
Because the shoes are incomplete it is impossible to classify them according to their uppers. The bottom units, however, can be grouped according to nail pattern, following Rhodes (1980b, 105, 107). As at Billingsgate Buildings (*ibid.*, 111–2), the nail patterns correlate with shoe size. Over seventy shoes can be classified as either adults' or children's, and of these, forty-one are sufficiently complete to allow their sizes to be estimated (10% has been added to compensate for shrinkage – see *ibid.*, 102). The relationship between size and nailing pattern is demonstrated in Figure 88. This shows that shoes with Type A, B, and A/B nailing patterns occur mostly in small sizes, suggesting that they were worn by women, young adults and children. As might be expected, the three dozen heavily nailed (Type C) shoes are exclusively of adult sizes, and mostly at the upper end of the size range.

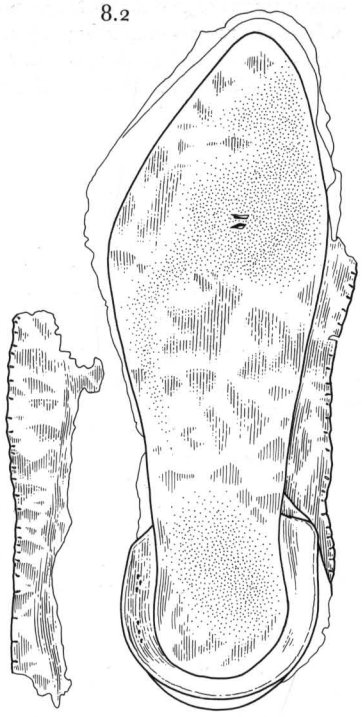
FIGURE 88 Nailed shoes: shoe size in relation to nailing pattern.

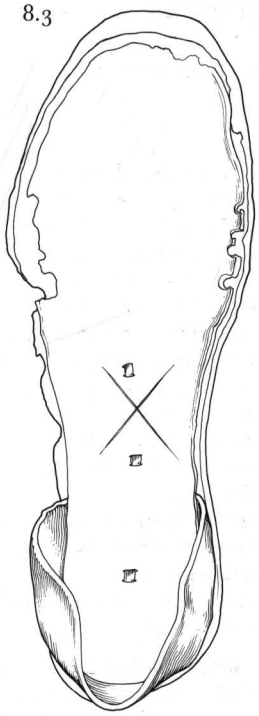
Nailing pattern	Type A	Type B	Type C
Child 6–13	4	3	
Child (exact size indeterminate)	5	3	
Adult 1–2	4	1	
Adult 3–5	5	1	3
Adult 6–7	3		6
Adult 8–11	1		10
Adult (exact size indeterminate)	10		17
Total	32	8	36

Nearly one half of the shoes with Type A nailing patterns have ornamental nailing in the tread. Diamonds, roundels, leaf shapes and S patterns occur but, on present evidence, only the latter seem to belong exclusively to the 3rd century in London. All of these designs occur on both adults' and children's shoes, with the exception of the leaf pattern which, in this assemblage, is found only on adults' shoes.



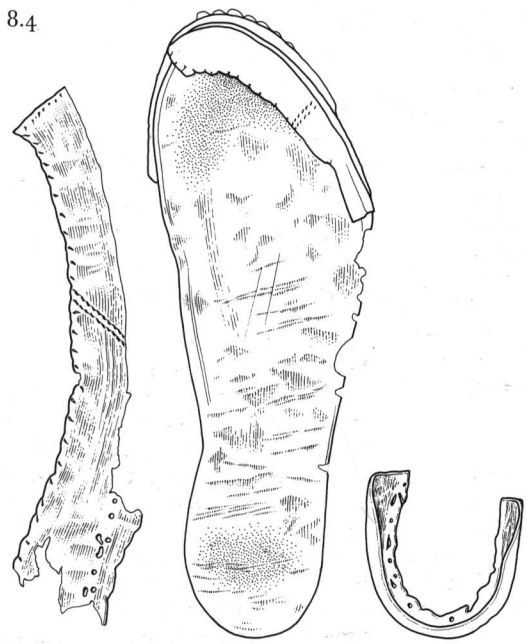


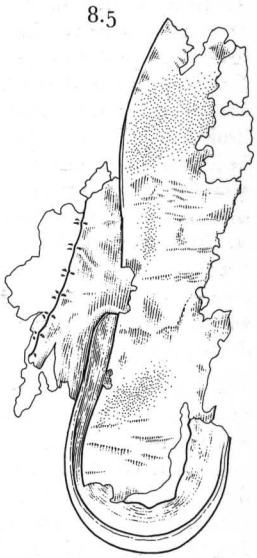




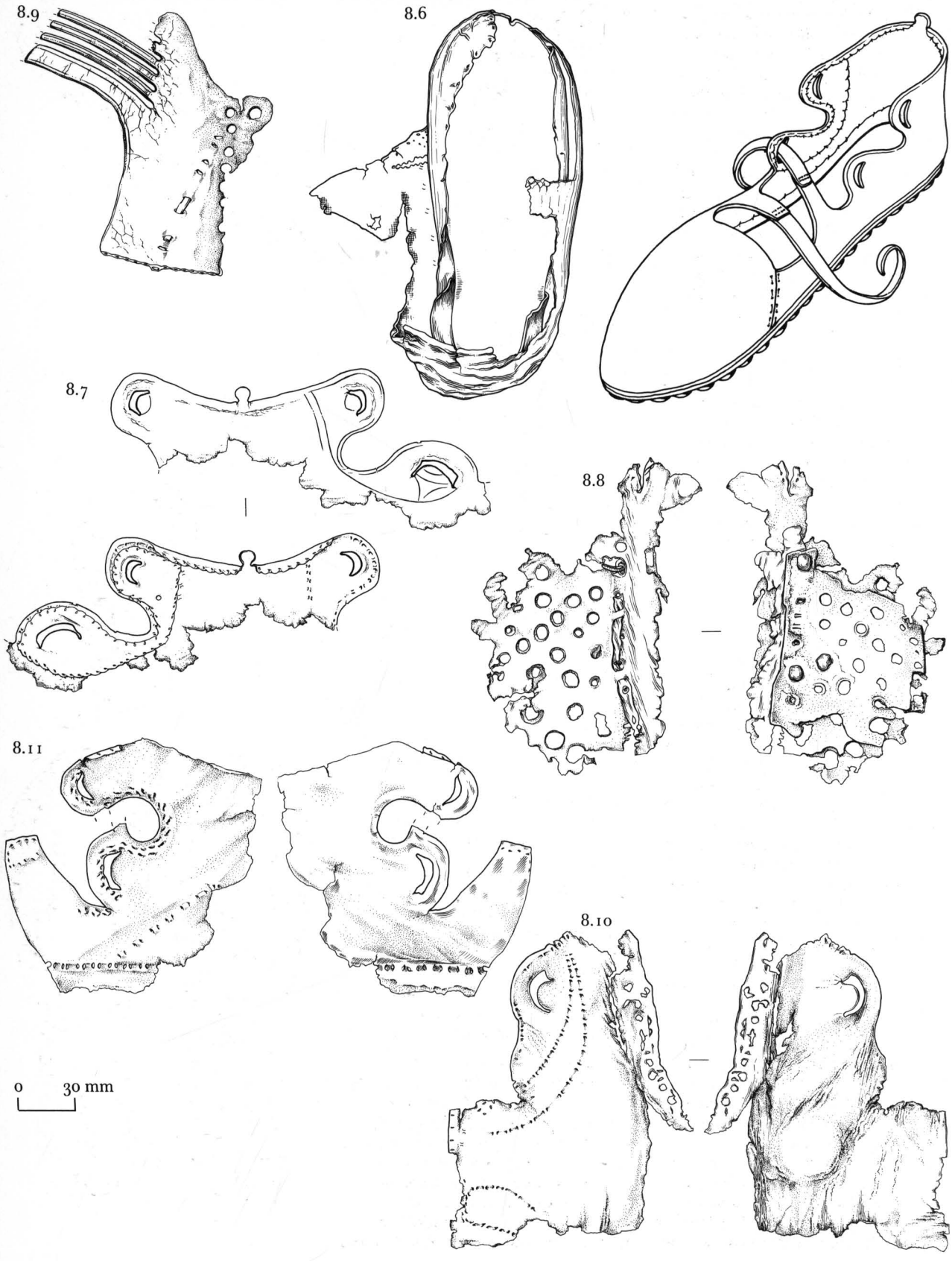
Bottom units: other characteristics
Shoe-makers' impressed guide-lines survive around the edges of a number of shoes (e.g. No. 8.1) – a feature also observed at Billingsgate Buildings (Rhodes 1980b, 103). The only maker's(?) mark occurs on No. 8.3, which has an impressed X on the insole.

Uppers
Those uppers with lasting margins probably all come from closed shoes; the surviving upper fragments show no signs of openwork or loops (see Nos. 8.5, 8.6, 8.10 and 8.11). The most intact nailed shoe is No. 8.6 – an ankle-shoe of large child/small adult size (p. **11**). It has a plain closed upper of sheep or goat leather, with a band of lining around the edge of the shoe. The top edge of this lining is stitched to the flesh (inside) of the upper, whilst its bottom edge is sandwiched between the layers of the bottom unit. This same feature occurs on about thirteen other shoes from New Fresh Wharf (e.g. Nos. 8.2, 8.4, and 8.5) and on a growing number of late Roman shoes from other London sites (e.g. Site Code: SWA 81, Reg. Nos. 4349 and 4573). The discovery of these lined shoes at New Fresh Wharf solves a problem of interpretation: similar shallow bands of leather were found on nailed shoes from Saalburg (Busch 1965, 170, and Taf. 9, Nos. 194–6), Zwammerdam (van Driel-Murray 1977b, 268 and Figure 36, No. 135) and Balmuildy (Miller 1922, 99–100 and Pl. LVII), but as these were not related to any upper parts, they were not interpreted as linings.





0 30 mm


8.9
8.6
8.7
8.8
8.11
8.10
0 30 mm

Shoe No. 8.6 (see reconstruction drawing opposite) demonstrates one method by which the uppers were fastened: that is by means of integral ankle straps, one on each side of the quarters. It is probable that there were originally one, or perhaps two, perforated tabs behind each strap similar to those on No. 8.11. A similar fastening device can be seen on shoes from Skeldergate, York (MacGregor 1978, 52 and 54, Figure 28, Nos. 353–4) and Saalburg (Busch 1965, Taf. 10, No. 209). The latter provides a good stylistic parallel for No. 8.6. The other detached upper portions (Nos. 8.7 and 8.10) are of similar style.

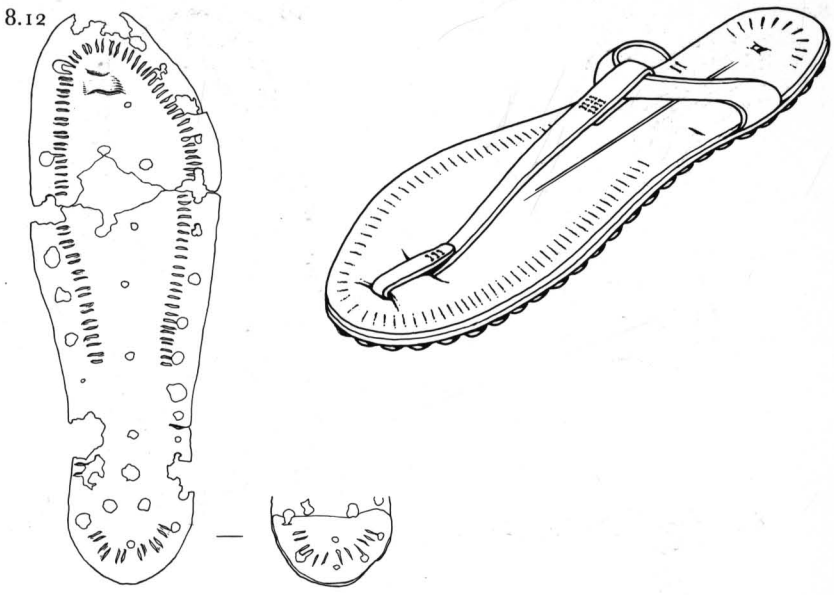
The more intact upper specimens demonstrate the considerable care with which the shoes were manufactured. The top edges of the uppers were all hemmed down, and the eyelets and fastenings lined (see Nos. 8.7 and 8.11). Unfortunately no stitching materials survived. No. 8.7 is the only ornamented example, having a simple impressed line pattern around the quarters.

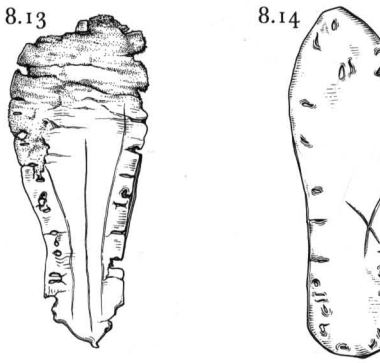
Sandals

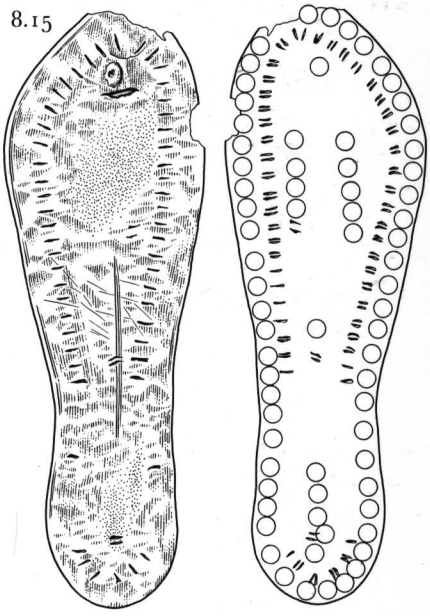
The thirty-three sandals form the second largest class of shoe. Originally, most had two or more bottom unit layers joined by thonging and nails, but a small highly unusual group have a single layer sole (see p. 223). There is a higher proportion of large sizes in comparison with the sandals from the earlier Billingsgate Buildings assemblage (Rhodes 1980b, Figure 67), which suggests that sandals had become more popular with male wearers by the early 3rd century. They are represented by bottom units alone, the upper strapwork having disappeared. Nonetheless, it is possible to make some inferences about the uppers from features surviving on the bottom units.

Uppers

Most examples display a pair of large inter-toe slots, and additional pairs of slots at either side of the waist (see e.g. Nos. 8.12 and 8.20). These indicate the points of attachment of the toe and ankle straps (see reconstruction drawing, on p. 000). There are no clues to the precise appearance of the upper strapwork. The only sandal upper part from London is an isolated *lingula* which joined the toe and ankle straps (Rhodes 1980b, 121). Elsewhere, impressive examples of upper strapwork have survived at Saalburg (Busch 1965, Taf. 6, No. 122) and in pre-Hadrianic deposits at *Vindolanda* (Metcalfe and Longmore 1975, 40 and Figure 3).







Sandals of standard shape: general characteristics

The sandals may be sub-divided into two groups according to shape of bottom unit:
(i) 'standard shape' sandals (ten examples, see e.g. Nos. 8.12 and 8.15)
(ii) 'broad sandals' (*c.* twenty-three examples e.g. 8.20 and 8.17, see p. **11**).

The standard shape sandals have a fuller tread than the characteristically narrow specimens of the 1st to 2nd centuries (see e.g. Birley 1977, 146, No. 66; Rhodes 1980b, Figure 66), and lack the toe scallops found on these earlier examples. Unlike the broad variety, they have a paucity of ornament or insole markings. The simple impressed lines on Nos. 8.13 and

8.15 are probably makers' guidelines, while an impressed X on a child's insole (No. 8.14) may be a trademark (van Driel-Murray 1977a). A similar mark occurs on a nailed shoe from the same context (No. 8.3), and is also found on early Roman sandals from London (Rhodes 1980b, No. 631, 119 and Figure 66).

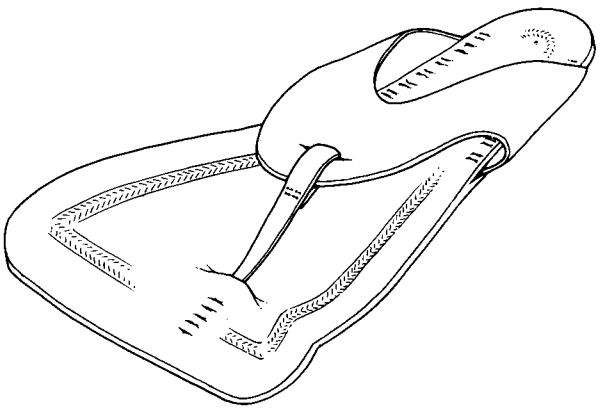
Five of the ten standard shape sandals are of children's sizes. Three of these (including No. 8.14) are of thonged or 'stitched only' construction. Unnailed sandals were found also at Billingsgate Buildings, where three of the four examples are in children's sizes (Rhodes 1980b, 120 and Figure 67). Stitched sandals are also known at Saalburg (Busch 1965, Taf. 3, No. 726) and *Vindonissa* (Gansser-Burckhardt 1942, 63–4).

The marginal thong seam on both the standard and broad shaped sandals from New Fresh Wharf is unlike that found on early Roman sandals. It is far more regularly cut, is set apart from the marginal trailing, and is discontinued at the waist (see Nos. 8.12 and 8.15). The only other constructional feature worthy of note is a half-moon shaped leather wedge (presumably a reinforcement) which occurs beneath the heels of Nos. 8.12 and 8.15.

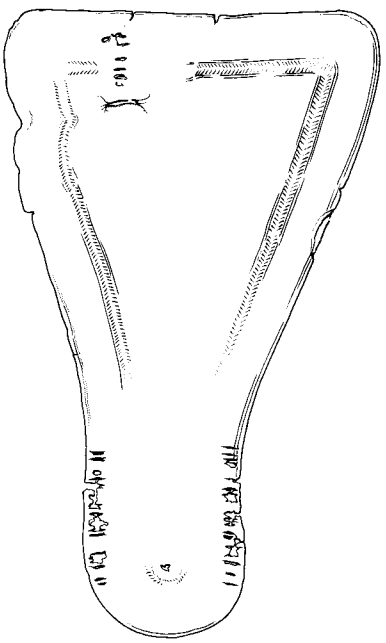
Broad sandals: general characteristics

Broad sandals are a remarkable extreme of fashion, in marked contrast to the slender sandals of earlier Roman times. They are characterised by a tread and toe of enormous width (the toe is usually wider than the tread). From a seat and waist of standard dimensions, the forepart of the sole can fan out to a great width: for example, No. 8.20 measures 150 mm across the toe. There are at least twenty-two examples of these broad sandals, six of which are of special note, having a single layer bottom (Nos. 8.18, see p. **11**; and Nos. 8.20, 8.21, 8.22, 8.23, 8.24).

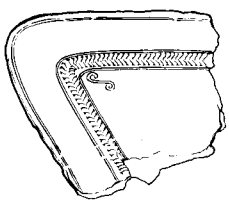
Broad sandals are well known from 3rd-century contexts in London (recent excavations have increased the number) although they have not been reported elsewhere in Britain. Continental examples are known from Saalburg (Busch 1965, Taf. 7, No. 141), Zugmantel (*ibid.*, Taf. 3, Nos. 722 and 727), and seemingly also from Zwammerdam (van Driel-Murray 1977b, 267 and Figure 37, No. 138).



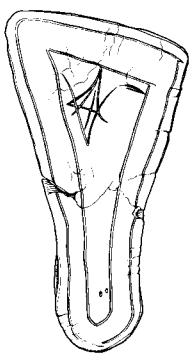
8.20



8.21



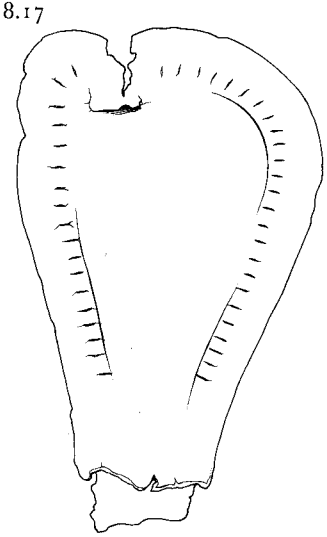
8.18



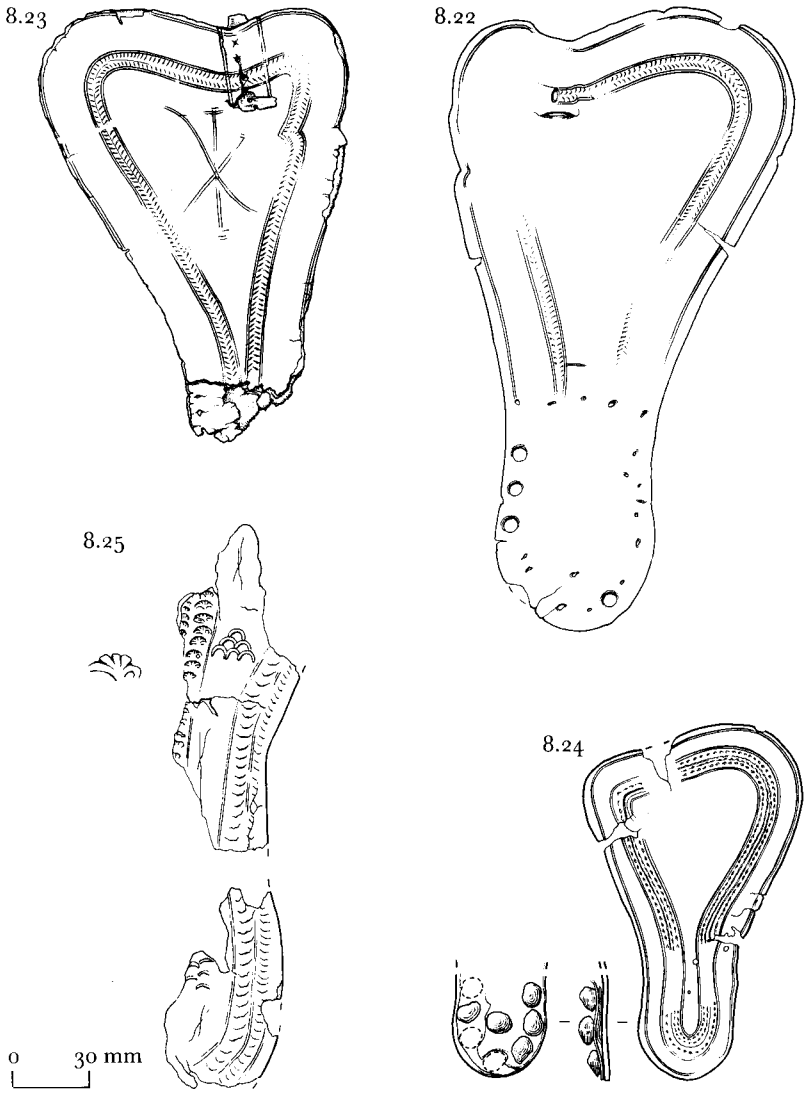
8.19



8.17



0 30 mm



Unfortunately the precise date of these continental sandals is unknown. The single layer sub-type is unknown outside London.

The majority of the broad sandals are scalloped at the big toe – a feature which appears to have carried over from early Roman sandals which are often shaped around the toes. The remainder of the toe end may be rounded, as on No. 8.17 (p. **11**), or straight, as on No. 8.20. Both shapes occur on adults' and children's sandals.

The two children's sandals, both of which have single layer soles, are miniature versions of adult types (No. 8.18, shown also on p. **11**, emulates No. 8.20; No. 8.24 emulates No. 8.22).

A substantial repair occurs on No. 8.19, a nailed sandal. The sole had worn away beneath the big toe, and a leather patch had been nailed in place.

Insole ornamentation and markings
These occur on only three of the eleven insoles from layered sandals (i.e. Nos. 8.16, 8.17 and 8.19). As on the standard shaped variety, these marks consist of single or double impressed lines flanking the marginal thonging, and/or down the insole centre; the former at least probably acted as guidelines for cutting the slots.

By contrast, all the single layer sandals have a decorated upper surface. Most have a border, composed of two lines, running parallel to the edge of the sole, the space between these lines being filled with small incisions (see Nos. 8.20, 8.21 and 8.24). These borders appear to emulate the thong seam on layered sandals. Additional decorative details are occasionally found in the zone enclosed by this border (see Nos. 8.18, 8.21 and 8.23). The stamped palmette and semi-circle motifs on No. 8.25 bear some similarity to the decoration on one of the slippers (No. 8.28).

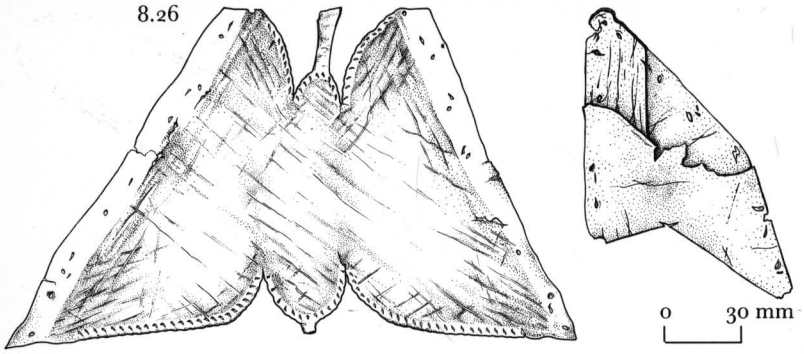
Single layer sandals: constructional details
The strap-ends of the single sole variety could not be joined to the bottom unit by sandwiching them between the various sole layers, as on multi-layered sandals. Instead, they were tucked into horizontal incisions in the edge of the sole, then fixed by nailing (No. 8.23) or stitching (No. 8.20). The inter-toe strap of No. 8.22 appears to have been secured by a separate thong or peg, as suggested by a single hole in front of the slot, which would have passed through both the strap end and the full thickness of the sole.

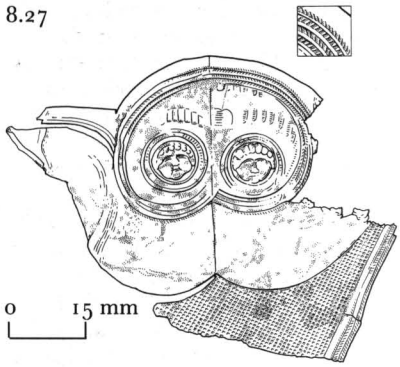
Two single layer sandals have a second reinforcement(?) layer at the heel seat, attached by nails (see Nos. 8.22 and 8.24).

Stitched shoes

The fourteen stitched shoes or slippers form 9% of the total collection. Three of the six uppers (Nos. 8.27, 8.28, and 8.29, see p. **11**) are of outstanding quality, being elaborately decorated by gilding and stamping. These are of major interest as a luxurious style of shoe previously unknown in Britain.

Uppers: shape
The three nearly complete uppers, which include Nos. 8.28 (gilded; see p. **11**) and 8.26, consist of a wide band of leather which covered the instep of the foot leaving the toes and heel bare (see reconstruction drawing on p. 225). Two further examples, which include No. 8.27, although incomplete, appear to belong to the same class of slipper. The only British parallel, also gilded and from a 3rd-century context, was found recently in London, on the Billingsgate Lorry Park site (Site Code: BIG 82, Reg. No. 3385). Outside Britain, excellent ungilded parallels come from Cologne (Fremersdorf 1926, Abb. 5).





The animal species of the leather of the gilded slippers could not be determined by examining the grain surface (the standard method of identification). This suggests that the leather may have been specially dressed before the gilding and ornament were applied, endorsing the view that these slippers were of very high quality. One of the non-gilded slippers (No. 8.26) was of calf.

The precise shape of the uppers is subject to variation. One of the gilded slippers (No. 8.28; see p. **11**) has a straight throat with a central rounded projection at the toe end. Part of the throat and toe openings of No. 8.26 were cut away to create a rounded tabbed effect on the centre line. Michael Rhodes (pers. comm.) suggests that, taken together, these projections appear to emulate the *lingula* found on sandals (Rhodes 1980b, 121), and should be regarded as a purely decorative feature. The throat and toe edges are each pierced by a row of stitch holes, which indicate the former presence of an edge binding, perhaps of coloured leather or fabric.

No. 8.29 (p. **11**) appears to come from a different style of upper. The surviving portion, which has a lasting margin, must be from the side of a closed shoe. An ornate stitched shoe with a closed upper is known from Southfleet in Kent (Brailsford 1964, 10–11 and Figure 4, No. 3).

Construction

The uppers were joined to the sole units by lasting margins; in most cases, just one seam appears to have united upper, sole and insole. The isolated bottom unit layers are generally unremarkable, with the exception of three examples (including Nos. 8.26 and 8.30) which have composite middles made from numerous small soft pieces of goat leather (thirteen such pieces survive on No. 8.30, two of which are illustrated). The upper of No. 8.26 survives and is described above. It indicates that some of these slippers had padded soles, which is consistent with the idea that stitched shoes were intended as comfortable indoor shoes. (This shoe was recovered during the watching brief, and although its context is given as 1.350: Per. 1, Ph. 1, its similarity to the others of this class strongly suggests that it cannot be much earlier than the 3rd century).

A considerable number of stitched shoe bottom units have been recovered previously in London (e.g. Rhodes 1980b, 116; M.O.L. Acc. Nos. 14180, 17618–17622). They are known also from Bar Hill (Keppie 1975, 65) and various continental sites (for references, see Rhodes 1980b, 116) including an example of AD 85–175 from Zwammerdam (van Driel-Murray 1977b, Figure 37, No. 139), which provides a close parallel for No. 8.31. No uppers were recovered from any of these sites.

Ornamentation of uppers

The gilding on Nos. 8.28 and 8.27 is restricted to the patterned zone, where it survives in patches (see p. **11**). It is exceptionally well preserved on No. 8.29, where it takes the form of a 4.5 mm wide stripe. The latter example was analysed using X-ray fluorescence by Paul Wilthew, who detected gold with a trace of copper. Writing in the 1st century, Pliny (*Historia Naturalis* XXXIII, XXXIX *ff.*) alludes to the use of a type of glue to affix gold leaf to wood; it is probable that a similar method was used in this instance. He also refers to women wearing gold on their feet (*Historia Naturalis* XXXIII, XXXIX *ff.*); this could refer to the attaching of gold baubles to the shoes or perhaps to gilding on the leather. Gilded *socci* are listed in Diocletian's Price Edict (9, 19–23) as costing eighty *denarii* per pair (M. Rhodes, pers. comm.).

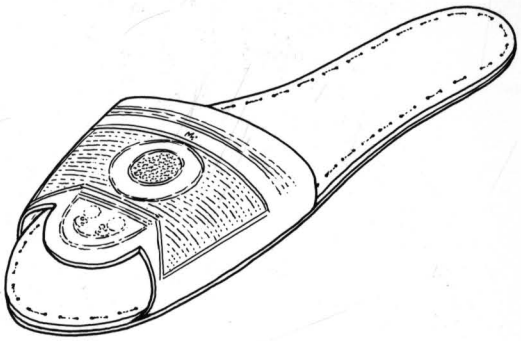
In addition to the gilding, Nos. 8.28 and 8.27 are embellished with extremely fine stamped and tooled patterns. Many of the motifs are so small that they can only be fully appreciated under microscopic examination.

The design of No. 8.28, by size the shoe of a woman or young person, mirrors the shape of the upper (see p. **11**). It falls into two main fields. The larger zone over the instep is delimited by a border of short, finely hatched lines. Within this border are horizontal rows of minute, stamped roundels, each enclosing seven tiny bosses. At the centre of this zone of repetitive motifs are two concentric circles, composed of finely hatched radiating lines. The innermost circle is filled with semi-circles, mounted one on the other, and like the main border, composed of finely hatched, radiating lines.

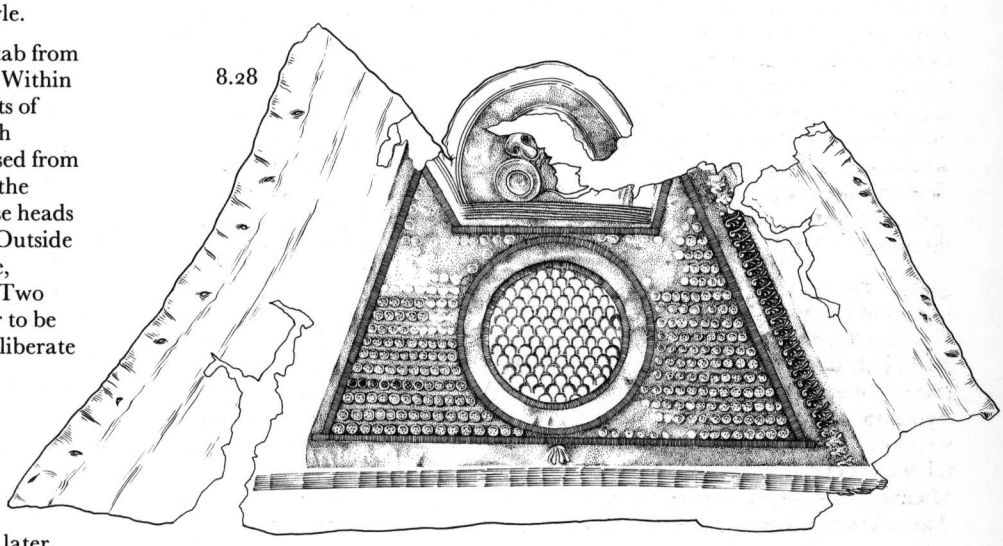
Outside this main field, to the right, is a straight row of stamped palmette motifs. This is not repeated, as one might expect, on the left side. It is thought that this shoe was for the right foot, a balance being achieved by means of a matching row of palmettes on the left side of the left shoe. These palmettes suggest a Celtic influence; Kilbride-Jones (1980, 46) has remarked on the notable absence of this motif in the Romano-British period. In the centre, just outside the main border at the top of the instep, is a single stamped palmette; beyond this, near the throat, lies a horizontal band of finely grooved lines.

The second zone of ornament is located on the rounded projection at the toe end, and delimited by both straight and curved tooled lines. Within this border is a small, stylised human head, facing outwards, and resting on a roundel. Michael Rhodes suggests that this may represent a bolster, on which couched figures are not infrequently displayed as resting (*cf.* the bolster on the monument of Victor the Moor, shown e.g. by Liversidge 1955, Pl. 2). Although the area to the right of the head is damaged, there are indications that a second head and roundel were once present. The head is undeniably Celtic in style.

No. 8.27 comprises a rounded tab from the toe end of a similar slipper. Within the *pelta*-like border, are two sets of concentric circles, each of which encloses a minute head, embossed from the reverse (flesh) side. Unlike the image on No. 8.28, both of these heads are decidedly Roman in style. Outside the *pelta*-like zone is a repetitive, stamped chequer-like pattern. Two crescent-shaped fissures appear to be accidental splits rather than deliberate cuts.



8.28

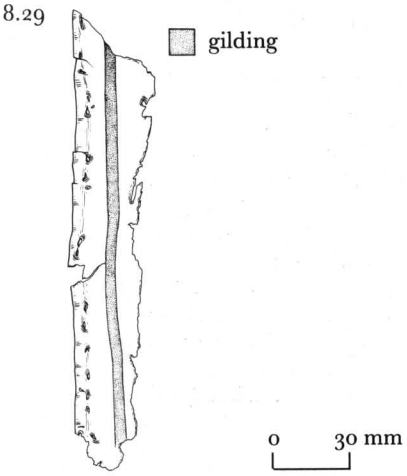


0 15 mm

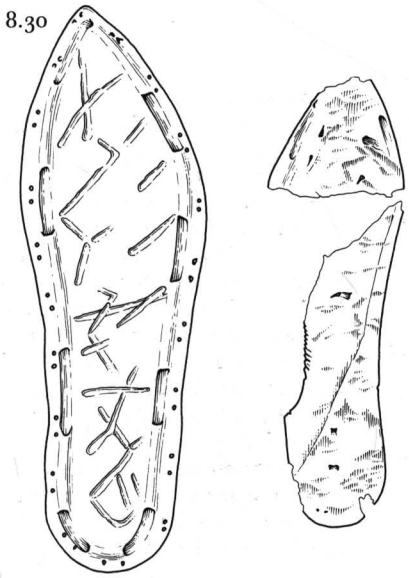
Conclusions

The major significance of these later Roman shoes from New Fresh Wharf is that they demonstrate notable changes in footwear styles when compared with earlier dated assemblages, especially that from Billingsgate Buildings. The relative quantities of the different shoe types from the two sites are given in Figure 89.

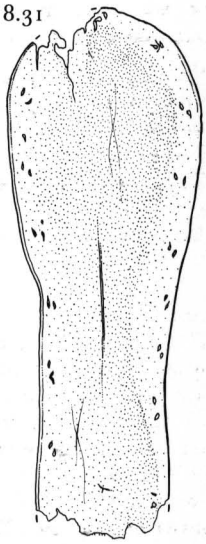
8.29



8.30



8.31



As we have seen, the nailed shoes of *caliga* type construction, which were so prevalent at Billingsgate Buildings, are all but absent, having been replaced by a closed nailed shoe. The absence of *caliga* type shoes has been reported on other sites of Antonine or later date, notably at Hardknott (Hadrianic-Antonine, see Charlesworth and Thornton 1973), Bar Hill (Antonine, see Keppie 1975, 178), and Skeldergate, York (4th century, see MacGregor 1978, 50). The inference is that before the close of the 2nd century, in Britain at least, the military boot in its classic form had been more or less abandoned in favour of the closed shoe, or *calceus*, which became the standard footwear of all groups: military, civilian, male, female, young and old. The change was probably a response to the rigours of a northern climate, combined with an apparent relaxation in the prescribed footwear for Roman soldiers in Britain.

The assemblage reveals other major changes. The narrow sandals shaped around the toes, which are typical of the 1st/2nd centuries (Rhodes 1980b, 114; van Driel-Murray 1977b, 258 and Figure 33, Nos. 44 and 46) have disappeared, to be replaced by a sandal with a 'standard' shaped sole, and an odd phenomenon of fashion footwear – the broad sandal. The insole stamps which are such a feature of earlier sandals (e.g. van Driel-Murray 1977a, Taf. 82; Rhodes 1980b, 119 and Figure 66) are no longer employed, and a new type of thong seam has been introduced (p. 222). The most distinctive new group of sandals are the single-sole broad variety. These have not been reported from outside London, and there is a possibility that they are a purely local phenomenon. Although little is known of the sandal uppers, the bottom units from Billingsgate Buildings and New Fresh Wharf point to a continuity of certain basic strapwork.

The virtual absence of one-piece shoes, which formed the second largest category at Billingsgate Buildings, demonstrates that this variety had fallen from fashion by the 3rd century, presumably in favour of the sandal and closed nailed shoe. It may be significant that the latin term *carbatina* with which it is associated (Rhodes 1980b, 127) is absent from the list of shoe types cited in Diocletian's Price Edict (M. Rhodes, pers. comm.).

The open slippers, represented by the instep coverings, are unique in Britain. The gilded examples are superior to all other known footwear of Roman date from Britain and the North-Western provinces, and, unlike the majority of shoes from New Fresh Wharf, could have been worn only by wealthy persons. Speaking of 3rd-century jewellery, Henig (1981, 140) has commented on the 'growing taste for magnificence' and 'for showing large splashes of gold or colour on the person'. These shoes suggest that this desire for display was manifest in footwear also.

FIGURE 89 Quantitative summary of the various shoe types from Billingsgate Buildings and New Fresh Wharf.

Type of shoe	Billingsgate Buildings	New Fresh Wharf
Nailed shoes	79	100
Sandals: narrow/standard	18	10
Sandals: broad		23
Stitched shoes	20	14
One-piece shoes	30	3
Total	147	145

WRITING TABLETS

Hugh Chapman and Vanessa Straker

Some twenty-two fragments of writing tablets were recovered from the site, although only those tablets of which substantial parts survive, or which have unusual features, are included in the catalogue below (see also p. **6**). Even taking into account their high survival rate because of the waterlogged nature of the deposits, the number of fragmentary tablets recovered is remarkable. If, as argued elsewhere in this report, the dumped material from within the quay was the result of deliberate dumping soon after its construction and to assist with its stability, it is presumably likely that much of the dumped material derived from the zone along the City's river frontage. It is tempting to suggest that the concentration of writing tablets, many of which are of the 'business' type (Chapman 1978) reflects the means by which trading activities were recorded along this riparian commercial zone. It is unfortunate that no readings are legible from the tablets to confirm that they were part of the trading practice.

Four wood species have been identified, namely *Abies* sp., *Cedrus* sp., *Larix decidua* and *Picea abies*. *Abies* (probably *Abies alba*, silver fir) is native to the mountains of central and southern Europe and is not thought to have been introduced into Britain until the 17th century (Mitchell 1974). *Cedrus* (probably *Cedrus libani*, cedar of Lebanon) is native to Asia Minor and Lebanon and was the first of the cedars to be introduced into Britain in the 17th century (*ibid*). *Larix decidua* (larch) is native to the mountains of central and southern Europe, and *Picea abies* (Norway spruce) is from similar locations (Clapham *et al.* 1962).

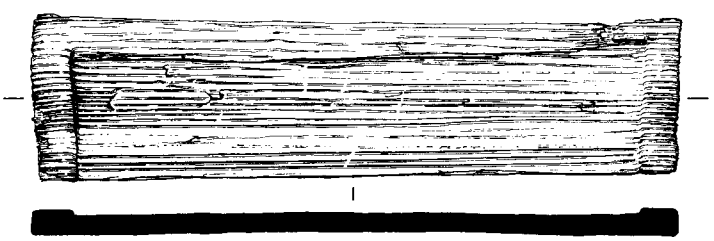
It is only possible to distinguish between the wood of cedar and silver fir if certain anatomical characteristics such as scalloped tori, present in cedar and not found in silver fir, and differences in the cross field pits are preserved. This distinction was possible in some of the writing tablets and not in others. Larch and spruce cannot readily be distinguished from each other on the basis of wood anatomy (Schweingruber 1978), so identification was taken no further. It is clear from the natural geographical locations of these species (outlined above) that they were not native to Britain in the Roman period, although they have since been introduced. The geographical locations of the species are wide and overlap and it is therefore not possible to make precise suggestions about where the wood came from, although cedar has a somewhat more restricted distribution than the other species. The writing tablets could have been made from imported wood, or imported as finished objects.

Other examples of writing tablets made from non-British wood have been found on Roman sites in Britain. Two tablets from Southwark were considered to be most probably silver fir (Keepax in Chapman 1978) and at Chew Stoke a tablet of larch and fragments of tablets of silver fir were identified (Turner 1956). More recently, fragments of writing tablets of silver fir were recovered from excavations in Carlisle (McCarthy *et al.* 1982).

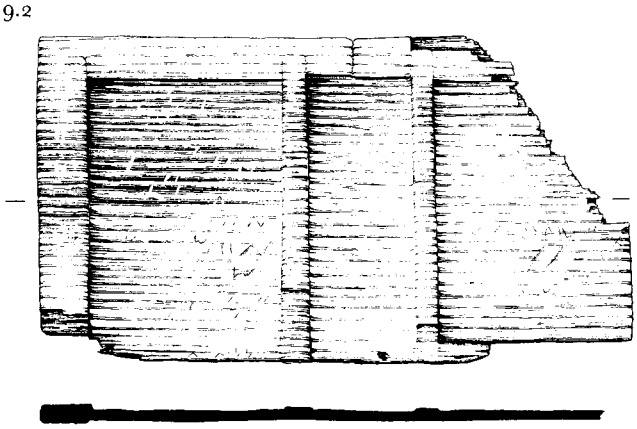
9.1 (FRE 43) Fragment of outer edge of outside leaf; no hinge holes; the total width surviving (72 mm) and just under half the height; recessed to receive wax on one side only and therefore the first or last page of the document. The large size compares with the triptych from a late 2nd-century pit from St Thomas Street, Southwark, see Chapman (1978, 387ff.). Wood identified as larch or spruce. IV. 388: Per. 1, Ph. 3.

9.2 (NFW 97) Fragment of inside leaf; inner (hinge) edge and end edge missing; one side recessed to receive wax across the dimensions of the leaf, the other recessed and divided into three compartments, the centre area being the narrowest. This area, normally a wide vertical cut groove, received the seal impressions of persons called to witness the contents of the document (see Chapman 1978, 397 ff.). For a similar arrangement see Nos. 9.3 and 9.7. Traces of writing are visible on the two flanking panels, but proved to be illegible. A cut caused by the binding cord is apparent half-way down the surviving horizontal side. Wood identified as cedar. II.110: Per. 1, Ph. 5 (see also p. **6**).

9.1

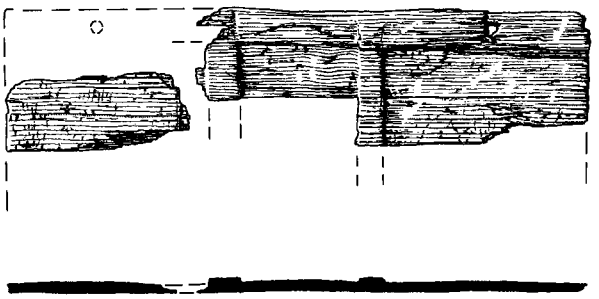


9.2



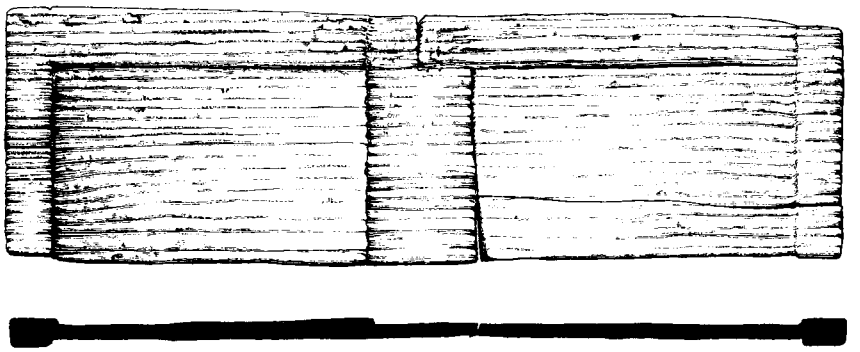
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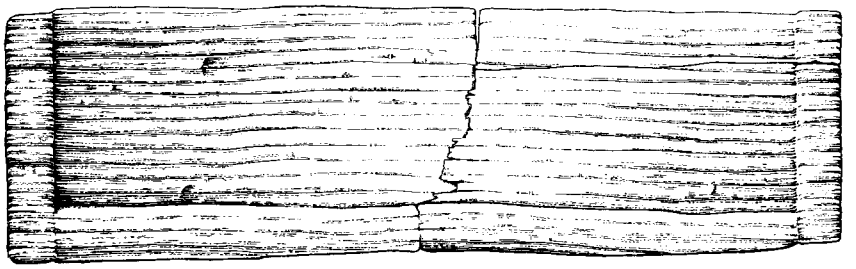
9.3



9.3 (SM 350) Fragment of inside leaf, inner edge with single surviving pierced hinge hole; left and right edges and most of the body of the leaf are missing. As in No. 9.2 above, one side was recessed to receive wax across the dimensions of the leaf, the other is recessed and divided into three compartments in the same proportions as No. 9.2. Wood identified as cedar. III.288: Per. 1, Ph. 5.

9.4

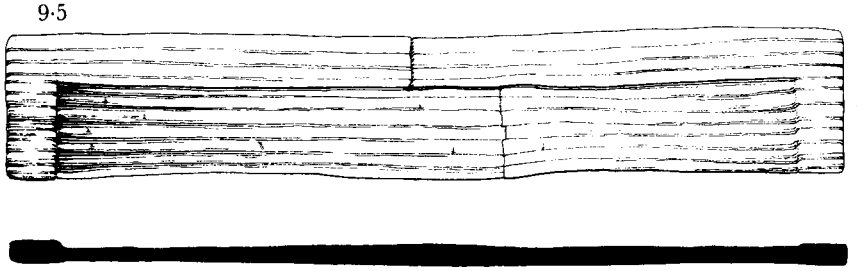




9.4–9.5 (NFW 240 and NFW 578) Fragments of two leaves which are probably part of the same document. They share the same width, the same physical appearance and wood identification, and come from the same context. No. 9.5 is a fragment of an outer edge of an outside corner (back or front) recessed on one side only. No. 9.4 is part of an inner leaf (pages 3 and 4) with surviving outer edge and approximately half the original height; recessed on both sides with incised horizontal groove on one side to receive seal impressions of those witnessing the contents of the document. These two sets of fragments are remarkable not simply because they constitute two-thirds of a Roman business document, but also for their large size (width 223 mm). Wood identified as cedar. II.511: Per. 1, Ph. 5 (see also p. **6**).

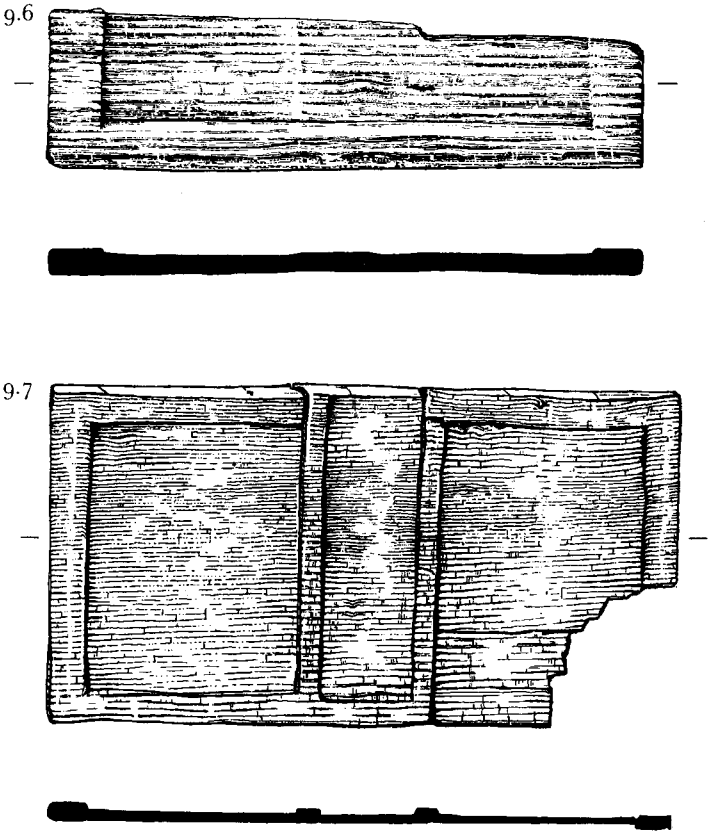
9.6 (NFW 233) Fragment of inner edge (with single hinge hole) of outer corner; recessed on side. The total width survives. Wood identified as silver fir or cedar. II.511: Per. 1, Ph. 5.

9.5



9.7 (SM 175) Almost complete, carefully-made inner leaf (probably pages 3 and 4) of business document. Single hinge hole; recessed on both sides, one divided into three compartments as in Nos. 9.2–9.3. The total width and height survive. Wood identified as larch or spruce. III.269: Per. 1, Ph. 6 (see also p. **6**).

0 20 mm


9.6
9.7
0 20 mm

WOODEN OBJECTS

Jane Weeks and Michael Rhodes

The wood types have been studied by Jane Squirrel and Vanessa Straker. In addition to unidentified softwoods, they report the following native species: birch (*Betula* sp.), box (*Buxus sempervirens*), maple (*Acer* sp.) and oak (*Quercus* sp.). The imported species are cedar (*Cedrus* sp.) and silver fir (*Abies alba*), whose possible origins are discussed elsewhere (pp. 91–2).

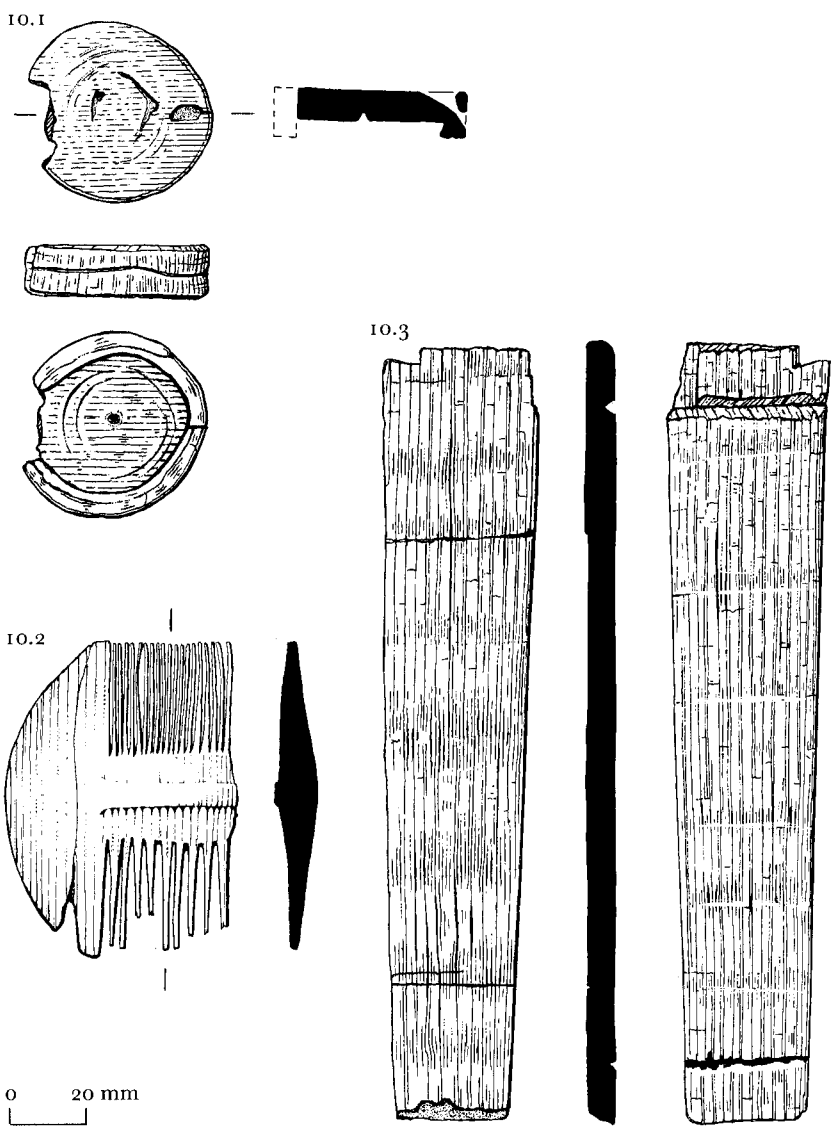
In addition to the objects described below, the Discussion of the finds (pp. 88–95) refers to a number of wooden objects, unworthy of full publication, details of which are available in an archive report by Jane Weeks. They consist mostly of offcuts in oak and softwoods, including silver fir, from Period 1, Phase 3, and later phases of the excavation. One of the offcuts appears to have a moulding on one face, another consists of a strip of oak, knife cut at one end, with a small shouldered tenon on the other, whilst a third consists of a small rectangular strip of coniferous wood, mitred at both ends. These are suggestive of furniture making or some other variety of woodworking. The Archive Report also contains details of six bungs, all but one from Period 1, Phase 5. As at Billingsgate Buildings (Chapman 1980b, 131, Nos. 674–7) these fall into two main categories:

i) Cork-shaped bungs in silver fir and birch (two examples). These were presumably for barrels, casks or perhaps flagons.
ii) Squat or flat bungs in silver fir and unidentified softwood (four examples). These are identified as amphora bungs (for classical refs. see Becker 1895, 488).

10.1 (FRE 120) Lid of container, lathe-turned, in maple, with an internal flange on the underside. A hole left by the mandrel during the turning process may be observed in the centre of the lid on the inside. The outside edge of the lid is decorated by a single grooved line. The lid was fastened to the container using a cord or leather thong, which passed through an oblique hole from the top of the lid to the side. The hole was bored from both sides. A similar turned lid, also with an oblique hole, was recovered from the 2nd-century Blackfriars barge. It was found with a shallow container, which may have belonged with it, having a similar oblique hole entering at the side and emerging at the base (Marsden 1965, 50–51 and Figure 19, Nos. 7–8). IV.444: Per. 1, Ph. 3.

10.2 (SM 265) Double-sided boxwood comb with median rib. One side has fine teeth (8 per 10 mm), the other has coarser teeth (4 per 10 mm). Only one end remains, and this is curved. A common type, always of box where the wood has been identified. Diocletian's Price Edict of AD 301 fixed the minimum price of a boxwood comb at 14 denarii, less than half the price of combs made of other species. III.289: Per. 1, Ph. 5.

10.3 (SM 334) Portion of stave, of split silver fir, from coopered tub. Two shallow grooves, apparently made using a scratch stock, are situated on the inside face of the stave *c.* 10 mm from each end, and would have held the head and base of the container. On the outer face, two incised lines parallel to the ends of the stave appear to be marking out lines for a wide recess which lies between them. This recess might have accommodated a now missing metal band, *c.* 120 mm wide. Stave-built vessels, ranging from large barrels to small tankards, are common on Roman sites. Silver fir or larch were most

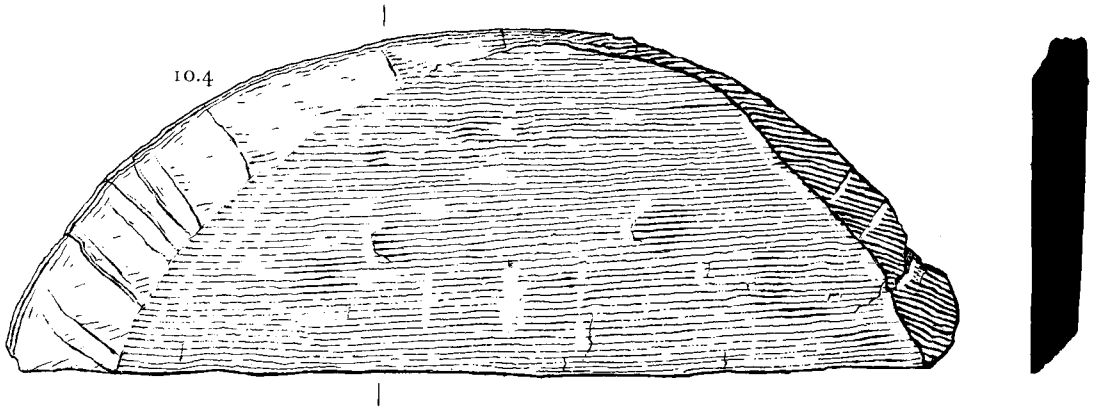


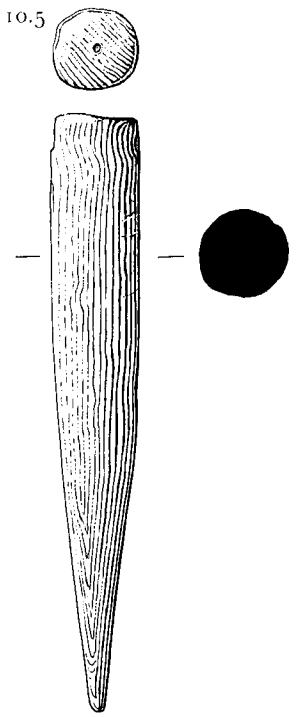
commonly chosen. Boon (1975, 55, Figure 16) has postulated a peasant industry supplying roughouts of staves to coopers in the Roman period, based in the restricted Alpine region where larch and fir grow. II.309: Per. 1, Ph. 5.

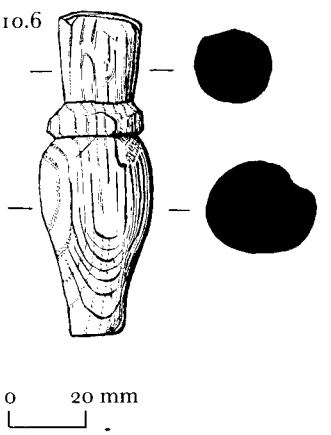
10.4 (NFW 297) Semi-circular portion of three-piece head or base of barrel, in silver fir or cedar. The outer edge is bevelled on both sides for insertion into a groove in the surrounding staves. It was attached to the central segment with two dowels, on the evidence of bored holes on the straight side. Original diameter *c.* 270 mm. II.166: Per. 1, Ph. 7.

10.5 (NFW 219) Long pointed peg in boxwood. Lathe-turned on evidence of depression created by a mandrel in centre of the broad end. No Roman parallels known, but closely similar to a post-medieval 'fid' as used in maritime trades for opening holes in canvas, reaming out grommets, or splicing rope (Horsley 1978, 175; and Figure 67 a–c). The antiquity of fids is unknown, but for possible medieval examples from London see Henig (1975, 153 and Figure 25, No. 27). II.112: Per. 1, Ph. 7.

10.6 (NFW 296) Finial(?), lathe-turned in oak, *cf.* poplar furniture leg from Brough-on-Humber (Wacher 1969, 104, Figure 47). II.166: Per. 1, Ph. 7.







ROPE

Michael Rhodes

Roman rope is exceedingly rare, both in this country and abroad, and this is the first example from London (H. Chapman, pers. comm.). The only other British examples known to the writer come from Newstead, where some rope survived as a result of heavy impregnation by water-borne iron particles (Daniels 1968, 119), from Bar Hill, which has produced strands of plaited horse-hair, bark and 'hempen(?) rope' (Keppie 1975, 90), and from Silchester (see below).

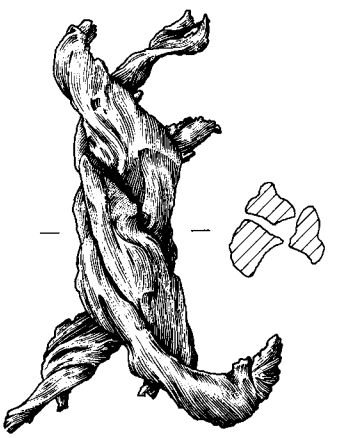
11.1 (SM 91) Remains of a length of thick cord or rope, highly deteriorated, and now in several short pieces. The total length of the surviving fragments is *c.* 800 mm and the present thickness of the cord is *c.* 23 mm. It is of three-ply manufacture, with yarns of Z twist wound together with an S twist. A sample of the yarn has been submitted to Rowena Gale of the Jodrell Laboratory, Kew Gardens, for fibre analysis. She comments that it is composed of strips of wood or bark, although the specimen is too degraded to identify which is involved, or the species. Possible methods of making ropes from these materials have been described by Van Iterson Scholton (1977, 135–6).

The Roman writers mention a number of materials in connection with the manufacturers of rope. These include sedges, rushes (Pliny *Historia Naturalis* XVI, I, 54), hair, hemp (*ibid.* XVII, XXI, XXXV, 166), flax, palm fibre, and bulrush (Varro *De Re Rustica* I, XXII, 1–2). It is interesting to note that bark or wood fibre is not included on this list, although corroborating evidence for its use comes from Bar Hill, where several fragments of bark rope, now lost, were recovered from the *titulus* outside the East gate (Keppie 1975, 90), and from Silchester, which has produced a degraded length of string composed of 'strips of bark', tied around the neck of a jug (Hope 1909, 481).

The choice of materials for rope-making would probably have depended upon what was locally available. Varro advises farmers to grow their own raw materials, and that the rope should be made on the farm to avoid unnecessary expenditure (Varro *De Re Rustica* X, XXII, 1–2).

Unfortunately most published accounts of Roman rope finds do not include precise details of the thickness and method of manufacture, and further discussion of the present example is not possible. III.318: Per. 1, Ph. 6 (one representative fragment illustrated).

11.1



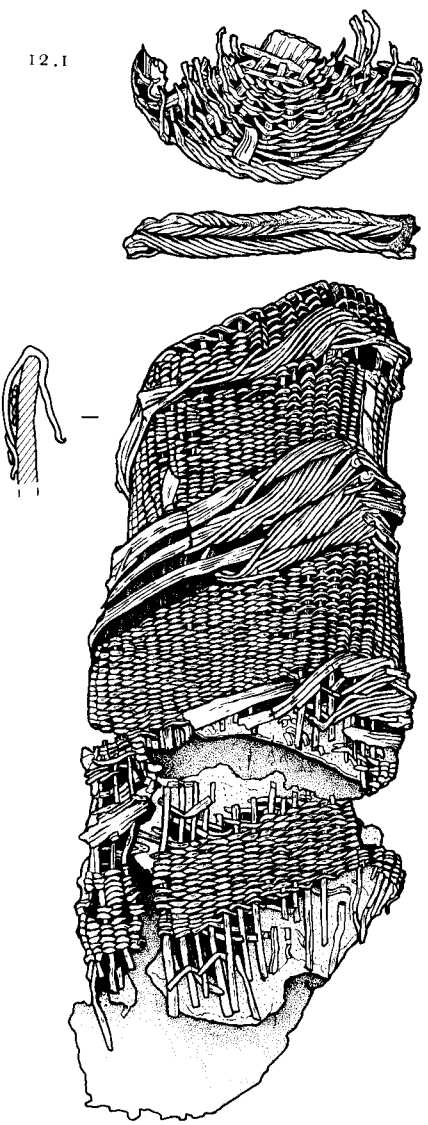
0 20 mm

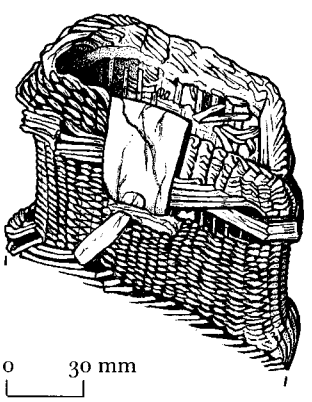
BASKETWORK

Frances Pritchard and Hugh Chapman

12.1 (SM 54) Four fragments of basketwork woven from willow, *Salix* sp. (identification by Mrs Rowena Gale). The largest fragment is of hollow cylindrical shape, now flattened, one end of which has a finished edge, the other (bottom end) broken; two fragments representing body pieces from apparently the same container (drawn in probable original position); the fourth piece is approximately half of a circular cap or lid with a raised finished edge.

12.1





0 30 mm

The surviving fragments indicate that it was a container which was longer than its diameter. Though it can be suggested that the two loose body fragments form part of the container, it is difficult to be certain that the body was of a uniform cylindrical shape throughout its full length.

The approximate circumference of the lid and that of the main body fragment suggest that the two go together and this suggestion is further reinforced by the survival of a leather thong running through the surface of the cap, and matched by the tag end of a corresponding thong rivetted below the tip of the mouth of the main body piece.

Technical description

(i) Lid, incomplete, diameter *c.* 146 mm. The centre is probably of the simple star type. Byestakes have been added to the sides of the initial stakes and the rounds are worked with the weavers passing over and under alternate stakes in simple randing. The edge is strengthened with one row of three-rod waling and finished with a three-rod plain border(?). The remains of a leather clasp is preserved threaded through ten rounds of the randing at the edge of the lid.

(ii) Top edge and sides of basket. Surviving height 200 mm. The sides consist of forty-eight stakes. Willow rods or withies are worked round the stakes by means of randing while bands of one to three rows of seven-rod waling, worked from left to right, occur at irregular intervals which help to ensure that the sides remain rigid. The top edge is finished with a trac border, which is the simplest type of closed border and well suited to a small narrow basket.

The complete number of rounds preserved described from the bottom upwards are as follows:

3(?) rounds of 7-rod waling
40 rounds of randing
3 rounds of 7-rod waling
32 rounds of randing
1 round of 7-rod waling
8+ rounds of randing
trac border

(iii & iv) Two side fragments. Surviving height 150 mm and 95 mm. The following rounds are preserved:

(a) 3 rounds of 7-rod waling
24 rounds of randing
1 + round of 7-rod waling

(b) 27 rounds of randing.

In all the side fragments the randing has been firmly beaten to produce a dense, hardwearing fabric of 9 rounds per 10 mm.

The purpose of the container, a long cylindrical shape with captive cap at one end, is not clear. Finds of basketware from Roman waterlogged deposits in the western provinces are rare. Three very small fragments are known from London (M.O.L. Acc. Nos. 20039, 20710, 20842). Other finds in the Roman world come from provinces where material has been preserved by arid climatic conditions, notably Egypt and the Near East. The small numbers recovered from the Empire as a whole can in no way indicate the amount of basketware that must have been in current daily use for all manner of containers and other household items. This view is reinforced by surviving pictorial representations.

One close parallel might be cited. The basketry from the Bar Kokhba period in the Cave of Letters in the Judean Desert, included a circular *cista* of similar form, though of slightly differing proportions to the London example and more ornately patterned (Yadin 1963, 151). The Judean example which, it is agreed, originally incorporated a lock, is interpreted from a German parallel (Haberey 1949, 82) as a basket for containing jewellery and other precious possessions. Unfortunately no such locking device seems to be present on the London example. III.301: Per. 1, Ph. 5.

COINS

Jenny Hall

Of the thirty-eight Roman coins from this site, thirty-three are identifiable. These are summarised here in tabular form (see Figure 90), and a detailed catalogue is available in the form of an Archive Report (see p. 267). A very high proportion of these coins (ninety-eight per cent) date from the late 1st to early 3rd centuries AD, the latest of this group being a coin of Elagabalus (Archive Report No. 15.31). Only two coins are later: a contemporary radiate of *minim* size, dated to *c.* AD 280, and a coin of Constantine II, dated to AD 330–5. Both of these coins are residual in post-Roman disturbance.

Six coins were found in the silts preceding the construction of the quay (Per. 1, Ph. 2), and these range in date from an *as* and *dupondius* of Vespasian (AD 72–3) to an *as* of Hadrian (AD 119–38). The silts seem to be primarily Hadrianic, and include mostly objects of that date, although they also contained some later pottery, probably intrusive (see p. 88).

Coins found amongst the construction levels and fill of the quay (Per. 1, Ph. 4 and 5) range from a *dupondius* of Augustus (AD 10–14) to a *denarius* of Septimius Severus (AD 197). The latter supports the early to mid 3rd-century construction date for the quay supplied by dendrochronology.

Only three coins were found in the late 3rd- and 4th-century silting (Per. 1, Ph. 6) around the quay. These are 1st and 2nd century in date, the latest being a *sestertius* of Marcus Aurelius (AD 170–1), and are therefore not of assistance in dating the silt.

The final group of coins was found in the late Saxon disturbance when the quay partially collapsed and its contents spread over the river-silts (Per. 2, Ph. 1 and 3). The coins range from a worn *sestertius* of Domitian (AD 85–96) to the coin of Constantine I (AD 330–335) mentioned above as being the latest Roman coin found. One notable coin from this group is a contemporary forged *denarius* of Elagabalus. Dr. N. J. Seeley reports that this was cast in a high tin bronze alloy, which was a suitable metal for this imitation coin. An Archive Report on the metallurgy of this coin is available on request.

The coins, therefore, lend independent support, but do little to add to the dating of the stratigraphy (for discussion see pp. 62–5). As an assemblage they are atypical of London sites in their deficiency of later 3rd- and 4th-century coins. This would normally be taken as an indication that the site was disused from the mid 3rd century onwards. This may indeed be the case but caution is required as the New Fresh Wharf site is by no means typical. The bulk of the material removed during the excavations was associated in some way with the construction of the early to mid 3rd-century quay, and this has undoubtedly distorted the pattern. The only sealed deposits of the 3rd and 4th centuries are riverine silts and gravels which lay mostly beyond the southern limit of the excavations.

It may be found that the other waterfront sites differ from New Fresh Wharf and such sites will need to be examined collectively before many conclusions can be made.

FIGURE 90 Summary of identifiable coins.

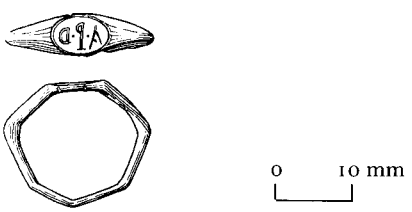
Period	Number of coins	Percentage
Up to AD 41	1	3
AD 41–68		
AD 69–96	4	12
AD 96–117	4	12
AD 118–138	5	15
AD 139–161	7	21
AD 162–180	6	18
AD 180–192	2	6
AD 193–222	2	6
AD 222–278		
AD 279–294	1	3
AD 294–330		
AD 331–348	1	3
AD 349–402		
Total	33	100

METAL OBJECTS

Hugh Chapman

A number of objects, unsuitable for publication in this form, are described in detail in the Archive Report, and briefly mentioned in the Discussion of the finds reports (pp. 88–95). They include pieces of sheet metal which come from throughout the stratigraphic sequence from Period 1, Phase 2, and are interpreted as scrap from a bronzesmith's workshop. Among these are 17 offcuts with crisply cut edges, two having marking-out lines to guide the cut. Seven have damaged rivet holes, showing that they were torn from whatever they were originally affixed. The rivet holes were presumably trimmed off to create unblemished pieces of metal for reuse. An oval repair patch from a metal vessel also seems to have been torn from its fixings. The ten remaining scraps seem to be pieces of cast bronze which were damaged whilst being beaten into sheets. Similar items of bronze scrap have been recovered from salvage excavations at the Billingsgate Lorry Park, so would appear to be a feature of this stretch of waterfront.

Gold



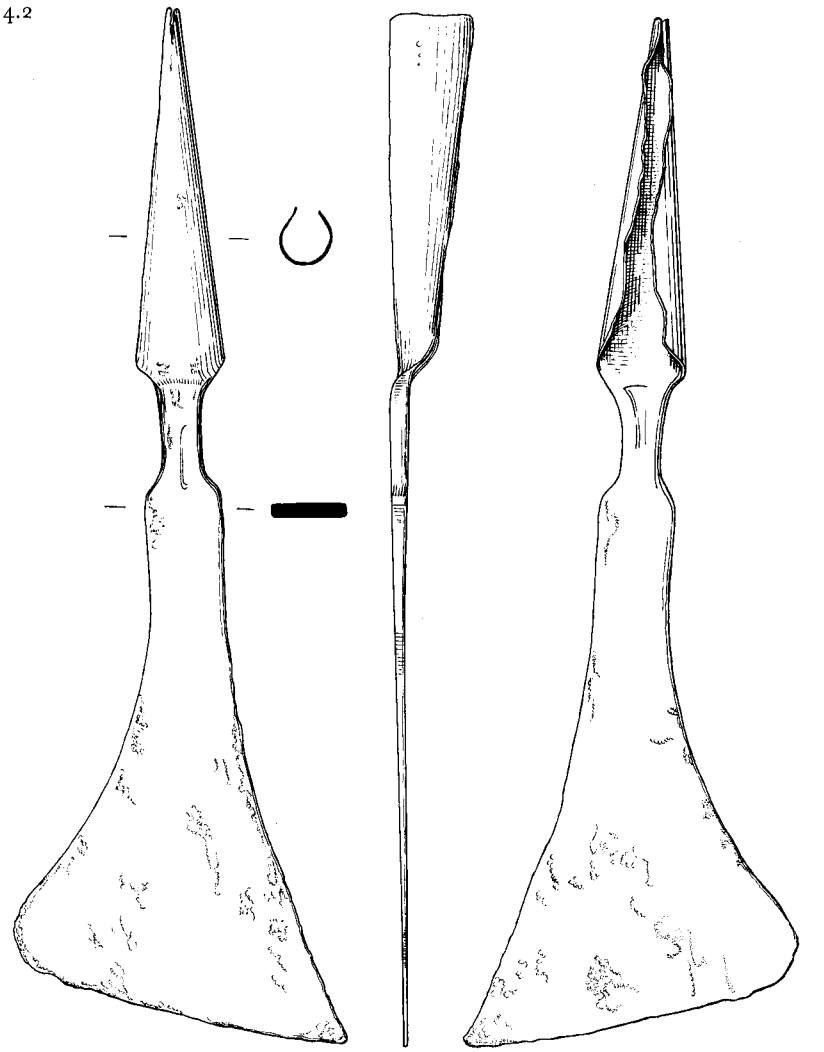
14.1 (SM 349) Gold ring, thin carinated hoop (ext. dia. 20 mm) and oval bezel, seemingly facetted below the carination. Inscribed within the bezel with the letters *A·P·D* (first published by Wright, Hassall and Tomlin 1976, 387–8). These letters are in retrograde, and are thus designed to be seen when impressed on beeswax or clay as a sealing. Dr Martin Henig makes the following comments:

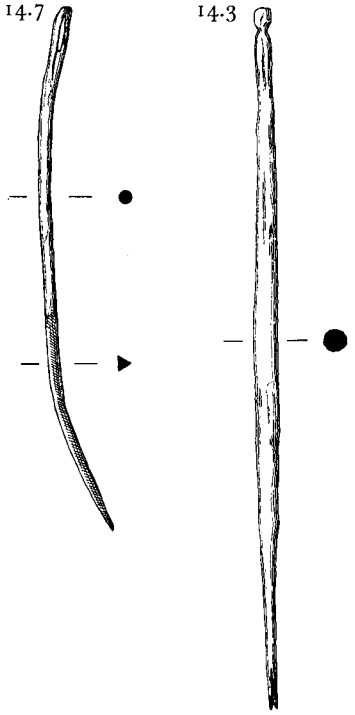
'the letters presumably stand for the owner's three names (*tria nomina*). We may compare this example with a gold ring in the British Museum inscribed *C* retrograde on the ring (Marshall 1907, 106, No. 630); also, more generally, with the uninscribed gold ring from a hoard in Bonn dated by coins to the middle of the 3rd century AD, as well as silver rings from Xanten and Cologne (Haberey 1961, 321, Figure 3, No. 2; 324, No. 6; and Henkel 1913, 35 ff., Nos. 390–2). The form of the ring is typical of the 3rd century (Henig 1978, 35 and 38 ff.; Figure 1, Type VIII).' Residual in III.136 (see also p. **16**).

Copper and copper alloy

14.2 (SM 104) Tool or 'knife' with triangular blade and hollow, tubular socketed handle, now partially flattened. Three other examples of the same type are known from London (Chapman 1980a, 88, No. 466, Figure 52, Pl. 2). The New Fresh Wharf example has the same form as the example from Billingsgate Buildings, with a clearly-defined waist formed between the blade and handle, though the blade shape differs, having a round semi-circular curve at one corner. Possible uses for these 'knives' – as medical instruments, in leather-working or domestic razors – are discussed in the work cited above. A further suggestion is that they may have been used for gutting and descaling fish, and it may be significant that two of the four examples from London come from the waterfront area. III.357: Per. 1, Ph. 1.

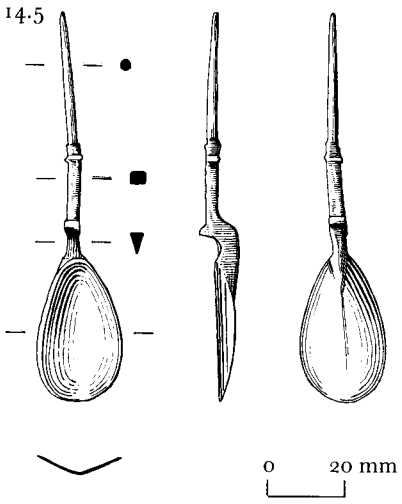
14.2



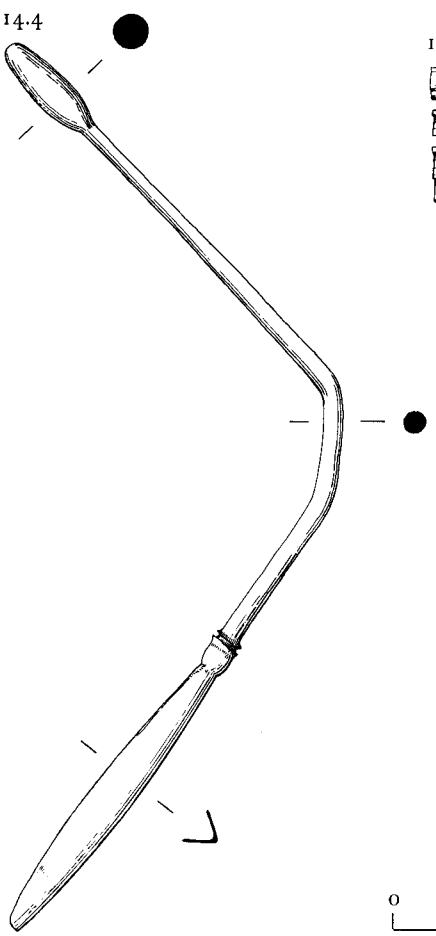


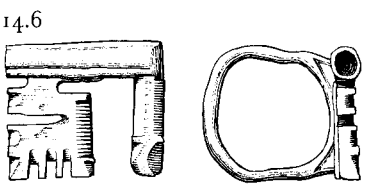
14.3 (SM 184) Pin, knopped head, bifurcated point – though it is not clear whether this is intentional, or a result of the manufacturing process, since surface cracks perhaps indicate that the pin was formed by rolling sheet(?) metal. III.340: Per. 1, Ph. 4.

14.4 (NFW 242) Instrument with long oval bowl at one end, V-shaped in section, and blunt probe at the other. Plain shaft (bow bent) with a single transverse moulding below bowl. A common object, often thought to be surgical, but so numerous that their primary purpose must have been domestic, e.g. the extraction of cosmetics from unguent bottles, and their preparation. II.110: Per. 1, Ph. 5 (see also p. **19**).



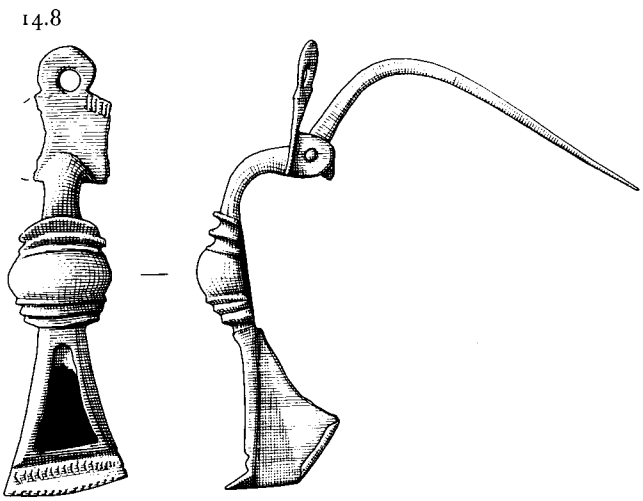
14.5 (NFW 245) Spoon with pear-shaped bowl; handle linked by curving arm with trace of a rat-tail under bowl. Apparently cast in one piece, and finished using a rasp or file. The bowl has a hint of a convex moulding around its inner lip; the handle is square in section for a third of its length, changing after two transverse mouldings to a circular section, becoming pointed at the now broken end. Strong (1966, 177–8, Figure 36b) places such spoons in the 2nd century AD. II.110: Per. 1, Ph. 5 (see also p. **19**).





14.6 (SM 148) Finger ring with rotary key, possibly for lock of small cupboard or chest (p. **19**). III.269: Per. 1, Ph. 6.

14.7 (SM 149) Needle; shaft curved and triangular in section for approx. 30 mm to point. III.269: Per. 1, Ph. 6.



14.8 (SM 73) Brooch, with flat, enamelled fantail bow. D. Mackreth makes the following comments: 'The hinged pin is mounted between lugs behind what was once a semi-circular or elliptical head-plate, surmounted by a cast loop, and having around the upper edge a line of marks made by the edge and corner of a square punch. The upper bow is narrow, round-fronted, has a quadrant curve in profile, and runs down to a central moulding with three marked steps top and bottom. The lower bow is a flat fantail, with a curved and cross-cut projecting moulding under a buried beaded cross-moulding. The main face has a chamfer down each side, and a triangular recess, the apex rounded, for enamel, now black in appearance.'

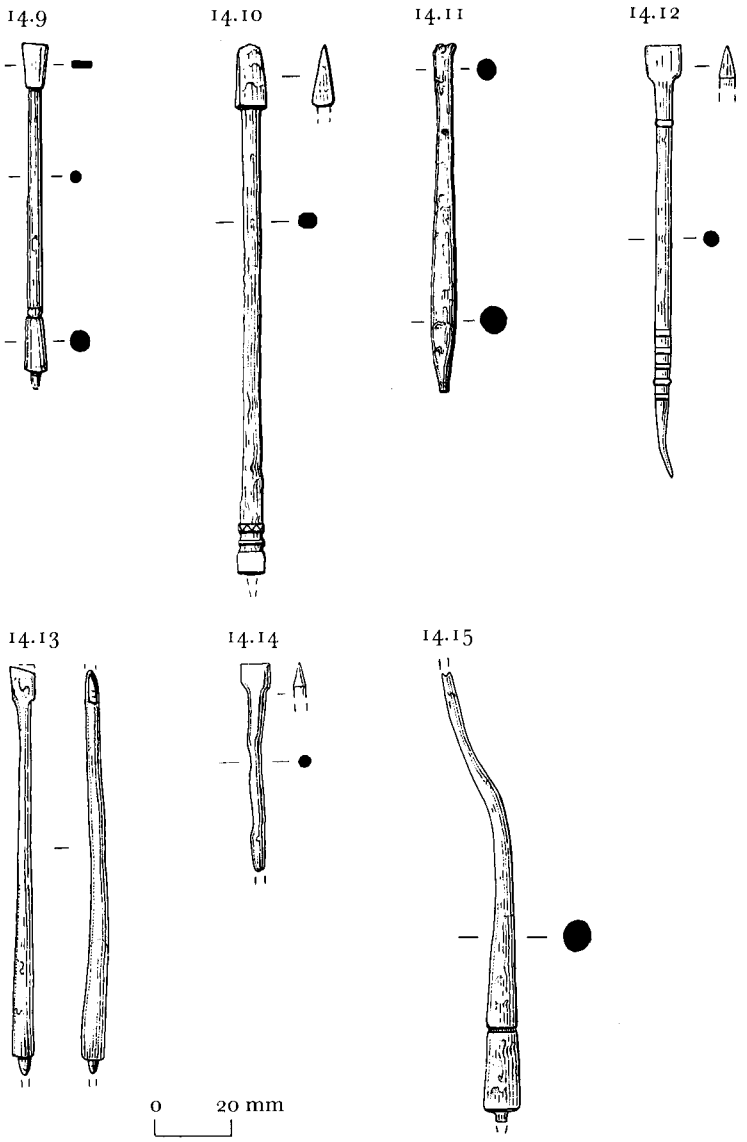
The brooch belongs to an ill-defined family of which the chief unifying feature is the head-plate and loop. While some may have no knop or central ornament (e.g. Böhme 1972, 81, Taf. 6,355), and thus may not belong truly to the group, the central ornament is common with a fantail as here, or a tapering lower bow terminating in a foot-knob (*ibid.* 81, Taf. 6,353). As most of the parallels, and all of the available dating, come from the continent, they were almost certainly made there. Close parallels for the present design are few. One comes from Canterbury (excavations by T. Tatton-Brown, to be published). Another from Colchester can only be placed before *c.* AD 300 (Crummy 1983, 14, Figure 11, No. 68).

The date range is not secure: one from Augst was found in a context dated to late 1st to early 3rd centuries (Riha 1979, 179, Taf. 57,1498); the specimens from Saalburg and Zugmantel give some idea of decorative variations and should date from *c.* AD 85/90 – 260 (Böhme 1972, 81, Taf. 6, 350–5; date: *ibid.* 9–10). However, a specimen from Niederbieber should show that the type was in use after *c.* AD 190 (Exner 1939, 80, Taf. 7, 13.I.26; Gechter 1980, 590). The available date-range appears to cover most, if not all, of the 2nd century, with a possibility that some continued in use into the 3rd., even if they were not being made then. III.220: Per. 2, Ph. 1 (see p. **16**).

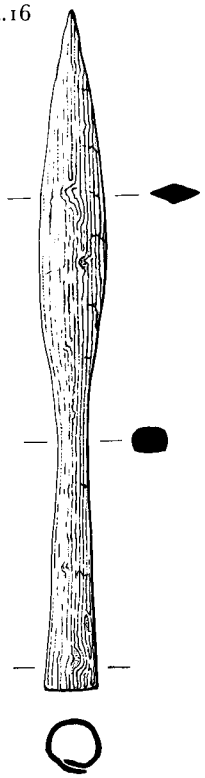
Iron

14.9–14.14 (SM 194, SM 86, NFW 136, SM 81, SM 82 and SM 179, respectively) Styli, fragmentary or whole, two having decorative bronze bindings around shaft (Nos. 14.10 and 14.12). Not an uncommon find from water-logged deposits in London, but it is interesting to note their occurrence in the same deposits that included several wooden writing tablets (Nos. 9.2–9.7 above; and see p. **6**). Nos. 14.9 and 14.10 come from III.288 and III.290, respectively: Per. 1, Ph. 5. No. 14.11 comes from II.112: Per. 1, Ph. 7. Nos. 14.12–14.13 come from III.220: Per. 2, Ph. 1; and No. 14.14 comes from III.150: Per. 2, Ph. 3.

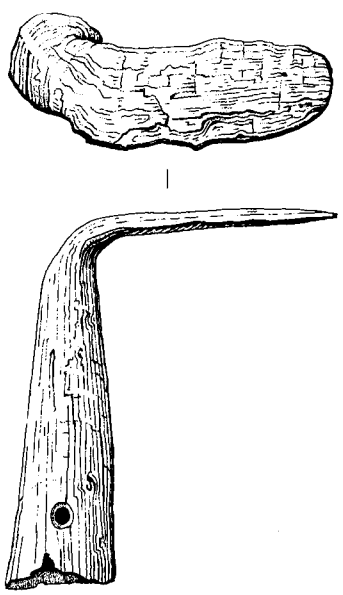
14.15 (SM 200) Implement/tool; perhaps an awl, gouge or stylus. Circular section, shaft tapering to point (now broken); the thicker end has a single transverse groove below a lip with remains of an insubstantial protruding tang(?). It is unclear whether the main shaft was bent intentionally or accidentally. If the protrusion from the main end is broken and originally acted as a tang to receive a wooden handle, the tool is best identified as an awl or gouge for delicate work. III.269: Per. 1, Ph. 6.



14.16

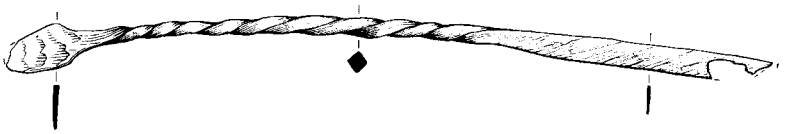


14.17



0 20 mm

14.18



0 40 mm

14.16 (SM 210) Socketed spearhead, well made, slightly drawn-out thickened point, slim leaf-shaped blade with hint of central rib on both sides, tapering without shoulders to circular sectioned socket. The socket appears to have neither a retaining hole nor longitudinal split, but contains traces of (unidentified) wood(?). Brailsford (1962), Manning (1976), and Scott (1980) have all discussed typological aspects of Romano-British spear and lance heads, drawing mainly from examples from military sites, but no complete study of such weapons from the province as a whole has been published, and it remains difficult to distinguish civilian from military equipment. III.288: Per. 1, Ph. 5.

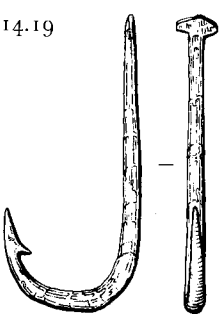
14.17 (NFW 285) Implement/tool/weapon; circular, hollow socket shaft, with two opposing circular holes, for retaining rivet-nail. The socket contains traces of (unidentified) wood(?). The functional part of the tool, which is much corroded, is bent at a right-angle to the socket, but it is unclear whether this was intentional. The implement ends in a thin leaf-shaped blade, but the original blade edges do not survive. If intentionally bent, an agricultural tool is possible; if originally straight, a spear-head is not unlikely, although the socketed shaft is somewhat short. II.166: Per. 1, Ph. 7.

14.18 (SM 215) Fire or altar shovel, with long twisted handle terminating in a flat section (the very end is missing). The spatulate end was linked to the now missing shovel, which was probably triangular with raised edges. For a more complete example from *Verulamium* see Frere (1972, 164, No. 6), and for examples from Newstead and the Carrawburgh Mithraeum (Manning 1976, 39, No. 149 and Figure 23). A portion of a similar shovel has been recovered from the Bank of England site in London (M.O.L. Acc. No. 13640). III.220: Per. 2, Ph. 1.

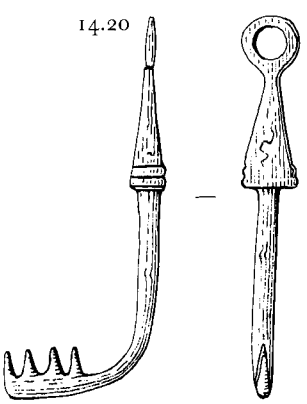
14.19 (SM 178) Barbed fish hook, with flange at right angles to shaft for line attachment. A very similar example in both shape and size, but in bronze, comes from the Bank of England (Walbrook) site (M.O.L. Acc. No. 14571), and a similar but smaller bronze example comes from the former London Museum collection (no number). III.269: Per. 1, Ph. 6 (see p. **19**).

14.20 (SM 209) Slide key, L-shaped, with four teeth, rectangular shaft, substantial four-sided tapering handle with circular loop. III.269: Per. 1, Ph. 6 (see also p. **19**).

14.19



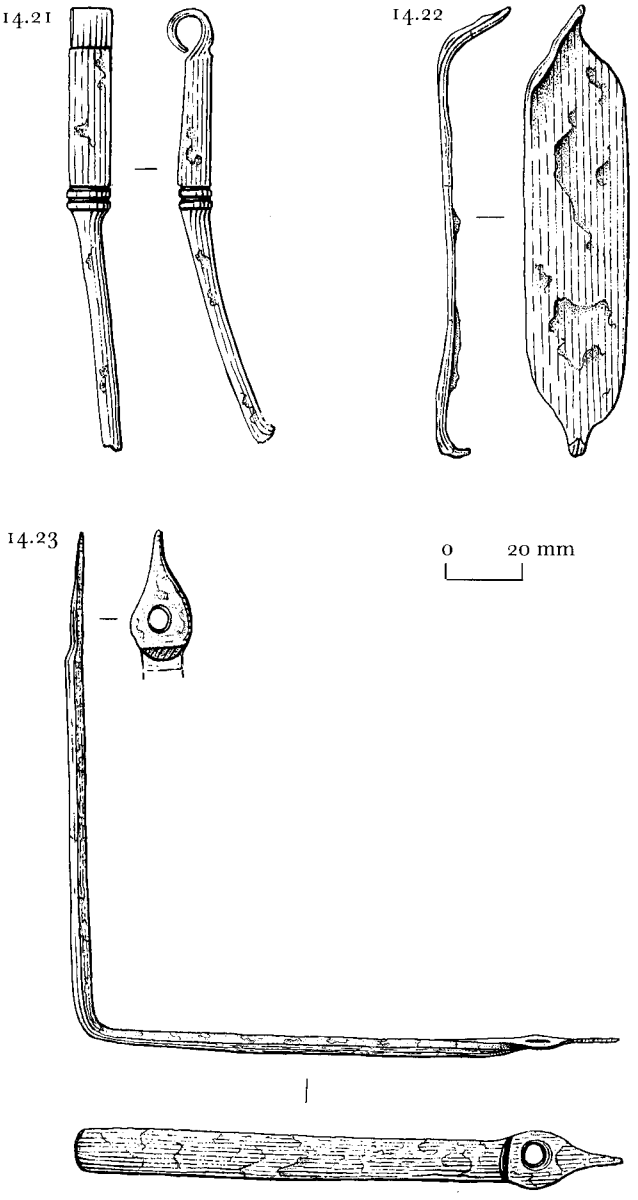
14.20



14.21 (SM 214) Slide key, head and teeth missing. Remaining shaft rectangular, extending to handle, which is rectangular in section, with transverse mouldings at one end and circular loop at other. III.258: Per. 2, Ph. 1.

14.22 (SM 84) Plate, roughly parallel sides, with ends drawn up, originally at right-angles, to two thin spikes (one broken). In general form similar to joiner's dog or central hold section of bucket handle, but too insubstantial for the former and insufficiently fashioned for the latter. III.220: Per. 2, Ph. 1.

14.23 (SM 13) Binding, strip of metal, semi-circular in section, bent at right-angles with two arms, one *c.* 10 mm longer than the other; both tips flattened to spatulate forms and pointed, with hole for rivet or nail. The insubstantial nature of the metal suggests that it was for a box, casket or furniture rather than building construction. Four similar bindings are known from London (M.O.L. Acc. Nos. 13395, 13756, 13757, 16419). III.221: Per. 2, Ph. 1 (see also p. **19**).



STONE OBJECTS

Michael Rhodes

(Petrological descriptions of the hones by D. T. Moore, and of the remaining items by Martyn Owen, unless otherwise stated).

The stone objects include a number of items of particular interest and importance. Of these, perhaps the most notable are thirteen hones, an unusually large number to have been recovered from a limited area. Roman hones are usually recovered in ones and twos, so it is likely that they represent some activity specific to the locality; leatherworking is one possibility (see p. 92). However, the majority of the hones belong to a Kentish Rag hone industry, whose products are easily recognised on account of score marks on the sides, produced during the manufacturing process (described below). They are identical in petrology, approximate size, and technique of manufacture to the contents of a crate of about one hundred hones from the gutter of the Wroxeter forum. These were apparently overturned from a stall during a sudden evacuation of the building, together with stacks of Antonine samian from Lezoux (see below). The New Fresh Wharf hones were also discovered in association with unused samian, raising the possibility that they could have been traded as a side-line by samian merchants. A number show no signs of wear, which may mean that they were broken in transit, along with the unused samian.

Other noteworthy items comprise a fragment of an Egyptian(?) statue (No. 15.14), some structural stone-work (Nos. 15.15–15.16), and the first Roman roofing materials of stone to have been recovered from London. The London region is devoid of suitable stone for this purpose, and stone roofed buildings cannot have been common. The same applies to *Verulamium*, where only one stone-roofed building has been reported – a mid 2nd century house, roofed in slabs of Stonesfield or Collyweston slate (Wheeler and Wheeler 1936, 141; Williams 1971, 178). At Gloucester, stone roofs were not introduced until the mid 2nd century (Williams 1972, 106). If this represents a widespread chronological trend, it might help to explain why they have not previously been identified in London, where earlier Roman buildings may have been more numerous, and are certainly better known.

There are also five fragments of stone slabs in a grey, glauconitic, sandy limestones from the Lower Greensand of the Weald – Hythe or Folkstone Beds (II.166: Per. 1, Ph. 7; and redeposited in several layers of Per. 2). They range in thickness up to 54 mm, and worn surfaces on one example suggests that they are flag-stones. This is of interest because Roman stone paving appears to have been rare in the South-East (Williams 1971, 179). The only other examples from London occur in an exceptional context: a room in the Roman palace, which was floored with slabs of 'green schist' set in *opus signinum* (Marsden 1975, 50).

A number of other stone objects, mentioned in the Discussion of the reports (pp. 88–95), are described in detail in the Archive Report. This also contains a full description of some unidentified stone objects, the most curious of which are two pieces of white, water-worn(?) vein quartz (Archive Report, Nos. 14.15–14.16), which, although of no apparent functional value, are remote from their place of origin.

Hones

Thirteen Roman hones have been positively identified (see p. **20**), and two possible hones are included in the Archive Report with the palettes (Nos. 14.2–14.3). A fragment of stone roofing in Elland Flag, appears to have been put to secondary use as a hone (see below); the reuse of building stone for such a purpose is by no means uncommon (Moore 1978, 65). With one exception (No. 15.1), the hones were recovered from the disturbed or redeposited upper fill of the quay (not one was recovered from the primary fill). They may therefore be dated as probably early to mid 3rd century, although a later date is just possible.

Examination of thin sections cut from the hones shows that all but two are of Kentish Rag, or similar rock. D. T. Moore comments that 'Kentish Rag is a marine facies in the Wealden or Lower Greensand, which is distinguishable from some Wealden or Purbeck freshwater limestones by the presence of the marine mineral glauconite. A number of hones could not be positively identified as Kentish Rag because this mineral was absent in the thin-section, but in other respects the general similarity of the majority of these hones, in terms of their size and method of manufacture, would indicate that they are also of Kentish Rag'.

A recent petrological study of hones from three English sites (Winchester, Northampton, and Scole in Norfolk), has shown that Kentish Rag is the most common Roman type, with Coal Measures Sandstones forming the next most frequent variety (Moore 1975, 67, Figure 3). This pattern is mirrored at New Fresh Wharf, since one of the two non-Kentish Rag hones is a Coal Measures Sandstone (No. 22.13). A survey of the limited number of published hones from London suggests that Kentish Rag hones were the commonest variety here during the 1st and 2nd centuries AD (Ellis 1973; Rhodes 1980c, 132 and Figure 77, Nos. 685–6; Townend and Hinton 1978, 219 and Figure 95, Nos. 98 and 100; 160 and Figure 162, No. 39; and probably also Schwab 1974, 100 and Figure 46, No. 7). This is no surprise since the Kentish Rag quarries are London's nearest source of building stone.

All but two of the Kentish Rag hones from New Fresh Wharf (Nos. 15.1 and 15.3 – the latter being a reused splinter) display evidence of manufacture. Angled saw marks on the surfaces of Nos. 15.4 and 15.10 suggest that the first stage involved the division of a quarried block into slabs of the required thickness, by sawing along the bedding plane. The edges of the slabs were then prepared by scoring a straight groove through half the thickness, and breaking away the irregular edge. Evidence for this comes in the form of a deep score-mark and break across one end of No. 15.8; a similar feature may be observed on a Kentish Rag hone from the Roman villa at Little Oulsham Drove (Gurney forthcoming, No. 45). Individual hones were then marked out by scoring a series of grooves into both surfaces of the slab, opposite each other, to a depth of *c.* 3/8 of the total thickness. These grooves were evidently scored

one at a time, as their depth varies from one side of the hone to the other. Finally, the hones were separated, leaving a central ridge on both edges. On a group of similar hones from Wroxeter (see below), the ridges are smooth, which was thought to indicate that these hones were broken from the slab by a sharp blow (Atkinson 1942, 129). Some of the New Fresh Wharf hones also have smoothed edges, but this may be due to wear. Another possibility is that they were separated by sawing: the ridges of Nos. 15.8 and 15.9 display traces of angled marks, akin to saw marks, although it is possible that they were caused by filing or grinding in one direction. Another hone (No. 15.10) is definitely sawn on one edge, although this item is untypical in that only one edge has score marks, while the other consists of two angled planes with marks which suggest that it was sawn from both sides (for a similar example of a hone displaying this feature, see M.O.L. Acc. No. 18346).

Although the study of hones has largely been restricted to petrology (Moore 1978, 64; 1983, 278), the preparation of the present report suggests that size and method of manufacture should also be taken into account, along with rock type and date. The New Fresh Wharf hones are in marked contrast with Kentish Rag hones from London of Hadrianic and earlier date, which are often rectangular in section, vary greatly in dimensions, and rarely display evidence of manufacture (occasional grooves cut into one side only have been noted; see e.g. M.O.L. Acc. Nos. 19254 and 26405). They are also often heavily worn, with rounded edges (see refs. cited above; Wilmott forthcoming; and many unpublished items from recent excavations and in the reserve collections of the M.O.L.). By contrast, one may note the relative lack of wear on the principal group of hones from New Fresh Wharf, and on similar hones from other British sites. This could be due to their small section, which may have encouraged breakage whilst they were relatively little used.

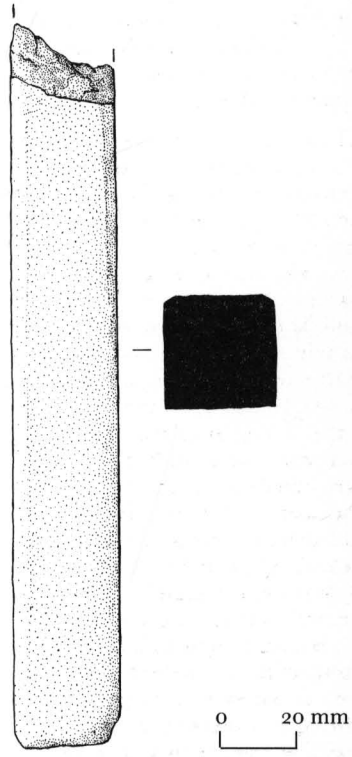
One half of the Kentish Rag hones from New Fresh Wharf are closely similar on account of their very small dimensions (mean width 21 mm, range 19–23 mm; mean thickness before wear *c.* 16.5 mm, range 16–18 mm). No. 15.8, although broken at one end, is probably close to its original length at 293 mm. They are identical to a crate load of *c.* one hundred unused hones from the Wroxeter Forum (Atkinson 1942, 128–9). The published account of these hones suggests they were obtained from the neighbourhood of Stony Stratford (Bucks), but a full petrological analysis of a typical example, by kind permission of Bruce Bennison of Shrewsbury Borough Museum Service, revealed that it is of Kentish Rag. Similar hones have been recovered at York (MacGregor 1976, 4–5, No. 5; Trajanic to late 4th/early 5th centuries), Portchester (Peacock 1975, No. 339; after *c.* AD 280), Little Oulsham Drove, Norfolk (Gurney forthcoming, No. 45; 4th century), and the nearby Pudding Lane excavations in London (Site Code PDN 81, Reg. Nos. 109, 613 and 1232, provisionally dated as *c.* mid 2nd century, G. Milne, pers. comm.).

These hones are clearly the products of an industry which supplied a large area of Roman Britain (first recognised by Peacock 1971b, 155). It is clear from the Wroxeter 'hoard' that they were produced and distributed in bulk. This may have led to a quicker method of production, standardized sizes, and in more slender hones, which would be cheaper to transport, and therefore to purchase, but which would break and require replacement with greater frequency. The long date range of the products of this industry (Antonine to 4th century, on present evidence) and their wide distribution, bear testimony to its enormous success.

Hones of Kentish rag and similar rock types

Unless otherwise stated, these hones have rectangular sections, with flat upper and lower surfaces.

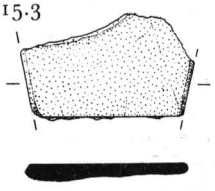
15.1



15.1 (SM 147) Quartz-calcite-glauconite microfossiliferous grit, identified as Kentish Rag. Square section; fresh break at one end, blunted break at other (bottom?) end. The corners are slightly chamfered on two sides, especially towards the bottom end. III.286: Per. 1, Ph. 2.

15.2 (SM 186) Stone type as for No. 15.1. Fresh breaks at both ends; underside broken away along bedding plane. Both sides score-marked; one has remains of central ridge. III.269: Per. 1, Ph. 6 (not illustrated).

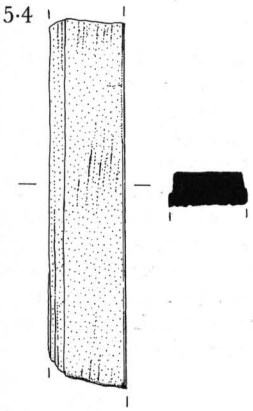
15.3



15.3 (NFW 646) Stone type as for No. 15.1. Fresh breaks at both ends. Tapering edges. At some stage during its useful life, this hone split along the

bedding plane, reducing it to a mere sliver of stone, 3 mm thick. This was evidently still useful as both edges are rounded, and there is some smoothing on the underside. II.112: Per. 1, Ph. 7.

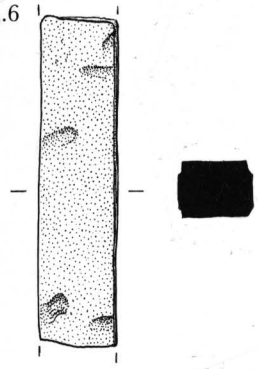
15.4



15.4 (NFW 83) Quartz-calcite microfossiliferous grit, identified as Kentish Rag (or a Purbeck freshwater limestone). Fresh breaks at both ends and on underside, where lower part broke away along bedding plane. Upper surface retains slight traces of maker's angular saw(?) marks; both sides score-marked with central ridges; perhaps little used, if at all. II.136: Per. 1, Ph. 7.

15.5 (SM 43) As for No. 15.4, but upper surface lost also. III.195: Per. 2, Ph. 3 (not illustrated).

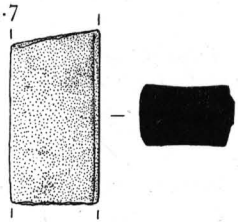
15.6



15.6 (NFW 138) Quartz-calcite-muscovite-glauconite microfossiliferous grit, identified as Kentish Rag. Fresh breaks at both ends. Sides score marked with central ridges worn smooth through use. II.166: Per. 1, Ph. 7.

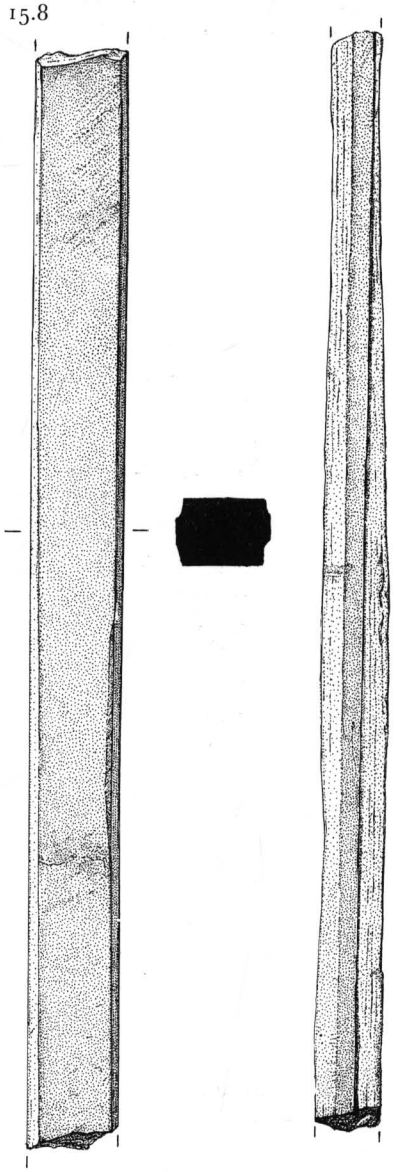
0 20 mm

15.7



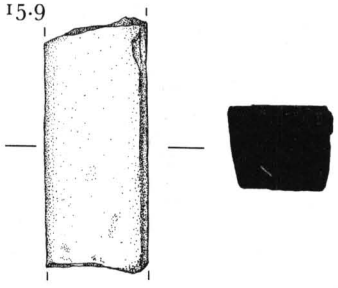
15.7 (NFW 641) Stone type as for No. 15.4. Fresh breaks at both ends. Surfaces slightly concave through use. One side displays score marks and central ridge, the other is smooth and convex, but whether through use or in manufacture is not clear (for similar sections see MacGregor 1976, Figure 4, No. 5; and M.O.L. Acc. No. 26404, first half 3rd century). II.166: Per. 1, Ph. 7.

15.8



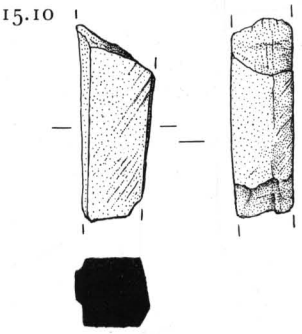
15.8 (SM 201) Stone type as for No. 15.6. One end original, having been formed by scoring and breaking (see discussion above), the other has fresh break. Surfaces worn longitudinally with hollows at one end. Clear score marks on both sides; possible saw marks on the ridges. III.258: Per. 2, Ph. 1.

15.9



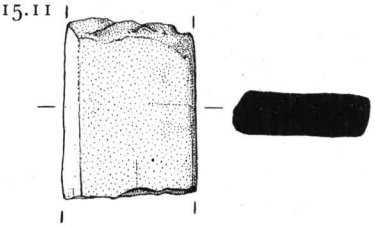
15.9 (SM 187) Stone type as for No. 15.4. Broken at both ends; one break fresh, the other less so. Worn upper and lower surfaces. One edge heavily worn, but clear score-marks and ridge on other; possible saw(?) marks on ridge. Section probably square originally, since score marks now deeper from one side than the other. III.293: Per. 2, Ph. 1.

15.10



15.10 (SM 712) Stone type as for No. 15.4. Fresh break at one end. Apparently end of hone as sides taper towards broken tip. Sub-rectangular section, with angled saw(?) marks on one surface. Score marks and central ridge (later smoothed in use) on one side; the other in two planes with angled saw marks (see discussion). III.293; Per. 2, Ph. 1.

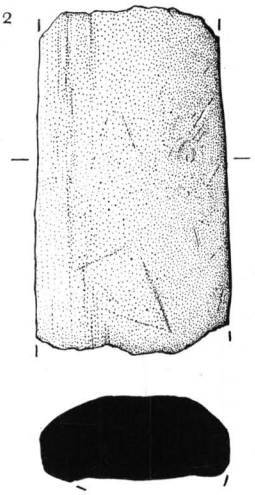
15.11



15.11 (SM 174) Stone type as for No. 15.1. From a broad flat hone. Fresh break at one end, blunted break at other. Abraded remains of central ridge on one side, the other convex through wear(?). III.150: Per. 2, Ph. 3.

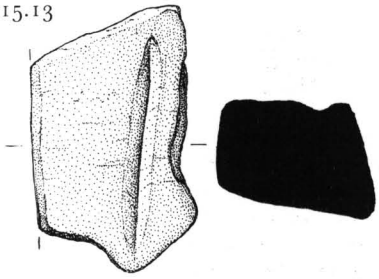
Other hones

15.12



15.12 (SM 185) Blue-grey quartz-muscovite siltstone/grit; source unknown. Broken at both ends, and along bedding plane on underside. Finely smoothed convex upper surface; sides taper and bear abrasion marks. III.357: Per. 1, Ph. 1.

15.13



15.13 (SM 713) Hone(?) fragment, in a purple-brown Coal Measures Sandstone – quite possibly Pennant Grit from the Forest of Dean or Bristol Coalfields. Broken down one side and at both ends. Irregular section; perhaps a secondary hone (Moore 1978, 65). III.195: Per. 2, Ph. 3.

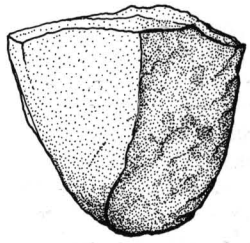
Statue

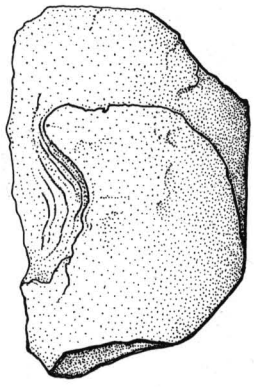
A fragment of polished statue (SM 479; No. 15.14) was recovered from III.256 (Per. 2, Ph. 3). The rock is a 'hard purple-brown/purple-grey igneous rock, possibly a dolerite'. It probably comes from the joint of a limb (perhaps a human elbow or knee) bent at right angles, with the complete ovoid section of an arm or leg emerging at one end.

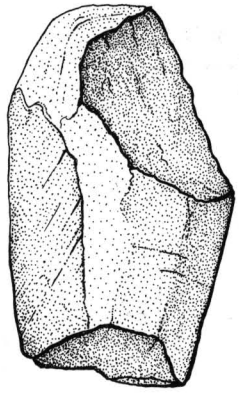
The use of dark stone is quite unusual in Roman sculpture, but it was used sparingly for some exotic luxury items, particularly for those with an Egyptian connection (Dr Susan Walker, pers. comm.). Ian Freestone comments that whilst the stone is not obviously Egyptian, this is by no means impossible. The apparent lack of modelling is also reminiscent of Egyptian sculpture, although it has proved impossible to match this item with any published Egyptian sculpture. Miriam Stead suggests that if it is not Egyptian, it may well be the work of a provincial artist trying to simulate an Egyptian piece.

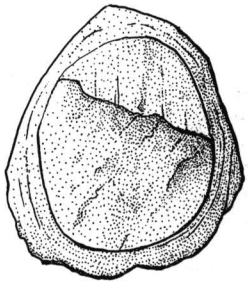
It would be tempting to link this piece with the Egyptian cult of Isis in London, for which there is clear epigraphic evidence (Marsden 1980, 49–50 and 133), or perhaps the Egyptian god Serapis, a statue of whom was found in the Mithraeum (Grimes 1968, 106). At the very least these references demonstrate possible contexts for an egyptianising statue in Roman London, and cannot but heighten the interest of this particular item.

15.14



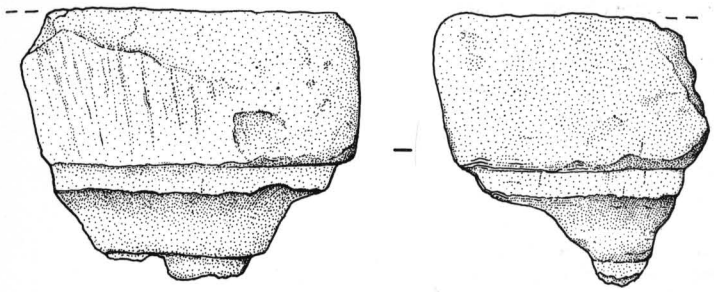




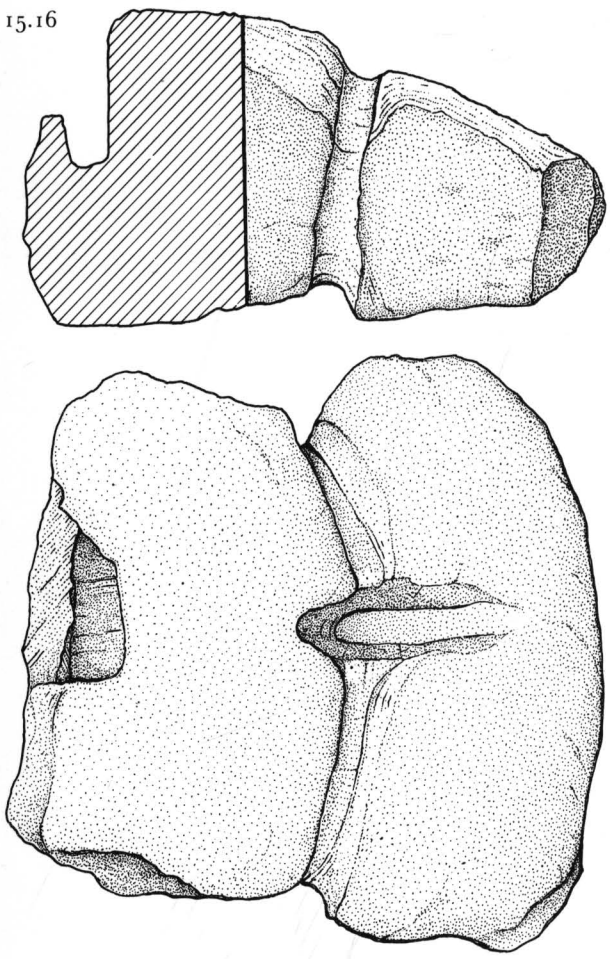


0 20 mm

15.15



15.16



0 40 mm

Architectural fragments

Portions of a Roman moulding and reused column shaft were recovered from the post-Roman levels. The former (SM 429; No. 15.15; III.114: Per. 2, Ph. 4) is in a white pelletal limestone, probably not British, perhaps from northern France. Dr Tom Blagg comments as follows:

'Probably part of a pilaster capital. Mouldings survive on two adjacent sides; the remainder is broken. Chisel marks are visible: oblique on the abacus and horizontal on the *cyma reversa* moulding. The top has been dressed with a mason's point. The profile of the mouldings and the techniques used are consistent with the piece being Roman.'

The column shaft (NFW 460; No. 15.16) is in a pale greyish buff, shelly oolitic limestone. Robin Sanderson has compared the stone with samples from British and French localities in the collections of the Geological Museum, London. He reports that it is most closely comparable with a sample of the Ancaster stone Weatherbed from near Grantham, Lincolnshire, and comments that material from this bed is reasonably weather resistant and capable of taking a polish.

Tom Blagg makes the following remarks about the column:

'A segment of about one eighth of the original circumference survives; the diameter was *c.* 0.55 m. In what was the centre is a broken lewis hole 76 mm wide at the bottom. A groove was later cut around the stone between the circumference and the lewis hole, presumably so that a rope could be secured around it in order to hold or weigh something down.

A column of this size is likely to have come from a monumental building complex. One may cite in comparison the columns of the forum ambulatories and porticos at Silchester (*c.* 0.53–0.57 m) and Wroxeter (*c.* 0.47–0.49 m); the size is smaller, that is, than the internal order of a basilica, but greater than the verandah columns of a town house. Surprisingly, columns of this size have rarely been found in London. A column drum *c.* 0.6 m in diameter was discovered close to the Roman Palace (Marsden 1975, 54 and Figure 28), and a fragment with an estimated diameter of 0.5–0.6 m, decorated with a lattice,

was reused in the Riverside Wall (Smith 1859, 48 and Pl. 5, Figure 5; R.C.H.M. 1928, 93 and Pl. 51). A column of "considerable magnitude" was also found near the palace site in 1846 (Marsden 1975, 64; Smith 1847, 341). All others which survive are considerably smaller.'

At least one colonnaded building is known to have stood in the area immediately to the north of the New Fresh Wharf site, on the evidence of two identical small limestone column bases (shaft dia. 0.26 m). These were recovered from the Regis House site in King William Street (Waddington n.d., 16; Merrifield 1965, 284, Site 309) and from the Pudding Lane excavations (Site Code PDN 81, Reg. No. 704; see Archive Report by R. Lea, Museum of London). The New Fresh Wharf column was recovered from II.127, an 11th-century dump containing rubble which may have been derived from an early medieval building. It could have been reused at any period prior to the 11th century.

Roofing materials

The objects identified as roof slates occur in three different rock types. Three fragments are in a fine-grained, flaggy, micaceous sandstone, very similar to the Elland flags of the Yorkshire Coal Measures (III.269: Per. 1, Ph. 6; III.258: Per. 2, Ph. 1; III.150: Per. 2, Ph. 3). They are broken on all sides, with flat upper and lower surfaces split along the natural bedding plane. One is 21 mm thick, which is probably close to the original thickness. A diamond shaped roofing-slate, thought to be Elland flag, has been recovered from Brough-on-Humber (Wacher 1969, 102 and Figure 45, No. 11). Alternatively, the micaceous sparkle of the surface might have made them suitable as wall veneer. A localised patch of wear on one fragment shows that it was once used as an improvised hone.

The remaining four roof-slate fragments occur in two varieties of slate, probably from North Wales, but possibly imported (they are not at all similar to any other British slate). Although from late Saxon deposits, a Roman origin is fairly certain, especially since all but one come from Period 2, Phase 1, in which only a very small proportion of the finds are of post Roman date (see p. 90). One is of a greyish green colour (III.348: Per. 2, Ph. 1), the remainder being dark grey/black (III.258: Per. 2, Ph. 1; III.195: Per. 2, Ph. 3). One of this second group is quite sizeable (maximum dimensions 220 × 170 mm), is weathered on one surface, and displays an original straight edge (No. 15.17). On the underside are traces of a straight score line along which this edge was nibbled into shape using a pair of pincers (on the evidence of what appear to be a series of 'bites', *c.* 7 mm wide). Part of a second scored line runs parallel to the edge at a distance of *c.* 22 mm.

It is generally held that North Welsh slate was not used in the Roman period, despite the fairly widespread use of other varieties (Liversidge 1968, 254; Williams 1971, 178–9), but fragments of closely similar slate are nonetheless occasionally recovered from Roman deposits (M. Owen, pers. comm.), for example, at Chester (Fryer 1973, 266).

BRICK AND TILE

I. M. Betts

The excavations produced just over 393 kg of ceramic building material, most of which came from early to mid 3rd-century deposits. Substantial brick and tile assemblages of this date are rarely found in London, so the material is important in that it complements our fuller understanding of earlier types, showing for the first time possible changes in the source of supply of building materials in the late 2nd to mid 3rd centuries. The statistical information presented in this report is a summary of the most significant findings. A more detailed record is available in the form of an Archive Report, available on request (see p. 267).

As this is the first time that later Roman building materials from London have been studied in detail, some eighteen new tile fabrics have been recognised (most of which are described in Figure 91). Altogether, some twenty-seven tile fabrics are present, although approximately half occur only in limited quantities. The fabric numbers refer to the Department of Urban Archaeology's type series of pottery, brick and tile fabrics, which may be consulted at the Museum of London.

A detailed comparison of their various characteristics shows that certain of the fabrics are closely related. The tegulae of fabrics 2453 (No. 16.14), 2457 (No.16.21), and 3001 (No. 16.31) are all characterised by the presence of a single distinctive type of rounded flange profile (see pp. 248–50). All three fabrics are unusual in being coated with iron oxide quartz sand grains in the moulding process. Almost every tile in fabrics 2453 and 3001 have red or reddish-brown sanding. In the case of 2457 the coloured sanding tends to be less frequent and of light brown colour. The only other tiles with such sanding are three small fragments of fabric 2454. Fabric types 3009 and 3019 have a very similar range of inclusions and are closely similar in appearance. The major distinguishing feature is the more sandy clay matrix of 3009. In addition, both fabrics occur predominantly in the form of bricks (see page 247).

FIGURE 91 Description of brick and tile fabrics discussed in the text.

Fabric	Colour	Description
2452	Various shades of red, orange or brown	Fairly fine fabric, usually with a scatter of silty inclusions, limestones and quartz. Fairly common quartz <0.4 mm in some examples. Green's (1980c) red fabric. For *tegula* profiles, see Nos 16.4–16.13; for signatures see Nos 16.58–16.64
2453	Pink or yellowish-brown	Fabric characterised by numerous yellowish coloured rounded clay inclusions. Quartz and iron oxide sometimes present. For *tegula* profile, see No. 16.14.
2454	Yellow, greenish-white, grey or pink	Generally hard, well-fired tiles, with varying amounts of quartz <0.3 mm, 'rose' coloured in some examples. Occasional limestone inclusions. Green's (1980c) white fabric. For *tegula* profiles, see Nos 16.15–16.19; for signatures, see Nos 16.65–16.66.
2457	Light grey, or greyish-brown	Abundant iron oxide <0.1 mm, occasional quartz <0.5 mm, iron oxide and shell fragments. For *tegula* profile, see No. 16.21; for signature, see No. 16.68.
2459	Light brown or orange	Very fine sandy fabric, with mica and abundant quartz <0.2 mm. Occasional iron oxide. For *tegula* profile, see Nos 16.23–16.30; for signatures, see Nos 16.69–16.71.
3001	Mainly grey, red, light brown, or yellow	Fabric with numerous rounded or lense-shaped grey and white inclusions. Occasional quartz and limestone. For *tegula* profile, see No. 16.31; for signature see No. 16.72.
3004	Orange-red, orange, or brown	Numerous quartz grains <0.5 mm. Tiles have a sandy texture. Also some silty inclusions, limestone, and iron oxide. For *tegula* profiles, see Nos 16.32–16.35; for signatures, see Nos 16.73–16.75; for nail hole, see No. 16.81.
3006	Light brown, orange red	Frequent small quartz grains <0.3 mm. Common iron oxide in some examples. For *tegula* profile, see Nos 16.39–16.42; for nail-hole, see No. 16.80.
3009	Light brown, brownish-orange	Abundant quartz <0.4 mm, plus numerous siltstone and iron oxide inclusions.
3019	Brownish-orange, some with light grey core	Numerous large siltstone and iron oxide inclusions <7 mm.
3020	Light brown	Fine sandy fabric with characteristic silty bands. Quartz <0.2 mm, with common iron oxide.

TYPES OF TILE PRESENT

Most of the common forms of Roman ceramic building material are represented, namely *tegula*, *imbrex*, brick, box flue tile, paving tile, and *tessera*. Unfortunately, very few complete, or even partially complete, tiles were recovered.

The tiles display a number of interesting features:

1) With the exception of a single 10 g example in fabric 2459, all of the *tesserae*

are found in only two fabrics (2452 and 2454), both of which are known to have been introduced at an early date (see below).
2) Flue tiles are found in only four fabrics, and in the case of fabric 2457 only one example is known. Again, three of these fabrics are encountered in the early Roman period.
3) Despite a considerable amount of tile in fabric 3001, it only occurs either as *tegula* or *imbrex*. The same is true for related fabric 2457. This suggests either that there was selective importation into London, or that certain production sites did not produce the full range of tile varieties.
4) Related fabrics 3009 and 3019 are unusual in comprising a relatively high proportion of brick (64.6% and 82.6%, respectively). The only example known in similar fabric 3020 is also a brick.

Date of the tile fabrics

Despite limitations to dating resulting from our inability to relate the material to standing structures, certain major changes are apparent in the sources of supply of London's building material during the later 2nd to mid 3rd centuries. The evidence is given in Figures 92 and 93, which show the quantitity and proportion of each fabric, by phase.

A striking feature of Period 1, Phase 1 is the small number of tile fabrics present. Of these, fabrics 2452 and 2454 are known from other early Roman sites in the City. Fabric 2454 was probably no longer produced by the second half of the 2nd century (Frances Pritchard, pers. comm.). Fabric 2452 is by far the most common, and likely to be of local manufacture, as tiles in this fabric stamped P.P.BR.LON have been found on a number of recent excavations, including those at St Peter's Hill and Pudding Lane (for site details see Richardson 1982, 161–2). Additional tile fabrics appear in Period 1, Phase 2, but only in limited quantities.

The difficulties in providing dates are illustrated by the tile recorded from Period 1, Phases 4 and 5. Although these two phases are contemporary, their tile assemblages show certain marked differences. Between Phases 4 and 5 the proportion of 2454 drops from 60.8% to 8.6%. In Phase 5 the proportion of fabrics 2457 and 3001 is 10.9% and 19.3%, respectively, whereas there are no tiles of these fabrics in Phase 4. Whilst the total weight of all tiles in Phase 4 is significantly less than for Phase 5, this cannot be the reason for the discrepancy. Phase 6 has roughly the same weight of tile as Phase 5, yet contains a significantly higher percentage of fabric 3001 (21.2%), whilst fabric 2454 is completely absent.

Although the pottery of Period 1, Phases 4 and 5 is contemporary, the higher proportion of fabric 2454 in Phase 4 suggests that tile from earlier buildings predominates in this phase. The presence of fabric 2457 in Period 1, Phase 5 (which is absent in Phase 4) reinforces the conclusion that this tile assemblage is later. Evidence from the Pudding Lane site (mentioned above) suggests that this fabric does not occur before the late 2nd century (pers. comm., Frances Pritchard).

The appearance in Period 1, Phase 5 of related fabrics 3001 and 2457 probably indicates that they were introduced at approximately the same time. However, the other related fabric, 2453, occurs in Period 1, Phase 1, and must therefore be earlier. It is probable that fabrics 2457 and 3001 are the successors to fabric 2453. Evidence from further excavations will be required before the date range of 2453 can be proven.

The appearance in Period 1, Phase 5 of ten new tile fabrics, at least one in large quantities (fabric 3001), and the drop in tiles of fabric 2454, both point to a major change and diversification in the source of supply of London's ceramic building materials in the late 2nd to mid 3rd centuries.

The building materials from Period 1, Phases 6 and later are very mixed. A number of fabrics appear for the first time, but in relatively small quantities, so their absence in earlier phases may not be significant. Fabrics 3009, 3019, and 3020 appear for the first time in the various phases of Period 2, raising the

Figure 92 Weights of tile fabrics in each Phase in kilograms.

Fabric	Period 1						Period 2	Residual
	1	2	4	5	6	7	1–3	
2451			0.60	0.65	0.40	3.60		0.80
2452	5.80	8.80	2.92	28.24	7.20	12.10	46.02	73.91
2453	2.35		0.15	2.15				1.05
2454	1.65	3.60	6.55	6.82		0.72	19.75	11.34
2455						0.30	0.02	
2456				0.02				0.10
2457				8.85	0.20	0.70	9.90	2.60
2458							0.30	
2459				0.70		0.70	1.61	4.75
3001				15.65	2.67	10.10	9.62	6.80
3004	0.65	0.30	0.15	2.35	0.80	0.30	9.15	7.65
3005		0.75		0.90				0.70
3006				7.10		0.55	6.10	2.35
3007					0.20		0.50	
3008					0.40			
3009							3.05	2.45
3011		0.05	0.40	2.95	0.45	1.35	5.82	4.50
3012				1.65		0.35	0.20	
3013				1.90		0.65	0.80	0.02
3015				0.30				
3016								0.25
3017								0.15
3018				0.60			1.25	0.35
3019				0.60			0.40	1.95
3020							0.30	
3021							0.40	
3027				0.15	0.25		0.15	
Total	10.45	13.50	10.77	80.98	12.57	31.42	115.24	121.72

FIGURE 93 Percentage weights of tile fabrics in each phase.

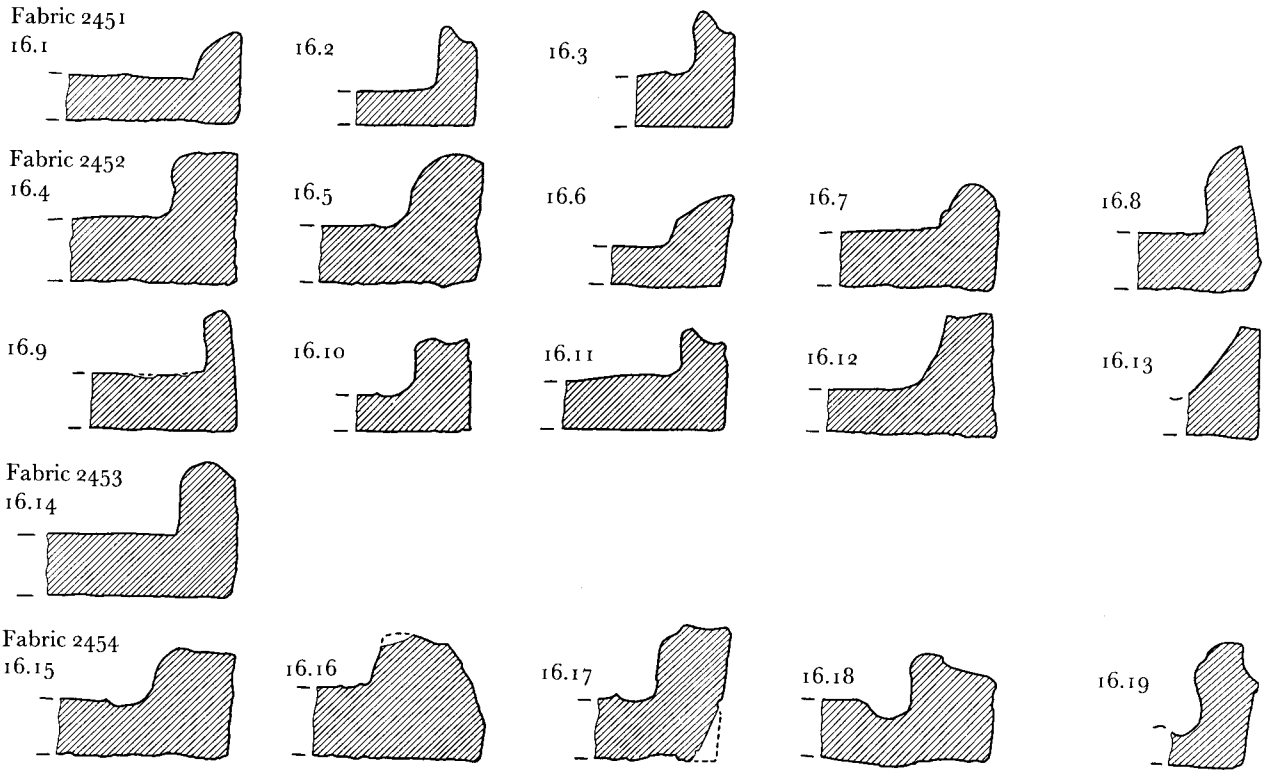
Fabric	Period 1						Period 2	Residual
	1	2	4	5	6	7	1–3	
2451			5.6	0.8	3.2	11.5		0.7
2452	55.5	65.2	27.1	34.9	57.2	38.5	39.9	60.7
2453	22.5		1.4	2.7				0.9
2454	15.8	26.7	60.8	8.4		2.3	17.1	9.3
2455						0.9	0.1	
2456				0.1				0.1
2457				10.9	1.6	2.2	8.6	2.1
2458							0.2	
2459				0.9		2.2	1.4	3.9
3001				19.3	21.2	32.1	8.4	5.6
3004	6.2	2.2	1.4	2.9	6.4	1.0	7.9	6.3
3005		5.5		1.1				0.5
3006				8.8		1.8	5.3	1.9
3007					1.6		0.4	
3008					3.2			
3009							2.7	2.0
3011		0.4	3.7	3.6	3.6	4.3	5.1	3.7
3012				2.0		1.1	0.2	
3013				2.3		2.1	0.7	0.1
3015				0.4				
3016								0.2
3017								0.1
3018				0.7			1.1	0.3
3019							0.3	1.6
3020							0.2	
3021							0.3	
3027				0.2	2.0		0.1	

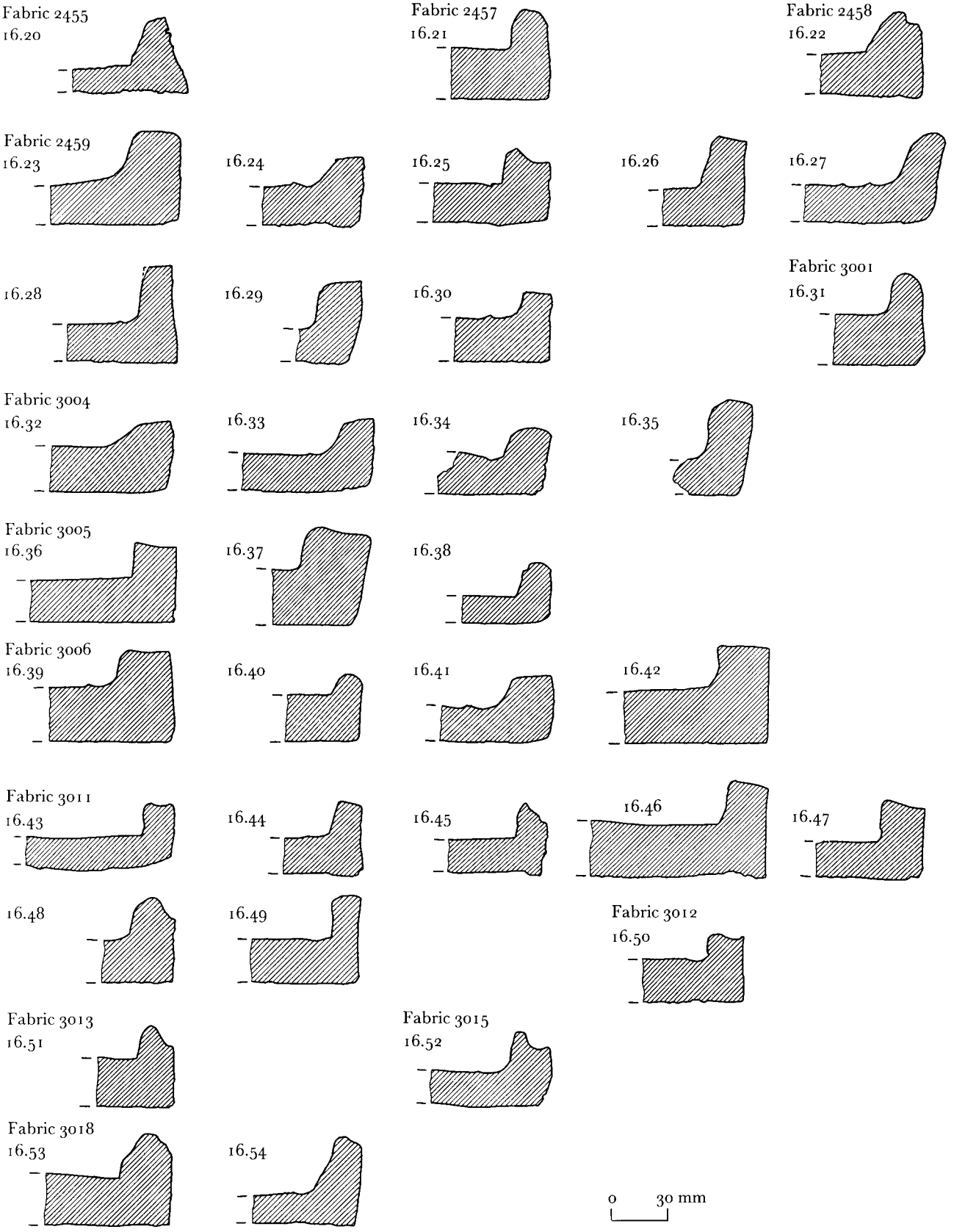
possibility that this group of fabrics (which occur predominantly as bricks) appeared fairly late in the Roman period.

TEGULA FLANGE TYPES

It has already been stated (see page 246) that the profiles of the *tegula* flange and fabric types can be related in the cases of fabrics 2453 (No. 16.14), 2457 (No. 16.21), and 3001 (No. 16.31). Fabric 2454 is characterised by a deep finger groove which occurs on the inside edge of the flange (Nos. 16.15–16.19), whilst many tiles in fabric 3004 have a flange with a gently sloping inside edge (Nos. 16.32–16.35). Other fabrics, however, seem to share a diversity of flange profiles, particularly the *tegulae* in fabrics 2452 (Nos. 16.4–16.13) and 2459 (Nos. 16.23–16.30). Some of the *tegulae* flanges in this latter fabric are bordered by grooves made using two fingers (No. 16.27).

Of the diverse range of flange profiles in fabric 2452, one appears to be far more common than others (No. 16.4). Only one example each of Nos. 16.9 and 16.12 is known. Close examination of the latter reveals a slightly more sandy fabric than many tiles in fabric 2452.




Fabric 2455
16.20
Fabric 2457
16.21
Fabric 2458
16.22
Fabric 2459
16.23
16.24
16.25
16.26
16.27
16.28
16.29
16.30
Fabric 3001
16.31
Fabric 3004
16.32
16.33
16.34
16.35
Fabric 3005
16.36
16.37
16.38
Fabric 3006
16.39
16.40
16.41
16.42
Fabric 3011
16.43
16.44
16.45
16.46
16.47
16.48
16.49
Fabric 3012
16.50
Fabric 3013
16.51
Fabric 3015
16.52
Fabric 3018
16.53
16.54
0
30 mm

The moulding sand is also unusual, having a bimodal size distribution with most quartz grains <0.25 mm, with a scatter of quartz grains of 2–4 mm. Again, this shows a link between the type of fabric and *tegula* flange, and illustrates that the frequency of the various flange types may be of significance. The range of flange types are shown in 16.1–16.54, where they are grouped according to fabric. More work is required before the importance of *tegula* flange types can be ascertained, but the initial results from New Fresh Wharf are encouraging.

Fabric 2452

16.55



16.56



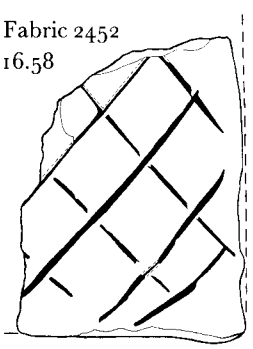
Fabric 3006

16.57



Fabric 2452

16.58



0 40 mm

Box flue tiles

These display three types of keying:
(i) Roller stamped decoration
(ii) Combing
(iii) Keying with a knife, or pointed stick

Fragments of two roller-stamped flue tiles were recovered, both from a die which fits into Lowther's (1948) Group 1 'W chevron' group (Nos. 16.55 and 16.56). The exact variety of this die is not included in his classification, but it has been recorded in London on the Pudding Lane site, where it is tentatively dated to the 2nd century AD (F. Pritchard, M.O.L. Archive Report). The New Fresh Wharf site also produced a roller-stamped brick of die type 18 (No. 16.57). This has also been recorded from Ironmonger Lane (for site, see Norton 1982); and an unprovenanced example from London is also known (M.O.L. Acc. No. 2214). Outside London, the die is known from St Albans and Alfoldean (Ernest Black, pers. comm.).

The majority of box flue tiles have combing impressions on the outside to provide a key for mortar. Also present are parts of two flue tile side vents, both of which appear to have been circular. Another flue tile is of interest on account of what would appear to be traces of combing on the 'inside' of the tile, running parallel to the bottom edge (from II.293: Per. 2, Ph. 1). The reason for these markings is not readily apparent.

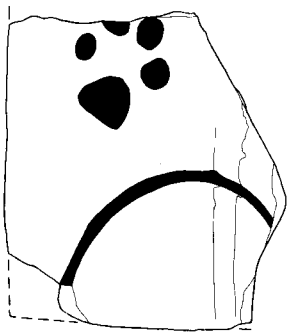
A third method of keying involved using a knife or sharp stick to produce a diamond pattern on the outer surface (No. 16.58).

Signature marks

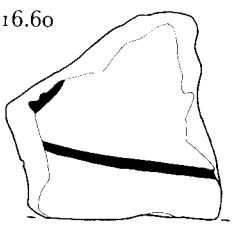
Signature marks are found on many of the *tegulae*, usually on the bottom end, and on certain bricks. Particular signature marks may be characteristic of the various production centres because some are restricted to a single fabric type. The various signature marks are illustrated, arranged by fabric.

Fabric 2452

16.59



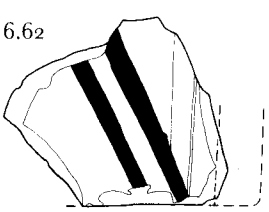
16.60



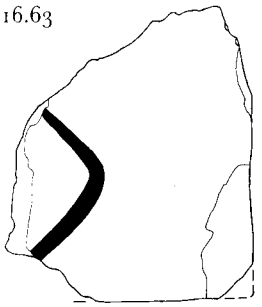
16.61



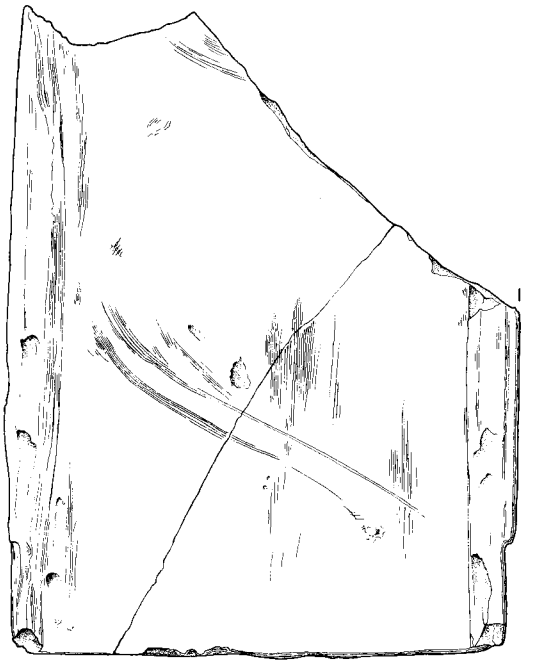
16.62



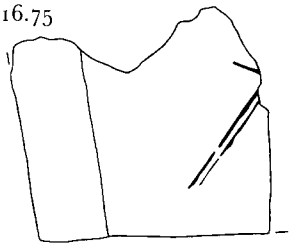
16.63



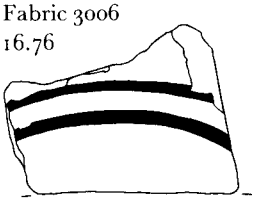
Fabric 2457
16.68



16.75



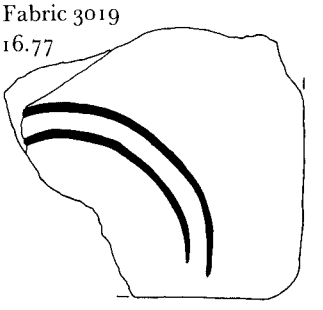
Fabric 3006
16.76



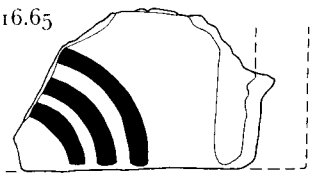
16.64



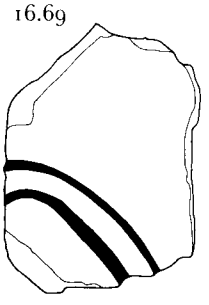
Fabric 3019
16.77



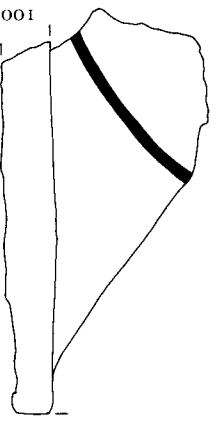
16.65



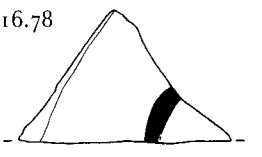
Fabric 2459
16.69



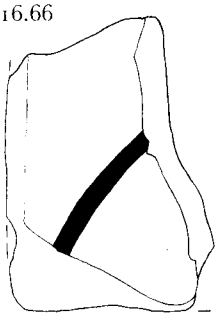
Fabric 3001
16.72



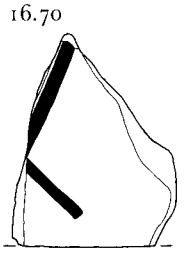
Fabric 3011
16.78



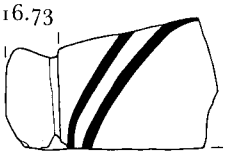
Fabric 2454
16.66



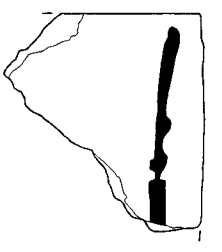
16.70



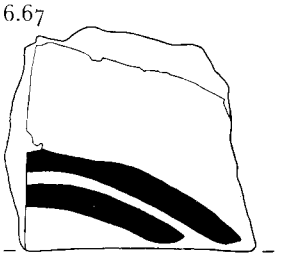
Fabric 3004
16.73



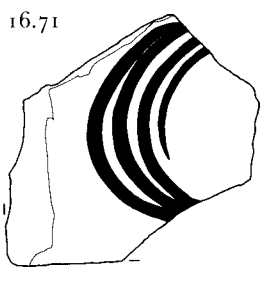
Fabric 3019
16.79



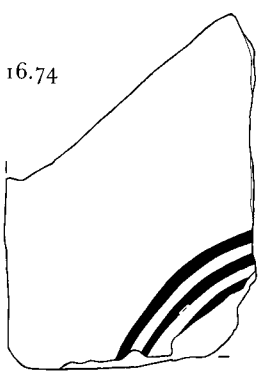
16.67



16.71



16.74

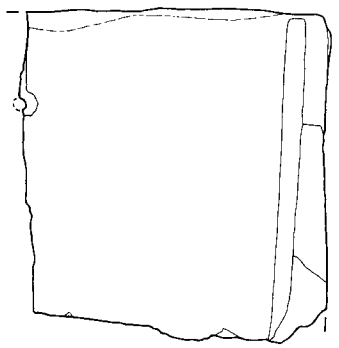


0 40 mm

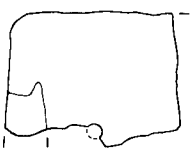
NAIL HOLES

A number of *tegulae* display evidence of holes for nails used to fix them to the roof. The position of these holes varies. Two tiles of fabric 3006 have nail holes at the top centre (No. 16.80), whilst one tile in fabric 3001 has a hole in the bottom centre position. A tile in fabric 3004 may have had two nail holes at the top, to judge from the position of the surviving hole (No. 16.81).

16.80



16.81



OTHER MARKINGS

Three examples of paw prints are present, together with tiles bearing the imprint of a leaf, a bird's footprint, and hobnails (nailing pattern uncertain).

TILE COLOUR

Certain tile fabrics occur in a variety of colours; in particular, fabric 3001 can be either pink, grey or occasionally yellow. Such colour variation may have been deliberate, especially if Green (1980c) is correct in his suggestion that there may have been patterned roofs. Tile fabrics 2452 and 2454, which are red and yellowish-white respectively, would have produced a striking appearance if used together. Patterned roofs may account for the import of fabric 2454 into London during the early Roman period, when other tiles were predominantly of local manufacture.

Discussion

The tile assemblages are unusual not only on account of the wide variety of fabrics, but the small quantities in which many of these occur. The presence of such a varied assortment in the quay infill suggests that some of the tile at least may have been brought into London as ballast from a number of distant sources, and was dumped into the quay as refuse from building construction work, together with tile of more local origin.

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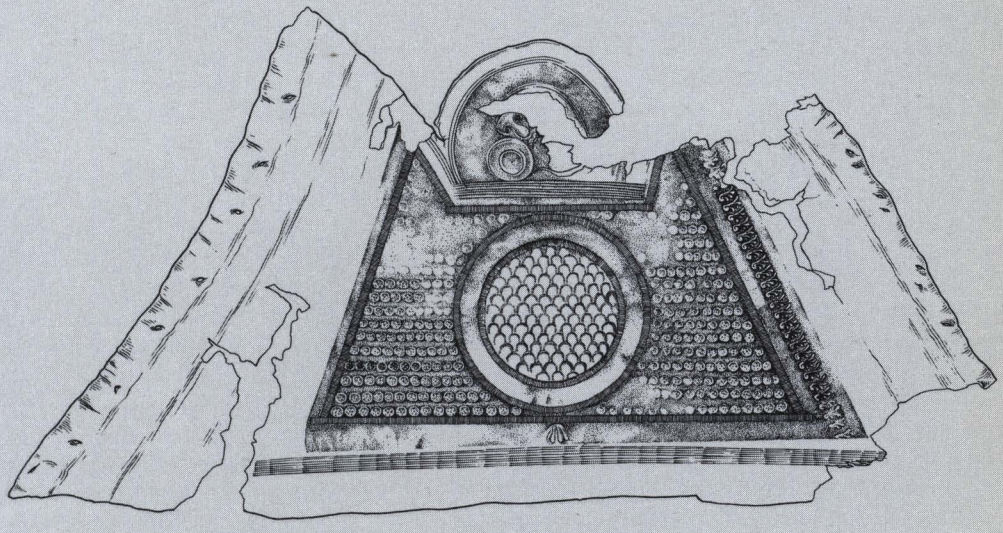
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The significance of the discoveries

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Among the many important facets of work on London's past over the last two decades study of the successive river-frontages looms conspicuously large. This is entirely proper since those frontages provided successive Londons, to a large extent, with their *raison d'être*. Without a full appreciation of the uses made of the river Thames, and particularly those connected with seaborne and riverine commerce, a thorough understanding of London's economic past does not lie within our grasp. A variety of publications over recent years has given notice that this essential task is now in hand. Early Roman harbour-works and store-buildings have been examined in the area of Pudding Lane [1]. Later harbour installations, of the third century, are presented in this report, while those of medieval London are partly published. A vital element is thus being added to the archaeology of Roman and medieval London. But the significance of these discoveries and studies does not reside solely in their import for the history of London. Far beyond that, they afford invaluable information on the network of trade which stretched over western Europe under the Roman Empire and later. The significance of trade in the Roman economy (even the question of whether it *had* any significance) has been much debated of late by historians and archaeologists. The ancient sources, on which we have had to depend for so long, are lamentably defective on the subject and to a large degree archaeological material, if it can be properly interpreted, seems to offer the only hope of enlightenment on basic questions. Rather surprisingly, the archaeology of trade is a relatively recent growth, at least as an orderly method of study, and many fundamental matters have yet to be adequately defined [2]. One of the most obvious gaps in our knowledge concerns harbours, their construction, disposition and function. Some of the great harbours of the Mediterranean world are familiar for their quays, moles and storage buildings, but little work has yet been done on how these installations operated and how commerce was regulated within them. The great inland harbours of the Roman world, at such places as Lyon, Bordeaux and Cologne, have for long remained largely unknown, though several have given hints of what they might one day produce for the excavator. London has seemed to offer more than most inland ports, for the city was clearly the focus of several long-distance sea-routes, as well as an important node in more localised commerce. Discovery of its harbours is thus a major event for the study of Roman Britain and of Roman trade. The fact that the structures at New Fresh Wharf are firmly dated to the period AD 225–60 adds greatly to their interest, as the development, or recession, of Londinium from the Antonine period has attracted considerable attention recently. There would be fairly general agreement that these harbour-works were constructed at a time when much was changing in the western provinces and when new trends in economic life were beginning to manifest themselves.

Any evidence for economic activity in a third century city in Britain is particularly welcome. The decades which followed on the Severan regime have long been seen as the beginning of that ever-steepening slope which was to plunge into anarchy and catastrophe. At the political level, this was true, but the course of human affairs, and especially economic affairs, do not always closely adhere to those of government. The evidence from London suggests that commerce was buoyant in the earlier third century, buoyant enough to warrant the reconstruction of part of the harbour about 225–45. Its life was relatively brief, no more than thirty or forty years, but it is notable that confidence was still high in the second quarter of the century. The end, when it came, was sudden: after about 260 the harbour went out of use. The reasons for this apparently abrupt change of fortune can only be grasped within the overall framework of later third century history: a simple analysis will not resolve the problem. It is all too easy to assume that external threats to shipping and the security of routes were now so menacing that there ensued a severe contraction in trade. But where is the real evidence that this was so? It is true that throughout the third century we discern an increased emphasis upon coastal installations on both sides of the Channel. But these seem far from well equipped to deal with small raiding bands of barbarians, whose aim will have been the rapid strike. The pirates who appear in the sources towards the end of the century also seem unlikely agents of catastrophe, since piracy was common enough in the ancient world and in some areas endemic. Internal economic stresses seem much more likely destroyers of commercial enterprise. It might be possible to argue, with Rougé, that there was a major recession in Mediterranean and western trade in the third century, followed by a revival in the fourth [3]. But bringing together a convincing corpus of statistics to support such a thesis is at present impossible, though some such trend does seem to be in evidence.

We must not be drawn into facile deductions about fluctuation in commercial activity without taking into account changes which were sweeping across the entire field of social relations in the later third century. Production of a wide range of goods was increasingly centred on estates rather than on towns and other population centres. It was this that lay behind the development of *vici*, minor towns, from the third century onward, with consequent effects on urban commerce and on many other urban functions. Trade and exchange, of course, continued, but now on different alignments. In particular, reciprocal exchange of goods produced 'internally' between landed estates to a large extent may have replaced the earlier trading networks. This may seem closer to *prexis* trade, as seen in archaic Greece [4], than to the commerce of the earlier Roman Empire and to some extent it is. Probably some such shift in the essential character of commerce, rather than

merely in the patterns of trade, may have contributed more to the history of the harbours of Londinium than any agent such as piracy or economic turmoil.

What, then, of London's harbour in the third century? It must first be emphasised that the first half of the century saw the construction of a large and varied number of public buildings in the city. These included the *mithraeum*, the monumental arch and sundry sculpted works, as well as the new harbour and the stone defences. The financial support for these enterprises presumably came from a mixture of private and public sources, but wherever it came from there can be no doubt about its abundance. Those who wish to argue for a major economic recession in Britain during the late Antonine and Severan period must surely exempt London. One of the most important questions raised, on which archaeology offers no help as yet, concerns the authority which was responsible for the reconstruction. Was this municipal, private, or a combination of the two? Did the provincial administration play any part? The latter possibility is not at all implausible. Governors and their staffs, of Britannia Superior, were still based in London in the third century and the intervention or initiative of a legate might be a decisive factor in the provision of so important a facility. More likely still is the influence brought to bear by leading *collegia*. Although epigraphically not to the fore in the British provinces, the role of these corporations in stimulating economic activity in Gaul is not to be ignored. Some indication of the wealth of those engaged in the trade between Britain and the Continent is given by the dedications in the temple of Nehallenia at Colijnsplaat in the Rhine delta, some of these at least being probably of early third century date. These shippers and merchants are likely to have been among the leading lights of Londinium, guiding or even controlling the main development of the port. Corporate action, with appropriate sanction by the legate, to ensure the maintenance of good harbour facilities would have been common form.

The scale of the London harbour-works is worthy of note. A frontage possibly as long as 640 metres is posited in this report, giving a harbour capacity broadly comparable with that of Cologne, protected by the Rhine island. Such a quay frontage is also not far removed in scale from that of one side of the Trajanic basin at Portus near the Tiber mouth. Works on this scale indicate long-distance maritime commerce as dominant over merely internal river-borne traffic, a fact which is admirably supported by the evidence for the commodities imported into London, to which we may now turn.

For the first time in Roman Britain, dependable evidence has been recovered for a range of goods whch reached a major port. Several items are predictable enough, others less so. The wine amphorae from the eastern Mediterranean, North Africa and Gallia Narbonensis, and the olive oil containers from Spain represent well established imports into Britain. Likewise, the pottery vessels from the Rhineland and north-eastern Gaul are familiar items. Some of the pottery is far less predictable, for instance the micaceous ware from south Devon. Along with the black-burnished ware from Dorset kilns, the appearance of this pottery in London is best explained as the result of portage by coastal shipping running up the Channel. The Whitby jet and the coal which perhaps came from Durham will have arrived by the same means down the east coast. The roofing-slates from North Wales are more surprising arrivals, though again coastal traffic could account for them. These are all highly visible commodities to the archaeologist and their very visibility can mislead as to their importance in the pattern of trade. The significance of pottery in the economics of trade has not yet been established on any sound basis. Containers such as wine- and oil-amphorae, of course, provide a varied range of information on the distribution, and to some extent the volume, of certain traded commodities. But there are very serious limitations to what can be safely deduced from such evidence about the overall patterns of trade, the changes which occurred in such patterns and the reasons for those changes. This has not prevented some optimistic deductions about trade-patterns and trade-volume, but caution must be exercised here. Until much more is known about the mechanics of trade, contracts, markets and destinations, such deductions are futile. Above all, we need to know how *purposive* Roman trade was. Did shippers and traders always know in advance where their markets were? It will be well to recall, too, that the mass of pottery which we have so far recovered from the earth and sea may represent much less than 1% of what was originally produced and dispersed.

Many Roman ports in the Mediterranean lands were also centres of craft-working [5]. The London evidence reveals a variety of activities along the waterfront, among them working in bronze, bone, wood and especially leather. The last-named is of particular interest, for the Roman Empire's demand for leather was insatiable. Yet relatively few sites in either towns or the countryside have yielded any indication of manufacture or working. The latter at least was carried out on the river-front of London and the tanning process, we might guess, was organised at no great distance. The possible link here between manufacture and trade is instructive and hints at other centres of production at or near Romano-British ports.

Although, as the excavators suggest (above, p. 71), the New Fresh Wharf quay may itself have been constructed with only limited functions in mind, the third century harbour of Londinium enlarges our picture of commerce between Britain and the mainland Empire in a number of ways. That picture cannot be completed by purely archaeological means. The most lucrative

forms of commerce in the Roman world were in commodities which rarely, if ever, leave any archaeologically detectable trace behind them: animals and animal products such as meat and wool, minerals such as salt, iron and copper, foodstuffs, especially grain, wine and oil, and slaves. Several, or most, of these are likely to have passed through London's port and a few (especially animal products and minerals) were probably staple exports from the island, in the third century as in the reigns of Augustus and Tiberius. The archaeological yield of what is reported on here is significant, but it represents a part only of the manifold activities of *negotiatores et negotiantes*.

NOTES

1. N. Bateman and G. Milne 'A Roman harbour in London: excavations and observations near Pudding Lane, City of London, 1979–82', *Britannia* xiv (1983), 207–26.
2. K. Hopkins in *Trade in the Ancient Economy*, eds P. Garnsey, K. Hopkins and C. R. Whittaker (London 1983), ix-xxv.
3. J. Rougé *Recherches sur l'organisation du commerce maritime en Méditerranée sous l'empire romain* (Paris 1966).
4. A. Mele *Il commercio greco arcaico. Prexis ed emporie* (Naples 1979).
5. To name only three, Alexandria, Aquileia and Puteoli.

ACKNOWLEDGEMENTS

The excavations, which were funded by the Department of Environment, were carried out by the Department of Urban Achaeology of the Guildhall Museum (from 1975, the Museum of London). Brian Hobley, Chief Urban Archaeologist, led negotiations for the sites; the excavations were organized by Field Officers David Browne (Area II), Charles Hill (Area III) and John Schofield (the watching brief in 1978). Louise Miller and John Schofield wish to thank many staff and volunteers who worked on the excavations, especially Richard Blurton, Peter Ellis, Paul Herbert, Amanda McIlwain, Chrissie Milne, Gustav Milne, Peter Muir, Martin O'Connell and Graham Troilett; and the members of the City of London Archaeological Society. The site and finds photography in this volume is the work of Trevor Hurst, Jon Bailey and Jan Scrivener.

The excavations were carried out with the co-operation of R. Seifert and Partners; Mott, Hay and Anderson Ltd; Higgs and Hill Building Ltd, and their sub-contractor J. Dolan; and the departments of the City Surveyor and City Engineer of the Corporation of the City of London.

For assistance and advice during the post-excavation period Louise Miller and John Schofield wish to thank Hugh Chapman, Tony Dyson, Jennifer Hillam, Richard Lea and Gustav Milne. The drawings in the excavation sections of this report are by Richard Lea. The summaries in German and French are by Friedericke Hammer and Beatrice Fleury respectively.

Jennifer Hillam and Ruth Morgan would like to thank the Ancient Monuments Branch of the Department of Environment for financing the tree-ring work, and members of the DUA for help in preparing their report.

Work on the finds from New Fresh Wharf began during the first excavation in 1974 and has continued, more or less unabated, until the present time. During this long period, a very large number of individuals and institutions have assisted in the various aspects of finds processing, research and in the preparations for this report. It is impossible to recall the names of all those who have been involved, and Michael Rhodes would like to take this opportunity of recording his thanks and apologies to any person whose contribution may have gone unnoticed in the following credits.

The catalogues of the artefacts were prepared by Kate Armitage, Anne Clark, Jill Craddock, J. Cotton, C. M. Green, Linda Hall, Penny MacConnoran, Louise Miller, Jacqui Pearce, Frances Pritchard, J. Reed, Beth Richardson, Mary Scalla, Nathalie Tobert and Pamela White, of the Museum of London's Department of Urban Archaeology. They were assisted in this work by a number of volunteers, including M. Clements, Joan Merritt and Clodagh Pritchard. We should like to take this opportunity to underline the Department's particular debt to the last two, whose long hours of service to the Department over the past decade have made an outstanding and lasting contribution to London's archaeology. The finds were conserved by the Conservation Department of the Museum of London.

The coarse pottery illustrations are by C. M. Green, Beth Richardson and Jill Craddock; the samian was illustrated by J. Pearson. The other finds illustrations are by Barbara Garfi, N. Griffiths, Vanessa Jones, Sue Mitford, Anne Sutton, Clare Thorne and Pamela White. N. Griffiths was responsible for supervising their preparation.

Thanks are due also to those who provided the specialist reports, which include not only the reports published in this volume, but the unpublished Archival Reports available on request from the Museum. They are Dr P. Armitage, I. M. Betts, C. M. Green, Penny MacConnoran, Frances Pritchard, Beth Richardson, Vanessa Straker, and Barbara West of the Museum of London's Department of Urban Archaeology; Dr H. P. A. Chapman, Jenny Hall and G. D. Marsh of the Museum of London's Prehistoric and Roman Department, and Helen Ganiaris, Suzanne Keene and Kate Starling of the Museum's Conservation Department; Joanna Bird; C. Calvin of the Leather Conservation Centre, Northampton; Brenda Dickinson of the University of Leeds; J. Evans of the North-East London Polytechnic; Rowena Gale of the Jodrell Laboratory, Kew Gardens; Dr S. Greep of the Verulamium Museum; Dr M. Hassall and Dr N. J. Seeley of the Institute of Archaeology, London; Dr M. Henig; Dr F. Jenkins; E. A. Jobbins, Dr M. Owen and R. Sanderson of the Institute of Geological Sciences; D. Mackreth of the Nene Valley Research Committee; D. T. Moore, F. C. Naggs, and A. D. Thomson of the British Museum (Natural History); J. D. Shepherd; Dr A. H. V. Smith of the National Coal Board; and Dr Jane Weeks.

Joanna Bird would like to thank the following for help in the preparation of her samian report: Brenda Dickinson of the University of Leeds, who provided information on several of the Central Gaulish bowls, and commented on a draft of the summary; Dr Ingeborg Zetsche, of the Stadt Museum für Vor- und Frühgeschichte, Frankfurt-am-Main, who commented on the dating and interpretation of the East Gaulish material, and provided notes on the decorated Trier ware; D. Bird, B. R. Hartley and G. D. Marsh, who made valuable comments on drafts of the summary; M. P.-H. Mithard, of the Centre Nationale de la Recherche Scientifique, who provided notes on the lion-head appliqués on the form 45 mortaria; and Herr K.-F. Bittner, who commented on the Rheinzabern wares.

Beth Richardson wishes to thank a large number of people for information and advice during the prepara-

tion of the pottery report. They are Dr C. G. Adams of the British Museum (Natural History); P. Barford; D. Bayard of La Direction Régionale des Antiquitées Historiques de Picardie; D. M. Bailey of the British Museum; P. Bidwell; Joanna Bird; M. Card and J. Evans of the North East London Polytechnic; Dr I. Freestone of the British Museum Research Laboratory; Dr M. G. Fulford of Reading University; C. Going of the Chelmsford Archaeological Trust; G. Marsh of the Museum of London; Dr D. P. S. Peacock of Southampton University, R. Perrin of the Nene Valley Archaeological Research Committee, Dr M. Pollard of the Oxford University Research Laboratory for Archaeology and the History of Art; R. Symonds of the Colchester Archaeological Trust; Dr D. F. Williams of Southampton University; and Dr C. J. Young of the Historic Buildings and Monuments Commission. Special thanks are due to Dr M. G. Fulford for his comments on the dating (which are incorporated in the introduction to the pottery report), C. M. Green, formerly of the Department of Urban Archaeology, who was closely involved with all stages of the report, to Kay Hartley for her comments on the mortaria; to Dr P. A. Tyers of the Museum of London's Department of Urban Archaeology for his comments on North French wares; to M. Redknap of the Passmore Edwards Museum for his comments on *Eifelkeramik*, and to Gwen Profit, who typed the first draft.

Penny MacConnoran wishes to thank Glynis Edwards and P. Wilthew of the National Monuments Laboratory for assistance in the analysis of the Roman shoes.

Vanessa Straker would like to thank Rowena Gale of the Royal Botanic Gardens, Kew, for advice on wood identification.

Finally Michael Rhodes would like to thank those not already mentioned in the list of contributors who gave advice and assistance during the preparation of this report in general, and in the course of his own research in particular. They are B. Bennison of Shrewsbury Borough Museum Service; Dr T. Blagg of Kent University; T. Clark of the National Monuments Laboratory; P. Crummy of Colchester Archaeological Trust; G. B. Dannell; M. Davis of the Colchester and Essex Museum; P. J. Drury of the Historic Buildings and Monuments Commission; C. Going of the Chelmsford Archaeological Trust; Suzanne Keene of the Museum of London's Conservation Laboratory; T. Dyson, F. O. Grew, Friedericke Hammer, T. J. Hurst, P. R. V. Marsden, Louise Miller, J. Schofield, Dr P. Tyers and T. Wilmott of the Museum of London's Department of Urban Archaeology; C. J. Ellmers of the Museum of London's Modern Department; Christine Jones of the Museum of London's Prehistoric and Roman Department; I. Tyers of the Museum of London's Greater London Archaeology Service; Ian Freestone, Catherine Johns, Miriam Stead and Dr Susan Walker of the British Museum; Jenny Keithley of the West Yorkshire Archaeology Unit; A. King; the late Joan Liversidge; Dr W. Manning of Cardiff University's Department of Archaeology; P. Mayes of the Greater Manchester Archaeological Unit; Dr A. J. Parker of Bristol University's Department of Classics and Archaeology; R. Thompson of Southampton Museum Service; and Margaret Ward.

LIST OF ARCHIVE REPORTS

The following archive reports are available for consultation in the Museum of London.

On the site:

LOUISE MILLER and JOHN SCHOFIELD, Excavations at New Fresh Wharf 1974–8 (1982) [includes the post-Roman periods]
LOUISE MILLER, Excavations at Fresh Wharf 1978 (1986)

On the finds (with the numbering system used within this report):

1. G. MARSH and M. RHODES, Miscellaneous ceramic objects (1985)
2. J. BIRD, Catalogue of samian wares (1985)
3. J. D. SHEPHERD, Additional glass items (1985)
4. M. RHODES, Additional items of leather (1985)
5. C. CALNAN, Analysis of leather for presence of dyes (1985)
6. P. MACCONNORAN, Catalogue of the shoes (1985)
7. J. WEEKS, Additional wooden items (1985)
8. H. CHAPMAN, Amber bead (1985)
9. S. GREEP, Bone objects (1985)
10. J. HALL (catalogue) and N. J. Seeley (analysis of forged denarius of Elagabalus), Coins (1985)
11. H. CHAPMAN, Additional metal items (1985)
12. M. RHODES, Nails (1985)
13. M. RHODES (description) and E. A. Jobbins (material identification), Jet and shale objects (1985)
14. M. RHODES, Additional stone objects (1985)
15. M. RHODES (description), K. Starling and H. Ganiaris (scientific analysis), Painted wall plaster (1985)
16. J. EVANS, Mortar sample anlysis (1985)
17. M. RHODES, Other building materials (1985)
18. M. HASSALL, Inscriptions and graffiti (1985)
19. A. H. V. SMITH, Coal (1985)
20. J. EVANS, Slags and fire-distorted leaden waste (1985)
31. J. EVANS, Resin (1985)
22. B. WEST, Human bone (1985)

On the environmental material:

P. ARMITAGE, The mammalian remains from the Roman, medieval and early modern levels, St Magnus, City of London (SM75) (Anc Mons Lab Report 2806) (1979)
G. CAREY and P. ARMITAGE, The bird bones from the Roman, medieval and early modern levels, St Magnus 1975 (1979)
P. BOYD, Report on the qualitative analysis of diatoms from sediments associated with the Roman waterfront at New Fresh Wharf, 1978 (1981)

RÉSUMÉ

Le quai romain à St Magnus House, Londres

Les fouilles conduites par le Musée de Londres à New Fresh Wharf, à présent le site de St Magnus House, Lower Thames Street, eurent lieu en trois temps: deux surfaces fouillées en 1974 et 1975, et une surveillance de chantier sur le reste du site pendant la construction du nouveau bâtiment en 1978. Le site s'étend de Thames Street au cours actuel de la Tamise, mais les couches archéologiques ont seulement subsité dans le tiers nord du site, et c'est là que le terrain fut examiné. Ce rapport fait part des trouvailles de la période romaine du premier au quatrième siècle ap J. C.

En résumant brièvement, les fouilles ont mis au jour des structures de trois périodes successives:
(a) des traces fragmentaires d'une digue fluviale en bois du deuxième siècle marquant l'étendue du terrain conquis sur la rivière a la fin de ce siècle;
(b) une impressionnante installation de quai faite en deux parties, datée principalement par la dendrochronologie de 225–245;
(c) une muraille construite à l'arrière du quai vers les années, 255–270, moins de deux générations plus tard, eut probablement de graves conséquences sur l'utilité du quai.

En addition, de nombreuses trouvailles stratifiées, provenant surtout du quai du troisième siècle et de son pourtour ont considérablement amélioré notre connaissance de nombreux aspects de la vie publique, privée et commerciale du Londres romain.

A l'extrême nord du site, véritablement sous le trottoir de Thames Street, les traces d'un mur de digue ou d'un revêtement de bois, fait de pilotis et de planches, ont été relevées pendant les travaux de construction. Il fut érigé durant le deuxième siècle et a du servir de limite sud de revendication du terrain, en avant de quais romains plus anciens qui avaient été trouvés au nord de Thames Street en 1976–80.

Un second revêtement s'étend à quatre mètres au sud. Des alluvions reposent contre le premier revêtement mais pas contre le second. Ceci suggère que le premier constituait le quai-même, mais que le second était seulement la préparation d'une autre phase de système de quais, plus avant dans la rivière. On trouve des parallèles à ces deux types de revêtement dans les quais du deuxième siècle, en aval a Custom House et ailleurs en Grande Bretagne et aux Pays-Bas, de la fin du premier à la fin du troisième siècle. Ils doivent être considéres comme deux exemples d'une variété de structures simples de quais romains que l'on trouve à l'heure actuelle en plusiers points de la rive nord de la Tamise dans le quartier de la City.

Le quai lui-mème fut construit à partir de ce deuxième revêtement, cinq mètres plus avant dans le rivière. La façade du quai consistait de cinq rangées de grandes poutres de chêne tenues en place par un chassis d'entretoises et de pilotis. Il restait suffisamment de la structure en place pour suggérer au moins quatorze étapes de construction de la mise en place initiale des pilotis le long de la ligne de façade du quai à la cinquième rangée de poutres. La surface de travail du nouveau quai était probablement constituée d'argile et de gravats de la Cité jetés dans le chassis du quai durant sa construction et le tout était recouvert de sable ou de gravier.

Le procédé de datation du quai combine plusieurs types d'informations et de parallèles à la fois dans ce pays et à l'étranger. La datation dendrochronologique des poutres du quai atteste que les dernières d'entre elles furent coupées entre 209 et 244. Il est probable, suivant les pra tiques de construction romaine, que de si grandes poutres étaient utilisées peu après la coupe. La date de coupe de ces arbres devrait per conséquent être proche de la date de construction du quai. Mais la date de 235-245 est à envisager, au vu de la poterie la plus tardive du remplissage, une céramique sigillée de Rheinzabern en Allemagne. Plusieurs options concernant le retard possible de la construction, ou le remplissage des caissons quelque temps après la construction du chassis en bois peuvent être considérées ou rejetées. Les auteurs proposent 225–245 pour la construction et le remplissage du quai.

Le type de construction de ce quai reposant sur des pilotis et des entretoises se retrouve à la même époque (fin du deuxième-début du troisième siècle) en amont de London Bridge, et en E sur le site de Custom House, ainsi qu'à la fin du deuxième siècle sur le site de Thames Street, fouillé en 1974. Le parallèle le plus proche est toutefois le quai du deuxième siècle à Xanten sur le Rhin; la disposition et la taille des poutres, les details de jointure et l'utilisation du matériau consolidant autour au moins des traverses inférieures sont très similaires. Ce type de quai auquel la structure de New Fresh Wharf appartient est ailleurs daté de la fin du premier et deuxième siècle; par conséquent la structure de New Fresh Wharf est la dernière connue de ce type.

Un deuxième type de construction de quai qui est, en contraste, basé sur des poutres arrangées en caissons a été trouvé aux quais du premier siècle au nord de Thames Street, à l'extrêmité ouest du site de Custom House, et ailleurs, par exemple à Douvres, aussi au deuxième siècle. Les deux types existaient côte à côte et il n'y a pas d'évolution générale des techniques structurelles de l'un à l'autre, mais les différences de stabilité de la couche sous-jacente a du régir le modèle: le sous-sol argileux et stable de Londres étaye largement la construction en caissons du quai à Custom House, alors que la structure de New Fresh Wharf, établie à un point plus avant dans la rivière romaine, près de la tête de

pont, là où la revendication du terrain était plus intensive, repose sur des limons et graviers de rivière potentiellement instables.

Le cadre de bois de la structure du quai était en plus stabilisé par des tonnes de terre et de blocailles, et des rebuts de la Cité romaine, déversés autour des poutres. Les matériaux déchargés qui incluaient d'autres sortes de débris à part les importations étaient de toute evidence récipérés des débris des zones à proximité immediate.

Beaucoup de céramique d'importation inutilisées avaient été versées à l'intérieur et autour des poutres du quai. Des témoignages d'autres sites tête de pont suggère que le quartier environnant la tête de pont était l'endroit du Londres romain destiné à l'emmagasinement et peut-être la vente de la céramique importée. Un certain nombre de pots inutilisés ont pu être restitués à partir des fragments provenant des fouilles; ceci suggère qu'un entrepot ou un magasin fut déblayé d'une grande quantité de stock.

Beaucoup d'autres objets trouvés dans les tas provenaient de la cité du troisième siècle et sont par consèquent spécialement précieux car notre connaissance de l'apparition de la City au début du troisiúeme siècle, à l'époque où le quai était presque terminé, est à présent très fragmentaire; les vestiges de cette période ont été largement détruits par les caves et fondations de l'époque moderne. Les nouveaux bâtiments publiques ou religieux, avec leurs monuments et statuaire étaient en grande partie construits en pierre importée du Kent et d'endroits plus lointains, tels que les pierres de Méditerranée trouvées à New Fresh Wharf. L'apparition soudaine de plusieurs nouveaux types de tuiles semble être une indication de nouveaux travaux de construction; de surcroît, quelques bâtiments étaient désormais couverts de dalles de pierre. Les fragments de marbre de Carrare, les lambris d'onyx et les fragments de diverses peintures murales démontrent que les bâtiments publiques et privés étaient d'un grand standing. Les gobelets à boire le vin importé, hautement décorés, la joaillerie et les cosmétiques et surtout les chaussures féminines d'intérieur, rehaussées d'or, sont l'indication d'un style de vie luxueux pour certains des habitants. Bien que le climat devait être plus chaud à l'époque qu'il n'est à présent, les habitants du Londres romain ont du s'ajuster au climat britannique; parmi les fragments de vêtement de cuir trouvés sur le site, on trouve des parties de veste, et peut-être même de culottes. Ces derniers dix années, les fouilles de la zone portuaire ont définitivement établi que l'une des industries de service du Londres romain était le travail du cuir probablement comme sous-produit des abattoirs pour le bétail.

Mais la principale raison d'être de Londres à toutes périodes était celle d'un port, d'un endroit de transbordement de marchandises. Certain objets seraient arrivés par voie de mer d'autres régions de Grande-Bretagne: ardoises de toiture du nord du pays de Galles ou de la région de Bristol, bols et jarres du Devon et du Dorset, épingles en jais de Whitby dans le Yorkshire, enfin du charbon soit du pays de Galles ou des mines de Durham. Les services de table, en céramique, provenaient d'autres provinces de l'Empire, notamment de l'Est de la France et de la vallée du Rhin. Un chapiteau de pilastre devait provenir du nord de la France, des récipients à vin de l'est de la Méditerranée et d'Afrique du Nord – probablement plein de leur contenu d'origine – et des récipients à huile d'olive du sud de l'Espagne. Les affaires du port étaient en partie consignées par écrit sous forme de lettres, de notes de comptes ou de transactions sur des tablettes de bois de cèdre – alors un arbre d'un autre pays –, pin argent et sapin de Norvège.

Les perspectives d'avenir de Londres dans les années 230 devaient être extrêmement prometteuses. Mais dans les cinquante années qui suivirent, ceci avait changé de façon dramatique. Les changements politiques et économiques de l'Empire Romain amenèrent l'effondrement des principaux marchés d'Europe du Nord qui suppléaient de nombreuses marchandises Londres et la Province. Dès 250 des pirates Saxons rompirent les routes de commerce. Le niveau de la rivière aussi a du diminuer, provoquant un envasement.

La période d'utilisation du quai de New Fresh Wharf a été très courte. Il n'y a pas de preuve d'utilisation après 260, à peine trente ans après sa construction. De plus, vers cette date un grand mur fut construit le long du quai a neuf mètres en arrière de la ligne de quai. Le mur le long de la rivière à New Fresh Wharf ressemble à d'autres parties trouvées les années précédentes sur les sites de Thames Street et de la Tour de Londres; et il est daté par la dendrochronologie ici, et sur d'autres sites, de 255–270. Bien que ceci soit la date où certains des forts Saxons furent construits, le mur de New Fresh Wharf est plus proche, dans sa construction, de plus anciens murs de la City. Le quai n'était plus nécessaire et a du être démantelé à cette époque, et formait ainsi un obstacle au devant du mur. Après cela, les premières structures post-romaines de la rive datent des dixième et onzième siècles.

ZUSAMMENFASSUNG

Der römische Kai unter St Magnus House, London

Die Ausgrabung des Museums von London in New Fresh Wharf an der Lower Thames Street, wo heute St Magnus House steht, bestand aus drei Teilen, zwei Flächenausgrabungen, die 1974 und 1975 durchgeführt wurden und einer archäologischen Überwachung mit Aufzeichnungen während der Bauarbeiten für das neue Gebäude, 1978. Obwohl das Gelände des Grundstücks von Upper Thames Street bis hinunter zum heutigen Bett des Flusses reicht, enthielt nur das nördliche Drittel archäologische Strata, hier wurden die Untersuchungen ausgeführt. Dieser Bericht befaßt sich mit den Funden der römischen Periode vom 1. bis zum 4. Jahrhundert nach Christus.

Aufs Kurzeste zusammengefaßt, brachten die Ausgrabungen Strukturen aus drei aufeinander folgenden römischen Perioden zu Tage:
(a) Bruchstücke einer hölzernen Uferbefestigung, die die Grenzen der Landgewinnung am Ende des 2. Jahrhunderts zeigte;
(b) einen zweiteiligen hölzernen Kai anspruchsvollerer Bauweise, laut Dendro-Chronologie aus den Jahren zwischen 225 und 245;
(c) eine Stadtmauer entlang der Rückseite des Kais, welche wahrscheinlich in den Jahren 255 bis 270 gebaut wurde, weniger als zwei Generationen nach der Fertigstellung des Kais, was wahrscheinlich schwere Auswirkungen auf die Gebrauchsfähigkeit des Kais hatte.

Außerdem haben viele Funde, besonders aus den Schichten des Kais des 3. Jahrhunderts, unser Wissen hinsichtlich des öffentlichen, privaten und kaufmännischen Lebens im römischen London bereichert.

Im nördlichsten Teil der Ausgrabung, unter der Südseite der Thames Street, wurden während der Bauarbeiten Spuren einer hölzernen Uferbefestigung gefunden, die aus Pfosten und Planken gebaut war. Sie war während des 2. Jahrhunderts errichtet worden und muß als südliche Grenze für die Landgewinnung dieses Jahrhunderts gestanden haben. Sie ersetzte einen früheren römischen Kai, der 1976 bis 1980 nördlich der Thames Street gefunden worden war.

Vier Meter südlicher lag eine zweite Befestigung. Flußschlamm hatte südlich der ersten Befestigung gelegen, jedoch nicht vor der zweiten, woraus sich schließen läßt, daß die erste Befestigung entlang des Flusses lag, die zweite Konstruktion aber ein Teil der Vorbereitung für einen anderen Kai war, der weiter draußen im Fluß lag. Die Bauweise beider Konstruktionen hat Parallelen in Befestigungen aus dem zweiten Jahrhundert, gefunden flußabwärts am Custom House und auch anderswo in Britannien und in den Niederlanden, aus dem späten ersten bis zum späten dritten Jahrhundert.

Diese beiden Beispiele stehen für eine Anzahl einfacher römischer Uferbefestigungen, die an verschiedenen Punkten des Nordufers der Thames in der City gefunden wurden.

Der eigendliche Kai war von dieser zweiten Befestigung weitere 5 Meter in den Fluß hineingebaut worden. Seine Front bestand aus 5 Reihen starker Eichenbohlen, die durch ein Gerüst von Verstrebungen und Balken gehalten wurden. Von der Struktur hatte genug überlebt um feststellen zu können, daß der Kai in 14 Arbeitsgängen gebaut worden war, vom Einschlagen der Pfähle entlang der Front, bis zum Einsetzen des 5. Querbalkens. Die Arbeitsfläche des zu errichtenden Kais wurde wahrscheinlich während der Konstruktion aufgeschüttet mit Lehm und Abfallladungen aus der Stadt und am Ende mit Kies und Sand abgedeckt.

Auf mehrere Arten wurde der Kai datiert, Parallelen aus dem Ausland wurden herangezogen. Durch Dendro-Chronologie ist belegt, daß der letzte Balken zwischen 209 und 244 geschlagen wurde. Wahrscheinlich wurden nach römischer Bauweise solch starke Balken bald nach dem Fällen verwendet. Beide Daten, das des Fällens und das der Verwendung, sollten daher nahe bei einander liegen. In der spätesten Aufschüttung der Befestigung aber, wurden Samian Scherben aus Rheinzabern in Deutschland auf 235 bis 245 datiert. Ob der Bau verzögert wurde oder die Aufschüttung später erfolgte, ist ungewiß, die Autoren meinen, daß der Kai zwischen 225 und 245 gebaut wurde.

Die Art der Konstruktion des Kais, die Verwendung von Pfosten und ins Innland gerichteten Verstrebungen, wurde auch flußaufwärts von London Bridge gefunden, errichtet zur selben Zeit (spätes 2. bis frühes 3. Jahrhundert) und außerdem noch am Custom House, Thames Street, (ausgegraben 1973) vom späten 2. Jahrhundert.

Die beste Parallele ist jedoch der Kai aus dem 2. Jahrhundert aus Xanten am Rhein, die Platzierung und Größe der Balken, Einzelheiten der Art der Verstrebungen, sogar der Gebrauch des Befestigungsmaterials um die unteren Balken herum ist sehr ähnlich. Die Art Kai, zu der der Typ von New Fresh Wharf gehört, wird anderswo ins späte erste und zweite Jahrhundert datiert, was den hier beschriebenen Kai zum spätesten bekannten dieser Art macht.

Eine zweite Art Kaikonstruktion, in der Balken in Kastenform arrangiert waren, wurden an der Nordseite der Thames Street, am Kai des 1. Jahrhunderts, im westlichen Teil von Custom House vom 2. Jahrhundert und auch in Dover gefunden, ebenfalls aus dem 2. Jahrhundert. Beide Arten wurden gleichzeitig gebaut, es gab keine allgemeine Entwicklung der strukturellen Technik von einem zum anderen, Unterschiede der Stabilität des Untergrundes mögen zu den verschiedenen Entwürfen geführt haben: solider Londoner

Ton lag unter der Kastenkonstruktion des Kais am Custom House, während Flußschlamm und Kies unter der Konstruktion von New Fresh Wharf gefunden wurde, da sie weiter in den Fluß hinein gebaut wurde, an einer Stelle nahe beim Brückenkopf, wo die Landgewinnung intensiver betrieben wurde.

Das hölzerne Gerüst des Kais wurde rundum befestigt mit Tonnen von Erde und Bauschutt, dazwischen wurde der Abfall der Stadt deponiert. Dieser Abfall bestand aus allem möglichen Material und enthielt auch importierte Tonwaren, die aus der nahen Umgebung stammten. Wagenladungen voller unbenutzter Scherben waren zum Kai hinuntergefahren und weggeworfen worden. Andere Ausgrabungen in der Nähe des Brückenkopfes bestätigten, daß in dieser Gegend importierte Tonwaren gelagert und vieleicht auch verkauft wurden. Eine Reihe dieser unbenutzten Tonfragmente konnten wieder zusammengesetzt werden. Wahrscheinlich war ein Laden oder eine Lagerhalle von einem großen Bestand geleert worden.

Viele andere Gegenstände, die im Abfall gefunden wurden, kamen aus der Stadt des 3. Jahrhunderts und sind besonders wertvoll, da unsere Kenntnis aus der Zeit, als der Kai beinahe fertiggestellt war, sehr bruchstückhaft ist. Die meisten Lagen dieser Zeit wurden durch moderne Keller und Fundamente zerstört. Neue römische öffentliche Gebaüde oder religiöse Komplexe mit Monumenten und Statuen wurden meist aus importiertem Stein aus Kent und weiter entfernten Gegenden gebaut, Steine aus der Mittelmeer Gegend sind in New Fresh Wharf gefunden worden.

Die Verwendung neuen Baumaterials ist belegt durch das plötzliche Erscheinen neuer Dachziegelarten, auch Steinplatten wurden zum Decken mehrerer Gebäude verwandt. Bruchstücke von Carrara Marmor und dünne Platten aus Onyx Marmor, außerden Fragmente verschiedener gemalter Wandbilder zeigten hohen Standard öffentlicher und privater Gebäude. Ornamentierte Becher für importierten Wein, Schmuck und Kosmetikbehälter lassen auf das luxoriöse Leben einiger Bürger schließen, vor allem aber, die vergoldeten Pantoffeln der Damen. Die Bewohner des römischen London hatten sich auf das britische Klima einzustellen, das allerdings wärmer gewesen sein kann als heute. Teile gefundener Lederbekleidung gehörten einmal zu Jacken und vielleicht Reithosen. Die Ausgrabungen der letzten 10 Jahre entlang des Flusses der Römerzeit haben zweifelsohne herausgefunden, das eine der Dienstleistungs-Industrien die Lederverarbeitung war, wahrscheinlich angegliedert als ein Nebenprodukt der Schlachthäuser für Rindvieh.

Hauptsächlicher Lebenserwerb in London war jedoch in allen Zeiten der Hafen, als Umschlagplatz für Waren, aus allen Teilen Britanniens. Dachschiefer kam aus Nord Wales oder der Bristol Gegend, Töpferwaren aus Devon und Dorset, Jettnadeln aus Whitby in Yorkshire und Kohle aus Süd Wales oder Durham. Irdenes Tischgeschirr kam aus anderen Provinzen des Reiches, vor allem aus dem östlichen Frankreich und dem Rheintal. Ein gefundenes Pfeiler Kapitell mag aus Nordfrankreich stammen, Weinkrüge mit Inhalt kamen vom Mittelmeer und Nord Afrika, Olivenöl aus Südspanien. Teile der Hafenkorrespondenz sind erhalten geblieben, Briefe, Rechnungen oder Aufträge, auf Fragmenten von Schreibtafeln aus Zedernholz (damals nicht heimisch hier), Silberfichte und norwegischer Rottanne.

Die Lebenserwartung im London der 230er Jahre muß sehr hoch gewesen sein. 50 Jahre später jedoch, änderte sich das drastisch. Politische und wirtschaftliche Veränderungen im römischen Reich brachten den nordeuropäischen Markt, der London und die Provinz mit vielen Gütern versorgt hatte, zum Stillstand. Von ungefähr 250 an gefährdeten sächsische Piraten die Handelsstraßen. Der Wasserspiegel des Flusses mag gesunken sein im Verhältnis zum Land, wodurch die Thames versandete.

So war die Zeit der Nutzung des Kais von New Fresh Wharf sehr kurz, sie ist nicht länger belegt als bis 260, kaum 30 Jahre nach der Fertigstellung. Um ungefähr diese Zeit wurde eine große Mauer 9 Meter hinter dem Kay gebaut. Diese Mauer am Fluß ähnelt Teilen, die an anderen Stellen am Fluß, in Thames Street oder beim Tower of London gefunden wurden. Dendro-Chronologie datierte alle Strecken auf 250 bis 270. Obwohl dies schon die Zeit der Errichtung einiger sächsischer Küstenburgen ist, ähnelt die Mauer früheren römischen Stadtmauern in ihrer Bauweise. Der Kai wurde nicht mehr gebraucht und mag um diese Zeit abgetragen worden sein, um ein Bollwerk vor der Mauer daraus zu machen.

Die ersten nachrömischen Bauwerke erschienen erst im 10. und 11. Jahrhundert.

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ISBN 0 903290 32 9

