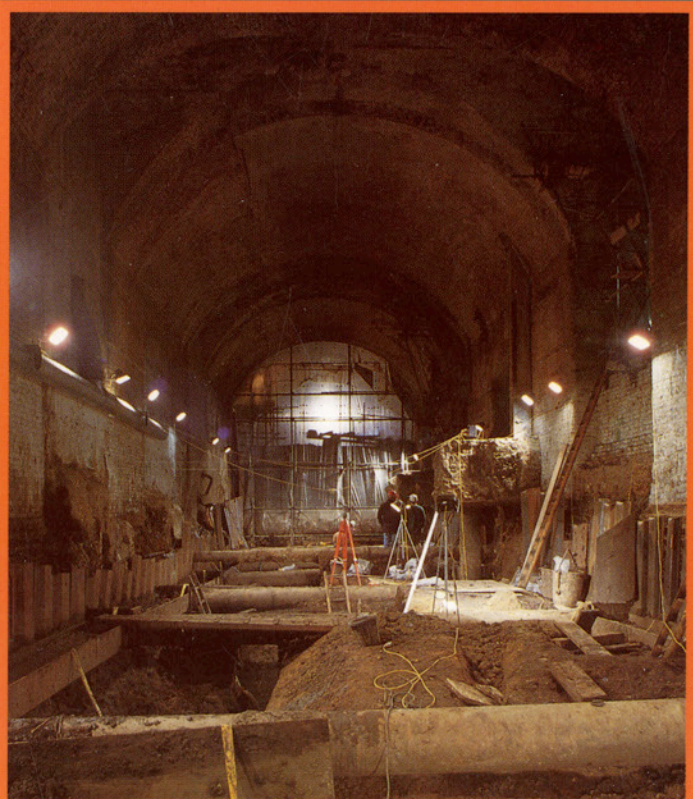




THE MUSEUM OF
LONDON

Museum of London
Department of
Urban Archaeology

THE ANNUAL REVIEW 1989



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Museum of London
Department of
Urban Archaeology

The Annual
Review 1989

Museum of London Department of Urban Archaeology

The Annual Review 1989

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The duties and powers of the Board of the Museum of London

'(1) . . . it shall be the duty of the Board:

(a) to care for, preserve and add to the objects in their collections;

(b) to secure that those objects are exhibited to the public and made available to persons seeking to inspect them in connection with study or research; and

(c) generally to promote understanding and appreciation of historic and contemporary London and of its society and culture, both by means of their collections and by such other means as they consider appropriate.

(3) . . . the Board may:

(a) provide archaeological services and undertake archaeological investigations and research in connection with land in London, publish information concerning such investigations and research and promote the provision of such services and the undertaking of such investigations and research and the publishing of such information . . .

(5) In this section, *London* includes all Greater London and the surrounding region.'

Museum of London Act 1986

The Museum of London has two archaeological departments: the Department of Urban Archaeology (DUA) operates in the City of London, and the Department of Greater London Archaeology (DGLA) operates in the majority of the surrounding boroughs.

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FOREWORD

Harrisons & Crosfield is a diversified international Group, which has been based in the City of London for well over a hundred years. It comprises four divisions: *Chemicals*, which is a world leader in chromium chemicals, and also has a major share of the world market for pigments and certain specialist organic chemicals; *Timber & Building Supplies*, which has depots in the UK, the USA, Australia and Eire; *Food & Agriculture*, which supplies malting and animal feed under the Pauls name, pet food under 'Omega' and packet human food under the private labels of leading retailers; and *Plantations*, which has estates in Indonesia and Papua New Guinea growing oil palms, rubber, cocoa, coffee and coconut.

Our association with the Museum of London arises from the redevelopment of the site at 1-4 Great Tower Street, which was our head office from 1854 until January 1989. Here a short excavation was required before foundation work could begin.

In comparison with some cities overseas, the visible remains of Roman and medieval London are scarce, but we watched with interest as the Museum's archaeologists uncovered and recorded a complicated sequence of soil horizons, pits and buildings. Past uses of the site, and the character of its inhabitants, gradually became clear through subsequent analysis of the records and study of the artefacts. As this *Review* shows, these results are now being collated with those from other excavations to improve our knowledge of the City as a whole.

Harrisons & Crosfield is pleased to sponsor this *Review* of the DUA's work in 1989, and looks forward to a long and successful association with the Museum of London.



George Paul
Chief Executive
Harrisons & Crosfield plc

Fuller Peiser is a national firm of property consultants, comprising predominantly chartered surveyors, established over 100 years ago in the City of London, where our Head Office is still found today. As a multi-disciplined company, we have been able to advise many well-known City firms on a range of property matters over this period. Most recently, on behalf of Harrisons & Crosfield, we have managed the redevelopment of its office building at 1-4 Great Tower Street, covering all property, funding and construction aspects.

It has been a pleasure to work alongside the Museum of London on this project. We can now see that the new building, which is due for completion in November 1990, is the latest in an almost unbroken sequence of occupation on the site which extends back to the first century AD.

Great Tower Street will always be remembered for the magnificent gilded glass beaker which is pictured here on the front cover. Now carefully restored and studied by specialists in the Museum, it is a reminder of the prestigious houses and wealthy families who lived along Great Tower Street in early Tudor times.

By sponsoring this *Annual Review*, we are proud to strengthen our association with the Museum of London, and look forward to future participation in the rediscovery, through redevelopment, of the historic City.



Ian Beith
Senior Partner
Fuller Peiser

ARCHAEOLOGY IN THE CITY OF LONDON: THE YEAR IN PERSPECTIVE

Archaeological remains are part of our national heritage. They constitute direct and tangible links with the past, and they should be protected and preserved. By their very nature they are non-renewable and, if disturbed, they can become indecipherable. They are limited in extent; perhaps only 25% of the present townscape of the City has Roman and medieval remains beneath it. This resource disappears as land is developed, a process demanded by the energies of modern life. An equal energy is therefore required to save or record the archaeological heritage. This review records the results from another successful year in the balancing of these two requirements.

The Department of Urban Archaeology (DUA) is one of two field archaeology departments in the Museum of London, charged by Act of Parliament with providing archaeological services within the City of London; the Department of Greater London Archaeology (DGLA) provides the same services within the Greater London Area outside the City. The purpose of both departments is to evaluate, preserve, record, research and publish archaeological sites as a means of developing collections of objects and data relating to the history of London.

The Museum provides an integrated archaeological service which has four interlocking parts:

1. Site assessment and wider planning advice;
2. Excavation of sites which cannot be preserved;
3. Compiling an archive of site records and finds; and
4. Maintaining that archive for the future, and publishing as much of the information as is practicable.

Archaeology in the planning process

The Museum wishes to guard against unnecessary destruction of the heritage, and therefore encourages conservation of the historical resource, whether archaeological strata or standing structures. This small remaining reservoir of precious

untouched historical material must be mapped, documented, and its present state monitored. We hope the Corporation will assist in persuading developers to avoid deep basements or to bridge over deposits on less harmful configurations of piles whenever possible.

The close co-operation enjoyed with the Planning and Architect's Departments of the Corporation of London was consolidated during 1989. Together we developed archaeological procedures in the planning framework, both via the Unitary Development Plan and the use of planning conditions. In the year which celebrated the 800th anniversary of the mayoralty, there were joint exercises on the care of City property such as the City wall and Mansion House, and plans were made for a conservation and exhibition programme for the Billingsgate Bath-house in Lower Thames Street.

A second Roman bath-house site beneath and near Huggin Hill, in Upper Thames Street, was the scene of much activity and some controversy during the first half of the year. Scheduled Monument Consent was granted for the destruction, during redevelopment, of much of the bath-house, which then, during the course of a developer-funded excavation, showed itself to be an extensive and important complex. Running at the same time as the Rose Theatre controversy in Southwark, the site served to focus the public mind sharply on the issues involved in preservation of major sites. At Huggin Hill, a satisfactory solution was achieved; the remains have been backfilled and will now lie safely sealed beneath the future building, waiting for the next phase of redevelopment.

Overall, during 1989 in the City, new buildings provided over half a million square metres of floorspace, the highest annual total since 1945; and 92% of this was for offices. At the end of 1989, over 1.2 million square metres of office floorspace were under construction, another record figure. Ninety-four major rebuildings or refurbishments were under way in the Square Mile; and these were preceded by, or proceeded in conjunction with, archaeological investigation in 34 cases, the majority of which are reported in the following pages (some, which were not

Archaeology requires the support of developers in many ways. Here, at 68 Upper Thames Street, extensive shoring and continuous ground water pumping was required to provide suitable conditions for excavation. The cost of this and contractor attendance was directly met by the developer.



finished in 1989, will be reported next year). As to the future, a further 130 planning applications for new buildings or refurbishments within the City were outstanding but not commenced at the end of December 1989.

■ The character of excavations

The archaeological aspects of development sites may be considered in several ways. All sites will illustrate some aspects of London's 2000-year urban development or its social history. Some will contain monuments of national importance, many of which assume that importance simply because they are in London. This is as true of the Roman forum and basilica, the largest in the Roman province, as it is of the large number of priories and hospitals in and around the medieval city. Thus London provides research topics of national importance because here, to an extent not paralleled elsewhere, three chief factors come together: it has been the capital city throughout much of its history, the deposits are being rapidly eroded by redevelopment, and, when sites cannot be preserved, society has created the circumstances for large-scale rescue of the evidence.

The surge forward in our knowledge of London's past, derived from sites excavated in 1989, is detailed in the following reports. The discoveries came thick and fast. The most significant findings for the Roman period were a large part of one of Londinium's main public buildings, the baths at Huggin Hill; the portico at the east end of the basilica on Cornhill; confirmation of the Roman origin of Ludgate from the discovery of the road leading to it from the Fleet; and the recording of several lengths of the City wall. Excavation at Thames Exchange, in the heart of the historic Vintry area, produced a catalogue of riverside embankments and graphic evidence of international trade in the Saxon and Norman city. Several important medieval and early modern institutions and undertakings in the City came to light, albeit fragmentarily, during redevelopment of their sites: long stretches of the medieval City wall extension round the Blackfriars, and notable survival of parts of the friary itself within modern buildings; the interior of the hall of German merchants at the Steelyard; and the walls of the Fleet Prison. The finds in

and around these structures and all the others excavated tell us much about London and its inhabitants in previous centuries.

The character of excavations also changed, for in 1989 there were several investigations of major Roman buildings and structures which were already known: the buildings possibly of the governor's palace beneath Cannon Street railway station, the Huggin Hill baths complex, and lengths of the City wall. In some cases the best thing was done for the monument, but not in all cases. As archaeologists we have to say that this pressure on Scheduled Ancient Monuments was not welcome, and one result has been a reaction in Museum policy which coincided with statements of increased vigour from both English Heritage and the Corporation of London.

The waterfront sites have illustrated another recent development; that of complexity of engineering programmes. With some misgivings, our field teams have had to work on sites where fast-track construction was already under way. The constant dialogue and frequent day-to-day modifications to plans require archaeologists to be flexible and resilient. This need for continuity of archaeological presence, with the same negotiators handling a project from beginning to end, demonstrates how it is only an integrated archaeological service which will succeed in the highly pressurised circumstances of the City.

■ Compiling the archive

The site and finds archive from excavations of the last 16 years is probably the largest of its kind for a single place in the country. This brings special problems, opportunities and responsibilities, particularly in the articulation of an archive which will yield information for generations to come.

Archive reports on the excavated sites and finds are written to a closely-regulated format to ensure easy cross-referencing between them. The City is in fact one large site, with each new redevelopment acting as one area of investigation within it. Thus not only are large sites important, but even the smallest observation acquires meaning when it is integrated into the data bank of the city as a whole. Each excavated site produces a

report, paid for by developer funds or by English Heritage for sites (of 1973-82) within the HBMC publication programme. In 1989 English Heritage also grant-aided storage and conservation of the records of the immediately post-War excavations by the late Professor W F Grimes.

The integration of finds and environmental data, relating to the past ecology of the City, contributes more to the archive framework. Special finds such as the Venetian-style glass from Tower Street give hints of the richness of medieval households on the site. But again the overall picture, gained from many observations, is also important, as with the thousands of sherds from over a hundred sites which are providing, for the first time, a detailed chronology of London's 17th century pottery; and, from analysis of their clay, show how delftware was made in the East End.

We are also producing more interim reports and assessments of recovered material, and are striving for more uniform handling of the information through our developing computer systems. All this is not only for scholarship, but to make the archaeology of London more accessible. The importance of displays and presentations to developers and to the public is emphasised in several sections in this review.

The reception organised by the department's Press and Public Relations staff for the Annual Archaeology Lecture was a major success. A large number of developers and their associates attended, and the professional relationship between the City developer and the department was further strengthened.



■ Publishing the results

This year was the sixth out of seven for the programme of research and publication of sites and material excavated in 1974-1982, funded by

English Heritage. In terms of finished products this was a quiet year, gearing up for the publication of several major projects in 1990. Much thought was in addition given to new ways of publishing our material and to the future.

Progress in publication during the year has entailed further developer-funded books: Speyhawk and MEPC, two major development companies, produced with our assistance books on their own sites in the London area. At a more detailed level, the decision was made to establish *London Archaeological Reports*, a series of volumes containing summaries of newly-excavated sites, to speed up the dissemination of information to the archaeological world.

■ Funding and the future

In the financial year 1987-8, 72% of the income of the DUA came from developers, 21% from English Heritage, and the rest from other sources, including the Office of Arts and Libraries and the Corporation of London via the Museum's main account. The comparable figures for the year 1988-9 were 77% and 15%; so it is clear that the onus for paying for archaeological work in the City is shifting to developers and we expect further diminution in the proportion of English Heritage grants in future years. Private sponsorship, including that from charitable foundations, will have to be sought to carry out some of our publication work. Our sponsorship activities are being increased to handle this. The City of London Archaeological Trust funds one quarter of the research work on the Leadenhall Court site and occasionally smaller grants are made for work not funded through other channels. A new structure and agenda for action is required, and the DUA is currently examining how this might be best achieved.

As we look forward into the 1990s, this *Annual Review* shows the extraordinary vitality of the Department of Urban Archaeology of the Museum. Every section is not only reporting how it does the job effectively, but also how it is pushing techniques and levels of quality to new standards. The City of London, its developers, and the public at large can be proud of this centre of excellence.

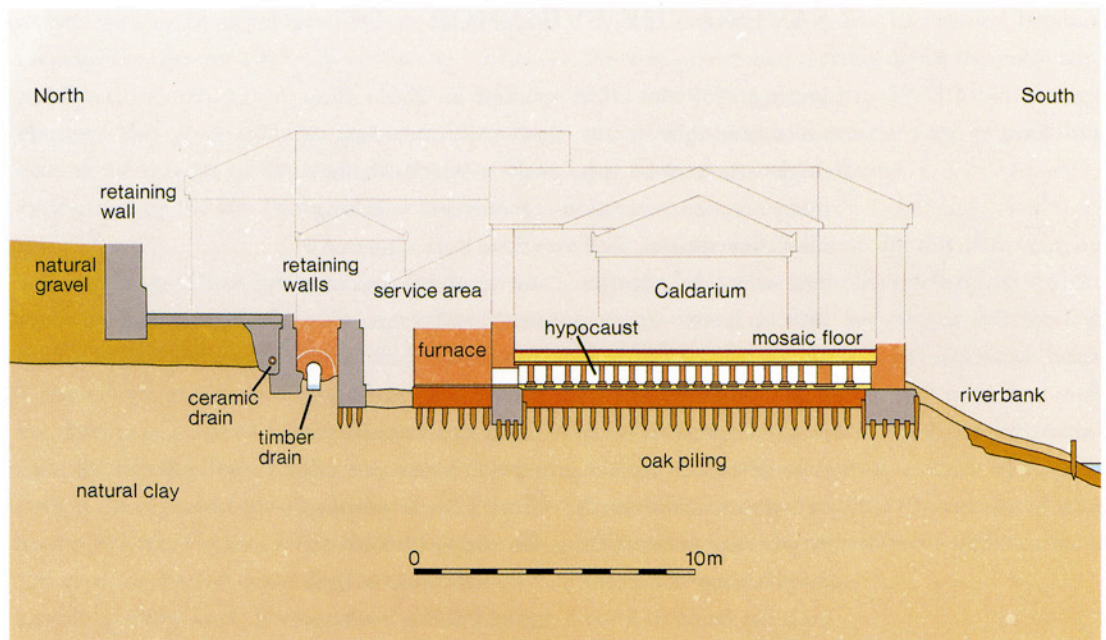
■ SAVING THE EVIDENCE

During 1989 the DUA worked on about forty sites, ranging from the small-scale recording of single structures to large projects which involved many separate excavation-trenches and watching-brief observations. Ten sites have been chosen for individual description - not so much because they were the largest projects, but because they illustrate the varying conditions in which the DUA worked, the wide chronological scope, from Roman to modern, and the remarkable state of archaeological preservation that can still be encountered in the City. The remaining projects are summarised at the end of the section, emphasising the particular contribution which each has made to knowledge of London's history and past topography.



One of the most impressive excavations of the year was at 85 Queen Victoria Street. This photograph was taken from the south over looking the large heated room (caldarium). Clearly visible are the numerous stacks of tiles (pilae) which formed the underfloor heating system or hypocaust.

A cross-section reconstruction of the Roman masonry structures found during the Dominant House excavations. The manner in which the natural ground slope was terraced can be clearly seen. The height of the walls and the roof lines were projected with reference to the rules for foundations set down by the Roman architect and writer Palladius.



**85 QUEEN VICTORIA STREET
205 UPPER THAMES STREET
(HUGGIN HILL)**

SPONSORED BY THE HAMMERSON GROUP

During 1988 and 1989 major archaeological investigations took place over the western half of the Huggin Hill Baths, a Scheduled Ancient Monument. The work included initial site assessment and substantial trial-trenching, followed by a full-scale excavation and watching-brief. This was a condition of the Department of the Environment's granting of Scheduled Monument Consent for redevelopment.

In 1845 and again in 1927 monumental Roman

The remains of the Roman bath house at 85 Queen Victoria Street were reburied, after full recording, to ensure their long term survival. After covering the masonry with a blanket of inert fibre mesh, the remains were covered with a high quality low salt content sand and finally sealed beneath 2m (6ft) of steel-reinforced concrete.



walls had been recorded on the site. The presence of a massive Roman building was confirmed during the construction of Dominant House in 1964. Excavations on the neighbouring site of Fur Trade House in 1969 showed that the building was probably Roman London's main public baths complex. The 1988 assessment revealed that the western part of the baths had survived the 1964 building-works virtually intact. The baths were constructed around AD 70-90 on the steep natural slope along the north shore of the Thames, below a spring line which would have provided the necessary clean water. Ambitious groundworks created terraces on the hillside. Deep foundations were then cut into the lower terrace, and a raft of oak piles was constructed. External wall foundations and internal slabs of ragstone and concrete formed the platform for the building.

Because the baths were built into the terraced hillside, the superstructure, which consisted mainly of tile, had survived later disturbance exceptionally well; parts were still standing to a height of 3m (10ft). This allowed a detailed architectural record to be made. The building was of a Classical design, similar to many public baths on the Continent. A suite of heated and unheated rooms formed an east-west range along the river frontage. The westernmost room, which had apses on its southern and western

flanks, was used as the *caldarium* (hot room). A smaller heated room to its east was probably a *tepidarium* (warm room). Both rooms shared a complex underfloor heating system (hypocaust) connected to furnaces and service areas to the north, and included suspended floors of tile and concrete topped by polychrome mosaics, though little of these survived. Two unheated rooms lay to the east, one of them probably being a *frigidarium* (cold room).



In only one place did part of the floor which would have once covered the hypocaust survive. This photograph shows one of the tiles which bridged between four pilae stacks; above this is a thick layer of concrete (opus signinum) which would have served as a bedding for the mosaic pavement.

The rooms and service areas were enclosed by massive retaining walls and buttresses to the north and west. These walls contained a system of culverts and tile pipes for the drainage of groundwater. A monumental platform, which formed part of the retaining structure, may have carried a large cistern or plunge bath on the upper terrace. A large area of concrete and ragstone flooring here may have been part of an exercise yard (*palaestra*).

The baths were extensively rebuilt in the early 2nd century with the addition of another large *caldarium* to the north. Parts of the original structure were demolished to make way for the new rooms, and the heating system was redesigned. The original drainage system was replaced by timber drains which ran through the service areas of the earlier phase.

The construction and maintenance of the building must have involved large public expenditure and the support of the municipal or provincial authorities. The sudden abandonment and systematic demolition of the baths in the 2nd century provides clear evidence of a transformation in the fortunes of Londinium. Valuable materials were salvaged for use elsewhere, and the site changed from public to private use. Clay-and-timber, low-status domestic and light-industrial buildings occupied the site during the late 2nd and 3rd centuries, some of them incorporating parts of the demolished baths.

No evidence was found of occupation after the 5th century, and the site was probably little more than a rubble-strewn slope until late Saxon times. Pits and sunken buildings recorded during the excavation may be contemporary with a refer-

ence of c 900 to a market area near the newly established Queenhithe and on the site of an ancient stone building known as *Hwaetmundes stan*. The latest remains to be revealed were the chalk foundations of medieval properties along the north side of Thames Street, and two 17th-century buildings with brick cellars which were destroyed in the Great Fire of 1666.

The impressive Roman remains led to calls from politicians, the public, and the national Press for the site to be preserved. The decision by the Hammerson Group to redesign their new building means that most of the baths beneath Dominant House will remain intact. Together with the scheduled remains to the east, these represent one of the largest Roman buildings to survive in Britain today.



Archaeological recording continued even after the main parts of the monument had been safely reburied. A watching brief was mounted in order to minimise any further damage to the remains that might occur during the construction of foundations for the new building.



THE FLEET VALLEY PROJECT

SPONSORED BY ROSEHAUGH
STANHOPE DEVELOPMENTS PLC

This major project, covering an area of 30,000 sq m (7.4 acres), began in early 1988 and will have been completed by the end of 1990. It arose from the redevelopment of the railway link between Blackfriars and Holborn Viaduct stations. The familiar railway viaduct, dating to the 1860s, will be demolished and replaced by a new underground line and station beneath Ludgate Hill. The area also includes the last remaining large bombsite in London. This, and the viaduct, will be replaced by over 55,000 sq m (600,000 sq ft) of office and retail accommodation.



The archaeological programme involved the excavation of approximately 100 trenches and a corresponding number of watching-brief observations. The project has provided an opportunity to record a large area of London at one time, and is concentrated on the east bank of the Fleet, once an important waterway but now one of London's lost rivers.

Above: One of the last trains to pass over the Ludgate Hill viaduct, built in the 1860's. The redirection of the railway line into an underground tunnel, together with the redevelopment of the surrounding property, demanded the investigation of an extensive area of the western limits of the walled city.

The redirection of the railway meant the destruction of a substantial length of the medieval extension to the City wall. The part shown here was extensively recorded, drawn and photographed before demolition.

Until recently little evidence had been found to indicate the extent of Roman activity here. In 1989 an important discovery was made in a gas-main trench as it was being cut through Ludgate Hill. The section in the side of the trench preserved a record of many surfaces laid on the hill, from the earliest pre-Roman ground surface to that of the modern street. The lowest deposits were the natural soft orange/yellow gravels of Ludgate Hill itself. Immediately on top of these was an early Roman road composed of compacted clay and gravel. It followed the natural gradient of the hill, a steep 1 in 5. Above this was a later Roman road of rammed gravel. It had been repaired and resurfaced a number of times, thus reducing the gradient to a much less dangerous 1 in 10.

Just outside Ludgate and alongside an important thoroughfare between the City and Westminster, the area was developed during the early medieval period. The Fleet Bridge is first mentioned at this time, and one of its massive timber abutments was observed during a watching-brief. On the southern side of Ludgate Hill a complex of substantial masonry buildings was constructed during the 11th and 12th centuries. Against the street, the most northerly of these measured 7m by 12m (23ft by



40ft) and had a small square turret in its south-east corner, housing a newel (spiral) staircase, the first step of which was found *in situ*. The building contained many floor surfaces, possibly pointing to a long period of occupation.

South of the medieval gate of Ludgate, half-way up the Hill, the City wall was extended to enclose the new priory of Blackfriars in 1283. The line of the wall is preserved in the line of modern Pilgrim Street. Parts of the wall, underground but still standing in the way of the new railway line, were recorded before destruction. This information can now be added to the extensive records of the wall that were made on the Pilgrim Street site to the east (reported in the 1988 *Annual Review*).

At the southern limit of the project area a stone-lined well contained an excellent group of late 16th to early 17th-century pottery, but even more important was the material used to line the well itself: a large number of re-used and re-cut Reigate stone blocks. Seventeen of these comprise fine window tracery mouldings which can be dated on stylistic grounds to around 1490-1500, and clearly came from a major church. It is most likely that they came from the Blackfriars. The friary was appropriated by the Crown on the dissolution of the monasteries in 1538, and the finding of stonework in the mid 16th-century well suggests that at least a part of it was demolished at that time.

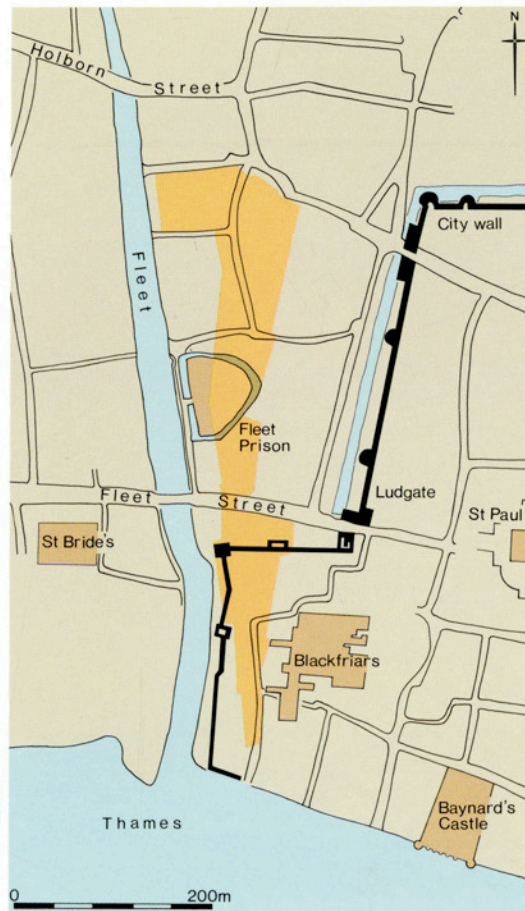
Another event graphically recorded in the gas-main section along Ludgate Hill was the Great Fire of 1666, represented by a layer of charcoal and fire debris 20cm (8in) thick. We know that the fire was followed by a massive rebuilding programme which included the conversion of the Fleet into a canal with wharves on either side, parts of which were recorded. On Ludgate Hill a new road was found to have been constructed from crushed and rammed greensand stone, moderating the gradient once again to a more gentle 1 in 20.

To the north of Ludgate Hill were found the perimeter walls of the Fleet Prison. Two successive brick-built walls were exposed, the earlier

0.6m (2ft) thick and the later as much as 0.8m (3ft). The earlier is probably of the 1760s, and was founded upon an even earlier wall dated to the post-Fire rebuilding of the 1670s. The later wall dates from the 1780s, when the prison was rebuilt after the Gordon Riots.



Pewter tableware was common in England throughout the late medieval and early modern period. The plates and spoon recovered from a site in the Fleet Valley are particularly good examples of their type.



The Fleet Valley Project covers an extensive area around the western limits of the medieval walled city. The area includes parts of the River Fleet itself, the priory of Blackfriars, their extension to the City wall, Ludgate Hill and the Fleet Prison.



22-25 AUSTIN FRIARS

SPONSORED BY MEPC
DEVELOPMENTS LIMITED

23 Austin Friars is a Listed Building. The facade, designed by Sir Aston Webb in 1888, is being retained, as are the rooms immediately behind and the facades of the adjoining properties, Nos 22 and 24. The only building to be demolished completely during this redevelopment was 25 Austin Friars, and so it was here that archaeological excavations were concentrated between February and June.



The natural terrain showed a distinct drop towards the north-west, where a silted up tributary of the Walbrook crossed the site. This

waterlogged ground held few attractions for the Roman settlers who first colonised the area.

Above right: The floors of the Roman building were made up of thousands of small pieces of tile known as tesserae, but the larger square tiles to the right of the floor were more unusual. Also of Roman date, they probably formed the base of an architectural feature. The circular brick lined well in the centre was cut down through the Roman deposits in the 17th century.

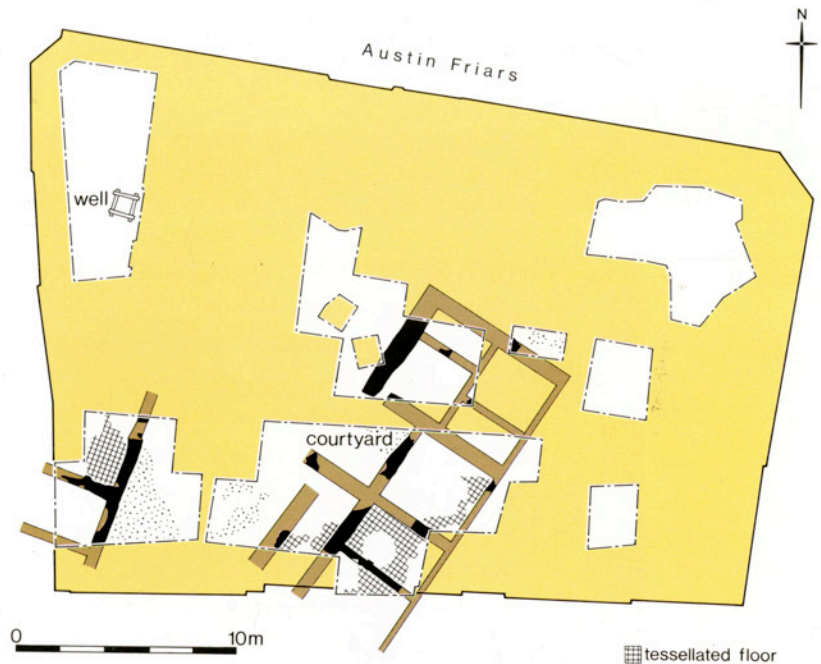
Right: A large late Roman storage jar was found during the excavation. It stood approximately 50cm (18in) tall and was manufactured at the Alice Holt pottery kilns in Surrey.



Activity concentrated on the higher, eastern half of the site, where fenced properties were laid out and an extensive series of drainage ditches was dug. The ground surface was further consolidated by large-scale dumping, incorporating a light timber revetment, close to the bank of the former river channel.

The first of several private houses was then constructed on this prepared platform. It was a relatively humble dwelling, but it had a piped water supply. It was eventually abandoned, and its remains were covered by further dumping in preparation for a major redevelopment. The first new structure was of timber, and may have served as a temporary shelter or store during the construction of an impressive, largely stone-built, house. This contained at least nine rooms and had a small courtyard on its western side, overlooking the Walbrook. It was clearly occupied for a considerable period, as the internal floors were renewed several times. It also underwent a complete refurbishment at some stage. Tessellated floors were laid throughout, and the walls were given a fresh coat of plaster. The building clearly served as an impressive residence for one of Londinium's wealthier citizens.

Another, very similar, stone-built house lay further west. This too appeared to be of a high status. Rooms in both buildings contained unusual underfloor drains and water pipes. The source of the water may have been the Walbrook itself. A well-preserved timber pipe was found in the north-west corner of the site, apparently running from the river towards the buildings. This was subsequently replaced by a well, dug to exploit the high water table. It is tempting to infer that pollution had rendered the river water undrink-



able. In time these masonry buildings were abandoned and most of the stone was salvaged for use in other structures. The final Roman building to be found was probably built almost entirely of such re-used material.

Two substantial masonry buildings of Roman date were recorded on the Austin Friars site. One had a central courtyard, both contained high-quality tessellated floors. To the north-west of the site, as the plan shows, a well was constructed to supply the properties with fresh water.



After the demise of Londinium, some time in the 5th century, the site reverted to open land and probably remained derelict for several centuries. During that time all traces of the Roman occupation were covered by a thick horizon of dark, silty soil.

In 1253 part of the site was incorporated within the precinct of the newly-founded Augustinian friary. In general the post-Roman deposits had been entirely removed during the construction of the deep basements of the Victorian office buildings, but a timber-lined ditch running north-south probably represented the western boundary of the friary.

Above: This small lion figurine, possibly a key handle, was excavated from the Roman levels at Austin Friars. When found its surface was covered in a solid layer of corrosion. Following X-ray analysis and painstaking cleaning by staff of the Conservation Department the original form of the lion can now be seen. The rear of the lion has yet to be cleaned and shows the condition of the figurine before work began.

Left: Excavation in progress on the remains of the tessellated floor of the Roman masonry building.



10 FRIAR STREET AND 69 CARTER LANE

SPONSORED BY MEPC
DEVELOPMENTS LTD

Excavations took place here between March and May, and were supplemented by year-long watching-brief observations from October 1988 to September 1989. The modern place-name 'Blackfriars' is a reminder of the former presence of a community of Dominican friars who acquired the site on the south side of Ludgate Hill between 1276 and 1278. Building-work was underway by 1279, and in 1287 Edward I granted 100 marks to the new church.

The overall plan of the friary during the 16th century has been reconstructed from documentary sources. It was dominated by an impressive church, consisting of a large aisled nave and a choir. The cloisters and all the domestic or residential buildings lay to the south; to the north was the cemetery, where excavations in 1987-8 revealed 58 burials.

The documentary evidence indicated that 69 Carter Lane overlay the eastern end of the choir of the friary church. Very little of the foundations remained, however, as the modern basement

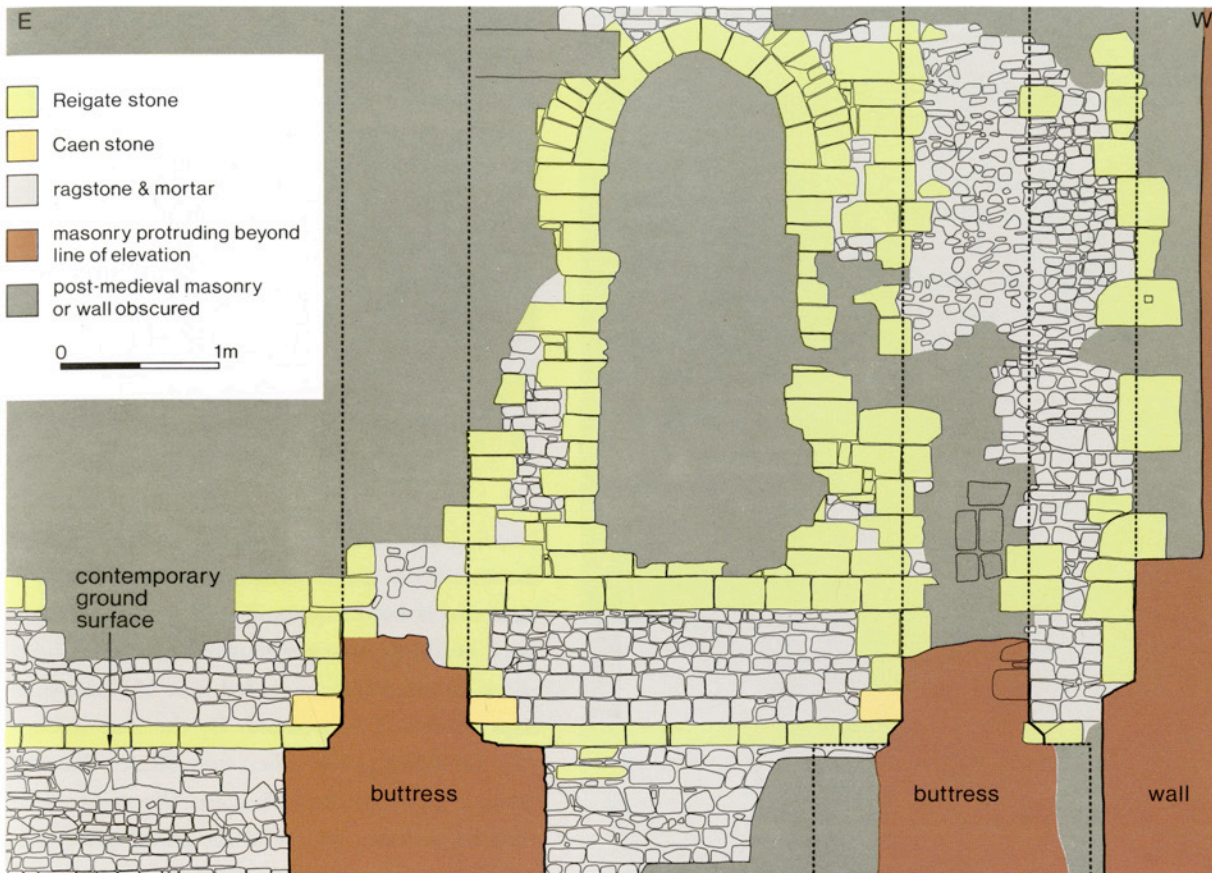
walls had been built in exactly the same positions. This only became clear when contractors excavating slots for steel shoring encountered medieval masonry within them. Within the choir, excavation revealed five burials, perhaps of rich patrons of the friary, and two wedge-shaped burial vaults of brick. Both vaults appear to have been emptied when the friary closed in 1538. They were used during the late 16th and 17th centuries for the disposal of rubbish.

To the south of the church lay a cellared building, identified as the Prior's Lodgings. It was represented by L-shaped stone foundations, and a cesspit had been added to the south-western corner. Traces of a 17th-century floor of Delftware tiles were found within. At the end of its life the building was used as a coal cellar. It was not demolished until the late 17th or early 18th century.

Along the south side of the site, within the modern party wall, the outer wall foundations of an undercroft were exposed. The interior had been recorded on the other side of the party wall, at 5-7 Ireland Yard, in 1900. The Provincial's Hall once occupied the first floor above, and there may have been a dormitory on the second floor. From the surviving remains it is clear that this was an impressive building: five rectangular

Work underway in the main area of the excavation; the surviving elements of the northern wall of the Provincial's Hall can be seen at the far end of the site.





A detailed elevation drawing was made of the northern wall of the undercroft of the Provincial's Hall. The drawing provides not only a detailed record of the wall but through careful analysis it can be used to deduce the method of construction.

The foundations of the Prior's Lodgings ran across the central area of the site. This building would have occupied a space between the Provincial's Hall to the south and the choir of the priory church to the north.

buttresses of the north wall were found, each with a chamfered plinth at ground level. Between each pair of buttresses was a window 3m (10ft) high, one of which was largely intact. This window will be preserved and displayed within the new building.

An unexpected discovery along the south-west boundary of the site was the external face of the east wall of the Chapter House, the rest of which lies under Ireland Yard garden. The current redevelopment includes plans to restyle the garden, laying out the projected wall lines of the Chapter House and the rest of the Provincial's Hall. The redesign of the garden, together with a permanent information panel, will make the remains of the Blackfriars a major feature of one of the City's open spaces.



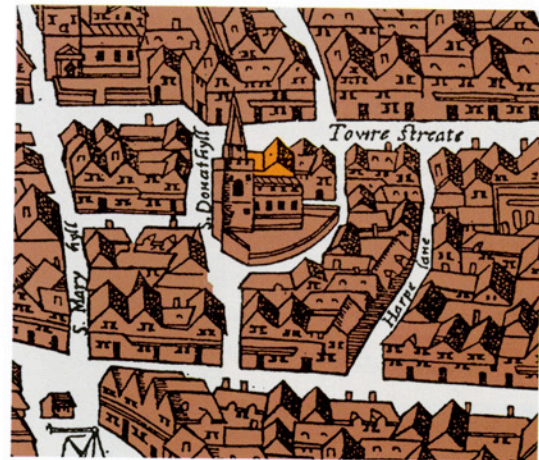


1-4 GREAT TOWER STREET

SPONSORED BY HARRISONS & CROSFIELD plc

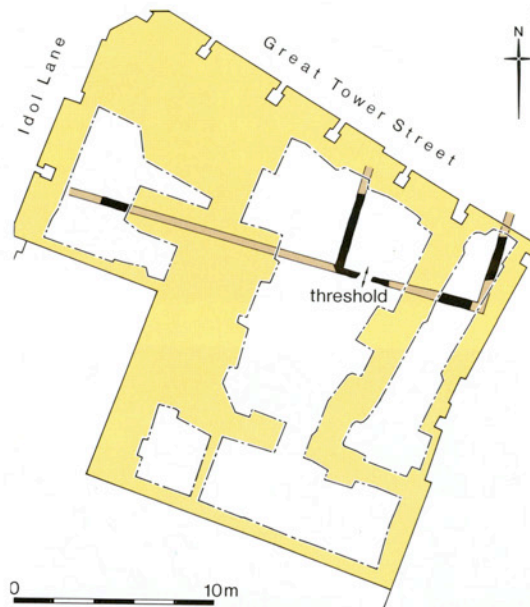
Excavations took place here during May and June. The site lies towards the south-east corner of the City, within the circuit of the Roman and medieval walls, near the top of the natural gravel terrace which slopes down towards the Thames.

The earliest evidence of human activity was the remains of a prehistoric pit. Subsequently, in the early Roman period, the area was levelled and a



Above right: It is possible to locate the Great Tower Street site on this woodcut map of London dated to AD 1562. The buildings which then occupied the site are just visible behind the church of St Dunstan in the East.

Right: Evidence for an early Roman building was found in the northern part of the site. The southern half was at this time an open area within which a number of refuse pits were dug.



building was constructed in the northern half of the site. Only the foundations survived, but it is clear that it was a post-built structure, presumably with walls of wattle and daub. Two internal room divisions were recorded, one of which perhaps contained a threshold. By the 2nd century AD the building had fallen into disuse. The site became open ground used for the disposal of rubbish, and was also used for gravel-quarrying, probably to supply metalling for the construction of roads nearby.

During the early Middle Ages the site appears still to have remained open. A number of rubbish pits and cesspits was excavated, which produced a range of artefacts dateable to around AD 1000. This area probably increased in importance in the mid 12th century, as it lay on the south side of

An overhead view of the excavations clearly demonstrates the complexity of urban archaeology. A large number of pits of various dates can be seen to intercut one another, and in turn to have been cut away or truncated by later brick foundations. North is to the left of the picture.



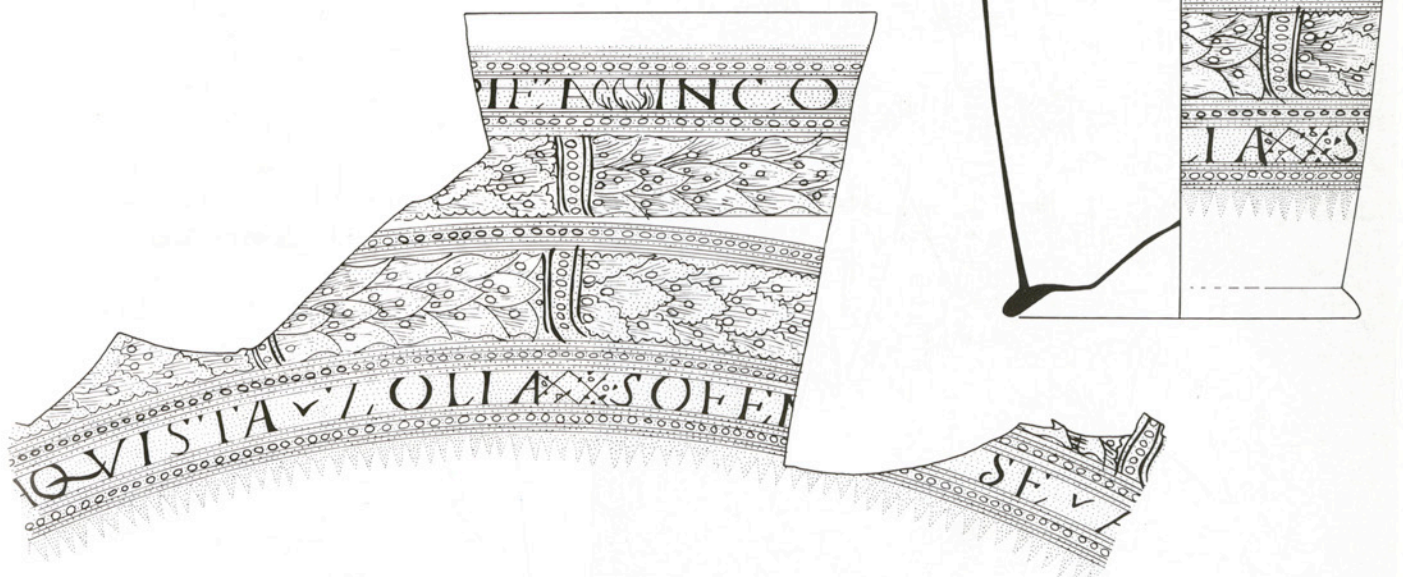
the main thoroughfare from the City to the Tower of London.

Four chalk-lined cesspits, dating from the 13th or 14th centuries, were found at the southern end of the site. They were finely constructed of ashlar blocks, and probably belonged to medieval houses fronting onto Great Tower Street. The largest pit had a chute built into its northern wall, which suggests that there may have been a privy above. This pit produced a leather 'patten' - a form of clog-like overshoe - and some of the finest late medieval glassware ever to have been found in the City.

A wide range of later features was also excavated, including rubbish pits, cesspits and brick-lined cellars, mostly dating from the 18th and 19th centuries.



This exquisitely decorated glass perhaps belonged to a resident in Great Tower Street, who discarded it when it was broken in a cesspit on the site that was excavated. The beaker stands about 10cm (4in) high, and bears white enamel dots and gold leaf which has been immaculately etched with lettering and alternating bands of laurel and oak leaves. It was probably colourless cristallo originally, the present purple tinge being caused by the decay of the manganese which would have been added as a decolourant. In form the beaker may look backwards to the Middle Ages, but its decoration is wholly typical of the Renaissance. It was probably made in Venice in about 1500, at the time that the English nobility were first taking an interest in luxury glassware; Henry VIII had a collection of several hundred Venetian and Spanish glasses, but the Great Tower Street vessel would have enriched even his cabinet.





CANNON STREET STATION (NORTH)

SPONSORED BY SPEYHAWK PLC

Right: The massive timbers of the late 1st-century waterfront. These revetted the eastern side of the mouth of the Walbrook and, together with observations made previously to the west, indicate for the first time the full width of the stream at its confluence with the Thames.

Below: Working conditions under the vaults of the railway viaduct were at times very difficult. The problems of excavating under artificial lighting were compounded by fumes from various machines, rising ground water and complex shoring requirements.

The construction of new offices above Cannon Street Station made it necessary to strengthen the foundations of the railway viaduct. Excavations between September 1988 and August 1989 proceeded in advance of, and partly during, construction, both north and south of Upper Thames Street. The northern area lay directly to the west of observations made in 1972, which have been interpreted as representing the southern wing of the Roman Governor's Palace. (The site to the south, which was occupied in medieval times by the Hanseatic Steelyard, is described overleaf.)

Here the railway runs directly over the point at which the Walbrook stream, now underground,

flows into the Thames. In the viaduct arch immediately north of Upper Thames Street, accumulations of sand, silt and decayed vegetation were found to have formed against the natural banks of both the Walbrook and the Thames. In the late 1st century a substantial timber revet-



ment was constructed on this natural embankment to form the eastern side of the stream. It consisted of two parallel lines of horizontal timbers, each at least 5m (16ft) long and 0.6m (2ft) square. It stood four tiers high on a foundation of driven piles. The area to the east, behind the revetment, was infilled with dumps of gravel and a large timber drain was constructed within it, flowing south towards the Thames, where there would have been a contemporary revetment. The area was subsequently surfaced and would have served as a quay.

At the same time an imposing retaining wall was constructed to the north, running east-west. It was built mainly of tile on a foundation of timber piles and was buttressed on its southern side; the most easterly buttress was curved and so would have been both functional and decorative. To the north the ground level was raised to form a terrace. These large-scale building-works, dated to the 70s or 80s, do not accord with earlier interpretations of the area as having been occupied by the southern wing of a palace.

The site was dramatically transformed in the late 2nd or early 3rd century with the construction of new revetments beside both the Walbrook and the Thames. Building-debris, presumably from demolished structures immediately to the north, was dumped over the 1st-century quayfront; the ground level was raised, and the quay was extended to the south and west. The new

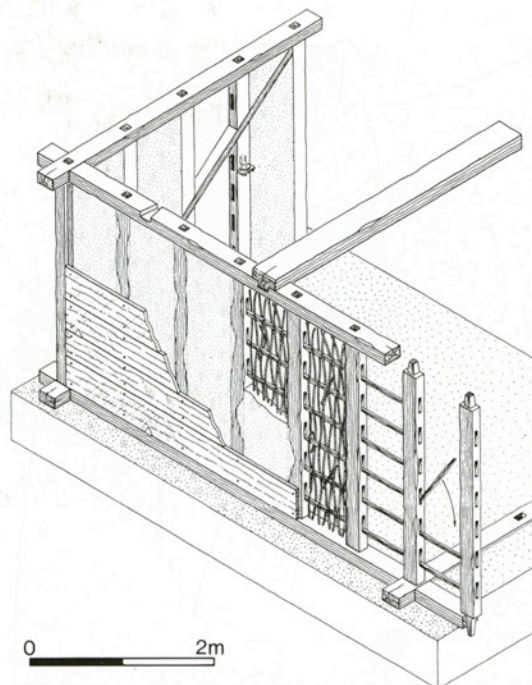




The waterfront timbers were removed after detailed recording both on plans and by elevation drawings. Slices of the timbers were taken to provide dating information through the science of dendrochronology (tree-ring dating).

Walbrook revetment was a complex double-box construction similar to Thames revetments of this period that have been recorded elsewhere. The timbers were smaller than those of the earlier quayfront but were lap-jointed together to form a rigid structure. A building was constructed on the freshly-reclaimed land. Its piled foundation was recorded over a distance of 20m (65ft). Some of the piles were found to have been reused from 1st-century buildings. At the eastern limit of excavation part of a hypocaust and fragments of tessellated flooring were uncovered.

In the late 3rd century the Walbrook revetment was partially dismantled. (By this time further land had been reclaimed from the Thames, and the waterfront of this date was found at Cannon Street South, described overleaf.) The discarded timbers from the Walbrook revetment were thrown into the stream and buried with clay. The area silted up, although some further reclamation dumping took place. It seems that the site was then partly abandoned. It is known that pits were dug over the eastern half, but on the west all late Roman levels had been removed by modern disturbance. Late 18th-century cellars and cesspits, superimposed on the foundations of earlier post-medieval properties, were all that survived to complete the archaeological sequence.



Detailed analysis of the timbers found reused as piles beneath the walls of the late 2nd-century building has shown them to be parts of a 1st-century timber structure. The reconstruction drawing demonstrates how the building would have been assembled, the frame elements being infilled with wattle and daub.



CANNON STREET STATION (SOUTH)

SPONSORED BY SPEYHAWK PLC

Beneath the cavernous brick vaults which carry the platforms of Cannon Street railway station to the edge of the Thames, a small area in the extreme north-west was excavated in a controlled fashion, with watching-brief coverage of the rest.

Across the northern part of the site ran a revetment consisting of two tiers of substantial timber baulks, probably part of the Roman quayside. These have been provisionally dated by dendrochronology - tree ring dating - to the late 2nd or early 3rd century. They were buried by river-laid material, which suggests a considerable rise in river levels after the revetment had fallen into disuse. Sealing this riverlaid material were modifications to the foreshore: clay banks, brushwood rafts and spreads of stone rubble, interspersed with dumps of brown fibrous organic material interpreted as horse manure. The localised nature of these deposits suggests activities that were carried out by individuals rather than as civic projects, probably in the 10th to 12th centuries.

The excavation revealed a substantial masonry building founded on alternating layers of rammed

chalk and gravel. The east, south and west walls were recorded, the north wall lying beneath Upper Thames Street. The building was at least 18m (60ft) long and 10.3m (34ft) wide internally. A sleeper wall within the building supported two square pier-bases made of ashlar blocks of greensand and the fine-grained limestone imported from Caen in Normandy - a stone often used in buildings of quality. The blocks had chamfered top edges, and some of them bore a mason's mark, the stone worker's personal 'signature'. Nothing remained *in situ* of the columns which the square bases once supported, but later brick cellar walls within the building contained moulded blocks of greensand which almost certainly came from them. In plan, each block was a segment of a circle, so that eight of them placed edge-to-edge would make one course of a plain column. A row of these would have formed a free-standing arcade with rounded arches, dividing one part of the interior from another.

These architectural characteristics date the building to the second half of the 12th century. In the 1170s Henry II granted the merchants of Cologne the right to a guildhall of their own in this area of the waterfront; we may conclude that this building was that Germanic guildhall. The floor consisted of a sequence of mortar and rammed chalk surfaces, suggesting that the ground floor was used for storage. The social and

Intensive excavation was concentrated on the remains of the 12th-century Cologne Guildhall in the northernmost of the viaduct arches of Cannon Street Station. Recording beneath the other arches of the viaduct was limited to watching-brief observations.





The main north-south wall of the Cologne Guildhall after full excavation and recording. The scale is 0.5m (18in) long.

administrative functions would have been carried out above, on the first floor. The floors incorporated numerous small hearths, but near the original construction level were two very large hearths surrounded by a ring of stake-holes. The stake-holes imply a superstructure, probably dome-shaped. These are best interpreted as kilns in which chalk was burnt to produce the lime that will have been needed for the mortar to construct the building.

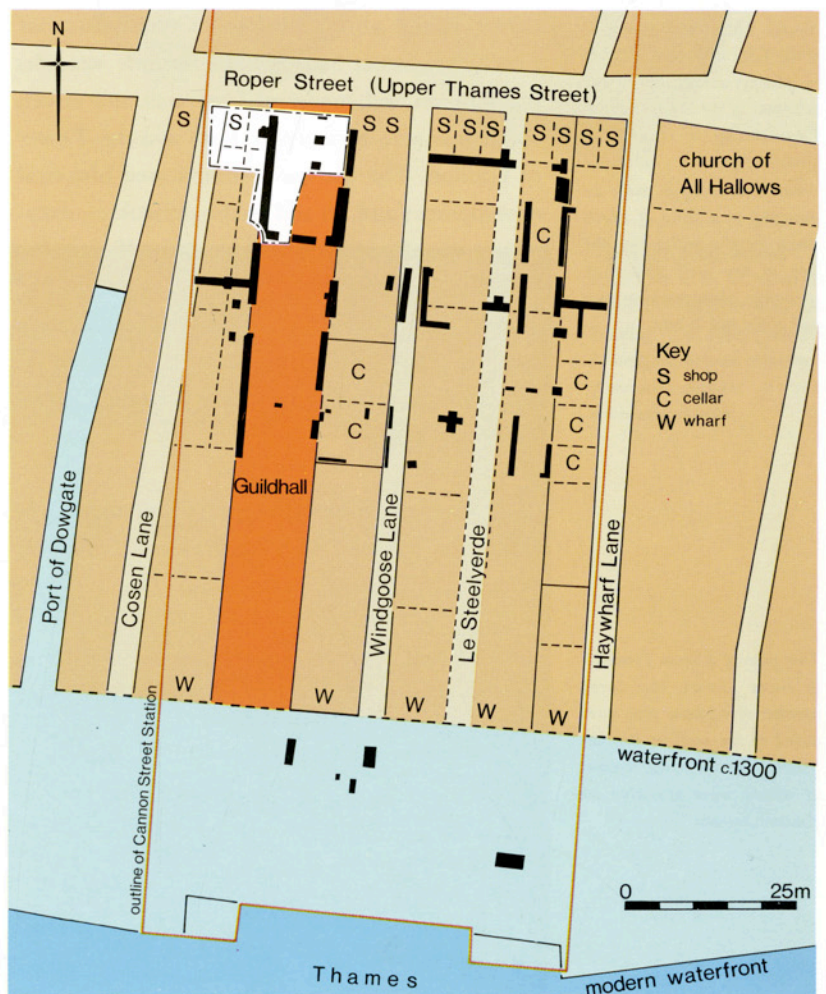
In the later medieval period the Cologne Guildhall was extended towards the river and the remainder of the site was filled with masonry buildings. Unfortunately these had been truncated down to foundation level during the construction of the station. In 1475, by which time it had become known as the Steelyard, the whole complex was acquired by the Hanseatic League, an association of some two hundred port cities which controlled trade in the North and Baltic Sea areas. The Steelyard was razed almost to the ground by the Great Fire, after which buildings with brick cellars were constructed.

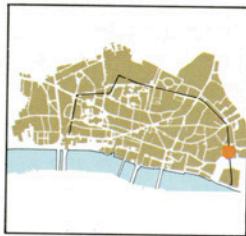
Waterfront sites normally produce large numbers of the timber revetments that were constructed to reclaim land from the river. Here only one was seen *in situ*. It consisted of contiguous upright staves, and was probably the means by which land was reclaimed for the Guildhall itself. Other timbers, which were brought up in the bucket of a mechanical excavator, include some which may have come from a quayside crane. The watching-brief revealed substantial stone-built drains and a late medieval river wall, very

near the present-day waterfront, which shows that only 10m (33ft) has been reclaimed from the river in the last 500 years.

It is unfortunate that owing to a shortfall in funding, further analysis of this excavation - and of that on the north side of Upper Thames Street - has had to be suspended indefinitely.

This plan shows the area covered by the viaduct of Cannon Street Station. The remains of the Cologne Guildhall and a number of other buildings of contemporary date are indicated. The information for the plan was gained both from the excavation and historical documentary research.





Above: The surviving lengths of the City wall were recorded by photogrammetry with the assistance of the Department of Engineering of the City University. A detailed elevation drawing is made by surveying in a series of targets which form a grid across the face of the wall and then accurately photographing each part of the grid in turn.

1 AMERICA SQUARE

SPONSORED BY CENTRAL AND CITY PROPERTIES LIMITED

The aim of this development, by Central and City Properties Limited, in conjunction with the British Rail Properties Board, is to create new office space above the railway viaduct of Fenchurch Street Station. The scheme straddles the Roman and medieval City wall and covers about one acre between Aldgate and the Tower of London. The site has a complicated historical development and, to add to the difficulties, excavation was dispersed through nearly 40 trenches dug to take supports for the building over the railway. The City wall, and its associated features, is a Scheduled Ancient Monument, protected by the Ancient Monuments and Archaeological Areas Act 1979.

There was very little evidence for settlement here before the Romans built the City wall, probably

This plan of Roman London's defences shows the large number of bastions that were added to the wall in the 4th century. Bastion 3, the remains of which were revealed at America Square.



in the early 3rd century AD. The defensive system seems to have been fairly uniform round the whole perimeter of the Roman city. The wall was of ragstone, over 2m (6ft) thick, with regular tile levelling courses and a trench-built clay and flint foundation. A V-shaped ditch was dug a short distance in front, about 5m (16ft) away in this case. A metallised surface was laid on the intervening berm, and an earth bank was built up behind the wall, probably using upcast from the ditch. Below the bank was found a 7m (23ft) wide gravelled road, with uneven mortar patches on its surface. This may have been a service road, used only during the construction of the wall itself. The bank seemed to consist of two layers, with a further trackway buried within its western edge. This suggests that the ditch was recut in Roman times and the bank heightened, again using the upcast. A projecting tower (bastion) was added later, abutting the outer face of the wall. This probably required the ditch to be re-dug a little further out. The bastion was built of less uniform masonry and incorporated several moulded stones that had clearly been salvaged from other structures.

Within the area enclosed by the wall this part of the city appears not to have been intensively occupied. Very few structures were found, although there were large numbers of pits and wells cutting through thick layers of 'garden soil'. This pattern of occupation seems to have continued throughout the later Roman and medieval periods.

In 1598 the historian John Stow, describing the area outside the wall, reported that where previously 'divers watering horses were drowned, both horse and man the same ditch is inclosed, and the banks thereof let out for garden plots, carpenters' yards, bowling allies, and divers houses thereon built, whereby the city wall is hidden, the ditch filled up, a small channel left, and that very shallow.' The ditch to which Stow refers was found at a depth of over 7m (23ft) below the modern street level. It had been filled in with dumped layers containing large quantities of 17th-century pottery. The area was intensively occupied from this time onwards, especially by wine-importers, who built warehouses and offices here.



the viaduct having been partly built directly on top of the Roman wall. The 30m (100ft) of City wall that survived here will be preserved by reburial under the new building. Demolition of the office buildings on America Square itself and of the Olde Crutched Friar public house revealed a further 30m (100ft) of wall, where it had formed the boundary between the properties. This portion will be consolidated, to become a feature of the new building.

Far left: The Roman City wall was carefully constructed, taking into account features of the existing landscape such as streams. Here a well-designed culvert was built into the base of the wall and continued to function up to the 17th century, by which time it had become blocked up with dumps of rubbish.

The survival here of part of the Roman superstructure is remarkable. All these remains were reported by contemporary artists and engineers as having been destroyed in the 1840s during the construction of the railway viaduct. In fact they generally survived up to a height of about 2m,



Left: In early modern times much of the site was marginal to the City and so became used for the disposal of rubbish. These fragments of fine oriental porcelain were recovered from a refuse pit and are decorated with topographic images of buildings, ships and people.



The length of the Roman City wall that is to be preserved within the basement of the new building. The office space will be designed around it giving 1 America Square a very remarkable interior.



THAMES EXCHANGE, UPPER THAMES STREET

SPONSORED BY KUMAGAI
GUMI UK LTD

Between February 1988 and September 1989 the opportunity arose to record a large area of land reclamation to the south of Upper Thames Street. From the onset of redevelopment the archaeology was co-ordinated within a complicated engineering programme. Fifteen to twenty percent of the site was allocated for a control excavation, while the remainder was recorded in a watching-brief. This required close co-operation between Taylor Woodrow Management, the sub-contractor Rees Hough and the archaeological team.



Above: The Thames Exchange excavation took place side-by-side with construction work for the new building. This required continual consultation between the archaeologists, architects and contractors, particularly during the watching brief, which covered some 80% of the site.

The earliest riverfront structure was a 35m (115ft) length of 3rd-century Roman timber quay on an east-west alignment at the extreme northern limit of the site. The structure was later robbed and left to silt up. In the following period, probably late Saxon up to the 11th century, a series of embankments raised the land by up to 2m (6ft) while advancing some 18m (60ft) to the

Right: The handle of this wooden scoop is decorated with a human head. It is thought to represent a negro and so reflects the extent of the Roman empire, which extended southwards as far as north Africa. Length: 269mm.

south. The remains of occupation levels, internal floors and hearths were found associated with them. The banks made use of various types of construction: wattle fences, pile-and-plank revetments with occasional back-braces, vertically set staves and clay banks consolidated by timbers used as hard-core. Some of the timbers were reused, including part of a dug-out trough, the largest yet found in London. One of the clay banks contained more than 50 millstones from Niedermendig in the Rhineland, the largest collection from this period ever to have been found in Britain. Incorporated into some of the timber structures were the remains of at least six boats. The fragments include clinker boat planking, a keel, ribs and a large mast partner, and represent vessels ranging from small river craft to large sea-going ships of a size previously unknown at this date.

In the centre of the site was an inlet laid out at the very beginning of the late Saxon sequence. As the waterfront advanced southwards the inlet filled up and was used as an access point by means of a planked timber trackway, with property divisions noticeable in the embankments to the east and west.



From the 11th century there were enormous advances, with a further 33m (108ft) reclaimed from the Thames. Several phases of earthen banks featured cobbled ramps leading onto the foreshore. By the 12th century the reclamation was faced with large timber structures which often survived up to 2m (6ft) in height. Carpenters' assembly marks show them to have been prefabricated. The central inlet was clearly the dominant property division on the site, the revetments to either side being distinguished by differences in style and construction. In the earliest post-and-plank structures timbers were driven into the ground, whereas the later structures incorporated baseplates as carpentry techniques became more sophisticated.

Other property divisions developed as access routes to the river in the form of lanes and jetties;



In the late 13th or 14th century the central inlet was blocked and became the lane to a major Thames ferry crossing known as Three Cranes Stairs. This continued in use until the construction of Southwark Bridge in the 19th century. Three Cranes Lane survived until the Second World War, and its alignment is continued today to the north of Upper Thames Street by College Hill.

The remarkably well-preserved front-braced timber revetment, probably constructed during the late 12th century. The additional free-standing braces in the foreground were probably part of a scissor-braced jetty which would have allowed direct access to the warehouses which occupied the waterfront area.

Left: A member of the Finds Section demonstrates how the early medieval pan pipes, found during the excavation, would have been played. Pipes such as these, which produce a sound similar to the flute, are still played in parts of central Europe.

one late 12th-century earth-fast revetment had a framed, scissor-braced jetty. Nearby was a large warehouse with foundations of huge oak baulks and split beech logs, a style of construction not used in ordinary domestic buildings. The site at this time was in the heart of the French wine trading area known as the Vintry, and it is possible that wine was off-loaded from boats onto the jetty and then stored in the warehouse prior to distribution in London and the country.

Below: This small, 5cm (2in) long, lead ampulla was a medieval pilgrim's souvenir, probably brought to London from Canterbury. The artefact would have contained Holy water and depicts the murder of Thomas Becket by the knight Richard le Bret.





1-7 WHITTINGTON AVENUE

SPONSORED BY THE CORPORATION OF LONDON

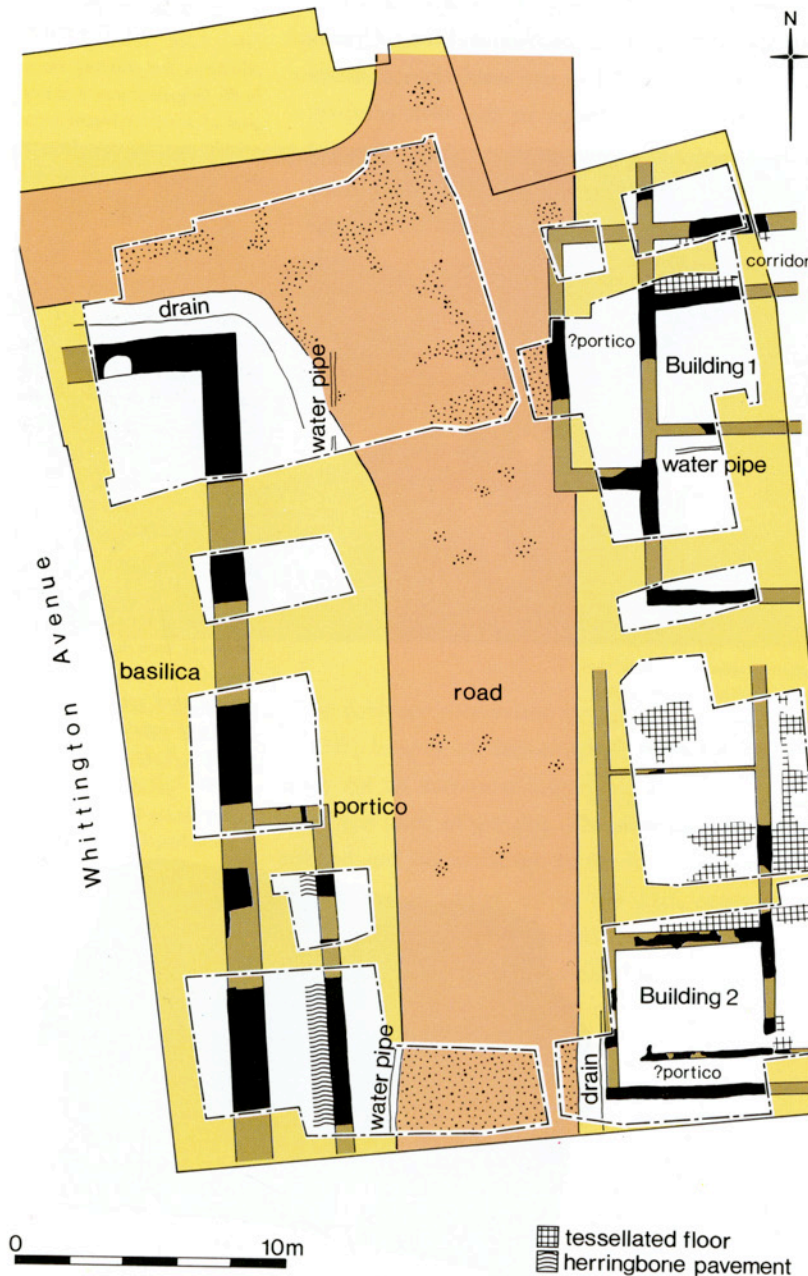
The site straddled the north-south road which ran along the east side of the Roman Basilica. New evidence for a portico, with a tile pavement laid in a herringbone pattern, was found to the south-west, while to the east of the road two large masonry buildings were constructed around the middle of the 2nd century.

The site lies on the east side of Cornhill, at the highest point in this part of the City. In Roman times it came to be occupied by the north-east corner of the second Basilica, one of the largest buildings in the Roman Empire and the administrative heart of Londinium. Nine trenches were dug in the basement of the standing building between June 1988 and February 1989. These were followed, after demolition, by a three-

month watching-brief in five trenches and numerous underpinning holes.

The natural brickearth was found to slope down from north to south. Early in the Roman period layers of brickearth were redeposited to raise the ground surface, and a street of rammed gravels and sand was laid out. It was 5m (16ft) wide and aligned roughly north-south, approximately in the centre of the site. To the east of the street was a sequence of clay and timber buildings. Fragmentary evidence of similar buildings was found to the west. All these structures were burnt down, perhaps in the Boudican revolt of AD 60 or 61. After the fire the two sides of the street developed separately. Following a period of cultivation, possibly with a plough or ard, the area to the west was used as a general rubbish tip. In contrast, buildings of good quality with flint foundations and tile sleeper walls were constructed to the east.

A major change occurred in the late 1st or early 2nd century. London's first Forum/Basilica, which lay some distance to the south of the site, was dismantled and a new, much larger complex was built. The ground surface was raised in preparation, and the Basilica itself was constructed on substantial ragstone and mortar foundations. Surprisingly, the floors of this important public building - by far the largest Basilica in Roman Britain - were of poor quality mortar or even brickearth. The redevelopment entailed considerable modifications to the street system. Initially, the north-south street continued in use while an east-west street was laid out to join it at right-angles, running immediately to the north of the Basilica. After the new street had been resurfaced four times, the old north-south street was almost doubled in width to around 9m (30ft). Timber-lined drains were provided on its east side, and on the south side of the east-west street. Within the streets lay wooden pipes 1.2m (4ft) long, joined together with iron collars, which supplied water both to the Basilica and to private properties.



In the mid 2nd century much of the Basilica was damaged by fire. As part of the subsequent rebuilding, a portico was added on the east. It

appears to have flanked the end of the Basilica only; it did not extend northwards as far as the street nor southwards as far as the Forum area. It had a narrow dwarf wall at the front, which may have carried a colonnade, and a floor of tiles laid on edge in a herringbone design (*opus spicatum*). By the mid 3rd century the portico had been dismantled, though the remainder of the Basilica seems to have continued in use.



To the east of the north-south street were two large buildings which may have shared a common party wall. The more northerly, part of which was probably a shop, had masonry foundations. Both buildings had tessellated floors and walls decorated with painted plaster. They also had a central heating system whereby hot air flowed through flues within hollow interior walls. The buildings appear to have fallen into disuse in the early 3rd century; in the 4th century they were overlain by destruction debris and 'dark earth'.

In early medieval times, around 1100, a well was cut through the foundations of the Basilica. Subsequently, the foundations were robbed out to provide stone and tiles for re-use elsewhere. Later in the Middle Ages several notable buildings are known to have stood on the site: the Green Yard Inn, the Leadenhall Chapel and a



Left: The main part of the excavation work took place within the basement of the standing building prior to demolition. Such work provides a range of logistic problems, among which recording under artificial lighting and the removal of spoil are probably the most difficult.

school associated with the Leadenhall. Scattered remains of all these were recorded. At the north-east corner of the site, in the surviving party wall, was a wall, probably 14th-century, of white chalk blocks and black flints arranged in a 'chequer-board' pattern. Otherwise, all post-Roman deposits had been destroyed by the Victorian basement.

Far left: The herringbone tile pavement lay on the eastern side of the Roman basilica; the scale (0.5m / 18in) is in the foundation trench for the portico colonnade. Sections of the pavement were lifted by the Conservation Department for future public display in the Roman gallery of the Museum of London.



This green glass decorative head, of Roman date, would probably have been attached to a glass vessel. The image is thought to be that of the head of the mythical Medusa.



The tin-strip decorated bowl recovered from the excavations at 52-63 London Wall. This unique find was manufactured within the London area sometime in the 2nd century AD.

SUMMARY OF OTHER FIELDWORK IN 1989

Pre-Roman activity

At 41-63 Bishopsgate (Site 14) a pit was excavated which contained a complete pottery vessel dating to the late Bronze or early Iron Age (c 1200-400 BC). This is only the third site in the City to have yielded prehistoric remains *in situ*.

Roman London

Houses and other buildings were recorded in several areas. The site at 4 Billiter Street/34-5 Leadenhall Street (Albion House) (Site 15) lay about 150m from the basilica (see report on 1-7 Whittington Avenue, above), a part of the Roman city that was always intensively occupied. A long sequence of buildings was excavated. The earliest were timber-framed, whereas the later were of masonry and tile, one of them having a buttressed apsidal wall. On the western side of

the city, a substantial masonry building decorated with painted wall plaster was recorded at 13-23 Carter Lane (Site 2), and a masonry building of late Roman date was found at 52 Gresham Street/14 Ironmonger Lane (Site 8). Just to the east of the Huggin Hill Baths, at 40 Queen Street/1 Skinners Lane (Site 5), a short excavation revealed a large masonry building with at least four rooms, and a post-and-plank revetment.

The pattern of development in the upper Walbrook valley was further elucidated by a large excavation at 20-56 Cophthall Avenue and 52-63 London Wall (Site 12). The Walbrook, which ran across the south-east corner of the site in Roman times, was gradually filled with a variety of deposits, the most notable being a large quantity of leather-working waste and between 20 and 30 human skulls. A complex sequence of timber buildings, drains and compacted gravel roads was recorded. Artefacts of particular interest include a bowl, probably manufactured in London in the 2nd century and uniquely decorated with thin tin strips, and an amphora with a painted Greek inscription, probably the name 'Theouerou'.

Roman activity elsewhere was recorded only patchily. At 2 Seething Lane (Site 17), the earliest features were a series of parallel ditches, thought

This map of the City of London indicates the positions of those sites described within this section of the Review:

- 1 Kings Bench Walk (British Telecom)
- 2 13-23 Carter Lane (St Martins Property Investments Ltd)
- 3 1 Wardrobe Place (Haslemere Estates / Harry Neale)
- 4 68 Upper Thames Street (Wates (City) Ltd)
- 5 40 Queen Street (Ortem Development Ltd)
- 6 62-63 Queen Victoria Street (MEPC Developments Ltd)
- 7 29-30 College Street (The Worshipful Company of Innholders)
- 8 52 Gresham Street (City Holdings Ltd)
- 9 Guildhall Yard (Corporation of London)
- 10 55 Basinghall Street (Wates City of London Properties Plc)
- 11 143-171 Moorgate (Land Securities (Management) Ltd)
- 12 52-63 London Wall (Scottish Widows)
- 13 15-17 Eldon Street (Norwich Union Pensions Management Ltd)
- 14 41-63 Bishopsgate (Kumagai Gumi UK Ltd)
- 15 4 Billiter Street (Commercial Properties Ltd)
- 16 21-38 Mincing Lane (Prudential Portfolio Managers Ltd)
- 17 2 Seething Lane (British Land Plc)
- 18 8-11 Crescent (Arundel House (City) Ltd)
- 19 166-170 Bishopsgate (MEPC Developments Ltd)
- 20 158-164 Bishopsgate (Friends Provident)
- 21 58-60 Houndsditch (Speyhawk Plc)
- 22 63-71 St Mary Axe (Bunge and Company)





The single burial recorded at Moorgate Hall within the area of the Roman extramural cemetery to the north of the City. The section behind shows the build up of organic deposits that later came to form the medieval Moorfield.

to represent some form of animal enclosures. A large channel was observed at 1 Wardrobe Place/1-10 Addle Hill (Site 3), running southwards. This may be part of the watercourse traced on a number of sites to the north of Ludgate Hill. Finally, at 55 Basinghall Street (Site 10) part of the ditch on the east side of the early 2nd-century Cripplegate Fort was excavated; it had been backfilled in the Roman period.

■ Roman cemeteries and extramural areas

Five excavations took place in the area of the large cemetery which is known to have extended both west and east of Bishopsgate (Roman Ermine Street) north-east of the city. On the western outskirts of the cemetery at 15-17 Eldon Street (Site 13), 24 burials were excavated. Two were accompanied by pots placed with them as part of the burial ritual, four were in wooden coffins, and one individual had an iron fetter around a leg. An east-west road was recorded to the south of the burials. Still further west, at 143-71 Moorgate (Site 11), one human skeleton was

found intact, together with large quantities of disarticulated human bone.

Along Bishopsgate itself cemetery remains were meagre. The site at 158-64 Bishopsgate (Site 20) produced evidence for gravel-quarrying, possibly during the construction of nearby Ermine Street. However, it remained open land throughout the remainder of the Roman and medieval periods and contained a large number of refuse and cesspits. A very similar sequence was recorded just to the north, at 166-70 Bishopsgate (Site 19); some disturbed human remains were also found here but no intact burials. Finally, on the east side of Bishopsgate, at 58-60 Houndsditch (Site 21), eight burials of late Roman date were excavated in layers filling the early Roman city ditch.

■ The Roman and medieval City wall

To complement the major excavation at America Square, the city defences were explored on several smaller sites, all in the sector between Bishopsgate and the Tower. At 63-71 St Mary Axe (Site 22) the City wall did not survive,

though there were remains of the Roman ditch, in turn succeeded by a medieval ditch in the base of which animal hoof-prints were detected. On a site adjoining to the east, 58-60 Houndsditch (Site 21), the face of the Roman wall had been destroyed but the core survived to a height of 4m (13ft) and is to be preserved; in front was the early Roman ditch, V-shaped in profile.

At 8-11 Crescent (Site 18) an important section of wall was recorded by photogrammetry. The outer face of the Roman work stood 3.5m (11ft) high above the foundations, and the footings of a bastion, probably added in the late Roman period, were uncovered alongside. The wall had been rebuilt in medieval times, this work surviving to a height just below the level of the crenellations.

■ The early medieval waterfront

The large-scale excavations on the east side of Southwark Bridge at Thames Exchange (see above) were partnered by an equally large project a little to the west, in the area known from medieval times as the Vintry. Both projects have provided some of the best evidence for Saxon occupation (c AD 850-1050) ever to have been found in the City. Work in 1989 concentrated on 68 Upper Thames Street (Vintners' Hall) (Site 4); subsequent sites will be reported in next year's *Annual Review*.

Excavation revealed a late Roman quay and foreshore followed by two low wattle and clay embankments of Saxon date. A later Saxon revet-

ment of rough posts and planks was then constructed further south. The area behind this revetment was reclaimed with material which contained many organic finds, including decorated leather, and numerous metal artefacts; the surface of the dumps was stabilised with a layer of wattle. On the contemporary foreshore were found well-preserved mooring posts, plaited rope fragments and boat timbers. These Saxon deposits were sealed by later medieval reclamation.

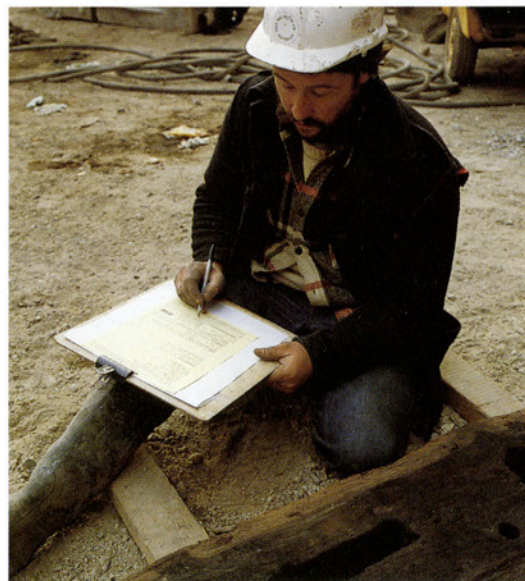
■ The medieval city

Medieval buildings rarely survive in the City, except along the waterfront, but invariably it is useful to test well-known sites by excavation. For example, chalk and ragstone foundations observed at 1 Wardrobe Place/1-10 Addle Hill (Site 3) may be from the King's Wardrobe, which stood here between 1359 and 1666. During refurbishment of Innholders Hall, 29-30 College Street (Site 7), excavation for a new lift shaft revealed a chalk wall on beech piles, possibly part of the medieval hall destroyed in the Great Fire of 1666. The roof timbers also were inspected; charring and evidence of reuse suggests that they may have been salvaged from the original hall after the Fire, though other fires have occurred since then.

The surroundings of medieval Guildhall were explored in a second phase of work beneath Guildhall Yard (Site 9), immediately to the west of the 1988 site reported in last year's *Annual Review*. The excavation was carried out by tunnelling sideways beneath the existing yard surface, which produced a record consisting of 116 interconnected drawings through the strata. Nothing more was found of the Roman amphitheatre, however, and the earliest activity was a sequence of 13th-century kilns which appear to have been used for bronze smelting and the production of buckles. A series of 14th-century foundations can be identified as belonging to the Guildhall Chapel and, to the south, Blackwell Hall. Successive gravelled metallings represent original surfaces of the Yard itself, the approach road to Guildhall.

Deeply-cut features, such as wells and pits, often provide the only evidence of medieval occupation. At 62-3 Queen Victoria Street (Site 6) a

Detailed recording of the timber structures found in the early medieval London waterfront provides important evidence of ancient woodworking techniques. Such work, however, both is time-consuming and requires specialist skills.



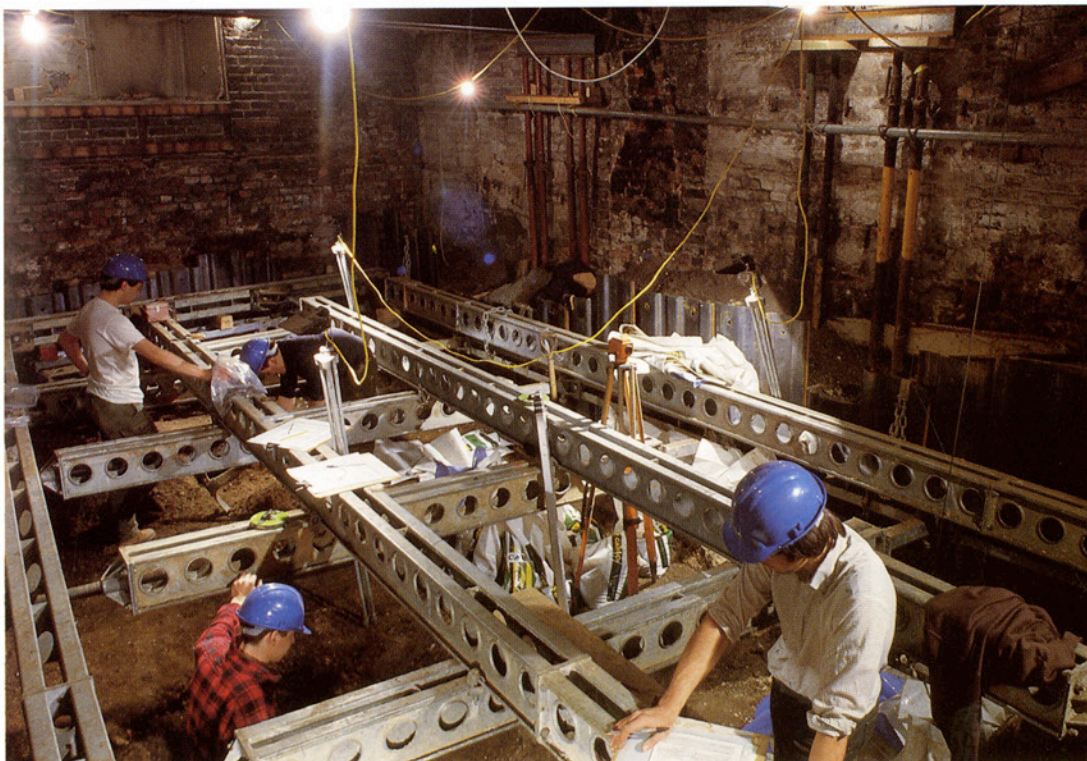
number of intercutting cess-, rubbish and storage pits were excavated, ranging in date from the 9th to the 14th centuries. One 12th/13th-century cesspit had a wattle lining and had been equipped with a privacy screen. Bell-founders are documented in the area around 4 Billiter Street/34-5 Leadenhall Street (Site 15) during the 14th and 15th centuries, and this was confirmed by the excavation of several large irregularly-shaped pits backfilled with bell-mould fragments. Finally, a chalk-lined well at 21-38 Mincing Lane (Site 16) had been backfilled in the 13th or 14th centuries with refuse which included a 12th or 13th-century whale-bone or walrus ivory book cover. This very unusual object bears an incised decoration showing a griffin or winged lion.

Medieval remains elsewhere can be summarised briefly: fragments of an 11th to 13th-century building at 52 Gresham Street/14 Ironmonger Lane (Site 8), 12th-century clay-pits on the Thames foreshore at Kings Bench Walk (Site 1), which may be associated with early occupation of the site by the Knights Templars, and a series of waterlain marsh deposits, drainage ditches and refuse dumps at 143-71 Moorgate (Site 11), which provide extensive evidence for the development of the medieval Moorfield.

Early modern London

The work at 52 Gresham Street/14 Ironmonger Lane (Site 8) has shown that 17th and 18th-century buildings can still be found in the City. The building on this site was proved to be of substantially late 17th-century date, probably built immediately after the Great Fire of 1666. It had been refaced and refenestrated in the present century, but original walls, floors and chimneys were recorded before demolition. Cellars of 17th-century date and later buildings were excavated on numerous sites, such as those at 40 Queen Street/1 Skinners Lane (Site 5) (late 17th-century).

As for the medieval period, wells and pits provide some of the best information about early modern London. A 16th-century well at 13-23 Carter Lane (Site 2), for example, was found to have been lined with barrel staves at the bottom and chalk blocks above. Artefacts from pits include a pewter saucer bearing the initials T C - probably those of the owner - from 158-64 Bishopsgate (Site 20), and a button from 8-11 Cresnet (Site 18) decorated with a crowned female figure. These finds, which usefully complement the large groups from Thames Exchange and the Fleet Valley, are discussed further in the report by the Museum's Tudor and Stuart Department, below.

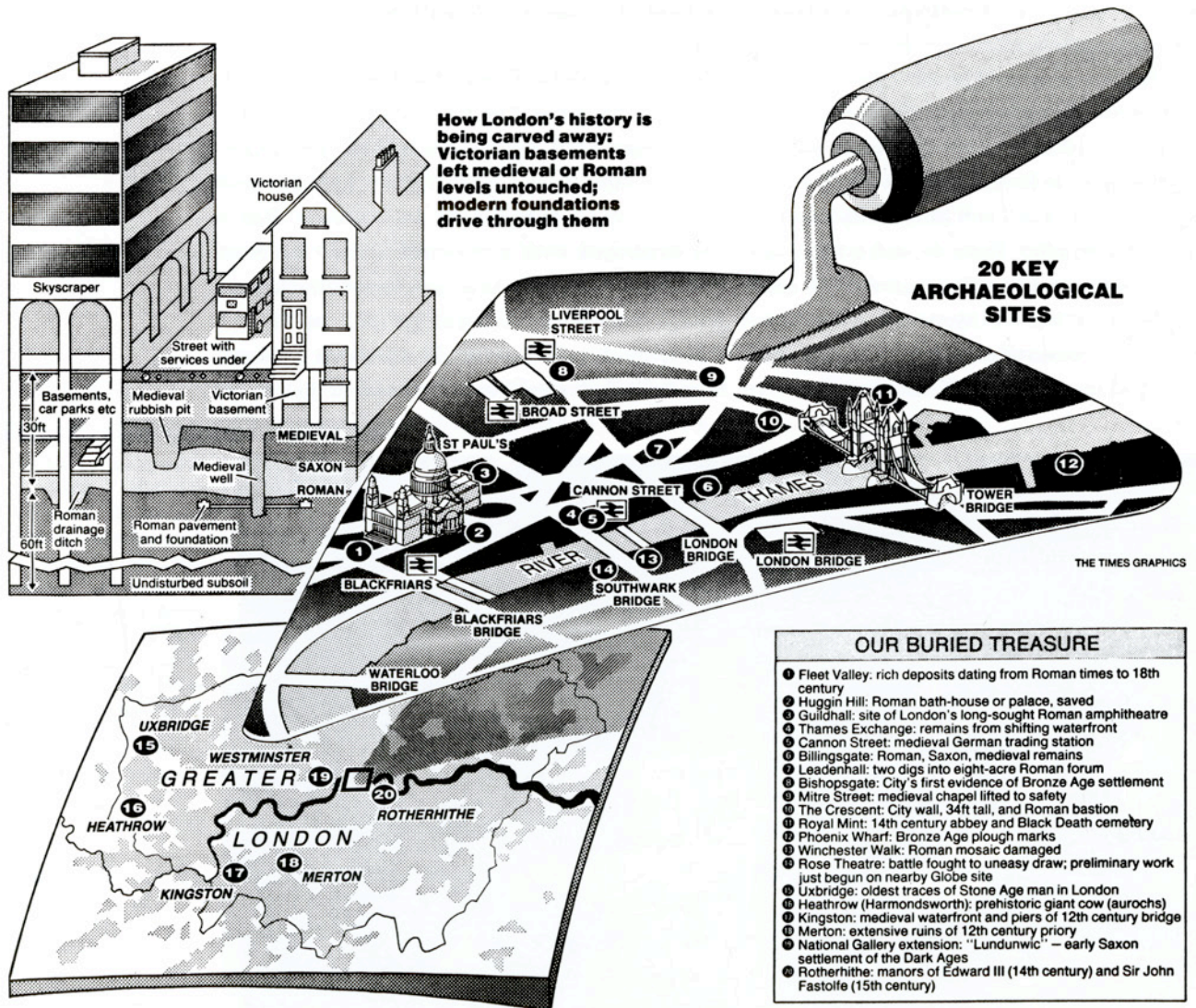


When it was realised that 52 Gresham Street was substantially a building of 17th-century date the archaeological work in the basement was extended to include a survey of the standing structure. The extensive shoring the building required created very difficult conditions for the excavation team.

RECORDING AND ANALYSING THE EVIDENCE

In 1989 the DUA comprised well over a hundred archaeologists and just under a hundred specialists or support staff. With the help of other departments in the Museum of London and of contacts in institutions outside, all aspects of archaeology in the City are fully covered. This section describes the work of the specialist staff, and what was achieved by them in 1989.

From The Times, July 31st 1989, the artwork below accompanied a full-page article on the many sites then under excavation, both in the City and the Greater London area.

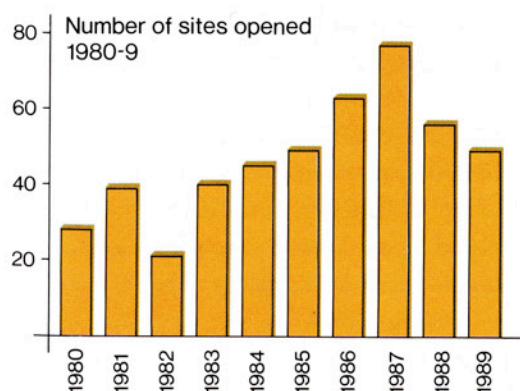


■ The Excavations Office

The Excavations Office holds two of the DUA's most important responsibilities: to safeguard the City's archaeological resource, and to ensure the fullest possible recording if destruction of archaeological remains becomes inevitable.

Assessments of potential archaeological survival are made by analysing past discoveries and determining the impact of existing basements/foundations on the site. The DUA has unrivalled expertise in this field and routinely deals with negotiation and planning on specific sites from the moment that planning applications are submitted; in some instances, developers contact the DUA for advice prior to submitting applications. Excavations Officers work directly with developers and their agents, giving technical advice on the implications of particular developments and seeking to protect remains *in situ* wherever possible. Where archaeological deposits are threatened, officers arrange a full evaluation of the site's potential and from this determine the resources needed to record it properly. The requirements will vary from a watching-brief of a few weeks' duration to an excavation of several months or longer.

The effects of the City's building boom were made apparent in 1989 by the opening of files on 49 new sites, bringing the total number of threatened sites to over 300. More than 40 of these were investigated by archaeologists drawn from the excavations team of over 150 staff. The work was funded by developers, at a total cost of £3.6



million. These funds covered not only the site staff, but also the specialist services provided by other DUA sections. On four sites features and deposits were preserved, by agreement with the developers, but elsewhere preservation *in situ* was not possible and the archaeological remains were recorded and removed.

At the same time, progress was made with measures to minimise the future destruction of archaeological deposits, while taking into account the planning trends in the City. An evaluation of London's Roman, Saxon, medieval and early modern archaeology was made as part of English Heritage's Monuments Protection Programme. In addition, the waterfront was identified as one of three zones which are both richest in surviving remains and most threatened. An overview of activity in the City is maintained by regular liaison with the Corporation of London, through their Archaeology Liaison Officer in the Planning Department.

To deal with the increasing workload, the number of Excavations Officers has been increased from four to six. Other staff include two survey/assessment officers, an officer principally responsible for day-to-day staff management, an officer and assistant responsible for Press and public relations, a training co-ordinator, a tools and equipment manager and three clerical/secretarial staff. These officers manage the allocation of resources, maintain the Department's health and safety standards in its workplaces (in conjunction with safety consultants) and ensure adherence to all legal agreements for each site. To facilitate the professional management of the enormous Fleet Valley Project, ECH Project Services were employed as consultants, improving still further the DUA's systems of budgetary control and work-programming.

■ Surveying

The Surveying Coordinator and Assistant help supervisors set out survey grids for recording excavations, and ensure that sites and their features are accurately located within the City. They are responsible for in-

Files on 49 new sites were opened in 1989. The comparable figure for 1987 was 77, reflecting the intensive redevelopment of the City at the time of the 'Big Bang', but as the chart shows, activity remains at a relatively high level.

house survey training, and for maintaining the department's survey equipment (two optical theodolites, an Electronic Distance Meter (EDM), one Sokkisha Total Station and fifteen levels).

During the past year the section has worked closely with the Computer Section and Drawing Office in implementing the recently acquired computer graphics system. This comprises a Sun Sparc station and a Dell 386 computer, plus A0-size digitisers and a plotter. The system, which runs CAD programs and makes use of the Ordnance Survey 1/1250-scale digital mapbase for the City, is expected to become fully operational during 1990. It will greatly aid the production of maps, plans and illustrations, and, in the longer term, serve as the graphics database for a Geographical Information System (GIS) for the archaeology of London.

■ **The Archaeological Timber Specialist** ■ **Post-Excavation Section**

As it is obviously impractical to conserve in the laboratory all the numerous ancient timbers found on London excavations, it is the task of the archaeological departments to 'conserve' them by making the most detailed record possible. The Archaeological Timber Specialist gives advice and prioritises this work on site, so that time and money is not wasted recording poorly preserved structures, particularly those of a type that have been well recorded elsewhere.

One of the Timber Specialist's routine activities is to check whether timbers found in waterlogged deposits, in the form of pile foundations or pit linings, have been reused. The importance of this was proved in 1989 by a large group of reused Roman building timbers found on the Cannon Street Station site. With detailed recording and study, we were able for the first time ever to reconstruct a common type of Roman timber-framed building to the level of its roof. Well-preserved sections of Roman timber quays were also investigated here, and at Thames Exchange and Vintry.

Woodwork of the Saxon period, including sever-

al unique boat and ship's timbers, was examined on a number of the waterfront sites. One timber was the decorated mast support beam of a very large vessel; another was the keel of a ship. The Fleet Valley Project has revealed parts of fifteen casks over 500 years old, now making it possible in London to study details of the medieval barrel-maker's art.

As information about the products of early carpenters, boat builders, coopers and other woodworkers is rescued, a regional history of these crafts, little documented in conventional histories, is beginning to emerge. We can see for example how and when certain joints were adopted, and how tool kits and skills changed through 2,000 years. A reference collection of sample timbers, which illustrate these developments and the practices of a variety of ancient wood-workers, is steadily being assembled.

The chief task of the Post-Excavation Section is to compile an Archive Report for each site excavated. These reports, which are written in a uniform style, provide a full, authoritative description of all archaeological remains that were found and offer a carefully reasoned interpretation of them. The author (usually the Site Supervisor) is monitored by a Post-Excavation Supervisor, who controls the quality of the finished document; at present there are two full-time and one part-time Post-Excavation Supervisors. Completed reports are stored by the Archive Officer at the Museum of London, where they may be consulted on written application.

'The judges have determined from time to time what is or is not a building Those edifices thought not to be a building have included a bird cage, a dog-kennel, a hen-coop a canal...four walls erected one foot high, and an incomplete structure.'

(From R W Suddards, *Listed buildings: the law and practice of historic buildings, ancient monuments and conservation areas*, 1988, 13-14)

During 1989 the Post-Excavation Section devoted much of its time to the development of a

computerised archive report index, encountering some testing intellectual questions on the way. What, for instance, defines a building? The new Oracle database into which this index is being entered is intended to facilitate research of the DUA's archive at a number of levels. It should soon be possible to ask questions of the computer such as, 'List all sites with 2nd-century tessellated pavements' or perhaps 'List sites which had hypocaust heating systems'.

A notable feature of 1989 was an increase in the number of interim reports produced for developers. These provide a brief guide to the main findings on the site. We aim to complete them within a month of the end of the excavation, whereas production of the final archive report generally takes much longer.

A total of fifteen full archive reports were completed during the year, or have reached the final editing stage. A further 66 are in progress or are awaiting future funding. Many current projects are large-scale, requiring two or more writers, and the section now has two out-stations devoted purely to this work.

■ The Drawing Office

The Drawing Office produces artwork to accompany all the DUA's site archive reports and publications. (Artefact illustration is the responsibility of specialists in the Finds Section.) The Graphics Officer also sets the standards for recording on site and has overall charge of the integrity of the DUA's drawn site records. Presentation graphics, for conferences, displays, exhibitions, lectures and general public information, is a rapidly-developing field of specialisation (see report on Press and Public Relations, below).

During 1989 ten archive reports were fully illustrated and work on several more began. These drawings are mainly plans at a uniform scale of 1:100 - an appropriate size for depicting the broad phases of development across a site as a whole - and are plotted out from large-scale field records and 1:20 plans of individual features or areas. Much of this work has begun to be trans-

ferred to computer; three members of staff attended courses on Computer Aided Design (CAD), and discussions were held with the York Archaeological Trust, where a similar system has been running successfully for several years.

The recording of stone mouldings was a priority in 1989. Sometimes door-frames, window-frames and similar features can be recorded *in situ* but, more often, isolated blocks, reused in later walls or simply as hard-core, are all that survive to show the appearance of the buildings that once stood on the site. Stone blocks are difficult to handle and costly to store, but fortunately medieval architectural mouldings tend to be repetitive; provided that everything has been fully documented, drawn and classified, only representative blocks need be stored permanently in the Museum. During the past year over 750 such fragments were recorded from nine different sites (including 400 from the Fleet Valley Project), and inroads were made into the backlog which had accumulated previously in the DUA's stores.

Maps and other information were provided for a survey of waterfront deposits commissioned by English Heritage, and for the London volume of the *Atlas of Historic Towns*. More general books to be illustrated with Drawing Office material include *The Book of London*, edited by Michael Leapman and published by Weidenfeld and Nicholson. A large number of drawings were completed to accompany forthcoming DUA publications, most of which will appear in 1990 and 1991. One of these, *The development of London east of the Walbrook*, makes use of evidence from numerous separate excavations, so that the mapping of large areas of the City - at a far higher level of detail than has been possible hitherto - is a major challenge. Outlines of buildings and streets recorded on over 50 sites have been entered into the computer graphics system, together with information on the dating of each feature; from this the computer can generate 'snapshots' of that area of the City at different times within the Roman period, so that maps of publication standard can be drawn up. This volume is one in a series which will ultimately give full cartographic coverage of Londinium.

■ Historical Research Section

The Historical Research Section supports the main archaeological programme by studying the documents and records (mostly unpublished) that relate to medieval and early modern London. This can set the individual excavation in its wider site context, can provide crucial missing details, and can confirm or refute interpretations made of the excavated remains. The Historical Research Officer also acts as the DUA's main editor.

In 1989 the two staff of the section continued collecting documentary evidence for the ownership of land in the seventeen waterfront parishes of the intramural City. Material was added to files on about 700 main properties, enabling their history, size and relative positions to be reconstructed. *Documents and Archaeology: The Medieval London Waterfront* (the 1987 Annual Archaeology Lecture) is largely based on such evidence and was published with the sponsorship of Stanhope Properties Plc. Also completed for publication was a detailed survey of the London Bridge area in late Saxon and early medieval times. This will appear in 1991, in a report on the riverside revetments excavated here.

One of the 6,000 accessioned, or 'small finds', to be individually registered by the staff of the Finds Section during 1989. A detailed record is made of each artefact both on paper, as shown here, and in a comprehensive computer database.

■ Finds Section

The Finds Section is responsible for handling all the artefacts recovered from excavations. These range from building-materials and pottery, which may be treated in bulk, to numerous categories of metalwork and



other 'small finds' which are examined individually. Preliminary sorting, cataloguing and storage is followed by more detailed recording and research by the section's specialists. The preparation of archival or published reports, including the illustration of selected finds, is the final stage.

Finds from 22 sites were processed in 1989, reflecting the intensity of the excavation programme. This involved the cleaning, and then the cataloguing on paper and computer, of vast amounts of pottery, building-material, animal bone and waterlogged leather. About 6000 items were individually registered. The number of staff in the section rose to 43, with the recruitment both of specialists and of general finds' processors. Three new posts were created to deal with administration, finance and the management of the growing paper archive. Additional help was provided by volunteers, some of whom have given invaluable service to the DUA over many years.

Preliminary examination of the excavated pottery was carried out by a team of seven specialists in Roman, medieval and post-medieval ceramics. Primarily intended to identify types and to provide dating information, the data recorded at this stage forms an excellent basis for future work, such as statistical analysis, illustration and publication. The department's reference collection of London pottery and building-material is unparalleled.

Stone, bricks and tiles from 20 sites were recorded by the section's four building-material researchers, and detailed reports were written for twelve sites. Particular emphasis was placed on finds from major Roman buildings: the Huggin Hill baths, for example, or the buildings found at Whittington Avenue and Cannon Street Station (North). This has provided valuable information on the internal and external appearance of buildings in the Roman city, as well as on their function, structural development and social status.

An exceptionally large number of rare or unique finds was excavated during the year. Waterlogged

conditions on some sites ensured the preservation of wooden artefacts. From Thames Exchange came a Roman negroid-headed scoop and a set of very early medieval pan-pipes; from the Fleet Valley a small, painted, pocket sundial of 16th or 17th-century date and a three-person oak lavatory seat. Ceramic oddities include a Roman bowl with applied tin-strip decoration from London Wall and, again from the Fleet Valley, a complete medieval jug made in Kingston (but of unfamiliar form) and a 16th-century palissy-type plate from France.

A wide range of medieval and post-medieval metalwork - notably jettons, tokens and cloth seals - was recovered from the Vintry site. Thames Exchange yielded the most important group of late Saxon brooches and dress accessories to have been found in the City in recent years. Most of these finds were the product of collaboration between the DUA and members of the Society of Thames Mudlarks using metal-detectors.

Finds Appraisal Reports are compiled at the end of every excavation. These provide a brief guide to the site and its finds, and serve as the basis for further reports and publications of all kinds. Twenty-seven appraisals were completed during 1989. In addition, an assessment of the finds from earlier excavations at Eltham Palace was carried out for English Heritage, and proposals for a book on the history of Aldersgate Street were drawn up at the request of private sponsors. The research and publication side of the section's activities is described more fully in the work of the Publications Section below.

Conservation Department

The Archaeological Section of the Museum's Conservation Department is concerned with the retrieval, analysis, conservation and welfare of objects from current and past excavations. Of the nine members of the section, four work solely with DUA objects; the others work on objects both from DUA and DGLA projects, as well as on the Museum's archaeological study collections. All work is carried out on a project basis, designed to



Artefacts are found in various states of preservation or decay. In their purpose built laboratory the staff of the Conservation Department undertake the delicate work of cleaning, conserving and stabilising them for storage or display.

accommodate the needs of the excavation, publication, archive and exhibition programmes.

As well as examining and conserving nearly 800 objects in 1989, the section was directly involved in several on-site projects. These included the reburial of the remains of the Roman baths at Huggin Hill, the removal for conservation of a medieval barrel that had lined a well in the Fleet Valley, and the block-lifting of groups of burial goods from the Roman cemetery at Giltspur Street. (This site will be reported in next year's *Annual Review*.) The block-lifted groups were X-rayed and then carefully excavated under laboratory conditions. They were found to contain bracelets, earrings and a ring, amongst other items.

Other objects treated include the fine gilded and enamelled medieval glass beaker from Great Tower Street and the Roman pot with tin-strip decoration from London Wall. Both were examined thoroughly, and analysis of the latter is to be the subject of a joint publication with the British Museum.

In addition many objects were analysed and conserved as part of the English Heritage publication programme, which deals with pre-1983 excavations. Numerous brooches and dress accessories were studied in collaboration with the Ancient Monuments Laboratory, to improve our knowledge of medieval metallurgy. Analysis of 17th and 18th-century Tin-Glazed 'Delft' Ware (with the British Museum Research Laboratory) will allow us to distinguish between London and imported products more accurately than has been possible so far.

■ Computing Section

All computer work in the DUA is managed or co-ordinated by the Computing Section. Currently there are three full-time staff, whose duties range from purchasing and maintaining equipment to training or the development of new systems.

Over the last year the Computing Section has achieved almost all its initial goals. These were to increase computer access and use, to make the system more effective, and to improve computer training. These were greater tasks than were originally imagined, because much of the earlier system had to be maintained while new systems were developed and implemented. Old data had to be moved and transformed into new formats, adding further problems. This necessary inefficiency will continue until the new systems are fully operational in late 1990.

Increasing computer use has entailed a five-fold increase in hardware and a seven-fold increase in available terminals. Whereas at the beginning of the year only 20% of post-excavation work was carried out on departmental computers, the system can now accommodate as much as 95%. The only areas which remain under-resourced are graphics and archive presentation, partly because space limitations and work-place fragmentation continue to hamper these developments.

The system has been made more effective in several ways. The carefully researched database system (running under Oracle) is now being implemented. This will create one system for comparing field, finds and environmental data, regardless of whether post-excavation analysis has been completed or is still in progress. At the same time, the standardisation of word-processing and statistics software will make more usable and compatible programs available on all the department's computers. Finally, the computer graphics system is already proving effective in minimising repetitive drawing tasks. With the addition of Postscript output at all points, the new system also promises a much easier path to publication.

This year saw the expansion of the computer training service. Courses on general computing,

MS-DOS, Word5 and Xenix are already available, and courses on Oracle, AutoCAD and statistics will be offered in 1990. Through the work of the Assistant Computing Manager, this is becoming the most comprehensive in-house computer training service of any archaeological unit in the country.

■ Greater London Environmental Archaeology Section

This section is responsible not only for the City but for the whole of Greater London. Its area of study comprises botanical, zoological, human and other remains (including natural soils and sediments) that survive on excavations, and the dating of oak timbers by dendrochronology (tree-ring measurement). The work involves the on-site support of current excavation; the processing and assessment of soil samples, animal bones and human skeletons; the identification and analysis of these, and the interpretation of the results. This information is used to reconstruct past environments, aspects of the economy and the population itself at all periods of human occupation in and around central London.

Staff numbers rose to fifteen by the end of 1989, with an increasing contribution from developers. Support for current excavations and sample-processing was expanded, particularly in the City, with the establishment of a sieving team for the bulk retrieval of finds, two new assistant environmentalists and a site environmentalist for the Fleet Valley Project. The bulk retrieval operation, which uses a modified cement-mixer to separate material before finer sieving, was successfully deployed on several tons of deposits from waterfront sites.

On the research and publication side, an assessment was made of the backlog from earlier DUA sites which might be included in future projects. Major contributions to two publications were completed: *Aspects of Saxo-Norman London, Volume II: Finds and Environmental Evidence*, and *The Upper Walbrook in the Roman Period*.

Dendrochronological reports for *The late Roman*

Waterfront in London and Saxon and early medieval Embankments reached draft stage. A project on the Roman timbers from Bucklersbury was started. Drafts of an important study of the environment and economy of Saxon London were completed, and an analysis of evidence from medieval waterfront dumps in the City began. Much of this work was funded by English Heritage.

As in 1988, the section maintained close links with university teaching departments. A student from Exeter University and five students from the Institute of Archaeology, University College London, have been learning the practical aspects of environmental archaeology on site and in the laboratory. Nine medical students at Guy's Hospital are working on the Roman skeletons from Giltspur Street as a practical element of their course.

Archaeological Photography

Nearly all the DUA's photography is handled by the qualified professional staff of this department. The Photographic Archive, along with the written and drawn records, enables archaeological remains that are threatened to be saved for future generations. Photogrammetry is sometimes used to record structures, and infra-red and other forms of technical photography aid the study of artefacts of all kinds.

The department had a hectic year in 1989. One full-time and two part-time assistants were appointed to meet the increasing demand for photographic services. On site, walls seemed to feature everywhere. The medieval City wall at Pilgrim Street was photographed in pouring rain in September, while the Roman City wall at America Square was photographed in the chilly darkness of the railway arches during November. A project to record the entire standing City wall was undertaken for the Historic Buildings Architect of the Corporation of London. The year ended with an exercise in rectified photography of a wall at Great St Thomas Apostle Street (to be reported in the next *Annual Review*).

Elsewhere, skeletons were photographed at

Giltspur Street and waterfront revetments at Cannon Street. Undoubtedly the most challenging task was the definitive recording of the Roman bath building at Huggin Hill. For this to be done, a vast bank of spotlights had to be erected high above the excavations by a crew of film-lighting electricians. The photography was completed over a single weekend in May.

In the studio, the department completed work for several publications, including *Archaeology and Development, a Record of Co-operation* (for Speyhawk) and *Developing in Harmony with History* (for MEPC). The latter was undertaken at break-neck speed and incorporated such designer specifications as several hundredweight of sand and gravel on which to show coins and ceramics to best advantage. A project on Fulham Pottery for the Tudor and Stuart Department was finished and, for the English Heritage publication programme, photography of medieval pilgrim badges was begun. The glass beaker from Great Tower Street was photographed for a Press release and subsequently appeared in many of the national newspapers.

This view of the excavations at 85 Queen Victoria Street shows the banks of film lights that were erected within what had been the loading bay of the old office building. This complex lighting project was essential if the high quality photographs - which can be seen elsewhere in this Review - were to be taken.



■ Press and Public Relations

The role of the Press and Public Relations staff is to promote awareness and understanding of the DUA's work through all available media: the Press, television, radio, exhibitions, presentations and even transatlantic in-flight films. This is targeted both at developers and the general public.

In 1989 coverage of archaeology escalated after the issues concerning the preservation of the Huggin Hill Roman baths and the Rose Theatre (Department of Greater London Archaeology) became major news. Over 100 features appeared in the national Press and on prime-time television, specifically about sites run by the Department.

We have moved towards promoting not only surviving remains of immediate visual impact but also the conclusions drawn from less substantial forms of evidence. For example, in August a Press day was held on the London Wall site to pose the question: 'How "Green" were the Romans?' This was based on a reconstruction of the environment during the Roman period, as deduced from evidence recovered from the excavation. Such an approach, of comparing past attitudes with those of today, has been well received.

The public demand for information also saw the emergence of a monthly external newsletter that briefly outlines current site work and research by the finds, environmental and conservation sections. This has rapidly built up a world-wide subscription. The international connections of the DUA were emphasised also by a steady stream of visitors: archaeologists from Canada, China, Hungary, Russia, Spain, USA and Vietnam, and students from the Smithsonian Institute and the University of Maryland.

Displays and presentations increased both in number and quality; these depend on the co-ordination of public-relations staff, specialists in presentation graphics, and Finds and Environmental Section staff. Information boards were posted on thirteen sites, and several display panels accompanied a highly-successful series of lunchtime archaeological lectures in the Museum. A videotape display was installed for several months in

the concourse of Cannon Street station, describing the excavations there, and a video on the Fleet Valley Project is being made for display in late 1990. Some of the DUA's graphics will appear in a BBC video disk on London's history. Exhibitions were mounted at evening receptions for the Thames Exchange site, the Fleet Valley Project and the Corporation of London. These, with other smaller presentations, have proved a popular way of describing to developers and sponsors the remains found on their sites, and displaying the artefacts from them. For the first time a regular temporary exhibition case was installed in the foyer of the Museum, so that finds from Dominant House and 52-63 London Wall could be shown to the general public. Exhibitions incorporating items from several sites were staged for MEPC - to celebrate the publication of the company's new book on London archaeology - and in association with the 1989 Annual Archaeology Lecture.

■ The Curatorial Departments of the Museum of London

Those departments of the Museum that research and interpret the earlier periods of London's history often make use of information and artefacts excavated by the Department of Urban Archaeology. Through gallery displays, exhibitions, publications, lectures, workshops and educational activities the curatorial departments are able to present an updated history of London to the general public and scholars alike.

■ The Prehistoric and Roman Department

Partly in response to the wealth of new information accruing from the City each year, the department is planning a major refurbishment of its public galleries. Scattered prehistoric finds have added to the evidence that this part of the Thames Valley was intensively settled in pre-Roman times. Flint tools were found at Seething Lane and in the Fleet Valley, Bronze Age pottery at America Square. Most importantly, two almost complete jars, dating to around 800 BC, were excavated from 41-63 Bishopsgate, proving that it is still possible to find undisturbed prehistoric deposits within the City.

In the past it has rarely been possible to preserve parts of Roman buildings except *in situ*. With a view to up-dating the existing room settings in the Roman gallery, the Conservation Department was asked to remove a number of the remains from Whittington Avenue: a mosaic floor, the floor of tiles laid herringbone-fashion, and a fragment of wall with painted plaster and mouldings at skirting-board level. The re-used house timbers from Cannon Street will similarly provide the gallery with a rare type of exhibit.

■ The Medieval Department

With a staff of just three the Medieval Department can take a direct interest only in a minority of sites during excavation, though there is regular participation in the identification and study of medieval artefacts. It has been difficult to incorporate evidence rapidly into the Museum's permanent galleries, but in 1989 space was allocated in the Medieval Gallery for a temporary display of material from Thames Exchange, probably the most important London site in recent years in the range and quality of its medieval finds.

With a view to proposed redesigning of the Medieval Gallery, however, notable finds are already being earmarked as likely exhibits: the Great Tower Street beaker, for example, or a medieval barrel and a wooden lavatory seat from the Fleet Valley, both of which were carefully lifted for conservation and eventual display. The department continues to liaise with the Society of Thames Mudlarks, metal-detector users who search the Thames foreshore and bring their finds to the Museum for identification and recording. These contacts led in 1989 to members of the Society assisting with the recovery of finds from DUA sites or from spoil derived from sites, as at Thames Exchange.

■ The Tudor and Stuart Department

During 1989 the DUA's Finds Section collaborated with the Tudor and Stuart Department in the preparation of a corpus of 16th and 17th-century pottery. This includes Tin-Glazed earthenware ('Delft'), Hampshire/Surrey 'Borderware', local redwares, and London and German stonewares. Complete vessels from the department's reserve collection were drawn or pho-



This Tin-Glazed earthenware button from the excavation at 8-11 Crescent is unique among the collections of the Museum of London. The crowned female figure bears a resemblance to the 'Queen of Africa', symbol of the Mercers Company.

tographed, and then compared with well-dated sherds from excavations. Samples were taken for neutron activation analysis, to determine the precise source of the clay. This research will make an enormous contribution to our understanding of Tudor and Stuart ceramics. It has already enabled the department to rationalise its collection and to catalogue it on computer using the DUA's nomenclature. A similar project - the archaeological component of which is also funded by English Heritage - is steadily providing useful information on the dating and typology of glass, metalwork and 'small finds'.

Of the many excavations undertaken in 1989 thirteen yielded material of 16th and 17th-century date. A single waterlogged pit at Thames Exchange offered an intriguing assemblage: Spanish, German and English domestic pottery, industrial ceramics used in sugar refining, an assortment of wooden bowls, two brooms, packing boxes, a pannier, and a child's ball and skittle. The Fleet Valley Project produced the largest assemblage: most notably, two pewter spoons and a pewter bowl, a knife with a copper-alloy handle in the form of a female figure, and a range of organic material including toothbrushes and wooden bowls. One of the most tantalising 17th-century finds, however, is from 8-11 Crescent: a button in Tin-Glazed earthenware, decorated with a crowned female figure, it is unique in the Museum's collections.

■ Publications

Books and articles in periodicals still remain the principal means by which the results of archaeology are transmitted worldwide. The DUA's output ranges from books commissioned by commercial publishers to papers in the *Transactions* of the local

archaeological society (the London and Middlesex); from technical manuals to site histories commissioned by developers. Every publication is produced as a project, with its own budget, by a team consisting of field archaeologists, drawing office staff, conservators, photographers, and computing and finds specialists.

1989 was the sixth year in the seven-year programme of post-excavation research, financed by English Heritage, on the findings from City excavations sponsored by the Department of the Environment between 1974 and 1982. Over thirty staff were employed on this in 1989, with a budget of some £600,000.

Roman discoveries are being treated in a five-volume series to be published by the Council for British Archaeology; the first two will appear in 1990. *The Upper Walbrook in the Roman Period* describes, with detailed environmental analysis, the marshy natural topography of the Moorgate area, at the head of the north-south stream which once divided the City into two halves. The Romans drained and consolidated the ground, to develop it with suburban and light industrial buildings. *The Early Topography of Roman London West of the Walbrook* deals principally with sites on either side of modern Cheapside. In some places the earliest buildings found were round-houses which owed more to indigenous British building methods than Roman construction practices. By the end of the first century AD London had become a boom town thickly populated with shops, houses and, in some areas, courtyard 'villas'. By the end of the second century, however, many parts had reverted to open land and were perhaps used as gardens.

Two further volumes in the series *Medieval Finds from Excavations in London* (published by Her Majesty's Stationery Office) were substantially finished for publication in late 1990. Both provide fresh insight into everyday dress in the Middle Ages. *Dress Accessories* describes over two thousand brooches, buckles, rings and pendants; just as today, the fine jewellery of the well-to-do was far outnumbered by cheap trinkets, shoddily mass-produced in pewter or copper alloys, that anyone could afford. Medieval textiles rarely sur-

vive on sites, and so the numerous examples recovered from London's waterfront are among the nation's treasures. Knitting, tapestries, silk hair-nets and elaborately patterned oriental, Islamic and Italian fabrics are covered in the volume on *Textiles and Clothing*.

The 1985-6 excavations on the Leadenhall Court site, in the shadow of the new Lloyds' Building, were amongst the most important in recent years. Post-excavation analysis and publication in this case is being funded by English Heritage and the City of London Archaeological Trust. Although the site is best known as the location of the Roman Basilica, it is the remains of another famous building that have reached publication first: the Leadenhall Market, completed in 1455. Unique in Britain, being in the form of an elegantly arcaded square enclosed by the four ranges of a massive granary, the Market may best be compared with Renaissance public buildings in Italy. A paper published in 1989 in the *Antiquaries Journal*, 'The Fifteenth Century Garner at Leadenhall', combines a painstaking study of the archaeological evidence with documentary and illustrative material to produce a vivid reconstruction of the building in its original, 15th-century, form.

Two developers commissioned books to record their involvement in London's archaeology and to share their enthusiasm, principally with colleagues in the construction industry. *Developing in Harmony with History*, assembles evidence from seven excavations financed by MEPC. A Roman burial ground in Moorfields, well-preserved Roman buildings in the Walbrook Valley and the great Dominican friary or 'Blackfriars' are among the many important themes. Speyhawk Plc commissioned a similar volume entitled *Archaeology and Development, a Record of Cooperation*. This describes the archaeology and history of twelve sites with which Speyhawk has been involved throughout the Greater London area. The City sites include Cannon Street Station, Holy Trinity Priory and the former City of London Boys' School. Books such as these are part of a growing and fruitful collaboration between archaeologists and developers, whereby the results of excavation can be communicated more effectively and more speedily to a new audience.

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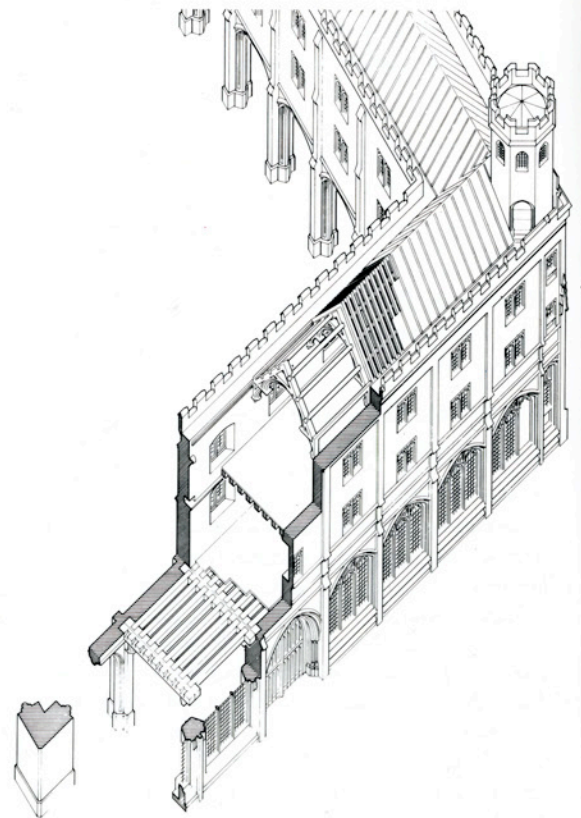
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Detailed analysis of moulded stones recovered during an excavation of 1986 made possible this 'cut-away' axonometric projection of the north range of the 15th-century Leadenhall Gamers. It is taken from Mark Samuel's article published in *The Antiquaries Journal* during 1989.



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Ortem Development Limited
P&O Developments Limited
Pension Fund Securities
Prudential Portfolio Managers Limited
Reinhold plc
Roschaugh Stanhope
Developments plc
Scottish Widows Fund and Life
Assurance Society
Speyhawk Mountrow
St Martins Property Investments
Limited
Sunley Homes Limited
The Worshipful Company
of Innholders
Trafalgar House Group Services
Limited
Wates City of London Properties plc

Cover

Top: A new computer-based graphics system is being used to integrate survey, graphics and data-base information through a joint project between the Computing Section, Drawing Office and Surveying Coordinator. The system facilitates the rapid comparison of plan information between sites, so helping to build an overall picture of London's topographical development.

Centre: The Great Tower Street excavations produced one of the most significant finds of the year. This gilded and enamelled fine glass beaker was probably manufactured in Venice, at the end of the 15th century.

Bottom: A recurring feature of excavations during 1989 was the need to work beneath railway viaducts. Here excavation is underway on Roman deposits beneath the platforms of Cannon Street Station, north of Upper Thames Street.

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