Transactions
Volume 46 1995

LAMAS

London and Middlesex Archaeological Society

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Editors' note: the editors are happy to consider articles for publication in *Transactions*. New contributors are advised to ask the Production Editor for a copy of *LAMAS Notes for Contributors* before submitting papers.

Front cover: Mace Bearer from the Great Tournament Roll of Westminster, 1511, Membrane 3 (*The College of Arms*). An illustration from *An Inscribed silver-gilt chape of the 16th century* in this volume.

LAMAS

Transactions of the

London and Middlesex Archaeological Society

Volume 46
1995

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London & Middlesex Archaeological Society

Registered as a charity

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London and Middlesex Archaeological Society

139th ANNUAL REPORT OF COUNCIL FOR THE YEAR ENDING 30TH SEPTEMBER 1994

Meetings and Visits

The Annual General Meeting was held on Tuesday 8th February 1994. Harvey Sheldon gave his first annual Presidential Address: *London and Its Saxon Shore.* It examined the *Litus Saxonicum* and the role London may have played in the system of trade and defence which the forts represented.

The lecture meetings of 1993–94 arranged by an informal committee of Council were *A prehistory for London* by Jon Cotton which considered the importance of recent prehistoric discoveries in London including the Beckton trackways. *The Royal Exchange* by Ann Saunders; a lecture by Mireille Galinou of the Museum of London on a recently acquired painting showing an early view of London. Her lecture ranged from a consideration of the depiction of landscape and buildings to a description of the scientific analysis which the painting had undergone; January saw the first of the Dr Hugh Chapman memorial lectures. This series of special lectures given by eminent figures is intended by Council to feature major sites, new discoveries or provoke academic debate, or indeed all three. The first lecture by Dr Ralph Merrifield entitled *Roman Metalwork from the Walbrook—rubbish, ritual or redundancy?* set a very high standard for the series, being entertaining, informative and challenging. Another lecture provoking lively debate was the March lecture given by Oliver Pearcey entitled *Current issues in the conservation of historic buildings and structures.* Mr Pearcey of English Heritage examined the process of listing buildings and the question of whether those living in historic buildings should have the right to adapt and modernise them as they see fit; Ian Tyers considered *Dendrochronology – dating wooden materials by examination of tree growth rings*; the season was finished with *Building stones in the London area: Recent Findings* by Eric Robinson.

Council had limited the number of visits the previous year due to poor attendance and continued with this policy, organising only one visit, a walk around Pinner, led by Patricia Clarke of Pinner Local History Society and formerly of LAMAS Council.

The first Stow Service since the terrorist bomb in the City was held at St Andrew Undershaft on the 20th April. Exceptionally the lecture was given by the minister conducting the service, the Rev Justin Mote, who took as his theme the latin inscriptions on John Stow's tomb and placed them in their social, historical and religious contexts. Council would like to express its great gratitude to the Rev Justin Mote for his hard work in ensuring the re-establishment and successful holding of the service.

Publications

Council recognising the concern of members regarding the backlog of unpublished Transactions had appointed Gillian Clegg in 1992 as paid Editor to increase the rate of publication. Thanks to the energy and commitment of both herself and the Publications Committee, a further two volumes were produced in 1993/4. These, volume 41 for 1990 and volume 42 for 1991, were the first to have coloured covers and to be produced to the same quality as the Special Papers series.

The Special Papers series remained suspended with Council wishing to devote its effort and resources towards the production of Transactions.

The Newsletter came out three times under the editorship of Mr Peter Rutland. Mrs Bowlt retired as Editor, having held the post since 1991, and Council wishes to express its gratitude for her innovation and enthusiasm, having done much to improve the visual appeal of the Newsletter and managing to ensure its regular production at a time when she was also undertaking other demanding Council duties. Mr Rutland has proved a worthy successor seeking to produce a visually appealing publication at a lower cost with the saving being channelled into providing more pages. He has also pioneered the reuse of selected articles of interest from the publications of societies affiliated to LAMAS.

Council

Following the Rule changes agreed at the Special General Meeting there was for the first time no need for the election among Council members of a Chairman and Deputy Chairman. The Chairman who had been elected at the Annual General meeting was Mrs Eileen Bowlt.

This was a year of consoldiation for the Society during a period of continuing uncertainty in London archaeology. The Council participated in the various discussions surrounding the Department of National Heritage review and the proposed closure of the Passmore Edwards museum.

Following the reorganisation of the CBA into regional groups, there were two such groups covering the LAMAS catchment area. The Society already has links with the South-east group through SCOLA and other bodies. A representative of the Mid Anglia group therefore was invited to meet with Council to begin discussions about the co-operation of the two societies. The meeting proved most cordial and productive and further contacts with CBA Mid Anglia are to be expected in future years.

Membership and finance

A continuing gloomy economic outlook for the country contribtued to declining membership figures which dropped to a total membership of around 600. Reversing this trend was a key priority of Council and occupied much of its deliberations. A new two-colour and much more attractive membership leaflet was produced and distributed. Mr Rutland took over the duties of Membership Secretary and proved most enthusiastic in chasing unpaid subscriptions and following up various irregularities.

Archaeological research committee

The Committee met regularly during the year. Two main themes dominated its discussions. The first of these was the general unsettled situation in London Archaeology and particularly doubts about the future of the Museum of London Archaeological Service. The Department of National Heritage initiated a review to which the Committee contributed through various of its memebrs and SCOLA.

The second was the issue of amateur involvement in archaeology. During 1993/4 the Committee had began a review of the role of the amateur in London archaeology. As part of the information-gathering process the Committee organised a very well attended and lively meeting of interested parties. Representatives included the various affiliated societies, particularly those who organised fieldwork activities of their own, MoLAS and English Heritage. Having established both what the current situation is, and what people wanted LAMAS to do, the Committee concluded its review and presented its findings for endorsement by Council. When this was done the Committee was authorised to launch its amateur initiative which had several components but centred around the provision of training. The first of these, a training session on recording standing buildings, has already been held successfully.

The 31st Annual Conference of London Archaeologists was held on the 19th March 1994. The morning session was devoted to a round up of current research and excavations and included speakers from some of the various contractors who now frequently undertake archaeological work in London. The afternoon session was devoted to the theme of Roman Public Buildings. The high level of attendance at the conference suggests that this was a topic which found much favour with the audience.

Local History Committee

The 29th Annual Local History Conference took place on 19th November 1994. As usual the conferene proved popular and was well-attended. The conference theme was *Wretched London—The London Poor 1700–1900* and began with a lecture on the care of the infant poor in 18th Century London by Eileen Bowlt, LAMAS Council Chairman. Other lectures were the Victorian Poor Law, the Labouring Poor and, to conclude the conference, The London Rookeries in the 19th century.

This was the first Conference organised by the Committee under its new chairman, Roy Vinjevold to whom Council extend their thanks and congratulations.

The LAMAS Project had been started a couple of years previously and is intended to link together the main areas of LAMAS interest, namely historic buildings, local history and archaeology. The first part of the project is a population study and work on this continued during the year. Thirty six parishes have now been completed with 70 still to do.

Historic Buildings Committee

During the year end 30th September 1994 the Committee met on eight occasions. During the calendar year 1994 the total number of new applications for listed building consent examined by the Committee was 218. Their derivation was as follows.

City of Westminster: 87, Merton: 25, City of London: 14, Enfield: 11, Hounslow: 9, LDDC: 8, Redbridge: 8, Kensington & Chelsea: 7, Waltham Forest: 7, Hammersmith and Fulham: 6, Tower Hamlets: 6.

The following boroughs notified less than six cases each: Islington, Hackney, Bromley, Bexley, Newham, Camden & Harrow. One notification each was received from Barnet, Brent, Ealing, Greenwich, Havering, Hillingdon and Wandsworth. No notices were received for Barking, Haringey, Lambeth, Richmond, Lewisham or Southwark.

To some extent these figures reflect the number of listed buildings in the Boroughs, but from notices in the press it is evident that many cases, particularly minor ones, are not being notified by the Boroughs to the Committee, via the CBA, as they are obliged to do. This is a matter of some cocnern which will be addressed by the Committee and Council during the coming year, with a view to encouraging the Boroughs to recognise their obligations. The Committee took action on a total of 23 cases.

Useful contacts have been established and maintained with the Theatres Trust, GLIAS and several local societies.

Young LAMAS

Regrettably it has not been a very successful year for the Youth Section. Membership has dropped and events arranged have not been well-attended. It appears that Young LAMAS faces stiff competition from a number of commercial interests, including the Interpretation Unit of the Museum of London and the Young Archaeologists Club. Since the Section was started to provide access for young people to archaeological events and activities and this need seems to now be fulfilled by a greater number of providers. There is therefore a need for Young LAMAS to be more competitive and distinctive with the Youth Section being revitalised. Mr Pepper has resigned and a successor is being sought.

BY DIRECTION OF COUNCIL
February 1994

LONDON & MIDDLESEX ARCHAEOLOGICAL SOCIETY
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 30th SEPTEMBER 1993
AND BALANCE SHEET AS AT 30th SEPTEMBER 1994

1992/93	**Income**	£	*1993/94*
£			£
6,031	Subscriptions		4,848
	Income Tax reclaimed on Deeds		
0	C.B.A. grant to Historical Buildings Committee		247
1,031	Dividends and Interest		980
6,712	Sales of Publications		3,741
	Grants for Publication:		
13,702	English Heritage	18,957	
711	Museum of London	1,670	20,627
150	Miscellaneous		20
163	Release of Nevinson Fund		0
£28,500	TOTAL INCOME		£30,463
	Expenditure		
	Publications:		
18,165	Special Papers	0	
3,432	Transactions: Volume 39	7,249	
0	Volume 41	6,583	
0	Volume 42	1,541	
5,000	Volume 43	0	
0	Volume 44	5,000	
363	Newsletter	1,012	
2,250	Production Editor	2,325	
29,210			23,710
120	Lectures and Visits		190
(916)	Local History Committee		(307)
(131)	Archaeological Committee		(481)
100	Youth Section		17
180	Historic Buildings Committee		173
708	Postage, Printing & Stationery		415
700	Secretarial and Administration		250
73	Subscriptions and Donations		62
526	Sundry Expenses		545
270	SCOLA		250
59	Lammas Project		0
30,899	TOTAL EXPENSES		24,824
(2,399)	Surplus\(deficit) for the Year		5,639
£28,500			£30,463

1993	**Assets**	£	*1994*
£			£
1,127	INVESTMENTS AT COST		1,127
2,793	Sundry Debtors		2,884
10,963	Bank & Cash Balances		6,930
17,771	Building Society Deposits		18,590
£32,654			£29,531
	Liabilities		
	GRANTS UNEXPENDED		
1,686	Future Publications		1,686
2,012	Archaeological Projects		2,012
439	Wheatley Bequest		439
4,137			4,137
0	Sundry Creditors		270
18,897	Provision for Transactions		10,000
2,597	Publication Fund		2,462
118	G.E. Eades Memorial Fund		118
	ACCUMULATED FUNDS		
	General Fund:		
9,304	Balance at 1.10.93	6,905	
£ (2,399)	Surplus\(deficit) for the year	5,639	12,544
£32,654			£29,531

Note: No value has been attributed to the Society's library, stock of publications or sundry equipment.

EXCAVATIONS AT THE FORMER JEWSONS YARD, HAREFIELD ROAD, UXBRIDGE, MIDDLESEX

A. Barclay, A. Boyle, P. Bradley and M. R. Roberts with contributions by P. Booth, L. Whittingham and M. Robinson

SUMMARY

The site was evaluated in June 1993 and subsequently excavated from May–July 1994. A watching brief supplemented these phases of work. Evidence for activity ranging in date from the Mesolithic to post-medieval was present on the site. Mesolithic and Neolithic flint work was recovered from features of all dates. Evidence for Middle Bronze Age settlement activity included a ditch and the plans of at least two structures. A major Late Bronze Age/Early Iron Age landscape boundary, comprising three parallel ditches and a revetment or fences aligned NW-SE was uncovered. It may have been used as a droveway. A fourth ditch appears to have been added to the alignment in the Middle Iron Age. Small Romano-British pits which may have contained cremations were found. These had been inserted into the upper fills of the E ditch. Medieval material was recovered from the upper silts of one of the ditches and from cultivation soils across the site.

INTRODUCTION

The Oxford Archaeological Unit carried out three phases of work at the former Jewsons Yard, Harefield Road, Uxbridge, Middlesex (TQ 055845) in June 1993 and May, June and July 1994. Evaluation was undertaken in support of an application for planning permission for retail development. Subsequently, excavation and watching briefs were undertaken to mitigate the effects of development following a Written Scheme of Investigation which had been approved by English Heritage. The archaeological recording was undertaken on behalf of Davies Street Properties Ltd, which funded all aspects of the work.

The site (Fig 1) lies at the NW periphery of Greater London at a height of 42–44m OD adjacent to the River Colne, which is a major tributary of the Thames. The Lower Colne Valley runs N-S and is cut through older Thames terrace sediments resting on Lower Tertiary deposits and above Denham on chalk bedrock (Gibbard 1985, 82). The site lies on the edge of the high ground to the E of the River Colne and Fray's River, overlooking the river valley.

The natural subsoil on the development site consisted of brickearths which showed variations in both colour and gravel content. In evaluation Trenches 1 and 5 the prehistoric features were seen to cut through a gravel layer which overlay the brickearth.

Four trenches (1–3, 5) and one test pit (4) were dug during the evaluation (Figs. 2 and 3). Ditch 1 was located in both Trenches 1 and 5. Trench 1 also located the Middle Bronze Age ditch [120]. Test pit 4 revealed a partial section of Ditch 4. No significant archaeology was seen in Trenches 2 and 3.

Following evaluation further archaeological recording actions were determined. Part of the development was designated for detailed excavation and recording (Fig 2, Trenches 6 and 8). Within this area all structures and zones of activity were to be fully excavated, all ditches and gullies to be excavated to minimum of 20% by volume, and all pits to be half sectioned. To the N of Trenches 6 and 8, the areas designated Trenches 7 and 9 (Fig 2) were stripped under

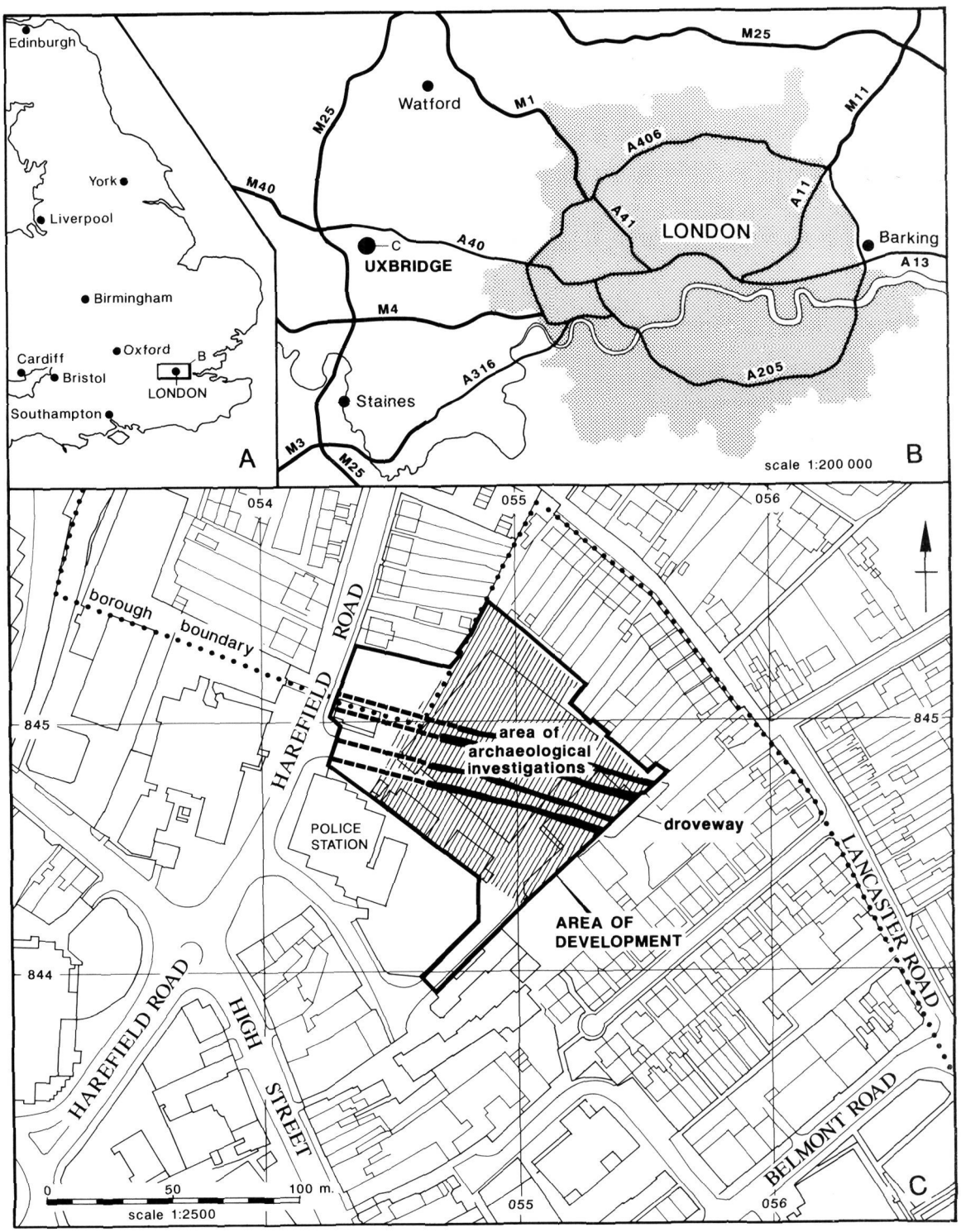


Fig 1 Site location, showing Borough boundary

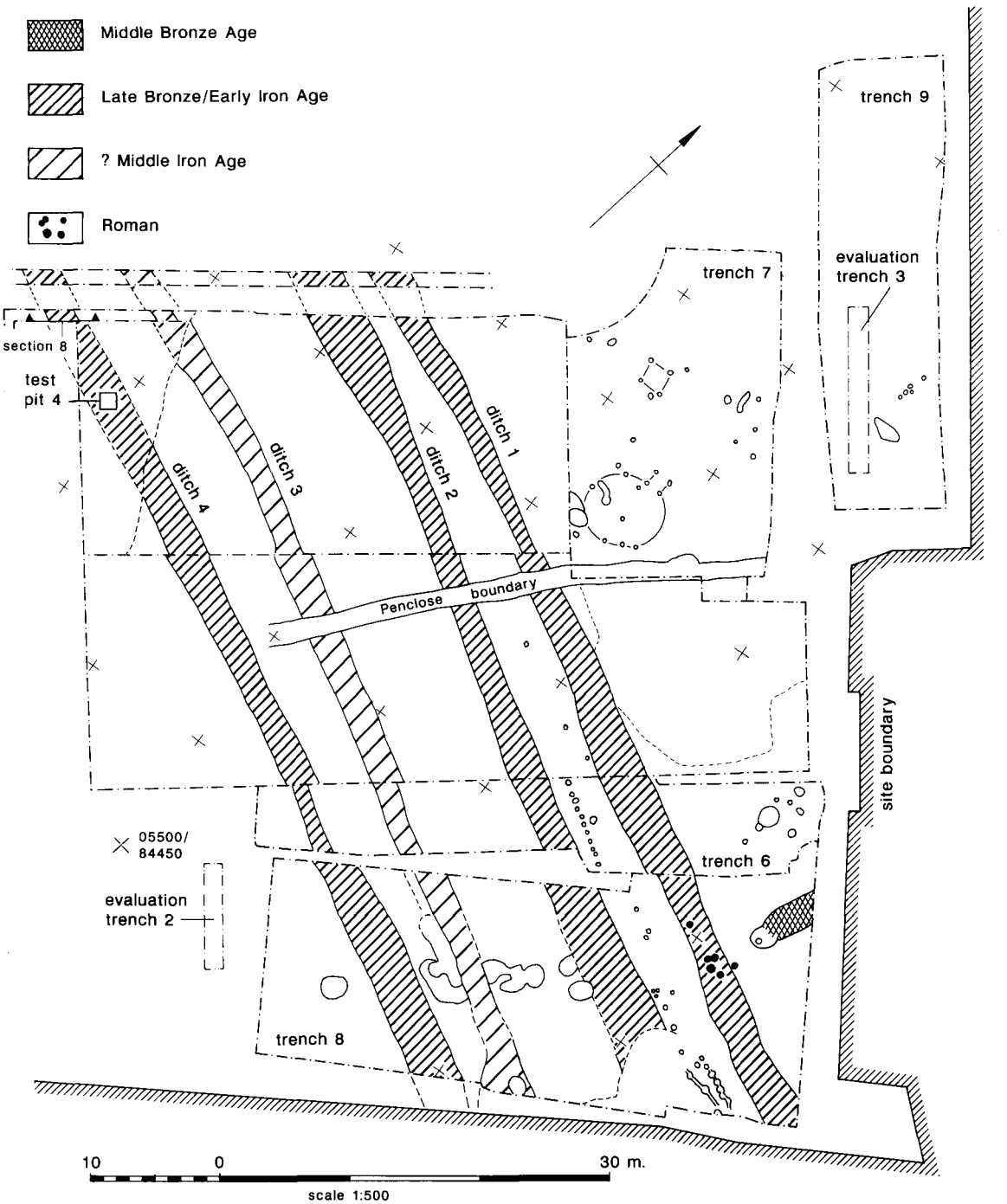


Fig 2 Plan of excavated area

archaeological control and features planned and recorded in advance of construction work. In the central portion of the site to the NW of Trench 6 and W of Trench 7 a watching brief allowed the recording of the ditch alignments. This area had been heavily truncated by previous buildings. To the N and W of this area groundworks did not penetrate to a depth sufficient to expose

archaeological features or deposits. A total area of *c.*9600m^2 was examined.

ARCHAEOLOGICAL DESCRIPTION

Angela Boyle & Mark R.Roberts

The four ditches which make up the land boundary or droveway have each been assigned a number (1–4) with Ditch 1 being located furthest north. All four ditches were seen in Trenches 6 and 8. They were further traced in the watching brief area which lay in the angle between Trenches 6 and 7. All four ditches were aligned NW-SE (Fig 2).

Generally the fills of excavated features were very similar and mostly consisted of brown/buff silty clays derived from the natural brickearth mixed with varying proportions of gravel. They are not described in detail.

Mesolithic and Neolithic activity

Both Mesolithic and Neolithic flints were found in small numbers across the site with no concentrations. None of the flint was associated directly with any features (see p 00 below).

Middle Bronze Age features

The evidence of this phase consisted of a large ditch [120] and a scatter of postholes, among which could be identified the plans of two structures.

The ditch

The short length of a ditch [120] aligned NE-SW was located within Trench 8 (Fig 3). It contained Middle Bronze Age pottery in its lower fills, cut [120: 116, 117 & 118]; cut [1009: 1008], (Fig 5.1); a separate and later feature [868] was initially misidentified as the ditch terminal during area excavation. The ditch was sealed by material [110] very similar to the natural brickearth. This layer may have been the remains of a bank ploughed over the ditch after it had silted up. A further section through this ditch was observed during the watching brief. A line of undated tree-throw pits [916, 927, 996], some of which were cut by the Middle Iron Age ditch (Fig 3) continued on a similar alignment to the SW. They were the only such features recorded on the site and may have formed part of a boundary with ditch [120].

The post-built structures (Fig 4)

Two possible post-built structures were identified in Trench 7. Building 5 was a circular structure 6m in diameter and eight postholes were identified [711, 728, 748, 759, 761, 762 and 765] around its circumference, with two further postholes [746 and 781] which probably represent a porch. The postholes varied from 0.2 to 0.44m in width and from 0.01 to 0.12m in depth. Three other postholes [706, 724 & 790] and a gully [726] lay within the structure. One of the postholes [724] contained Middle Bronze Age pottery, a flake from a Neolithic polished axe, and oak and hazel charcoal with one charred sloe and emmer wheat. Building 6 was a four-post structure measuring 2m across. The postholes [771, 773, 775 and 777] varied from 0.26 to 0.3m in width and 0.17 to 0.22m in depth.

Late Bronze Age and Early Iron Age features

A landscape boundary consisting of a fence line, or a revetted bank, flanked by two ditches (1 and 2) and a further parallel ditch (4) was set at right-angles to the Middle Bronze Age ditch [120] and aligned NW-SE. Domestic rubbish had been dumped into parts of Ditches 1 and 2. It is probable that the parallel ditches served both as a boundary and as a droveway.

The ditches (Figs 2, 3 & 5)

Ditch 1 was the northernmost of the group and could be traced for a distance of approximately 74.5m. Two partial sections were excavated in evaluation Trenches 1 and 5. Six further sections were recorded during excavation in Trenches 6 and 8 and just under half of the ceramic assemblage from the site was recovered from these sections. The slope of the sides of the ditch varied from 30° to 45° and the depth from 0.8m to 1m. The ditch varied between 1.91 to 2.96m in width. In the two southern sections in Trench

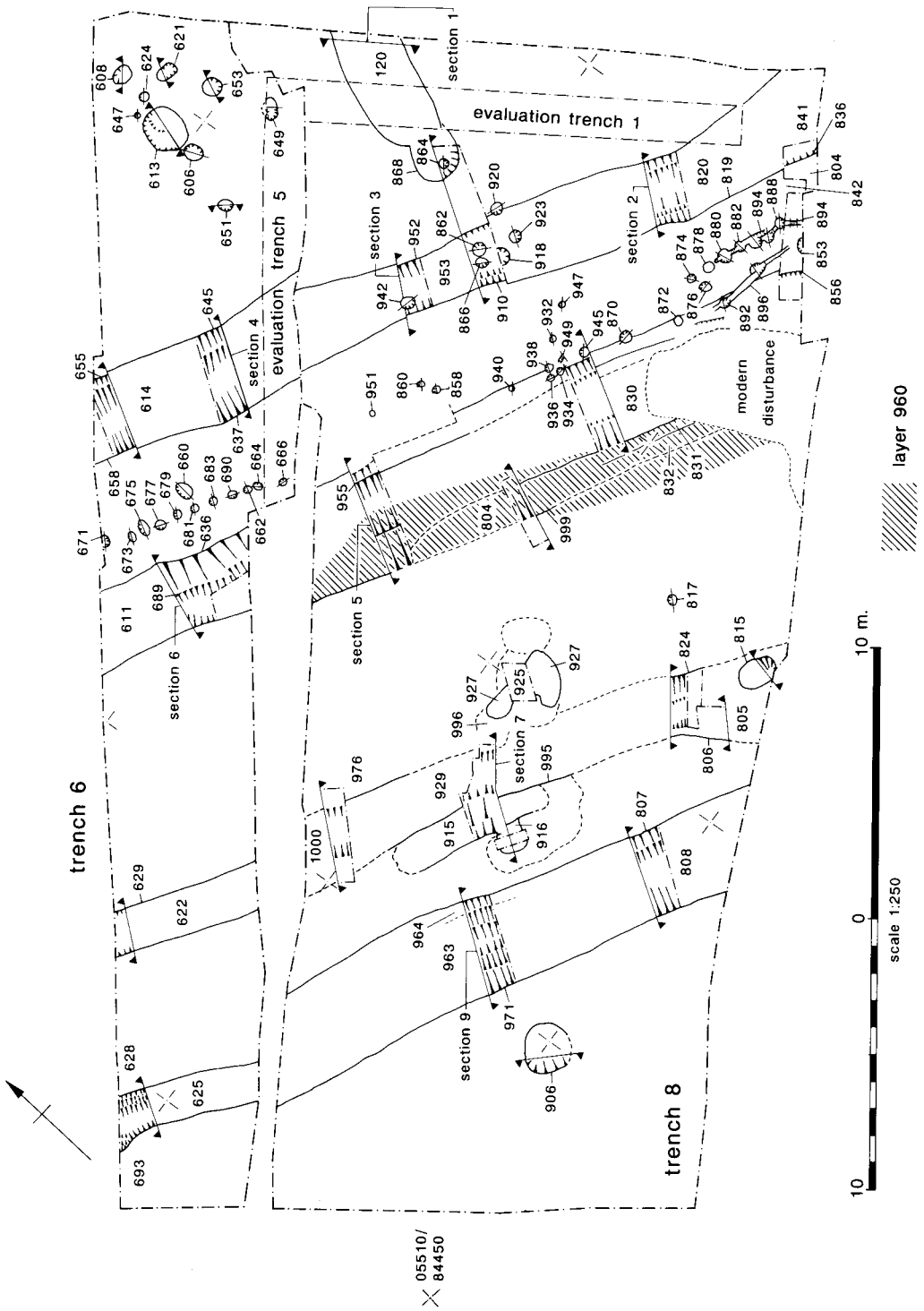


Fig 3 Detailed plan of Trenches 6 and 8

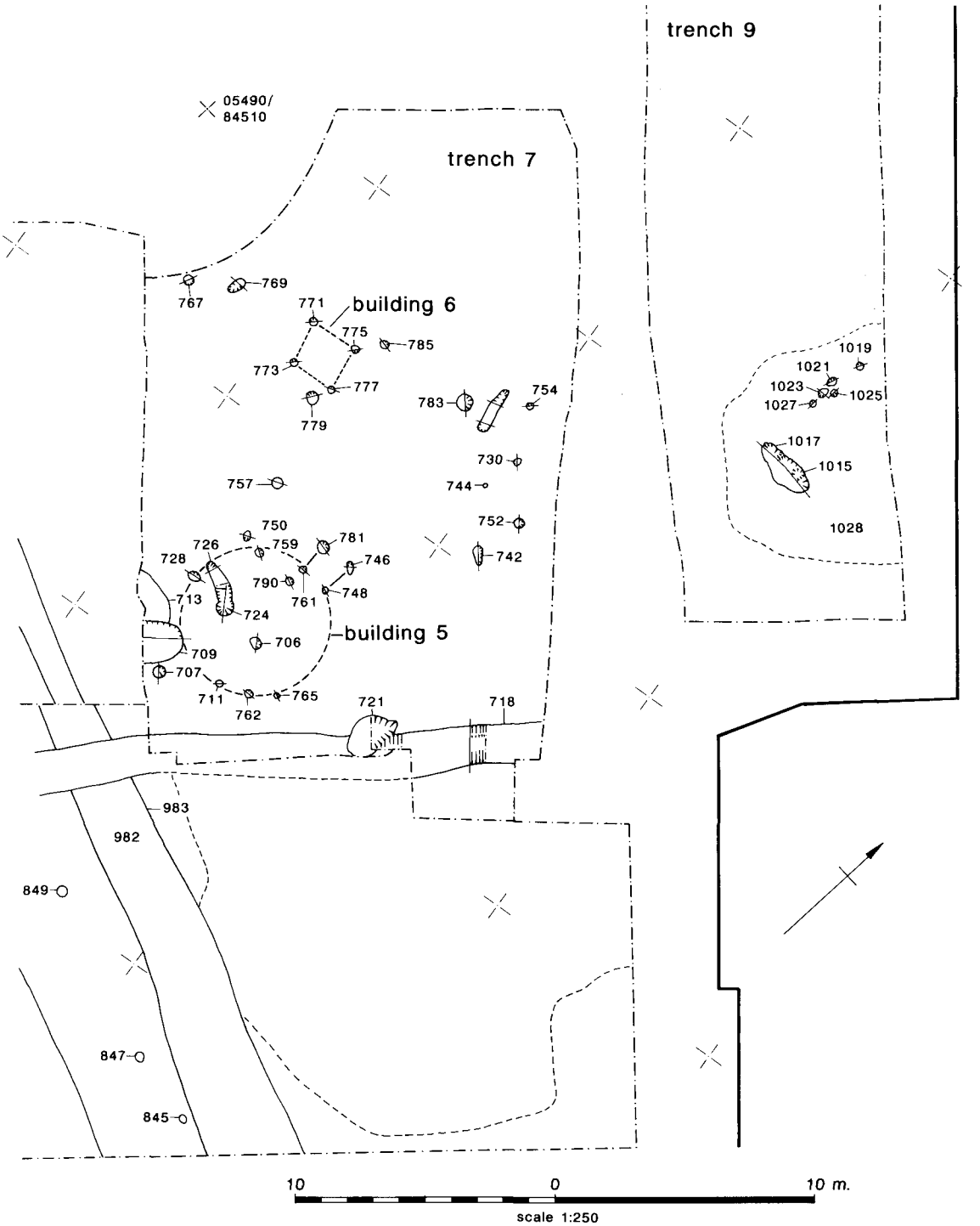


Fig 4 Detailed plan of Trenches 7 and 9

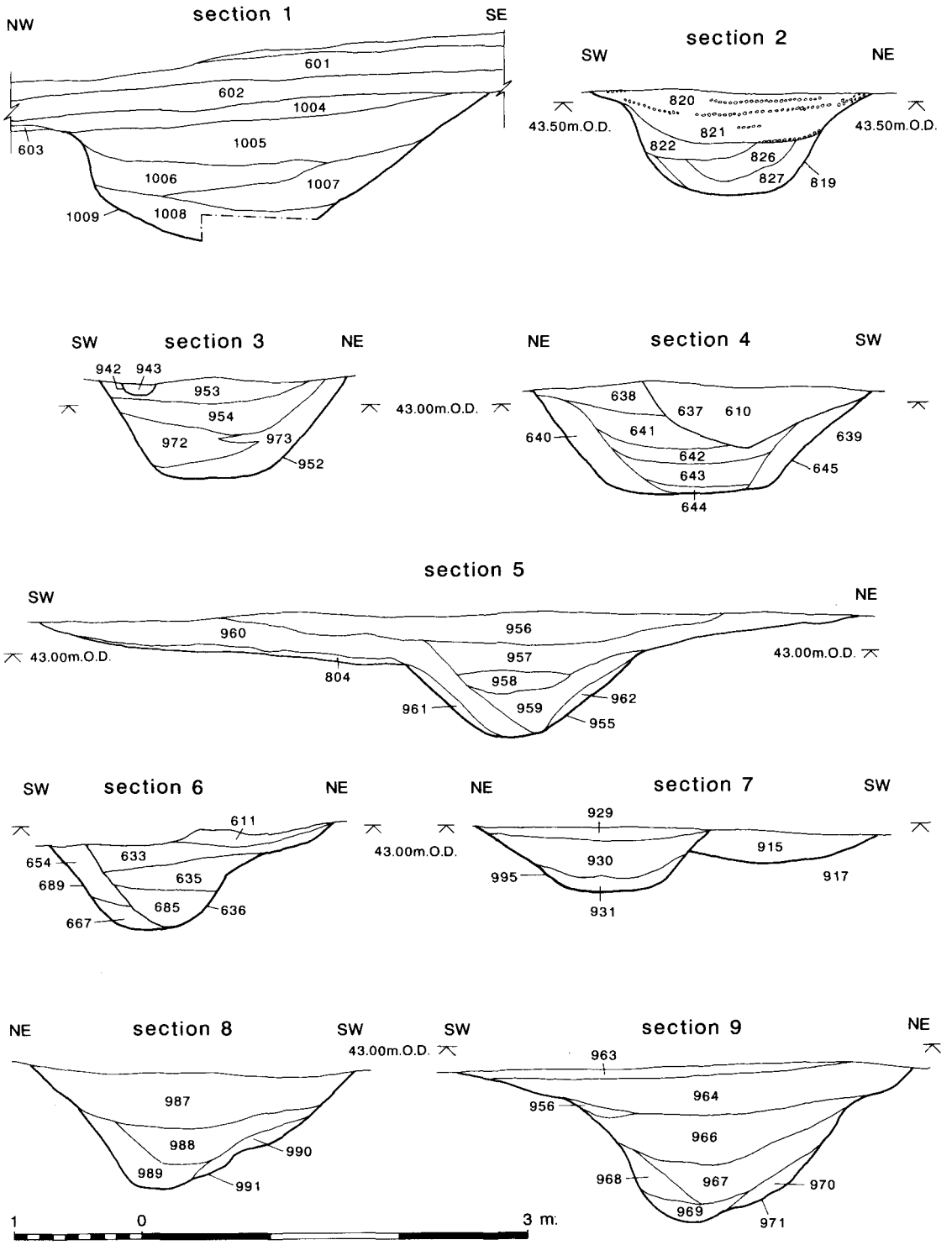


Fig 5 Ditch sections

8, a dump of domestic material formed the upper fill of the ditch [822] (Fig 5.2). This deposit contained charred plant remains (spelt wheat) and LBA pottery. One hundred and seventeen sherds were recovered from [822] and these represented a mixed deposit of Late Bronze Age to Early Iron Age date (catalogued pottery sherds, P2–6; Fig 6). The overlying fills [820 and 821] contained a further 76 sherds of similar material (including P7–9, Fig 6) which, together with the material from [822], forms 20% of the pottery assemblage recovered from the site. However, the lower fills of the ditch at this point [826, 827 & 828] contained 12 sherds of pottery in Early Iron Age fabrics (AF2 and 3). An EIA furrowed bowl came from the bottom of the next section [909], (Fig 6, P14). A single Middle Iron Age rim (P13) and six Romano-British sherds were recovered from [899], a layer of the upper fill of Ditch 1, cut [910] in Trench 8. In Trench 6, Romano-British pottery was found in the upper fill [641] of Ditch 1. A shallower cut [637], (fill [610], Fig 5.4), also containing Romano-British pottery, was dug on the same alignment as the main ditch. This cut was only seen in Trench 6.

Ditch 2 was 3.25m to the SW of Ditch 1, and was traced for a distance of 65.5m. Five sections were excavated. The sides of the ditch varied from near vertical to 45° and the ditch measured from 1.7 to 2.7m wide and 0.4 to 0.95m deep. The bottom of the ditch varied from flat to rounded. Medieval and Romano-British pottery was recovered from the upper silts of the ditch [830]. In the two southern sections a dump of domestic material [831 and 958], (Fig 5.5) with charred plant remains (oak and hawthorn charcoal) and quantities of burnt flint was recovered. EIA pottery (P17, Fig 6) was found in the lowest fill of Ditch 2 in Trench 6, cut [689] (Fig 5.6).

The western edge of Ditch 2 in Trench 8 was lower than the general site level and the slight hollow was filled by layer [960] (Figs 3 and 5.5). It is possible that [960] was an *in situ* deposit contemporary with the ditches and that because of its position it had escaped the truncation by ploughing which was in evidence elsewhere on the site. However, too much weight must not be placed on the recorded relationship between [960] and the ditch fills – defining layers within the brickearth-derived material was not easy – and it is possible that [960] was simply another layer of disturbance.

Ditch 4 lay 11.5m SW of Ditch 2 and could be traced for a distance of approximately 74m. Three sections were cut through the ditch in the excavation; one in the watching brief. A partial section was recorded in the evaluation (test pit 4). The ditch profile had sloping sides and a gently rounded bottom. The ditch was between 2.44m and 3.3m wide and varied from 0.78 to 1.24m in depth. LBA/EIA pot was recovered from the lowest fill [812]. A section recorded in the watching brief (Fig 5.8) was of particular interest as the upper fill [987] contained a dump of burnt flint and clay. In Trenches 6 and 8, Ditch 4 was very difficult to see because the top fill [808] closely resembled the natural brickearth. During excavation this layer was thought to be bank material which had been slighted into the ditch. Later ploughing disturbed these layers and truncated the natural subsoil with the result that no old ground surface or remnant of any bank survived to confirm this interpretation. Middle Iron Age and Romano-British pottery was recovered from the upper silt [984] of the ditch in the watching brief area.

The revetment or fences

Between Ditches 1 and 2 evidence for a revetment or for fences was recovered. Two rows of postholes were seen in Trench 8 and a single row in Trench 6. The postholes in Trench 6 were spaced *c.*0.5m apart and revealed no evidence for slots between the posts. One row in Trench 8 was placed centrally between the ditches and comprised postholes spaced *c.*0.5m apart and linked by a wall slot. The second row of postholes in Trench 8 was positioned on the edge of Ditch 2 and the posts were spaced *c.*2m apart and at the S of the trench were linked by a wall slot. The postholes were cut through the gravelly layer capping the brickearth [842 and 907] which had been slightly disturbed by ploughing and their state of preservation was variable. Pottery recovered from the features indicated a LBA/EIA date which suggests that the posts were contemporary with Ditches 1 and 2. It is possible that postholes in the centrally placed row in Trench 8 and the row in Trench 6 were contemporary, and that the postholes in the second row in Trench 8, which were more widely spread, were of a different date, in which case they would best be interpreted as fences. If, however, the rows of posts were contemporary,

they could well be evidence for a revetted bank between Ditches 1 and 2.

Middle Iron Age activity

Ditch 3 which was 8m S of Ditch 2 and 3.5m N of Ditch 4, was traced for a distance of 71.5m (Figs 2, 3 and 5.7). This ditch was much slighter than the other ditches and was *c.*2m wide and only 0.5m deep. Middle Iron Age pottery was recovered but it is possible, though perhaps unlikely, that the pottery is residual and the ditch later in date. The evidence suggests that this ditch was later than Ditches 1, 2 and 4, but that it forms part of the same boundary. It would seem to be an addition to an existing boundary, or perhaps a replacement for it.

Romano-British features

A group of six small pits [862, 866, 918, 920, 923 and 942] probably of Roman date (Figs 3 & 5.3) were cut into the accumulating upper fills of Ditch 1 at a point adjacent to the MBA ditch [120]. The pits were 0.35 to 0.6m in width and 0.09 to 0.14m in depth. They had been badly truncated by ploughing and as a result the quantities of bone and pottery recovered were very small. The fills of all six pits were similar and comprised black or dark grey silty clay with charcoal. The presence of charcoal and some burnt bone suggested that the pits might be cremations. The amount of bone recovered from soil samples was very small (see Table 4) and could not be identified as human or animal.

The environmental evidence from the pits included oak and hawthorn charcoal and orache, vetch, plum, cherry, dock, summer savory, sedge and emmer or spelt wheat and spelt chaff with emmer or spelt glume bases. This evidence may indicate that the pits contained burnt domestic rubbish rather than cremations.

The pottery recovered comprised one sherd from pit [862], fill [863], and two sherds from each of pits [866], fill [867], and [918], fill [919]. Pits [920] and [923] contained no pottery. Pit [942], fill [943] contained 11 sherds, including three joining sherds from a possible jar base (fabric 7). None of the pottery could be identified as from cremation urns. The location of the pits adjacent to Ditch [120] and their relationship to the fills of Ditch 1 suggests that both ditches were still visible in the Roman period.

Albert Ironworks and Penclose House

The S portion of the site formed part of the Albert Ironworks. A ditch [718] formed the boundary between the Ironworks and Penclose House which was built in 1836–8 at the W of the site. The house was demolished in 1990. The boundary ditch ran across the site in a broadly NE-SW direction cutting through Ditches 1, 2 and 3 (Fig 2). An irregular feature [721] which cut the ditch was interpreted as a tree-throw hole (Fig 4). Several 19th-century features, including shallow brick lined circular pits, were recorded in Trenches 7 and 9 (the former gardens of Penclose House) and are interpreted as planting pits.

THE FINDS

The later prehistoric pottery

Alistair Barclay

Introduction

The evaluation and subsequent excavation produced a small assemblage (939 sherds, 4377g) of later prehistoric pottery. Most of the assemblage was recovered from the fills of a double-ditched droveway. The assemblage ranges in date from later Bronze Age through to the Middle Iron Age.

Methodology

The assemblage is quantified by weight and sherd number. The pottery is characterised by fabric, form, surface treatment, decoration and colour. Only the more diagnostic featured sherds are listed in the catalogue. The sherds were analysed using a binocular microscope (x 20) and were divided into fabric groups on the basis of principal inclusion type. Oxford Archaeological Unit standard codes are used to denote inclusion types.

Fabrics

Eleven fabrics have been defined by their principal inclusion types and have been given an alpha-numeric code. There are five fabric groups: flint (F1–3); flint with sand (FA1–3), sand with flint (AF1–3), sand (A1) and organic (O2). During the later Bronze Age flint-tempered fabrics were predominantly used in the manufacture of pottery in the Colne Valley area, eventually being replaced by sand during the transition to the Iron Age (Longley 1980, 40–65; O'Connell 1986, 61–2). Following the work of O'Connell and Longley it is tentatively suggested that at Uxbridge there is a simple chronological trend from flint-tempered to flint with sand-tempered fabrics in the mid to late Bronze Age, and that by the early Iron Age fabrics were predominantly made from sandy fabrics with the addition of little or no flint. All 11 fabrics recognised at Uxbridge could be of local manufacture.

Fabric descriptions

Inclusion codes: A = sand (quartz and other mineral matter), F = flint, O = organic matter.
Size range: 1 = < 1mm very fine; 2 = 1–2mm fine-medium; 3 = > 2mm medium-coarse.

Flint
F1 Hard fabric with common (up to 15%) fine (< 1mm) angular calcined flint (9 sherds, 30g).
F2 Hard fabric with common (up to 15%) fine-medium (1–2mm) angular calcined flint. Some sherds also contain ferruginous pellets and organics (46 sherds, 233g).
F3 Hard fabric with common (up to 15%) medium-coarse (> 2mm) angular calcined flint. Some sherds also contain grog (126 sherds, 783g).

Flint with sand
FA1 Hard fabric with common (up to 15%) fine (< 1mm) flint and rare (up to 5%) quartz sand (126 sherds, 352g).
FA2 Hard fabric with common (up to 15%) fine-medium (1–2mm) angular calcined flint and rare (up to 5%) quartz sand (200 sherds, 706g).
FA3 Hard fabric with common (up to 15%) medium-coarse angular calcined flint and rare (up to 5%) quartz sand (96 sherds, 854g).

Sand with flint fabrics
AF1 Hard fabric with common (up to 15%) quartz sand and rare (up to 5%) fine (< 1mm) angular calcined flint (11 sherds, 43g).
AF2 Hard fabric with common (up to 15%) quartz sand and rare (up to 5%) medium (1–2mm) angular calcined flint. Some sherds also contain ferruginous pellets (72 sherds, 331g).
AF3 Hard fabric with common (up to 15%) quartz sand and rare (up to 5%) coarse (> 2mm) angular calcined flint (27 sherds, 205g).

Sandy fabric
A1 Hard fabric with common (up to 15%) coarse quartz sand. Some sherds also contain ferruginous pellets and, or, organics (212 sherds, 996g).

Organic fabric
O2 Soft fabric with organic temper (2 sherds, 2g).

Indeterminate
Sherds considered to be too small to be assigned to any fabric (12 sherds, 27g).

Surface treatment and decoration

Wiping was noted on a number of coarseware vessels (*eg* Fig 6.4) and smoothing and burnish were noted on some fineware vessels. Decoration is rare amongst the assemblage and occurs on only 11 vessels. Finger tipping occurs on the shoulders of nine coarseware jars (Fig 6.4, 6, 16–7) and includes one example with multiple rows (Fig 6.6; *cf* Canham 1980 fig 16.42–3). In addition, cabling occurs on a flaring rim (Fig 6.15) and furrowed lines occur on the shoulder from a fineware bowl (Fig 6.14). The base from a coarseware vessel has been deliberately flint-gritted (Fig 6.12).

Forms

Because of the fragmentary nature of the assemblage, indicated by an average sherd weight of less than 5g and the relatively low number of featured sherds, no attempt has been made to construct a form series. The recovery of much of the assemblage from ditches that had been recut probably accounts for the apparent brokeness of the assemblage.

The assemblage is characterised by rims and shoulders mostly from bipartite vessels. Twenty three rims were recorded of which a representative range is illustrated in Fig 6. Rim P1 is from a straight-sided coarse ware vessel (Fig 6.1). Similar forms occur in Deverel-Rimbury and 'early' Plain Ware assemblages of the 15–8th centuries cal BC and are common in the Thames Valley (Barrett 1980). P4, 6, 9, 17 are all fragments from decorated coarseware jars belonging to Barrett's Class I (1980). Rims P10 and P18 are likely to derive from fineware bowls of bipartite form and are of Late Bronze Age date. The simple rims and shoulders, P2 and P8, are from tripartite vessels of Early Iron Age date. The rim P11 is probably from a type of hooked-rimmed jar. The flaring rim P15 with probable

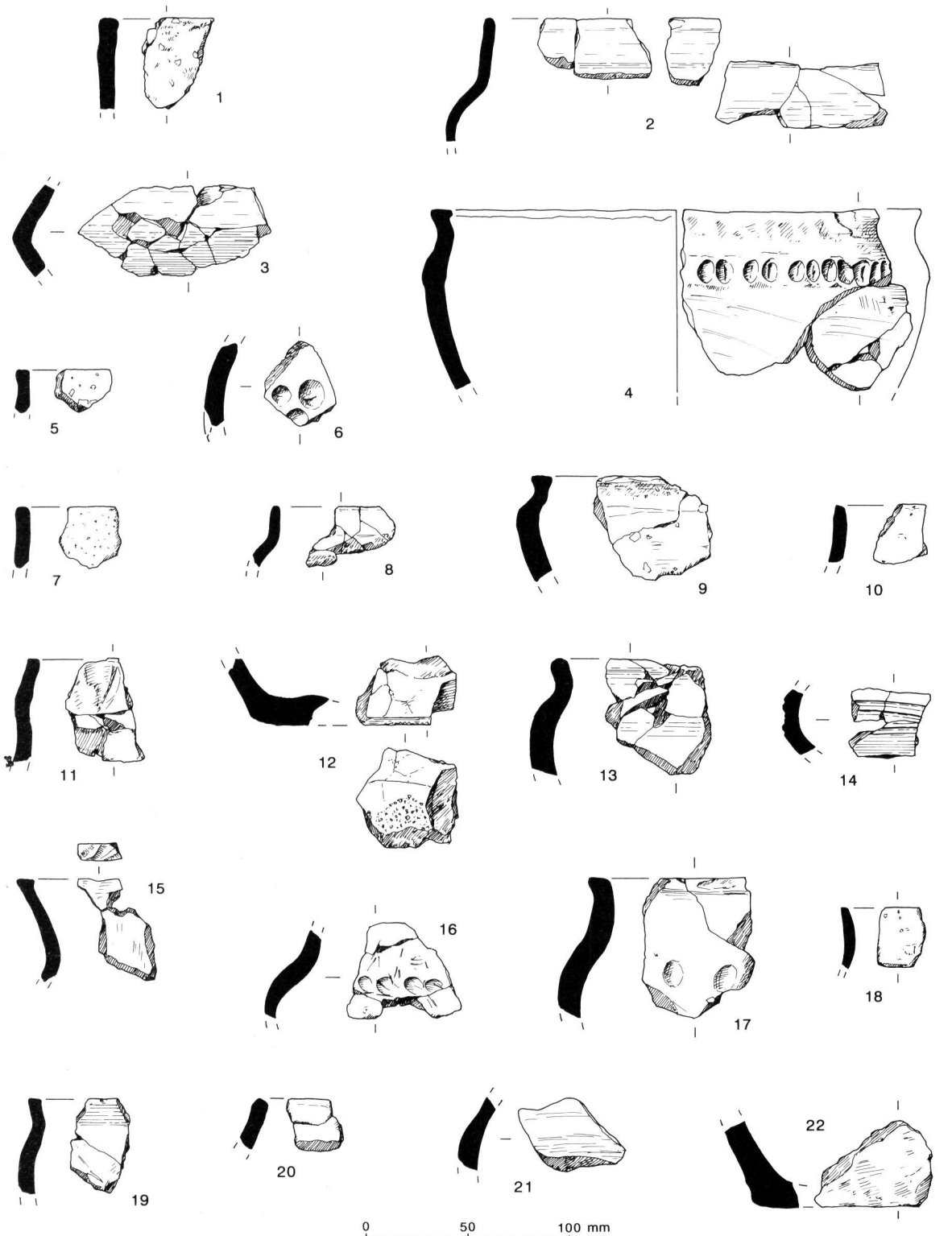


Fig 6 Prehistoric pottery

cabling and the form of rim P19 can be paralleled at both Ivinghoe Beacon and Runnymede Bridge (Longley 1980, fig 34.347; Cotton and Frere 1968, figs 20.119 and 18.74–5). The rounded shoulder with furrowed decoration (P14) is probably from a type of furrowed bowl of earliest Iron Age date. The rounded shoulders and rim represented by P13 and P21 which are manufactured from sandy fabrics are of Middle Iron Age date.

The small number of featured sherds in the overall assemblage is in direct contrast to the variety of rim and vessel forms. Chronologically the assemblage is mixed and includes both Late Bronze Age, Early Iron Age and Middle Iron Age forms. In addition, P1 and a small number of flint-tempered sherds could be of mid-late Bronze Age date, while the sand-tempered sherds represented by P13 and P21–2 are of Middle Iron Age character.

Catalogue

Ditch 120

P1. (Fig 6.1) Layer 116. Mid-Late Bronze Age. Simple rim from a straight walled vessel. Fabric FA3. Colour: ext: brown; core: dark grey; int: grey. (*cf* O'Connell 1986, fig 47:80–1).

Ditch 1 section 819

P2. (Fig 6.2) Layer 822. Late Bronze Age-Early Iron Age. Rounded shoulder and upright rim. Fabric FA1. Colour: ext: dark grey; core: dark grey; int: dark grey. (*cf* Canham 1980, fig 18.85).

P3. (Fig 6.3) Layer 822. Late Bronze Age-Early Iron Age. Angular shoulder from a fineware bowl. Fabric FA1. Colour: ext: dark grey; core: dark grey; int: dark grey.

P4. (Fig 6.4) Layer 822. Late Bronze Age-Early Iron Age. Shouldered jar with finger-tip decoration. Fabric FA3. Colour: ext: reddish-brown to dark grey; core: dark grey; int: dark grey to brown. (*cf* O'Connell 1986, fig 48:30).

P5. (Fig 6.5) Layer 822. Late Bronze Age. Simple rim. Fabric F2. Colour: ext: brown; core: grey; int: brownish-grey.

P6. (Fig 6.6) Layer 822. Late Bronze Age-Early Iron Age. Shoulder with double row of finger-tip decoration. Fabric FA2. Colour: ext: brown; core grey; int: greyish-brown. (*cf* Canham 1980 fig 15.47, 16.42–3).

P7. (Fig 6.7) Layer 821. Simple, upright rim. Fabric FA1. Colour: ext: dark grey; core: brown; int: brown.

P8. (Fig 6.8) Layer 821. Simple rounded upright rim from a fine ware shouldered vessel. Fabric FA1. Colour: ext: dark grey; core: greyish-brown; int: greyish-brown.

P9. (Fig 6.9) Layer 820. Late Bronze Age. Shouldered bowl with short neck and flat rim. Fabric FA3. Colour: ext: reddish-brown; core: dark grey; int: greyish-brown. (*cf* O'Connell 1986, fig 51: 128).

P10. (Fig 6.10) Layer 614. Rim from a bipartite bowl. Fabric F2. Colour: ext: dark grey; core: dark grey; int: dark grey. (*cf* O'Connell 1986, fig 49: 90–101).

P11. (Fig 6.11) Layer 614. Rim sherds from a hooked rimmed or bucket shaped vessel. Impressed decoration. Fabric FA3. Colour: dark brown; core: dark grey; int: dark grey. (*cf* O'Connell 1986, fig 56: 263–4).

P12. (Fig 6.12) Layer 898. Late Bronze Age-Early Iron Age. Flint gritted base sherd from a coarse ware vessel. Fabric FA2. Colour: ext: reddish-brown; core: grey; int: grey.

P13. (Fig 6.13) Layer 899. Middle Iron Age. Rounded rim and out-turned neck. Fabric FA1. Colour: ext: dark brown; core: dark grey; int: dark grey.

P14. (Fig 6.14) Layer 909. Early Iron Age. Rim and shoulder from a fine ware bowl with furrowed decoration. Fabric FA1. Colour: ext: dark brown; core: dark grey; int: dark grey. (*cf* Canham 1980 fig 14.30).

P15. (Fig 6.15) Layer 972. Late Bronze Age-Early Iron Age. Out-turned flaring rim with squared top. Fabric AF1. Colour: ext: dark grey; core: dark grey; int: dark grey. (*cf* Longley 1980, fig 34: 347–9; Longley 1991, fig 90 P222).

P16. (Fig 6.16) Layer 954. Late Bronze Age. Shoulder with finger tip decoration. Fabric A1. Colour: ext: reddish-brown; core: dark grey; int: reddish-brown. (*cf* Longley 1986, fig 43–4).

Ditch 2

P17. (Fig 6.17) Layer 667. Early Iron Age. Jar sherds with an out-turned rim, straight neck and finger-tip decorated shoulder. AF3. Colour: ext: dark grey; core: dark grey; int: brownish-grey. (*cf* Cunliffe 1991, A:8.3).

Ditch 4

P18. (Fig 6.18) Layer 669. Late Bronze Age. Fine ware rim from a bipartite bowl. Fabric FA2. Colour: ext: dark grey; core: dark grey; int: dark grey. (*cf* Longley 1991, fig 78 P28).

P19. (Fig 6.19) Layer 812. Late Bronze Age. Squared rim, flaring and rounded shoulder. Fabric AF1. Colour: ext: dark grey; core: dark grey; int: dark grey. (*cf* Longley 1991, fig 85 P130).

P20. (Fig 6.20) Layer 984. Middle Iron Age. Simple rim. Fabric A1. Colour: ext: greyish-brown; core: dark grey; int: greyish-brown.

P21. (Fig 6.21) Layer 984. Middle Iron Age. Rounded shoulder with burnish. Fabric A1. Colour: ext: dark grey; core: dark grey; int: dark grey.

P22. (Fig 6.22) Layer 984. Middle Iron Age. Base sherd from a coarse ware jar. Fabric A1. Colour: ext: reddish-brown; core: dark grey; int: dark grey.

Discussion

At least three ceramic phases can be recognised among the assemblage: Mid-Late Bronze Age (15–8th century cal BC); Late Bronze-Early Iron Age and Early Iron Age (8–6th, 6–4th century cal BC) and Middle Iron Age (4th–1st century cal BC). The pottery is a good indicator of domestic activity and much of the assemblage may have derived from the dumping of refuse in and around the droveway ditches.

The earliest pottery recovered from the site is manufactured from a range of flint-gritted fabrics and includes thick walled sherds with dense flint grit (mostly fabrics F1–3). The earliest group

comes from Ditch 120 and includes the vessel fragment P1 and several coarse flint-tempered sherds in fabrics F1–3. These sherds are most likely to belong to the Deverel-Rimbury tradition of the Middle Bronze Age or the Plain Ware tradition of the Late Bronze Age. Pit [724] and Posthole [790] within the post-built house contained a small number of later Bronze Age sherds manufactured from these fabrics. In addition, a number of other sherds that were recovered from the droveway ditches could be redeposited or residual material, especially as some are in a relatively worn condition.

The flint and sand-tempered fabrics are thought to be of Late Bronze Age-Early Iron Age date (*cf* Longley 1980, 40). Both the bipartite vessel forms and the limited use of finger-tip decoration on the shoulders of coarseware jars are typical of the Late Bronze Age-Early Iron Age. Simple plain rims from fineware vessels of probable bipartite form are present. This material is characteristic of the so called 'Decorated Ware' assemblages of the 8–6th century (Barrett 1980). These sherds have good affinities with the Late Bronze Age assemblages from Petters Sports Field and Runnymede Bridge (Longley 1980; O'Connell 1986). However, some of the vessels with more upright necks and flaring rims (Fig 6.2, 15 & 17) have affinities with Cunliffe's Park Brow-Caesar's Camp group which he places in the 6th–4th centuries BC (Cunliffe 1991, 72, fig A:8).

Most of the material recovered from the droveway ditches, including P2–19 is of Late Bronze Age-Early Iron Age date. This includes both Late Bronze Age and Early Iron Age forms, which are unlikely to be contemporary in date. Some, if not most of the pottery, could be redeposited, especially if the ditches were recut. Much of this pottery can be paralleled amongst the Late Bronze Age and Early Iron Age assemblages recovered from excavations at Heathrow some 10km to the south (Canham 1980; Grimes and Close-Brooks 1993; O'Connell 1990).

Middle Iron Age material came from [603, 830, 966, 982 and 984]. Layer [984] contained a group of 79 sherds in sandy fabrics as well as some redeposited material including a finger-tip decorated shoulder in a worn condition. This material is likely to indicate small-scale domestic activity within the vicinity of the droveway.

The worked flint

Philippa Bradley

Introduction

An assemblage of 529 pieces of worked flint and 530 pieces of burnt unworked flint and quartzite pebbles was recovered from a series of pits, postholes, gullies, ditches and unstratified contexts. Assemblage composition is summarised in Table 1, selected artefacts are described in the catalogue and illustrated in Figures 7 and 8.

Methodology

The flint was recorded using codes supplied by the Museum of London; the flint records were put onto a database (dBase IV) which will form the basis of the research archive.

Raw materials

The flint is dark brown, almost black to grey in colour with a smooth white, pink or brown cortex. The flint has frequent cherty inclusions and thermal fractures both of which caused some cores to shatter. A few pieces of grey chert and a single flake of Bullhead flint were also identified (Shepherd 1972, 114). Cortication is generally light, some pieces are iron-stained and some sand-glossing was noted. Calcium carbonate concretion was also noted on much of the flint, presumably deriving from the calcareous river gravels.

The majority of the flint would have been available relatively locally within the river gravels. The single piece of polished implement from the fill of posthole [724] and the few pieces of better quality flint would have been brought to the site from further afield.

The burnt unworked flint is generally very heavily calcined, being white or grey in colour, sometimes with a reddish tinge. Varying degrees of crazing were recorded from lightly burnt to very heavily calcined and highly crazed. Flint pebbles weighing around 240g and small quartzite pebbles were recovered from the deposits of burnt flint.

Table 1. Flint assemblage composition

Context Group	Flakes (including core rejuvenation flakes)	Blades, blade-like flakes, bladelets	Irregular waste	Chips	Cores	Retouched forms	Total	Burnt unworked flint
old ploughsoil	45 (inc 3 core rejuvenation flakes)	10	2	8	4	3	72	10
top of brickearth	12	1	—	—	1	—	14	—
treehole	1	1	—	—	—	1	3	—
pits, scoops	31 (inc 1 core rejuvenation flake)	17	1	7	1	3	60	10
postholes	11 (inc 1 flake from polished implement and 1 core rejuvenation flake)	4	1	8	—	1	25	28
gullies, watching brief ditch	6	—	—	—	—	—	6	—
Ditch 120 (MBA)	15	—	—	3	1	—	19	—
Ditch 1	135 (2 core rejuvenation flakes)	—	9	17	8	11	180	83
Ditch 2	44	9	2	1	2	2	60	361
Ditch 3	37	6	1	1	1	3	49	22
Ditch 4	24	1	—	5	2	2	34	10
plough-disturbed layers	6	1	—	—	—	—	7	—
Romano-British pits (?cremations)	—	—	—	—	—	—	—	6
TOTALS	367	50	16	50	20	26	529	530

Technology and dating

The assemblage contains diagnostic retouched forms dating to the Mesolithic; the distinctive character of the majority of the debitage can quite confidently be assigned to the later Bronze Age. A single flake from a polished implement from the fill of Posthole [724] would indicate Neolithic or Early Bronze Age activity. All stages of the reduction sequence were recovered although no hammerstones were found. Surprisingly little of the worked flint was burnt, only 16 flakes, blade-like flakes and chips showed any sign of burning.

The Mesolithic component of the assemblage consists of three obliquely blunted points (Fig 7.1–3), blades, blade cores (*eg* Fig 8.9), and a crested blade from [304]. One or two other retouched pieces may belong to this phase of activity, these include a piercer on a blade, a truncated blade, an unfinished microlith or piercer and one or two of the neatly retouched scrapers (*eg* Fig 7.4). Two backed blades, including an example from [984] (Fig 7.7) may also be Mesolithic.

Blades and blade-like flakes are frequently soft-hammer struck with linear or punctiform butts (Tixier *et al* 1980, 105). Platform edges are often abraded and previous parallel blade scars were often noted on the dorsal faces of flakes and blades. Some of the soft-hammer struck flakes would also seem to belong to this activity. Approximately seven flakes and blade-like flakes were utilised, some pieces exhibited edge gloss. Cores were often rejuvenated when platforms became unworkable; five face/edge rejuvenation flakes and one core tablet were recovered. Another core tablet from [1012] (old ploughsoil) was reworked into a scraper (Fig 7.5) although the nature of the retouch would suggest that this piece is probably Bronze Age in date.

The blade cores recovered were all opposed platform types, (*eg* Fig 8.9) (see Table 2 for typology). Two core fragments also had blade

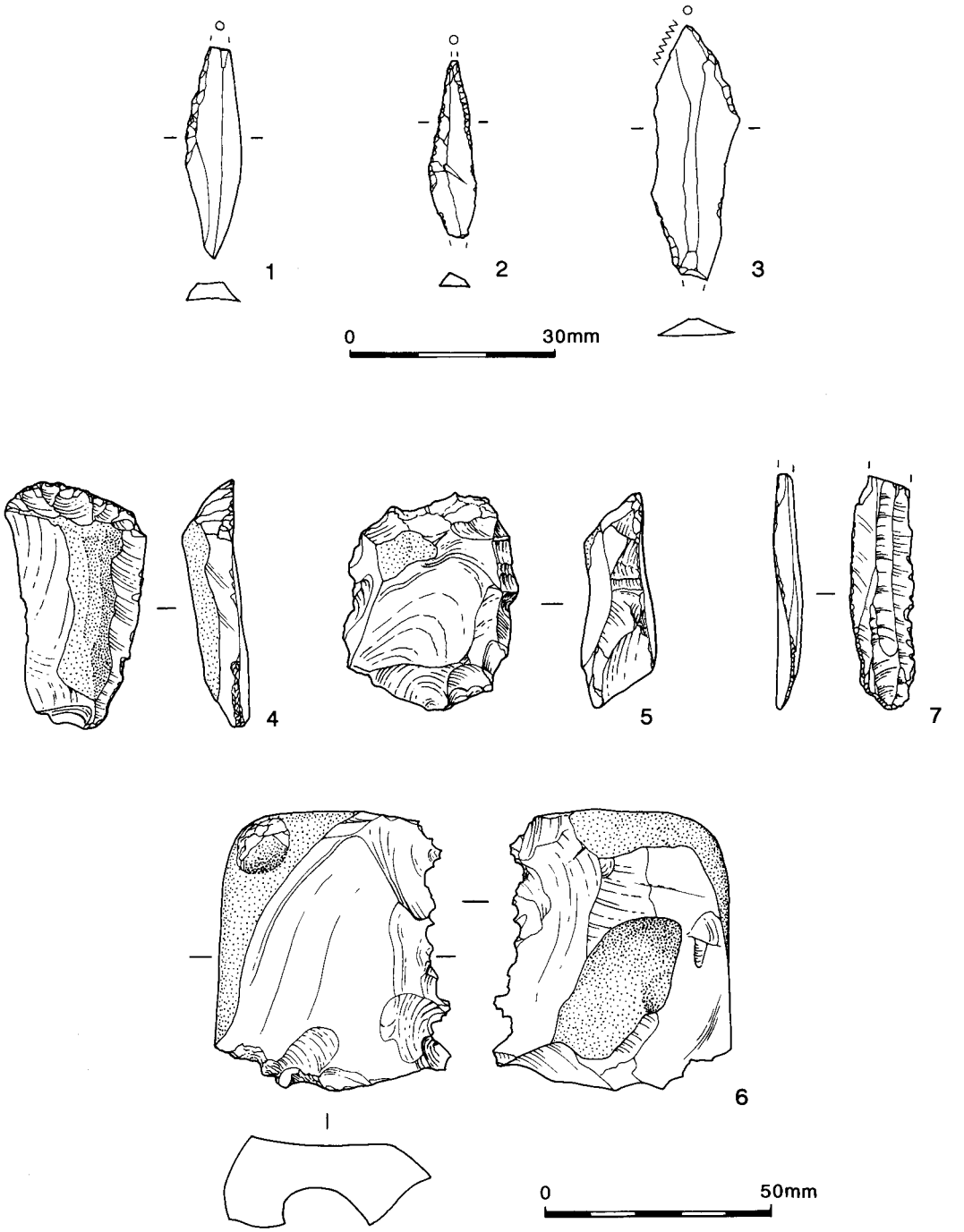
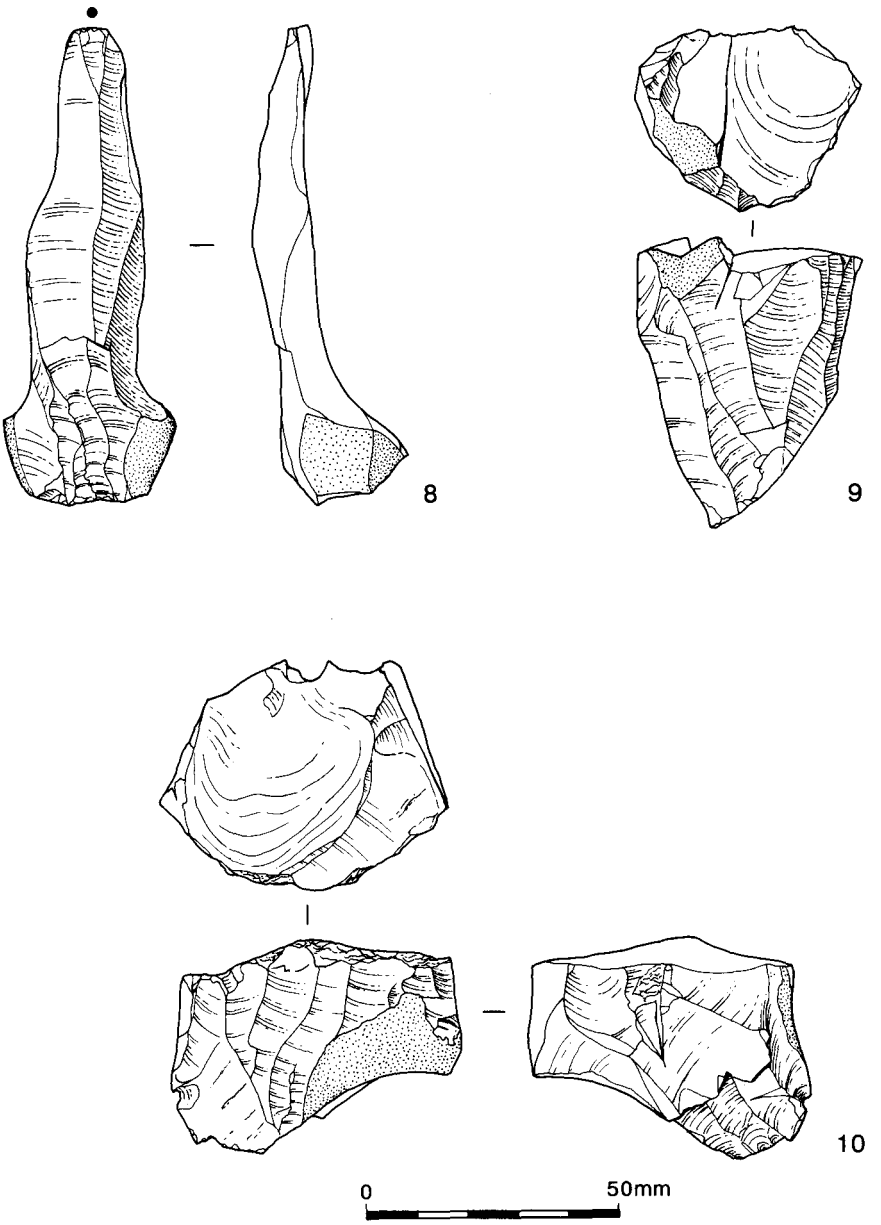


Fig 7 Flint

scars. These cores were generally very carefully worked with overhangs being removed between knapping episodes. A plunging flake from an opposed platform blade core (Fig 8.8) indicates that some of the cores must have originally been much larger. One or two blades and blade-like flakes and a piercer (Small find no. 607 [610]) were also quite long (in the range of 80–100mm).



The longest surviving blade scar on the blade cores is 53mm indicating that they were considerably worked down.

Mesolithic artefacts were recovered from all areas of the site although there was a possible slight concentration in Trench 6.

Obliquely blunted points occur in both earlier and later Mesolithic assemblages (Pitts and Jacobi 1979, fig 5) and with the absence of other microlith types it is difficult to refine the dating. Although the microliths are on the small side, they compare well with those from Three Ways Wharf, Uxbridge (see Lewis 1991, 252, fig 23.10, no. 8288). The general appearance and composition of the Harefield Road material would indicate an earlier Mesolithic date.

Very little of the flintwork, with the exception of the flake from a polished implement from the

Table 2. Core typology

Context group	Opposed platform blade	Single platform flake	Multi-platform flake	Keeled	Core fragments	Total
old ploughsoil	1	—	—	—	3	4
top of brickearth	—	—	1	—	—	1
pits, scoops	—	—	—	—	1	1
fill of Ditch 120	1	—	—	—	—	1
Ditch 1	3	—	—	1	4	8
Ditch 2	—	—	1	—	1	2
Ditch 3	—	—	1	—	—	1
Ditch 4	—	1	—	—	1	2
TOTALS	5	1	3	1	10	20

fill [723] of posthole [724] is demonstrably Neolithic or Early Bronze Age in date. The remaining flintwork from [723] would be consistent with a Neolithic or Early Bronze Age date. A very large, steeply retouched scraper (*c.*72mm long and 46mm wide) from [1001] may be of Neolithic date, however, scrapers are notoriously difficult to date (*cf* Riley 1990, 227). Some of the multi-platform flake cores (*eg* Fig 8.10) and the keeled core may also be later Neolithic or Early Bronze Age. The remaining retouched forms recovered are unspecific types such as scrapers, broken and unclassifiable or atypical pieces (Table 3). Some of these pieces may also belong to this activity.

The majority of the flint assemblage would, on technological grounds, appear to be later Bronze Age in date. This material is characterised by broad, hard-hammer struck flakes, irregularly worked cores and minimally retouched pieces, often worked on thermal blanks (*eg* the denticulate from [821], Fig 7.6). Butts tend to be wide and unprepared, many are cortical. Approximately 97% of the butts classified (a total of 319 pieces) were unprepared. Incipient cones of percussion were noted on the butts of many flakes (*eg* from [638, 674, 997 and 1001]) indicating attempts to flake were unsuccessful (*cf* Brown 1992, 92; Montague 1995, 22). Twin bulbs of percussion and very pronounced bulbs indicate that excessive force was used. Hinge fractures were commonly noted amongst this material. Cores were irregularly worked with few removals and there were few attempts to maintain platforms by rejuvenation. Many of the cores shattered because of thermal fractures or cherty inclusions within the raw material, however, unlike the Mesolithic opposed platform cores, there were few attempts to rejuvenate suitable fragments.

The retouched pieces which would seem to be of Late Bronze Age date include minimally retouched scrapers, for example Fig 7.5 on a core tablet, denticulates, for example Fig 7.6 on a thermal blank, a notch and a minimally retouched piercer made from a small pebble. The reduction in the numbers of retouched forms is a characteristic of later Bronze Age flint technologies (*cf* Healy 1981, 165; Brown 1992,

Table 3. Retouched forms

Context group	Scrapers	Obliquely blunted points	Backed blades	Denticulates/ notches	Piercers	Miscellaneous retouch	Totals
old ploughsoil	1 (other)	2	—	—	—	—	3
treehole	—	—	—	—	—	1	1
pits, scoops	1 (end)	1	1	—	—	—	3
postholes	—	—	—	—	—	1	1
Ditch 1	5 (4 end & side; 1 end)	—	—	2	2	2	11
Ditch 2	—	—	—	—	—	2	2
Ditch 3	1 (end & side)	—	1	1	—	—	3
Ditch 4	1 (other)	—	—	—	—	1	2
TOTALS	9	3	2	3	2	7	26

92; Montague 1995, 22; Ford *et al* 1984, 167). At Micheldever Wood there was a fairly wide range of retouched forms but only scrapers and borers were present in any quantity (Fasham & Ross 1978, 59). The emphasis in these assemblages is on producing expedient tools, generally cutting, scraping and piercing tools and far less emphasis is placed on the preparation of blanks and their final retouching.

The majority of the burnt unworked flint and quartzite pebbles were recovered from dumps of domestic debris in Ditches 1 and 2 (Table 1). Two hundred and fifty-four pieces of burnt unworked flint were recovered from a single layer in Ditch 2 [958]. This material appeared to have been dumped with other rubbish including pottery and charcoal.

Catalogue

Selected pieces are illustrated in Figures 7 and 8. The catalogue entries are ordered as follows: object with brief description, raw material, condition, context, small find number and weight (cores only).

1. Microlith. Obliquely blunted point. Abrupt retouch to upper left-hand side. Clark's Class Aia (Clark 1933, 56). Proximal break. Medium to heavy cortication. [304], Old Ploughsoil (Lower). Small find no. (sf) 301.

2. Microlith. Obliquely blunted point. Abrupt retouch to upper left and right-hand sides. Distal break and slight damage to tip. Clark's Class Aib (Clark 1933, 56). Light brown flint, fresh condition. [612], fill of pit. sf 660.

3. Microlith. Obliquely blunted point. Retouched upper right-hand side with additional retouch to the lower left-hand side. Very fine removals on the upper left-hand side may result from use rather than formal retouch (indicated on Fig 7.3 by zig-zag line) Clark's Class Aic (Clark 1933, 56). Distal break. Orange-brown flint with medium cortication ?Iron concretion on ventral face. [602], Old Ploughsoil. sf 789.

4. End scraper. Neatly retouched, scraping angle 55–70°. Fresh condition. Mid brown flint with smooth buff cortex, occasional cherty inclusions. [614], Ditch 1. sf 694.

5. Scraper on a core tablet. Irregularly retouched, some later damage, scraping angle 65–70°. Undetached bulbs of percussion. Some thermal fractures and cherty inclusions. Battered and sand-glossed. [1012], Old Ploughsoil. sf 1104.

6. Denticulate on a thermal fragment. Brown to grey flint with cherty inclusions, smooth buff pebble cortex. Large flaw within the flint. Coarsely retouched. [821], Ditch 1. sf 882.

7. Backed blade. Neatly retouched along edge, edge has suffered more recent damage. Light brown flint with cherty inclusions, very lightly corticated. Worn. Distal break. [984], Ditch 3. sf 1050.

8. Plunging flake, removing large part of an opposed platform blade core. Fresh condition. Dark brown to black flint with smooth white cortex. [1001], Ditch 1. sf 1076.

9. Opposed platform blade core, abraded platform edges. Grey flint with many cherty inclusions. Small patch of light brown cortex remaining. [119], Ditch 120. sf 131. Weight 110g.

10. Multi-platform flake core, some truncated blade scars, lightly burnt. Reddish-grey flint with cherty inclusions. A small area of smooth buff cortex remains. [984], Ditch 3. sf 1055. Weight 114g.

Discussion

Although a relatively small component of the overall total, the Mesolithic material is of some interest given its proximity to the important scatter at Three Ways Wharf, Uxbridge. No focus for the Mesolithic activity was identified at Harefield Road although there was a slight concentration of material in Trench 6. Food and hide processing, knapping and possibly hunting activities are represented. Although the dating evidence is slight this activity is probably earlier Mesolithic, dating to around 9800–8500 BP.

The trend towards broader flakes through time is now well established (Pitts 1978, 26; fig. 4). The seeming lack of controlled flintworking and limited number of retouched forms are typical of later Bronze Age industries (Fasham and Ross, 1978, 63; Healy 1981, 165; Ford *et al* 1984, 167). Burnt unworked flint is also frequently associated with later prehistoric sites and may relate to many different activities including cooking, saunas or the preparation of temper for pottery (Hodder and Barfield 1991). The perceived reduction in the knapper's 'skill' and the limited number of retouched forms may simply reflect the role of flintwork in the later prehistoric period; new technologies may have been preferred for many activities, flint simply being used for the more mundane domestic activities (*cf* Ford *et al* 1984, 166). Flint tools would still have been more effective and more efficient than metal for many of these activities, such as scraping, cutting and piercing (Ford *et al* 1984, 166).

The fired clay

Alistair Barclay

A total of 32 fragments of clay were recovered and, with the exception of three possible object fragments from [898] and a tile fragment from

[603], the material is characterised by amorphous lumps of fired clay. Nearly all of this material is oxidised reddish-brown and is therefore likely to indicate, albeit indirectly, domestic or industrial activity.

The Roman pottery

P. Booth

Some 90 sherds of Roman pottery, weighing 1039g, were recovered from the excavation, some from post-Roman contexts. The material was generally in poor condition, many sherds being relatively small and with badly-preserved surfaces. The latter characteristic may have been a consequence of adverse soil conditions rather than redepositional factors. None of the sherds were considered worth illustrating.

The sherds were divided into nine fabric groups, for which generalised descriptions are given here, followed by codes used in the Museum of London (MoLAS) pottery recording system. The MoLAS codes employed here are broad categories, since the character of the material did not warrant detailed matching of the sherds with more specifically defined fabrics.

1. Fine sandy oxidised fabric with cream/white slip, RWS, (2 sherds).
2. Fine sandy oxidised fabric as 1 but apparently without slip, OXID, (1 sherd).
3. Coarse sandy oxidised fabric, OXID, (1 sherd).
4. Coarse oxidised fabric tempered with common angular grog, GROG, (1 sherd).
5. Very fine reduced, probably 'London ware', LONW, (2 sherds).
6. Coarse quartz-tempered reduced fabric, SAND, (57 sherds).
7. Moderately coarse reduced fabric with sand and occasional grog inclusions, SAND, (21 sherds).
8. Coarse sandy irregularly fired fabric, SAND, (3 sherds).
9. Coarse grog-tempered irregularly fired fabric, GROG, (2 sherds).

Confident attribution of these fabrics to sources was difficult, particularly as some groups were only represented by small numbers of sherds with no diagnostic features. Both fabrics 1 and 2 may have originated at Staines (*cf* Crouch and Shanks 1984, 44); otherwise the identification of two small fragments of London ware seems reasonably secure. Fabrics 8 and 9 were essentially in the 'Belgic' ceramic tradition (Thompson 1982, 4), though only the latter was grog-tempered. Of the two principal fabrics, 6 has most of the characteristics of the Fulmer/ Hedgerley kilns, though there is clearly some variation of fabric within this industry (*cf* Crouch and Shanks 1984, 45; Cauvain and Cauvain 1987, 164) and probably originated there. The finer fabric, 7, was perhaps another Staines area product.

Only three fragmentary vessels were represented by rim sherds (0.35 EVEs); a medium mouthed jar in fabric 6, an uncertain jar or bowl in fabric 7, and a slightly beaded rim jar in fabric 8. Base sherds in fabric 1 were probably from a flagon, but no other specific forms were indicated by body sherds. The forms are not themselves diagnostic of source or of close date, nor do they suggest any particular functional specialisation.

Just over one third of the small quantity of Romano-British pottery from the site (36 out of 90 sherds) was recovered from the upper fills of the parallel ditches, and in particular from Ditch 1 (33 sherds). A further two sherds came from a recut [637] of Ditch 1, and two sherds from a layer sealing the fills of the same ditch. Another 20 sherds were recovered from the small pits (*ie* the possible cremations) cut into the upper fills of Ditch 1; of these 20 sherds, 11 were found in pit [942] fill [943]. It is possible that the pottery from the pits is residual, given their relationship with the fills of Ditch 1. Two other features, [709] fill [710] and [713] fill [714], both in Trench 7, contained RB pottery and may have been of Roman date. They produced four and two sherds respectively. The remaining RB pottery (24 sherds) comes from later contexts, including ploughsoils.

The assemblage indicates limited, low status settlement, though the small sample present may not have been representative of the overall site from which it derived. The range of sources represented by the pottery appears to have been very limited, with the bulk of the material probably deriving from the Fulmer/Hedgerley kilns less than 10km distant to the west, and further material perhaps from Staines. There are no imported or specialist wares and notable absentees are products of the Brockley Hill and Highgate Wood sites to the northeast and east. The Fulmer/Hedgerley kilns are generally dated to the early-mid 2nd century, with much material assigned to the second quarter of the century. It has been suggested that the industry was in operation in the 1st century (Crouch and Shanks 1984, 45), though production sites of this date are as yet unknown. The present assemblage is probably largely of 2nd-century date, though the

grog-tempered sherds, for example, indicate a 1st-century component.

The medieval and later pottery

Lucy Whittingham

Thirty-five medieval sherds (0.2kg) have been identified from residual contexts (old ploughsoil, the top fill of Ditch 2 and modern garden soil). The majority of the sherds are from early medieval cooking pots in a variety of coarse sand or sand and flint-tempered fabrics. They are mainly of one fabric type; a coarsely gritted quartz and flint-tempered fabric with thickly slurried surfaces. The rims are all square-clubbed cooking pot forms, one with thumbed upper edge. Two sherds in this fabric type have stabbed and thumb-impressed decoration on the shoulder. The combination of fabric type, vessel type, potting technique and decoration suggest an early medieval date between the mid 11th and the late 12th centuries. Other recognised medieval wares present are London-type ware jug sherds of mid 12th to mid 14th-century date and Kingston-type wares of mid 13th to mid 14th-century date. A small number of post medieval sherds are present including 17th to 18th-century post-medieval Redware (PMR), English Stoneware (ENGS) and 19th-century transfer printed Pearlware (PEAR).

The cremated bone

Angela Boyle

Cremated material from five contexts was examined and the results are tabulated in Table 4. None of the bone recovered could be identified as certainly human.

The charred plant remains

Mark Robinson

Introduction

During the excavation 54 samples were taken from a cluster of pits and post holes, and the large parallel Ditches 1 and 2. Late Bronze Age occupation debris including charcoal spread along part of the length of these ditches. A further 10 samples were taken from six possible Roman cremations which had been inserted into the top of Ditch 1.

The samples, which were of *c.*10 litres (unless the fill of the entire context was less), were floated onto a 0.5mm mesh and dried. All the dried flots were then scanned at x10 magnification to determine which had potential for further analysis.

Under half the Late Bronze Age flots contained charred seeds or charcoal. Unfortunately, most of them were contaminated with pieces of coal, coke and cinder from the Albert Ironworks which formerly occupied part of the site. It was therefore decided to concentrate analysis on those uncontaminated samples from a post hole [723] and two uncontaminated samples from the spread of occupation debris in the Late Bronze Age ditches [822, 958 and 831].

All the samples from the Roman cremations, except the only sample from [924], contained charred remains and all were uncontaminated. However, some of the flots were very large with, for example, between 140 to 150g of charcoal from those flots listed as + + + + in Table 6. Analysis of all the possible cremations for the full range of charred plant remains would have been very time-consuming. Therefore it was decided to analyse for seeds and chaff one sample from each of the three cremations in which they were

Table 4. Summary of cremated bone

Context	Cut	Sample no	Weight	Fragment size	Colour	Comments
867	866	806	c. 1g	>10mm	white	no identifiable bone
919	918	808	c. 7g	c. 10mm	white	no identifiable bone
922	920	809	c. 93g	10–25mm	white	no identifiable bone, small stones
924	923	810	c. 3g	5–25mm	white	no identifiable bone
943	942	811	c. 70g	>10–20mm	white	no identifiable bone

found during the assessment (Table 5). Charcoal was analysed from one sample from each of the six cremations which contained it (Table 6).

Results

The results of the analysis for charred seeds and chaff are listed in Table 5. The possible *Prunus spinosa* from [723] comprised most of the fruit in addition to the stone. Seeds and chaff were absent from the samples from [822 and 958].

The results of the charcoal analysis are listed in Table 6. Ten or 20 fragments from each sample were identified using incident light high power microscopy. The charcoal from the Bronze Age flots was mostly in small fragments and it was difficult to determine whether it was from young or old wood. The *Prunus* and Pomoideae charcoal from the Roman cremations was all

Table 5. Charred seeds and chaff

		Late Bronze Age	**Romano-British pits**		
	Context (cut)	723 (724)	863 (862)	919 (918)	943 (942)
	Sample no	615 a+b+c	805	808	811
	Volume (litres)	30	10	10	10
Seeds					
Atriplex sp.	orache	—	2	2	—
Vicia or *Lathyrus* sp.	vetch or tare	—	3	—	—
Prunus cf. *spinosa* L.	sloe	1	—	—	—
P. domestica L.	plum	—	—	—	1
P. avium L.	cherry	—	—	—	1
Rumex sp.	dock	—	3	43	—
Satureja hortensis L.	summer savory	—	—	—	1
Carex sp.	sedge	—	—	1	—
Triticum dicoccum Shubl.	emmer wheat	3	—	—	—
T. dicoccum Shubl. or *spelta* L.	emmer or spelt wheat	4	2	1	—
cereal indet.		14	4	—	—
Gramineae indet.	grass	—	4	—	—
weed indet.		1	1	1	—
Chaff—glume bases					
Triticum spelta L.	spelt wheat	—	41	—	—
T. dicoccum Shubl. or *spelta* L.	emmer or spelt wheat	—	10	—	—

Table 6. Charcoal

		Late Bronze Age			**Romano-British pits)**					
			Ditch 1	*Ditch 2*						
	Context (cut)	723 (724)	822 (819)	958 (955)	831 (829)	863 (862)	867 (866)	919 (918)	922 (920)	943 (942)
	Sample no	615 a+b+c	801	813	803	805	806	808	809	811
	Volume (litres)	30	10	10	10	10	10	10	10	10
Prunus sp.	sloe, etc	–	–	–	–	1	–	–	–	–
Pomoideae indet.	hawthorn, etc	–	–	2	2	4	2	–	–	1
Corylus avellana L.	hazel	3	2	–	–	–	–	–	–	–
Quercus sp.	oak	7	8	8	8	15	8	20	10	9
No. of fragments		10	10	10	10	20	10	20	10	10
Abundance of charcoal		++	++	+++	++	++++	+++	++++	+++	++

KEY: +present, ++some, +++much, ++++very much.

small diameter wood with under ten rings. All the *Quercus* charcoal from [919], a single fragment from [863] and some of the fragments from [943] (the remainder were too small to determine) were also from small diameter wood with under 10 rings. All the *Quercus* charcoal from [822, 831, 867] and the remainder from [863] was from old wood and mostly had tyloses.

Discussion

The charred cereals from [723] were all either grains of *Triticum dicoccum* (emmer wheat) or grains that could have been from *T. dicoccum*. This provides useful evidence that emmer wheat remained a crop in the region into the Late Bronze Age. The assemblage of Late Bronze Age charred plant remains was too small to establish their origin and it is uncertain whether the fruit of *Prunus* cf. *spinosa* (sloe) represented a food item or not. The Late Bronze Age charcoal was unexceptional.

Quercus sp. (oak) was the main fuel used for the possible cremations. Sometimes the pyres appear mostly to have been sticks or branch trimmings and sometimes more substantial pieces of wood were burnt. The other plant remains from [863 and 919] probably represent kindling. In the case of [863] it comprised mostly crop processing waste, with many glumes of *Triticum spelta* (spelt wheat). Seeds of *Rumex* sp. dominated the other charred remains from [919] and it is possible that dry weeds were used to start the fire. The interpretation of the remains from [943], a stone of *Prunus domestica* (plum), a stone of *Prunus avium* (cherry) and a seed of *Satureja hortensis* (summer savory) is more problematic. However, there are other examples of food plant remains being recovered from Roman cremations in the London area. Some of the Roman cremations from Hooper Street, East London contained charred *Lens culinaris* (lentils) (Dr D. de Moulins, pers comm).

DISCUSSION

Alistair Barclay with Philippa Bradley

The excavation confirmed the evidence from documentary sources; the area had remained a green field site until the construction of Penclose House and the Albert Ironworks in the 19th century. The excavations identified the south-east boundary and part of the gardens of Penclose House. Mesolithic and Neolithic flintwork recovered from the ploughsoils associated with these fields and from various features indicated the earliest activity across the site. Later prehistoric activity was found beneath these ploughsoils and consisted of ditches, a ditched droveway and a small open settlement.

The site

The earliest excavated features were found in Trench 7 and belong to a small open settlement comprising a house and a four-post structure of later Bronze Age date. Contemporary with this settlement is a boundary defined by the short stretch of Ditch [120] and an alignment of treeholes. Pottery from the ditch and from features within the house is identified as Mid-Late Bronze Age. If the pottery is contemporary with the settlement, then the house and the four-poster would belong to the same period as the ditch. Emmer wheat was found in direct association with Mid-Late Bronze Age sherds in one of the settlement features [724]. In plan the house consists of an irregular oval post-ring of approximately 5–6m in diameter, and a porch structure with the entrance facing north. The incompleteness of the post-ring could be a product of differential plough damage. An alternative interpretation of the porch structure representing a four-poster seems less likely given the greater size of two of the postholes.

The irregular, small size and slightly oval plan of the house is perhaps typical of some later Bronze Age settlements, comparable structures include two houses from Stanwell, six houses and an oval structure from Petters Sports Field, Surrey and structure IV from Ivinghoe Beacon, Buckinghamshire (O'Connell 1986 and 1990; Needham 1990, 115–118 and fig 34; Cotton and Frere 1968, 196). None of these examples are entirely convincing, but this appears to be a characteristic of some Late Bronze Age structures. Four-post structures are a common feature of both Late Bronze Age and Iron Age settlements and are often assumed to be granaries (Poole 1984, 93–4).

The pottery from the ditched droveway indicates that at least three of these ditches were laid out in the Late Bronze Age or Early Iron Age. Pottery and flintwork from Ditches 1 and

2 may indicate domestic refuse, either deliberately dumped or redeposited into the open earthwork. This pottery appears to have been re-deposited because there is pottery of Early Iron Age type from the lower fills of both Ditches 1 and 2. Middle Iron Age pottery from Ditch 3 and some of the upper fills of the other ditches indicates that the droveway remained in use for several centuries. In the Roman period a series of possible cremation deposits, some associated with pottery of probable 2nd-century date were placed in the top of Ditch 1. Roman activity appears to be insignificant and, on the basis of the ceramic evidence, of low status. Consequently, the double ditched droveway may just have survived as a much silted boundary at this time. Probable medieval ploughing appears to have disturbed these cremation deposits and truncated any surviving earthworks and relic ground surface.

A series of excavations around Uxbridge have produced evidence for prehistoric ditches of probably contemporary date. A pair of ditches were found at Three Ways Wharf, a pair of E-W ditches at the Cowley Business Park and a single ditch at Uxbridge Block III, Site I (Lewis 1989, 9; Bennett 1989 and Mills 1984). Another single ditch was found nearby at Holloway Lane, Harmondsworth (Cotton *et al* 1986, 48 and fig 34). If the small scale of some of these excavations is taken into consideration, then the area of Uxbridge may in fact overlie extensive Late Bronze Age-Early Iron Age settlement. It is possible that the ditches at Harefield Road and the other sites in and around Uxbridge form part of a co-axial system of land division. At present this can only be substantiated by further excavation.

The site in a local and regional context

Mesolithic flintwork has been recovered from a number of sites within Uxbridge and its immediate area, for example at Cowley Mill Road, Uxbridge (Lewis 1991, 254) and Mesolithic/Neolithic flint was found immediately south of Harefield Road (Mills 1984, 6). Similarities between the Harefield Road material and the substantial early Mesolithic flint scatter (scatter C) at Three Ways Wharf (Lewis 1991) have already been discussed. In the wider context Mesolithic flintwork has been found in the Colne Valley at such sites as Iver, Sandstone and Boyers Pit (Lacaille 1961; 1963; Lewis 1991, 247, fig 23.1). Slightly further afield Mesolithic material has been recovered at Broxbourne in the Lea Valley (Collins 1976, 15).

Later prehistoric activity has been recorded in Uxbridge; Mills found evidence for Late Bronze Age/Early Iron Age activity including a series of ditches, pits and scoops (Sites I and II) with contemporary pottery (Mills 1984). In the vicinity few contemporary sites have produced any quantity of lithic material, for example Runnymede Bridge (Saville 1991, 127) and Petters Sports Field, Egham (Pitts 1986, 9). Later Bronze Age flintwork has also been recovered from Harmondsworth, Cranford and Sipson although this is unpublished (Jon Cotton, pers comm). Late Bronze Age ceramics, flintwork and copper artefacts were recovered from a settlement site at Weston Wood, Albury, Surrey (Russell 1989) and Late Bronze Age flintwork has been recovered from excavations at Carshalton, Surrey (Adkins and Needham 1985, 41). In the wider context numerous later Bronze Age sites have been excavated in the Lower and Middle Thames Valley (Barrett and Bradley 1980), many of which have produced similar contemporary artefact assemblages.

The phenomenon of land division increases in the later Bronze Age, which in the context of southern England may reflect wider social and political change. The emergence of a variety of land divisions, including linear ditches, ditched droveways and coaxial field systems, appears to have happened diachronously within the region of the Thames Valley. Land divisions of various types and date are known along the length of the Thames Valley. Field systems and droveways have been recorded around the Thames estuary in Essex and Kent. At Mucking a Late Bronze Age ringwork was constructed over an existing field system, while at Gravesend pottery and radiocarbon dates indicate that a probable droveway was constructed around 1000 cal BC (Bond 1988; Mudd 1994).

In the middle Thames Valley probable Late Bronze Age droveways have been excavated at Stanwell (O'Connell 1990) and it is possible that the town of Uxbridge overlies a coaxial field system of comparable date (Mills 1984). An extensive coaxial field system of later Bronze Age date has been evaluated at Dorney and ditches and settlement activity have been excavated at Bray (Tim Allen pers comm; Barnes & Cleal 1995). Some evidence for land division has been found in the Kennet Valley and in the Upper

Thames Valley a number of coaxial field systems and linear ditches of later Bronze Age date have been recorded (Lambrick 1992, 88).

The ditches at Harefield Road, together with the various sites recorded around Uxbridge, reflect locally a much wider period of social and political change towards a more settled and bounded landscape.

At a later date, it should be noted, that the historic borough boundary to the west of the site was on a similar alignment to the droveway.

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ROMAN METALWORK FROM THE WALBROOK – RUBBISH, RITUAL OR REDUNDANCY?

Ralph Merrifield

THE HUGH CHAPMAN MEMORIAL LECTURE 1994

INTRODUCTION

I well remember my first meeting with Hugh Chapman, when he was interviewed for his appointment to Guildhall Museum staff in 1969. When I was asked for my opinion, I very much annoyed Norman Cook, then Keeper of the Museum, by saying I thought he was far too good for us. We were then working in odd corners provided temporarily by the Corporation of London, and although our collection had survived the war intact and had subsequently grown enormously, apart from a small selection exhibited temporarily in the Royal Exchange and subsequently in shop premises that were difficult to let on the Bassishaw High Walk, the bulk was stowed away in store-boxes accessible only to its own staff and little known or esteemed. True we were promised that it would form part of a brand-new custom-built Museum of London, but when? Its birth was dependent on the agreement of a Government Department, the Corporation of London and the Greater London Council, which would give it equal financial support – a completely new commitment for the GLC. Not surprisingly, all three were quite happy that decisions previously taken should not be implemented until some unspecified future date. It did not seem to offer much to a young man on the threshold of his career. Yet in one respect Norman Cook was quite right; it did give Hugh the opportunity to become intimately familiar with a great Roman collection. Its particular strength was its unique accumulation of metal artefacts in a wonderful state of preservation, and Hugh was able to develop a special expertise in this field, so that he was many times asked to contribute a specialist's report on metal finds from excavations, not only in London.

Guildhall Museum's great collection of Roman metalwork came almost exclusively from sites in the valley of the Walbrook, a small stream that flowed through the centre of the Roman city. How prolific this material was is indicated by the contribution it had also made to other Museum collections – not only to the London Museum, soon to merge its collection with that of Guildhall Museum, and the British Museum, but also to museums in the British Commonwealth overseas. When I visited the Royal Ontario Museum several years ago, I found obviously Walbrook material, labelled 'City of London', prominent in its Roman exhibits. I believe an equally generous consignment went to New Zealand.

The Walbrook metalwork, as we shall see, is outstanding on three counts: its sheer quantity, its uncorroded condition and the continuing serviceability of the majority of the objects. It is obviously important that such a remarkable phenomenon should be correctly interpreted, as I believe it has not been in the two admirable studies produced by the Museum of London's archaeological staff (the former Department of Urban Archaeology) in the last three years: *The Upper Walbrook in the Roman Period*, by Catharine Maloney and Dominique de Moulins, published

as a CBA Report in 1990, and *Excavations in the Middle Walbrook Valley* by Tony Wilmott, published by LAMAS in 1991. My debt to both these publications will become apparent, and although I have ventured to disagree with them in one important conclusion, without them I could not have marshalled my own argument. There are those who feel that a memorial lecture should be uncontroversial, but I do not believe Hugh would have agreed, for he was always an advocate of open debate. The Museum of London has in the last 17 years sponsored research into Roman London of a standard never before known, culminating in a succession of published reports, of which the two Walbrook reports are worthy representatives. Yet in this very excellence there lies a danger – that the admirable series of published reports emanating from the Museum will establish a new orthodoxy that may not be challenged. That, in my view, would be regrettable, for varying conclusions may be drawn from the same set of facts, and the facts themselves may look different viewed from a different angle. As a survivor of a most unsatisfactory period of investigation, I am conscious of my temerity in rejecting any conclusion of a new and better age. I have, however, the advantage of personal memories of one major Walbrook site, and also familiarity with those finds of the past that tend to be disregarded by the younger archaeologists simply because they were not recovered under ideal conditions. I do not believe we can do this without risk of distorting the whole picture. The new and vastly improved investigations have not been sufficiently extensive for us to rely on them alone.

The special qualities of the Walbrook metalwork can best be appreciated by a visit to the Roman gallery in the Museum of London, where an overwhelming majority of the metal exhibits comes from the Walbrook valley. In planning the gallery I tried to put on display as much of the Walbrook material as possible, some of it in what I called 'vignettes' of Roman London, putting things together as they might have appeared when in use –like the 'habitat' groups in natural history museums. Space precluded full-scale reconstruction of interiors, but we could show a carpenter's bench and shelves, part of a smith's workshop, and a cutler's stall with his stock-in-trade. Each tool had to appear serviceable, and remarkably little restoration was necessary. Only missing wooden handles usually had to be replaced. In selecting this material for exhibition, Hugh's familiarity with the collection and the expertise he had acquired enabled him to take full responsibility for assembling and supervising the construction of these and other vignettes (Plates 1 and 2).

There is no mystery about the survival since Roman times of uncorroded metal; it survived 'as good as new' because it was kept throughout in waterlogged conditions that were completely anaerobic – *ie* with all air excluded. Iron remained unrusted – the only chemical change being sometimes the deposition of some bluish phosphate of iron, the result of organic acidity in the soil, and this also inhibited corrosion. Copper-alloys remained untarnished and shining bright. These ideal anaerobic conditions were produced by the silting of the stream-bed, which in its more sluggish phases produced a horrible sticky substance, black with organic pollution, of the consistency of thick porridge, as in a revetted stream-bed of a tributary of the Walbrook at Copthall Court. In its healthier, more free-flowing phases, the silt was more gravelly, though still black with organic waste. Both were sufficiently anaerobic to prevent corrosion of metals.

RUBBISH DUMP OR LOCAL REFUSE SITE?

The Walbrook stream

These deposits of anaerobic silt, however, are found in the banks of the Walbrook as well as in the bed of its main stream and tributaries. In some places these bank deposits are as rich in metal artefacts as the stream-bed. Where did they come from? Tony Wilmott has no doubts about this, and repeats several times his belief that they were brought as rubbish 'from all parts of the Roman city' (Wilmott 1991, 64). In this I believe he is quite wrong, and I believe also that this basic error has resulted in other misinterpretations. We have no evidence that refuse in Roman London was normally allowed to accumulate in surface middens; it was commonly disposed of by householders tidily and fairly hygienically in pits on their own premises. Finds in pit groups are familiar to all London archaeologists and are useful because they filled quickly and can be closely dated by the broken pottery they usually contain. This is so rarely accompanied by metalwork that I cannot recall a single example from the contents of the numerous Roman rubbish-pits and cess-pits handled by staff of Guildhall Museum in the

Plate 1. Reconstruction of Roman carpenter's bench and shelves by Hugh Chapman, with original Roman tools and other metalwork from the Walbrook (Museum of London)

Plate 2. Reconstruction of Roman cutler's stall by Hugh Chapman, with original knives and tools from the Walbrook (Reconstruction of stall in the Museum of London copied from a Roman tombstone)

1950s and 60s. It would certainly have attracted attention both because it could be dated and because it would have needed urgent conservation, for dry refuse did not provide the conditions that kept it free from corrosion. The black silt, sometimes called 'peat' when it contained a high concentration of organic matter, found incorporated in the artificially raised banks of the Walbrook, has always been recognised as being of watery origin. For years in fact it misled intelligent observers into the belief that the lower Walbrook was a wide river, navigable to the site of the Bank of England, since the wide spread of such deposits was believed to indicate the width of the stream.

It was Professor Grimes's section across the

valley, laboriously excavated in 1953–4, that cut the Walbrook down to size, indicating a stream normally no wider than 12–14ft (Grimes 1968, 92–5). At that time Grimes believed that the peaty layers were probably flood deposits made by the stream before the Mithraeum was built in the 240s. His section shows, however, that these layers are interleaved with the dumps of clean clay undoubtedly brought from elsewhere to raise the level for occupation on the banks, suggesting that they were dumped at intervals while this process was continuing. The most substantial peaty deposit lay further east, filling a hollow some time before the first floor of the Mithraeum was laid. The watery origin of these deposits can hardly be doubted, and they could have come from the Thames, some other tributary of the Thames, the fill of wells kept waterlogged by subterranean springs – or the Walbrook itself. This material had obvious disadvantages for the stability of the banks, as it was compressible and could therefore cause subsidence, as happened in the Upper Walbrook in one place (Maloney & de Moulins 1990, 47). There was therefore no point in bringing it from elsewhere, and it seems reasonably certain that it came from the Walbrook itself, and was incorporated in the banks only in order to dispose of it. The Grimes section does in fact suggest there was a clearance of silt that was blocking the revetted stream-bed, and that it was this, combined with increasing pressure from the build-up of the west bank, that led to the collapse of the revetment after the middle of the second century. This seems to be confirmed by Noël-Hume's observations just north of the Mithraeum, which puzzled me greatly at the time. A fill of fine gravelly silt, dated to the mid 2nd century by a brooch (Plate 3) near its base (a date confirmed by Wilmott's study of the pottery) lay deep within the revetted banks,[1] immediately overlying the primary stream-bed of the artificial channel, consisting of pebbles and sand overlying the natural London Clay. This contained a little Flavian-Trajanic pottery, but the lowest finds (ER 268E) were consistently Claudian-Flavian, also the date of pottery from the earliest levels of the bank outside the revetments (Wilmott 1991, 21; ER 268E and F). The early 2nd century seems to be missing from the stream-bed sequence, and this is the period when the Upper Walbrook seems to have had drainage problems (Maloney 1990, 120). Were these partly due to silting of the Middle Walbrook, which necessitated the unblocking of the stream by transferring its silt to the banks?

Plate 3. Bronze fibula (Collingwood Class Sii, attributed to middle of 2nd century) found deep in gravelly silt in revetted stream-bed of Walbrook, immediately overlying pebbles and sand of earliest (Flavian) bed of the artificial channel, together with other objects apparently dumped at one time by a metal-worker (ER 268 G). (Museum of London)

Finds from the NSDC

Let us now examine more closely the metalwork from one Walbrook site (Plate 4). This is the site

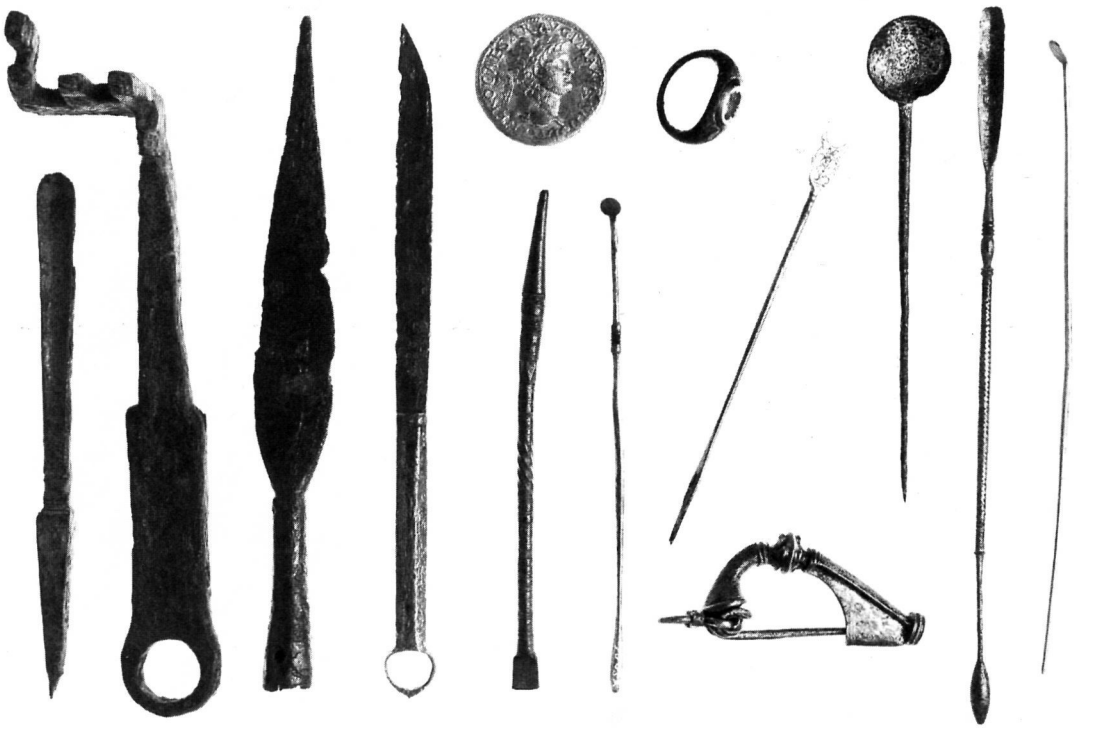

*Plate 4. The main classes of Roman metal artefacts from the Walbrook, comprising (1-r) a tool (spoon-bit), key, weapon (spear-head), knife, coin (*as *of Nero), stylus, ligula, finger-ring (with intaglio), hair-pin, fibula, spoon (with pointed handle), ligulae ('curette' type 1., 'ear-pick' type r.). Only needles are missing here from the 12 main classes of metal artefact that occur repeatedly in the Walbrook series (Museum of London)*

of the National Safe Deposit Company just opposite the Mansion House, a small triangular site only 418sq m in overall area, bisected by the Walbrook immediately north of its main Roman crossing-place in Bucklersbury. Its centrality to *Londinium* might be compared with that of Piccadilly Circus in modern London. It was excavated by builders in 1872–3, and J.E. Price, then Museum Clerk for Guildhall Library, was able to recover a great quantity of antiquities, nearly all Roman, for Guildhall Museum. His published account indicates that Roman levels were reached in three great trenches dug for the massive foundations of the external walls of a triangular building designed for maximum security (Puleston & Price 1873, 55). Price's plan indicates the position of two of these, perhaps all that he himself saw. They cross the stream-bed in two places, and on analogy with Bucklersbury House immediately to the south, it might be expected that some Roman metalwork would have been recovered here, as well as one or two post-Roman metal artefacts (a key and stylus) in 'Walbrook condition', presumably from higher levels of the stream-bed. Price makes it quite clear, however, that most of the antiquities (including Roman metalwork, since he mentions vast numbers of coins and also personal objects of iron and bronze) came from the west end of the trench parallel with Bucklersbury (Point F). Yet he also mentions remains of buildings, which would not have provided the anaerobic conditions in which most of the metalwork he recovered must have been preserved. He also mentions evidence of fire which had melted some metals and glass (not surviving in the collection). This area cannot have been larger than a few square metres, but may have been a deep accumulation, with later buildings, possibly destroyed by fire, overlying an earlier dump of water-logged silt, from which most of the complete metal objects came. It is reasonable to assume that it came originally from the neighbouring stream-bed,

including possibly the portion underlying the road, which would have been particularly subject to blocking.

Wilmott compares the Walbrook metalwork with that of two other anaerobic dumps that were excavated in recent years by archaeologists, and which do in fact contain material probably discarded as refuse. In significant criteria, however, there is no similarity whatsoever between the metalwork from these and that from the Walbrook. Only in the actual condition of the metal is there any similarity. The special characteristics of Walbrook metal artefacts both from stream-bed and bank dumps, is their *continuing serviceability*. Wilmott is dismissive of this argument, saying (and I quote): 'many must have been discarded in antiquity because of superficial damage which is no longer apparent ... It is unfortunate that Roman criteria for assessing utility or lack of utility are not recoverable' (Wilmott 1991, 172).

It is a neat phrase which enables him to ignore the outstanding characteristic of the Walbrook finds; but I suggest it is incorrect. For tools and practical appliances the criteria are likely to be precisely the same as they would be today – and modern craftsmen tend to retain familiar tools until they are broken or totally worn out. I recall that my grandfather, who was a shoemaker, retained one hammer throughout his working life – and gradually his thumb wore a thin place in the wooden handle, until eventually it broke, but only after his retirement. Personal ornaments, fibulae, hair-pins and the like, are of course affected by fashion, but are more likely to pass down the social scale – *eg* from mistress to servants – than to be thrown away as refuse, particularly if they had some value as metal. The other striking characteristic of Walbrook metal finds is their concentration in some areas, so that *numbers* of complete artefacts from a site are also significant. Including coins, which likewise remained serviceable, for there was no demonetisation in the 1st and 2nd centuries – the relevant period – the finds recovered by Price from the National Safe Deposit Company's site, totalled 179 serviceable metal artefacts catalogued by Guildhall Museum (Guildhall Museum 1908, 108–18); those from the Thames foreshore at Billingsgate Buildings, recovered by trained archaeologists, whose aim was to preserve for study everything they found, totalled just 12 (Jones 1974). From the dump within the wooden Antonine waterfront at New Fresh Wharf (Dyson *et al* 1986, 235–9), also excavated by archaeologists, they totalled 45, but 33 of these were coins, almost certainly lost during cash transactions on the waterfront. (See Appendix for tabulated details.) At Billingsgate Buildings the commonest metal artefacts were needles – three serviceable and five broken. There was also a great dump of leather scraps on this site, and the needles likewise no doubt reflect the proximity of a riverside industry (Fig. 1). I suspect there is nearly always a local explanation for the special characteristics of dumped refuse. We have no evidence whatsoever that refuse in Roman London was ever transported far from its source.

It will be noted that nearly all the metalwork from the National Safe Deposit Company site falls into a limited number of categories: tools, weapons (rare), knives, fibulae, hair-pins, ligulae (two types – here put together – probably used domestically, to extract cosmetics from flasks), spoons, needles, styli (the most abundant artefacts on all Walbrook sites), finger-rings, keys, and of course coins.

As we have seen, the NSDC material probably comes from both the stream-bed and a dump of silt on its bank. A similar pattern is shown by the material stratified in the stream-bed at Bucklersbury House – and datable to the first half of the 2nd century. (See Appendix for tabulated list). The same categories are represented, and there is the same very high proportion of serviceable metal artefacts, totalling 104. (Fig. 2)

A significant difference from the NSDC series is the increase in the quantity of craftsmen's tools, which no doubt came from local workshops on the banks. These were replaced in this area, and elsewhere in the Middle Walbrook, by more widely spaced and more substantial residences after about the middle of the 2nd century. The material deposited by a main street in the centre of *Londinium* probably *was* brought 'from all parts of the Roman city', but not as dumped refuse; it came in the hands of the multitude of individuals who passed by; whereas on Bucklersbury House it came from local workshops, and was concentrated where the stream was accessible to them.

RITUAL DEPOSITS?

The Walbrook skulls

The difficult question of whether ritual played any part in accumulating this great quantity of

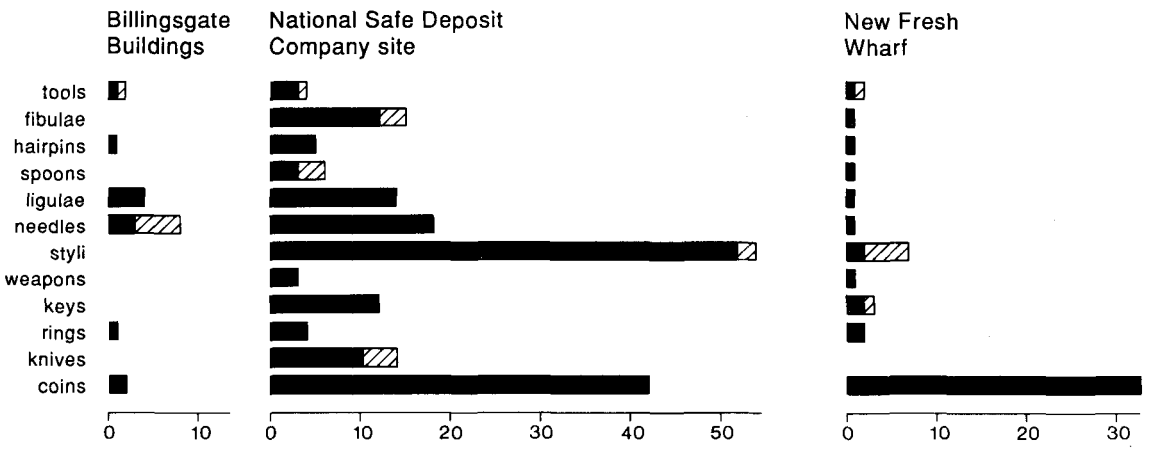

Fig 1. Histograms comparing Roman metal finds from National Safe Deposit Company's (Walbrook) site with those from Billingsgate Buildings and New Fresh Wharf (Thames-side sites). Hatched extensions to bars represent incomplete specimens

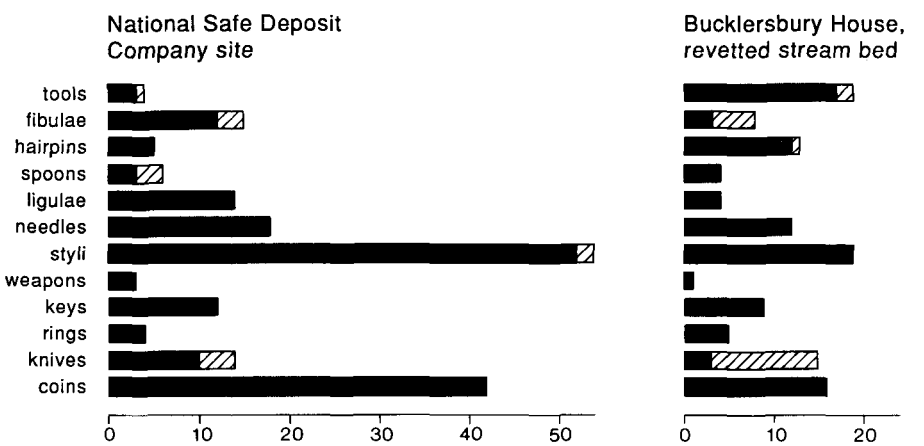

Fig 2. Histograms comparing unstratified Walbrook Roman metal finds from National Safe Deposit Company's site in Bucklersbury, many said to be from west bank, with stratified metal finds from revetted Walbrook stream-bed on Bucklersbury House site

serviceable metal artefacts, mostly originally in the stream-bed, though sometimes transferred to the banks, must now be addressed. Both Wilmott and Mrs Maloney have recognised another Walbrook phenomenon as having ritual significance, though they have little to say about it. Great numbers of human skulls have been found in the upper channels of the Walbrook – more than 100 from one site in Blomfield Street (Plate 5). They are unaccompanied by other human bones, and almost invariably have no lower jaws, suggesting strongly that they were fleshless when deposited. They are predominantly of young males (in itself almost ruling out older ideas of their origin in the Boudican massacre, in which, according to Tacitus, the victims were the aged women left behind in *Londinium*). None have been found south of the Walbrook crossing at Bucklersbury; one (doubtful) on the NSDC site, nine from the Bank of England site, increasing numbers north of the junction of the east and west streams of the Walbrook, and greater numbers north of the line of the later City wall (Blomfield Street and Finsbury House) (Marsh & West 1981, 86–102). In support of the dictum that ritual activity is unlikely to have been centered on a polluted stream in an industrial environment, Mrs Maloney has suggested that the skulls were deposited in an unpolluted area to the north and were subsequently carried by the stream to the places where they were found (Maloney 1990, 124). It is improbable that they would travel far in the rapidly silting channels, however, and one was

Plate 5. Roman skulls from the Walbrook, with the characteristic brown staining (Museum of London)

found high in the silt of a second-century roadside ditch in the Upper Walbrook – a position it can hardly have reached from an unpolluted stream-bed nearer the Walbrook's source.

Two of the Walbrook skulls have been dated by radio-carbon as within the dates 110 BC to AD 130, and one between 100 BC and AD 390 (Bradley & Gordon 1988, 507), while (as we have seen) one was archaeologically dated by being in the fill of the ditch of a road dated AD 120–40, while another came from the fill of a Roman canalised stream (Maloney 1990, 30–1, 34). A date within the Roman period seems likely for them all.

The deposition of skulls in watery places is well-known in Roman Britain, and in Roman London is also known in wells (Cannon Street and Queen Street), in ditches (fort ditch in Aldermanbury and in a roadside ditch in Southwark) as well as in two places on the waterfront (Marsh & West 1981, 94–5; Merrifield 1987, 37–8, 45). In the London area skulls were likewise deposited in the Thames in much earlier times, and large numbers were recovered in the same dredging operations that produced spectacular finds of Bronze Age metalwork and less abundant but equally spectacular finds of metalwork of the pre-Roman Iron Age. Carbon 14 dates for six of these skulls indicated that four were of the Middle – Late Bronze Age (1388–800 BC), the period to which most of the Thames metalwork is attributed. One is earlier (Neolithic – 3925–3338 BC) and one later (Anglo-Saxon) dating from AD 620–852. It is interesting that the last is of the same period as a group of spearheads from the Thames, including four from Battersea Bridge where the skull itself was found. One of the Bronze Age skulls, from Mortlake, is said to have been found 'underlying' Bronze Age metal objects. There does therefore seem to be some correlation between skulls and metalwork deposited in the Thames. Prehistorians, such as Richard Bradley, suggest that both were connected with the unknown Middle and Late Bronze Age funerary rituals, which may have involved excarnation (burial or exposure until the flesh has gone) (Bradley & Gordon 1988, 503–9).

It is interesting to find the two practices re-emerging in close association in the Roman Walbrook, but we may be quite sure that even if similar ritual was involved, its purpose was quite different. The study of ritual is in its infancy, but it is already clear that although ritual may have a very long life, it survives only by being reinterpreted to accord with new beliefs or to satisfy new needs. It is unlikely that these Romano-British practices had anything to do with funerary rites, about which we know a fair amount for the relevant period, and more likely that they were applied to contemporary needs and problems. It is unlikely that Roman

officialdom can have approved the deposition of remains of the dead within the limits of the Roman city, which was against Roman law and repugnant to Roman feelings and traditions. It is therefore likely to have been surreptitious, and it may be for this reason that it was more commonly practised in places remote from the main streets. Metalwork is said to have been rare in the Upper Walbrook, where the skulls are most common, while metalwork is abundant on the Bucklersbury House site between the two main east – west thoroughfares of the Roman city, where no skulls were found. Metalwork and skulls are not, however, mutually exclusive; there is an area of overlap on the Bank of England site, where nine skulls were found, but there was a great abundance of metal artefacts. This was perhaps sufficiently far from the main road to the south (125m) to permit the occasional deposition of a skull, but metalwork was more commonly deposited. I tentatively suggest therefore that if metal objects were deliberately placed in the Walbrook as ritual deposits it may have been in substitution for the preferred skulls, the supply of which cannot in any case have been limitless. (Their source is a mystery, for in the later 1st and early 2nd centuries, cremation was general, and the few large battles that might have produced them were far from London. Were they the heads of criminals, sent to London for execution, and possibly displayed for deterrence until the flesh had decayed, as heads of traitors and rebels were displayed in London in later centuries?)

Metal objects as votives

We need not be surprised if metal objects were in fact offered as votives in Roman Britain. There was a tradition of offering ironwork to the gods going back to the pre-Roman Iron Age in Britain and Northern Europe generally. They were sometimes buried in sacred places on dry land, as in a hoard of iron objects buried within the hill-fort near a shrine at South Cadbury. More commonly they were deposited in watery places as in Llyn Cerrig Bach, where a great accumulation of metalwork was found. Several hoards of ironwork found in bogs and other watery places in Scotland are considered to be ritual deposits, and we have an example much nearer London in the Lea Valley near Waltham Abbey, in which a blacksmith's hoard of the late pre-Roman Iron Age or early Roman period was found in the remains of a wooden box in the river-bed. This is an example in which votive intention is indicated not by the continuing serviceability of an implement, but by its deliberate destruction by bending – at the cost of considerable effort. Two pairs of tongs were treated in this way in the Waltham hoard (Merrifield 1987, 29–31). In general, with the coming of the Pax Romana, and the prohibition of arms to civilians, votive weapons tended to be replaced by more peaceable appliances or by votive miniatures. (It is interesting that a miniature sword only 4in long has been identified by Dr Greep among the metalwork from the Walbrook at Bucklersbury House (Greep 1981, 103–6). Personal ornaments such as fibulae and rings were also used as votives at Romano-British temples, as well of course as coins (Woodward 1992, 72–3). A number of temple-sites were in fact first identified by the finds of similar votives – *eg* Springhead in north Kent, which became known as a place where treasure-hunters could find Roman brooches, before the temple itself was discovered.

RELIGION AND INDUSTRY

Part at least of the reluctance of London archaeologists to recognise ritual in the Walbrook valley seems to have been due to their conviction that this was a workaday industrial area, where religious activity seemed to them inappropriate. I suggest that this arises from a misunderstanding of ancient religion, which was part of the fabric of everyday life.

Ritual ceramic wares

There is in any case abundant evidence of ritual/religious activity in the Walbrook valley in its earlier industrial phase, quite apart from the deposition of human skulls and metalwork. Some of it may indeed have been centred on the industrial work itself, rather than on the stream. It can best be demonstrated by the concentration in this area of two types of pottery that appear to have been made solely for ritual purposes: pottery given a human face by the addition of features (Plate 6), or in somewhat later times by the addition of a human mask modelled in clay, and multiple vases consisting normally of three

Plate 6. Face-pots, complete. (l) from London Wall, (r) from Cannon Street. Being unbroken, they were clearly deliberately buried, but the imprecision of the records leaves doubt whether they accompanied cremation burials, which might be encountered in the Upper Walbrook Valley at London Wall, or non-funerary ritual as at Bucklersbury House; this is most probable for the Cannon Street pot (Museum of London)

cups joined by a common ring-base. On the map (Fig 3) finds of substantially complete vessels of both kinds are indicated by an F or an M. Significantly they occur elsewhere in the City on sites occupied by early cremation cemeteries or in close proximity to them, where ritual offerings are likely to have been made either to the shades of the dead or to underworld deities on their behalf. The indications on the map represent only almost complete or large portions of such vessels that are likely to have been used near the place where they were found. (I have not included a small sherd of a face-pot showing an eyebrow from the foreshore dump at Billingsgate Buildings, as this is not comparable with the substantially complete pots represented on the map. Incense-burners were well represented at Billingsgate Buildings, but unlike face-pots and multiple vases have a random distribution through the Roman city, and were presumably used in domestic cults.)

One face-pot on the Bucklersbury House site seems to have been left standing on a grassy surface where it was last used. It was in close

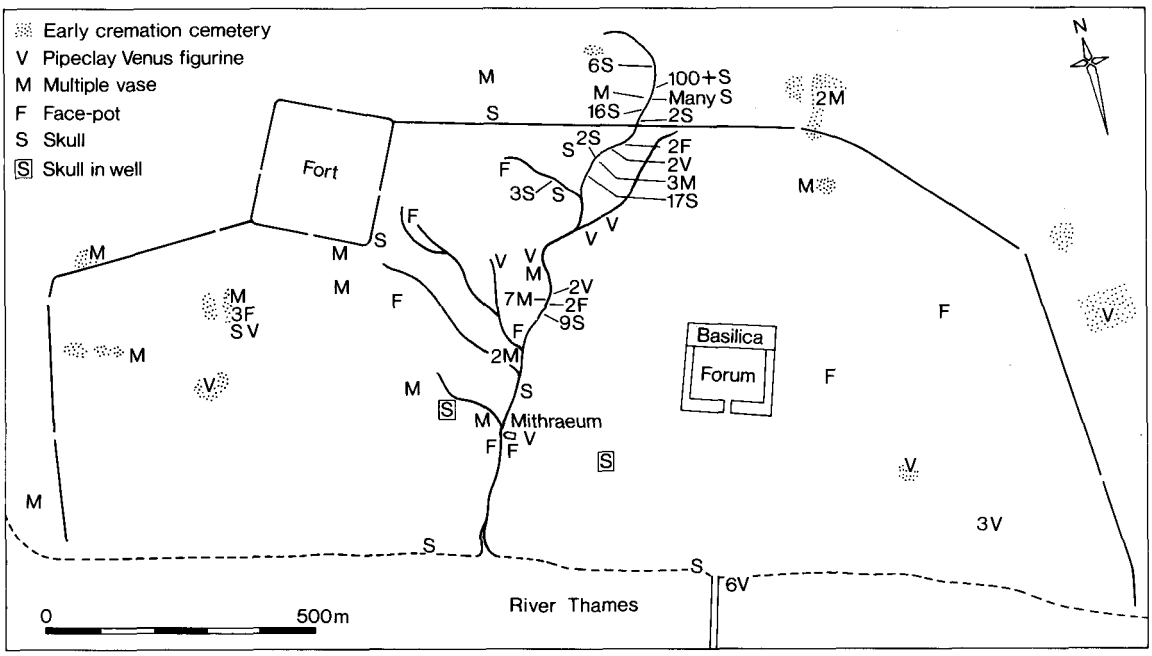

Fig 3. Distribution map of human skulls (S), pipe-clay figurines of Venus (V), face-pots (F) and multiple vases (M) in Roman London

association with a burnt wooden structure with an arcaded panel that may have been a shrine. Subsequently the pot seems to have been carefully covered with a cairn-like deposit containing flints and pieces of iron. (This cannot have been the fill of a pit, the base of which exactly coincided with the burnt grassy surface on which the pot stood, as has been suggested.) Face-pots and pots of similar form sometimes bore applied emblems of the smith's craft, and Wilmott was probably right in suggesting that the ritual here was specifically associated with metal-working. I am reminded of a visit a few years ago to a silversmith's workshop in Jogjakarta, Central Java, where offerings were made at a crude altar at the commencement of the industrial process, as an essential propitiation of mischievous spirits that might otherwise interfere with it.

The non-funerary use of the multiple vases (Plate 7) is unknown, but the possibility that those in the Walbrook valley were used in ritual directed at the problems of the stream and its silting cannot be ruled out.[2]

The pipeclay figurines of Venus Anadyomene ('rising from the sea') have a clearer connection with the spirit of the stream. When Frank Jenkins wrote an important paper in 1958 on 'The Cult of the Pseudo-Venus in Kent' he listed all the known examples with provenances then known from Roman London (Jenkins 1958, 60–76). There were 16, of which nine came from the Walbrook valley: Bond Court, Bank of England (2), Coleman Court, Copthall Court, Founders' Court, Angel Court and London Wall (2). The remainder were mostly from early cemeteries, and they were not uncommonly buried with cremations, for reasons which remain obscure. In Gaul and elsewhere in Britain, however, they have more usually been associated with springs and streams, or with temples built on watery sites, and there is little doubt that Jenkins was right in identifying this particular image of Venus as a water-nymph. The Walbrook examples, however, are scattered and fragmentary, and do not suggest the site of a shrine to such a deity. They were more probably kept in domestic shrines by those living on the banks of the stream until they were accidentally broken. None are recorded as being from the stream-bed, but one pipeclay fragment of another deity, possibly Mars, was found there, and it may have been an appropriate place for the disposal of 'sacred' rubbish. Since then six fragmentary Venus figurines have been found in the embankment dump at New Fresh Wharf (not Billingsgate Buildings as stated by Wilmott). These have no local religious significance but form part of a great ceramic dump of Central Gaulish imports, presumably unloaded there and found to be

Plate 7. Multiple vases from the Walbrook valley, (1) from London Wall. As with the undamaged face-pot from the same area, this may possibly have accompanied an unrecorded – even unnoticed – cremation burial (Museum of London)

broken, or possibly subsequently cleared from a neighbouring warehouse.

In spite of the evidence for local respect for a water-nymph on the banks of the Walbrook, Tony Wilmott concludes that 'it does not seem very likely that the sort of functional polluted water-course postulated above would have been the focus of religious devotion' (Wilmott 1991, 175). 'Religious devotion' is of course an emotive term that diverts attention from the strictly practical purpose of much ancient ritual. Roman *religio* involved the recognition of external powers with a will of their own (*numina*), with whom it was necessary to come to terms by performing appropriate rituals, usually including sacrifice or some other form of offering. It was a practical businesslike arrangement that entered into more aspects of human life, both domestic and public, than we can easily realise today. It was particularly necessary in dealing with a recalcitrant power of nature that could be useful or hostile. Ritual is for frontiers, and is more likely to be encountered where men and nature meet than in wild places, however numinous, where nature can be left alone. The need to use a marshy valley in the centre of *Londinium*, and to convert its natural streams to useful drains and suppliers of water for industrial purposes, would therefore have been likely to have promoted *religio* from the beginning of activity in the area. It would have been further stimulated by later setbacks, when the silting and overflowing of the stream would have been taken as a clear indication of the anger of its *numen*, and of the need to placate it.

A Roman parallel

There is a remarkable parallel from Rome itself, centuries earlier. The marshy area between the hills, later occupied by the Roman Forum, was drained by a natural stream that was canalised at an early date by stone revetments, and much later (after 200 BC) was arched over. This was the *Cloaca Maxima*, the great central sewer of Rome. Tributaries of the main stream were converted into subsidiary drains. At the junction of one of these with the *Cloaca Maxima*, a shrine to the tutelary goddess, Venus Cloacina, was built. A late Republican representation of this, on a coin of L. Mussidius Longus, about 39 BC, shows a circular structure with two statues of Venus on a fenced platform.[3] It was here,

according to Livy, that Virginia was killed by her father in 450 BC, to save her from dishonour by a decemvir. For this purpose he seized a knife from a butcher's shop nearby, and this part of the Forum seems to have been occupied by provision shops at an early date (Grant 1970, 18). Butchers and fruiterers no doubt found the open sewer a convenient place for the disposal of organic waste, and this part of early Rome cannot have been more salubrious than the Walbrook valley at its worst. This did not preclude the building of a shrine to the stream-spirit, nor did the crowded workaday atmosphere of the drained area discourage the building of other and greater temples, including the most sacred shrine of Vesta itself.

City shrines

Londinium was closely linked with the administration of the province, and high-ranking Romans, who must have been well aware of the metropolitan analogy, would have been concerned with the project of draining the Walbrook valley. There is evidence from several sites that the earliest canalisation of the Walbrook by revetting its bed was early Flavian (Wilmott 1991, 75). It may be significant that the Governor of Britain from AD 74 to 78 was Sextus Julius Frontinus, who was interested in engineering, and was later to write a book on the transportation of water at Rome (*De aquae ductu*). He may well have initiated the Walbrook project, and if so would have been fully conscious of its similarity to the draining of the Roman Forum. Practical and scientific interests for a 1st-century Roman did not preclude participation in traditional religious customs, and Frontinus himself became a member of the College of Augurs, whose function was to ascertain the will of the gods by observing omens. We have no evidence that a public shrine to the local Cloacina was set up in the Walbrook valley, but in the circumstances it is by no means unlikely. If so, as at Rome, a precedent was set for more temple-building, with dedications to greater deities. This polluted industrial district contained at least two shrines to the triple Celtic mother-goddesses; one near Cannon Street in Budge Row, we are informed by an inscription, was restored by the district at its own expense (Collingwood & Wright 1965, 1 (London 2)); the other probably stood in the upper valley near Moorgate Street, where a votive tin plaque representing the goddesses was found (Plate 8). It would undoubtedly originally have been placed in their shrine which was probably nearby (Toynbee 1978, 128–47). Similarly a damaged stone cult figure of Mercury found in or on a 2nd-century gravel surface at 55–61 Moorgate probably came from a shrine nearby (Frere 1988, 463 pl XXVIIB). The proximity of two more shrines with unknown dedications is probably indicated by lead curses from Telegraph Street in the Upper Walbrook and from Prince's Street in the Middle Walbrook (Plate 9) (Collingwood & Wright 1965, 3–4 (London 6 and 7)).

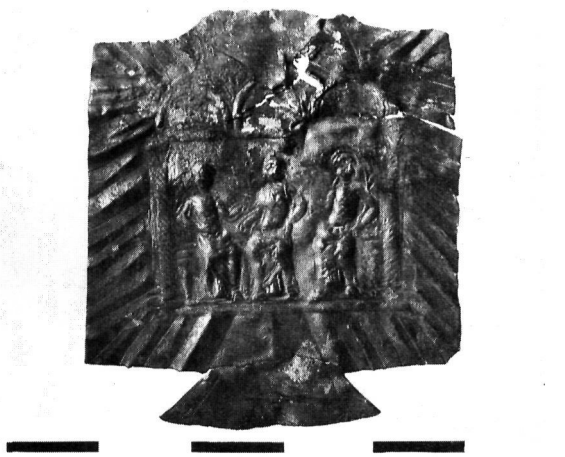

Plate 8. Votive plaque of tin, formerly surmounted by a feather-like terminal, with repoussé relief representing the three Celtic Mother-goddesses standing between two columns surmounted by a triple arcade, found on site of 55–61 Moorgate in 1929, with channels of brooks flowing eastward to the Walbrook. It may be noted that the arcading is very like that of the burnt wooden 'shrine' found at Bucklersbury House. The votive probably came from a similar edifice in the neighbourhood (Museum of London)

CONCLUSION

We must however return to the unresolved issue of the Walbrook metalwork, and here we know of no parallel from Rome. If this is in fact a ritual deposit, its affinities, as we have seen, lie in the Celtic and northern world rather than the Mediterranean.

It may be helpful to examine closely two deposits stratified in the mid 2nd-century stream-bed that seem to be among the last of their kind, each of which seems to come from a single

Plate 9. Lead curse from the Walbrook at Prince's Street, previously nailed to a wooden structure, most probably a neighbouring shrine. The same inscription is incised on both sides: 'T[ITVS] EGNATIVS TYRANVS DEFIC[T]VS EST ET P[VBLIVS] CICEREIVS FELIX DEFICTVS E[S]T' 'Titus Egnatius Tyranus is cursed and Publius Cicereius Felix is cursed' (Museum of London)

source and consists of material probably deposited at one time – as is accepted by Tony Wilmott (Wilmott 1991, 128). Both were excavated by Ivor Noël-Hume from within the revetted banks on the Bucklersbury House site, in the gravelly silt deposited in the final phase before the collapse of the revetment. Both seem to have been deposited by metalworkers, in all probability at the time of their enforced departure from their former workshops and homes. In these circumstances ritual is likely, for terminal deposits marking the end of occupation and often accompanied by debris of demolition have been observed in many places, including London (Merrifield 1987, 45–50). The discarding of rubbish is equally likely, since anything not worth removing *ipso facto* becomes rubbish. If the troubles of the departing craftsmen were in part economic, they may have been left with unsaleable stock on their hands, and redundant material in a pristine condition might be disposed of. We will now examine the first of these groups, numbered E.R. 268 G, to see if these categories can be distinguished.

Certain additions must be made to the group illustrated by Wilmott, which is not complete (Wilmott 1991, figs 90–1, nos 468–85; see also Appendix). They include a bronze fibula of distinctive mid 2nd-century type, readily identified from Noel-Hume's MS record, which Wilmott apparently did not see; also in Hume's list were a hook, a pin, two styli, three ligulae, shears, a joiner's dog, several needles, bronze studs and waste fragments, with a great quantity of nails, and a single coin of Domitian (not necessarily residual). Eight of the twelve classes of metal artefact found at the National Safe Deposit Company's site, and in the general series from the stream-bed at Bucklersbury House, are represented here, but only by one or two specimens. It raises the question whether these

larger series were perhaps made up of an accumulation of similar groups, varying in some particulars according to the trade represented. Here tools are represented by two iron punches; and in the series generally there is a preference for thrusting, penetrative tools – chisels or bits for carpenters and masons, awls for shoemakers, and so on. A repetitive pattern would favour the idea of ritual, but undoubtedly some of the material from 268 G could fall into the category of rubbish, either by being broken or not worth carrying away. A phalera, chape, armour-scale and ornamental studs are probably products of the workshop, and therefore could be regarded as redundant, but are insufficient in quantity to suggest that over-production was a factor in the deposition of Walbrook metalwork. No parcels or packets of similar objects found together have ever been recorded, and styli, the commonest of all Walbrook implements, always seem to occur only one or two at a time.

Let us now compare the second stratified group, E.R.268 H, with the first (Wilmott 1991, 131–5, figs 91–2, nos 486–508. See also Appendix). Tools are again represented by a punch, but a much more delicate one made of copper alloy. It has been suggested that it may have been used on gold. If so, it is not surprising that surplus products and waste are lacking. Pins are strongly represented, and iron objects include a broken fibula, a miniature knife 2¼in long, perhaps made as a votive, a stylus, a tanged spike of unknown use, the tine of a rake, and various nondescript fittings. There was a single old coin of Claudius, probably residual, but possibly selected for its Minerva reverse and thrown in with the rest.[4] There was also a quite enormous quantity of iron nails (three hundredweight-sacks full, it is said). All had been used before, and were carefully extracted for recycling, but had become 'rubbish' in the sense of being too heavy for easy removal.

Putting both groups together, the one common feature of the majority of these disparate objects is that they have *points*. This of course also applies to the nails, and it was perhaps the reason that they were included, presumably with some effort, for it would have been easier simply to have abandoned them for future burial with the remains of the workshop from which they came. It is a characteristic shared by many objects from the general unstratified Walbrook series, *eg* from the site of the National Safe Deposit Company – not only styli, knives, hair-pins and needles, but also spoons of the *cochleare* variety and some ligulae of 'ear-pick' type. Has it any significance for our present enquiry? Here perhaps I may cite a comparison with recent British folk customs without evoking too much shock and horror among archaeologists! The commonest small votives dropped in holy wells in the 19th century in Cornwall, Wales, Scotland and northern England were domestic pins, and the wells were often called 'pin-wells' on that account.[5] But why should pins be particularly acceptable to water-spirits? If we further consider the commonest tools in the Walbrook series, we find a distinct bias towards thrusting and penetrative appliances – chisels, bits, awls, and, as we have just seen, punches. In contrast axes and adzes do not occur; hammers are very rare indeed, and saws are nearly all fragmentary. Was all this based on very simple sympathetic magic, to meet the clearly perceived need of a spring or stream to penetrate the obstacles that impeded it? If it did not, disasters occurred, ranging from the failure of a well or drainage system to flooding. Keys might be regarded as symbols of a different kind, but for a similar purpose, intended to open a way that was closed. Attempts at explanation can only be highly speculative, but the existence of a ritual involving deposition of metal artefacts in the stream is less doubtful. I have to leave the answering of my original question to personal judgement, however, as it depends on an assessment of probabilities. The pattern of finds rules out, I think, the suggestion that unsaleable goods were being dumped on a large scale; common sense must, in my view, reject the idea that these remarkable concentrations were achieved by bringing together rubbish dumps, all anaerobic, from other parts of the City. Very local disposal of refuse must account for fragmentary metalwork and possibly a few items from stock, uncollected orders and the like, as well as scrap metal saved but not worth removal. Accidental losses of articles normally carried on the person must account for some finds, and the muddy conditions often prevailing on working surfaces on the banks probably contributed to the loss of tools. But so much repetitive loss of serviceable appliances and the apparent bias towards certain classes of artefact strongly suggest that ritual also made a substantial contribution. As I have demonstrated, a great deal of ritual was going on in the Walbrook valley in its early industrial phase – so why not this, a practice conforming with a well-known tradition, of which recognisable survivals in recent times can be found?[6]

APPENDIX TABULATED FINDS FOR COMPARISON

Metalwork from Walbrook sites

National Safe Deposit Company site, 1872–3			*Bucklersbury House Revetted stream-bed* (ER 268K)	
Weapons	3		1	
Tools	3	(+1 broken)	17	(+2 broken)
Knives	10	(+4, blades only)	3	
Styli	52	(+2 broken)	19	
Needles	18		12	
Ligulae	14		4	
Spoons	3	(+3 broken)	3	
Keys	12		9	
Pins	5		12	(+1 broken)
Fibulae	12	(+3 without pins)	3	(+5 broken)
Finger-rings	4		5	
Coins (identifiable)	42		16	
Miscellaneous	1	iron lamp (+1 manacle with broken chain)	–	(+1 manacle without chain)
Totals	179	serviceable artefacts	104	serviceable artefacts

In both cases these were recovered by a single archaeologist working intermittently on a building site in competition with other collectors. For comparison the finds of metalwork from two non-Walbrook anaerobic sites, excavated by teams of archaeologists under controlled conditions, are tabulated below:

Metalwork from non-Walbrook sites

Billingsgate Buildings			*New Fresh Wharf*	
Weapons	–		1	(+1? corroded and bent)
Tools	1	(+1 broken)	1	(+1 broken)
Styli	–		2	(+4 broken)
Needles	3	(+5 broken)	1	
Ligulae	4		1	(bent but complete)
Spoons	–		1	
Keys	–		1	(+1 broken)
Pins	1		1	
Finger-rings	1		2	
Fibulae	–		1	
Coins (identifiable)	2		33	
Miscellaneous	–		1	fish-hook (+1 broken 'altar-shovel')
Totals	12	serviceable artefacts	45	serviceable artefacts

Accidental losses (of coins and a gold ring) probably made a substantial contribution to the finds at New Fresh Wharf.

Finally tabulated below are two groups that appear to have been dumped deliberately in the Walbrook stream at Bucklersbury House. Each appears to have been deposited on a single occasion from a single source, probably in the middle of the 2nd century, when workshops on the banks were being abandoned. They are additional to the stream-bed series tabulated above.

Associated groups from Walbrook stream-bed

ER 268 G			*ER 268 H*	
Tools	2	punches (iron)	1	punch (copper alloy)
Knives	–		1	miniature knife
Styli	2		1	
Needles	3	(+2 broken)	–	
Keys	1		–	
Ligulae	3		–	
Pins (Hair and dress)	–	(+1 bent and broken)	7	(+1 broken)
Fibulae	1		–	(+1 broken)
Coins	1		1	(?residual)
Nails	many		great quantity	
Fittings various, ?products	(copper alloy fittings 7)		(copper alloy and iron fittings 12, including 2 iron spikes)	
Totals	13	serviceable artefacts	11	serviceable artefacts

NOTES

[1] Guildhall Museum *Excavation Register* 268G; Wilmott 1991, 21, where the wrong reference (301) is given to this brooch in the find-list. 301 is a residual 1st-century brooch from ER 268K. The mid 2nd-century brooch from 268G is 304, as is shown by a sketch in the excavator's MS ER Notebook.

[2] Three incomplete examples were found with an unguent flask and a red-deer antler in the fill of a well in Union Street, Southwark, associated with the debris of demolition, circumstances in which ritual deposits are common (Merrifield 1987, 45–8). The incompleteness of the vases might suggest, however, that they had been used elsewhere, possibly at a domestic shrine, and were deposited in the well treating it as a *favissa* (receptacle for sanctified refuse) rather than marking offerings to the water-spirit (see G Marsh in J Bird *et al* (eds) *Excavations in Southwark 1972–4*, 1978, I, 221–32.

[3] E A Sydenham *The Coinage of the Roman Republic*, 1952, 181, 1093–4, pl 128, 1093. The marble ring which originally held a metal grating, resting on a travertine base over two courses of tufa blocks, is still preserved beside the steps of the portico of the Basilica Aemilia (E Nash *Pictorial Dictionary of Ancient Rome*, 1968, I, 262–3).

[4] Minerva was the goddess of craftsmen.

[5] D Longman and S Lock, *Pins and Pincushions*, 1911, 59, 61–3; J C Davies, *Folklore of West and Mid-Wales*, 1911 (facsimile ed 1992), 302, 303, 306, 307. Nails and needles also were used, J M Mackinlay, *Folklore of Scottish Lochs and Springs*, 1893 (facsimile ed 1993), 16, 189.

[6] The best single source for recent survivals is Francis Jones, *The Holy Wells of Wales*, Cardiff, 1992 ed, (page references below). More than 50 wells, evenly divided between North and South Wales, received offerings of pins in the 19th century (10, 93, 222, map 5.) Brass buckles also were offered at Ffynnon Baruc, Barry Island, Glamorgan (101); needles at Ff Fihangel, Bodfari, Flintshire (179); and, interestingly, *keys* as well as pins were thrown into Ff Saint, Criccieth, Caernarvonshire, on Easter morning, a variant rationalised as a 'solace' for St Catherine, its patron saint (153). Coins also were commonly offered, mainly groats, pennies and farthings (92–3). They were sometimes thrown into the well with the pins, as at Ff Degla, Denbighshire (173), but where the well was closely associated with a church, or had a local guardian, a separate collecting-box was often provided for gifts of money. Coins were however thrown into the water of Ff Farchill, Denbigh (174), and were found when St Non's Well, St Davids, Pembrokeshire, was cleaned in 1825 (210).

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AN EVALUATION OF THE ROMAN ROAD AT BROCKLEY HILL, MIDDLESEX

David Bowsher

SUMMARY

The following report deals with a two week archaeological evaluation and subsequent watching brief carried out by the Museum of London Archaeology Service on the site of the former Wimpey Sports Grounds, Brockley Hill, Stanmore, London Borough of Harrow.

Fourteen archaeological evaluation trenches were investigated in order to determine if archaeological evidence survived for a Roman road, Watling Street, and any associated Roman roadside settlement or pottery kilns as have been located to the north of the site in the area of the Scheduled Ancient Monument (Sulloniacae).

The earliest deposit was the naturally occurring London Clay. In six of the evaluation trenches adjacent to the modern road a Roman road with a ditch on the west side was found directly below the topsoil. Limited investigation showed that the road had been constructed on a bank of clay and gravel layers, and had undergone periodic maintenance as indicated by a number of successive road gravels and recutting of the ditch when it had silted up. Dating evidence confirmed the road was in use into the 4th century AD. Early Roman pottery was of the type produced at Brockley Hill and the Roman ceramic building material was of fabric types produced in kilns found alongside Roman Watling Street. The most significant find was a Roman folding knife.

INTRODUCTION

In February 1995 the Museum of London Archaeology Service investigated and recorded 14 archaeological evaluation trenches (Bowsher 1995) on the site of the former Wimpey Sports Ground, Brockley Hill, Stanmore, London Borough of Harrow (Ordnance Survey reference TQ 1786 9343). The site is located on the west side of Brockley Hill (A5), its southern boundary opposite the junction with Pipers Green Lane (Fig 1). The site is approximately 450m north-south and 250m east-west, over 9.5 hectares in total area, and lies on the southern slope of Brockley Hill.

The archaeological evaluation was carried out

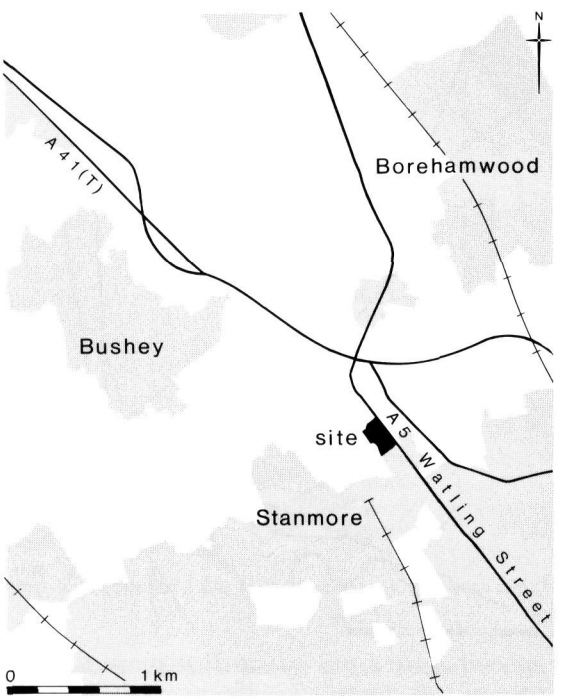


Fig 1. Location map of the site

to assess the potential archaeological remains in light of plans to develop the site into a golf course. The main research objectives for the evaluation were to locate a Roman road (Watling Street, Fig 2), thought to be on the east side of the site, and any evidence of Roman roadside occupation or pottery kilns as have been found to the north of the site in the area of the Scheduled Ancient Monument of *Sulloniacae* Fig 3.

The evaluation produced positive results for the line of the Roman road and flanking ditches in places only 0.30m below the present ground level. It recommended either preservation by record, requiring full archaeological excavation, or preservation *in situ*. Given the scope of the groundworks a mitigation strategy was agreed which delineated the line of the Roman road and a 10m wide band to the west to be protected by raising the ground level and avoiding large-scale ground works in this area. Some limited ground reduction was necessary within this zone and was the subject of an archaeological watching brief in August 1995 (Barber 1995). As part of the planning condition the results of the archaeological fieldwork were to be published.

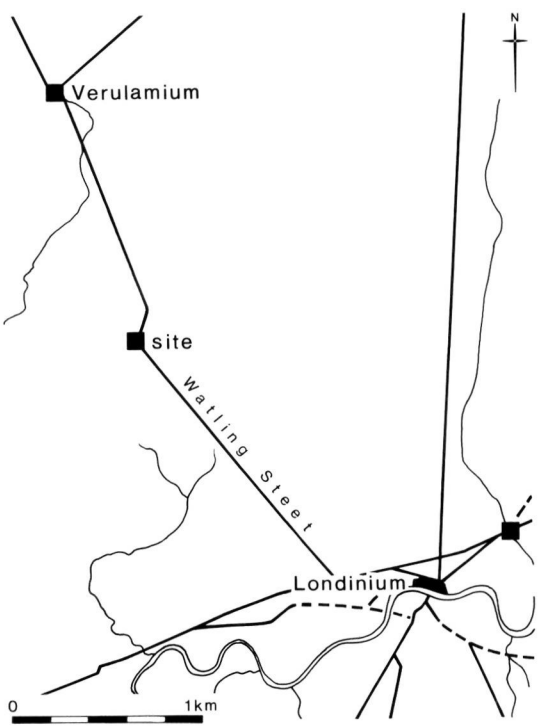


Fig 2. Location map of the site in relation to the Roman settlements at London (Londinium) *and St Albans* (Verulamium)

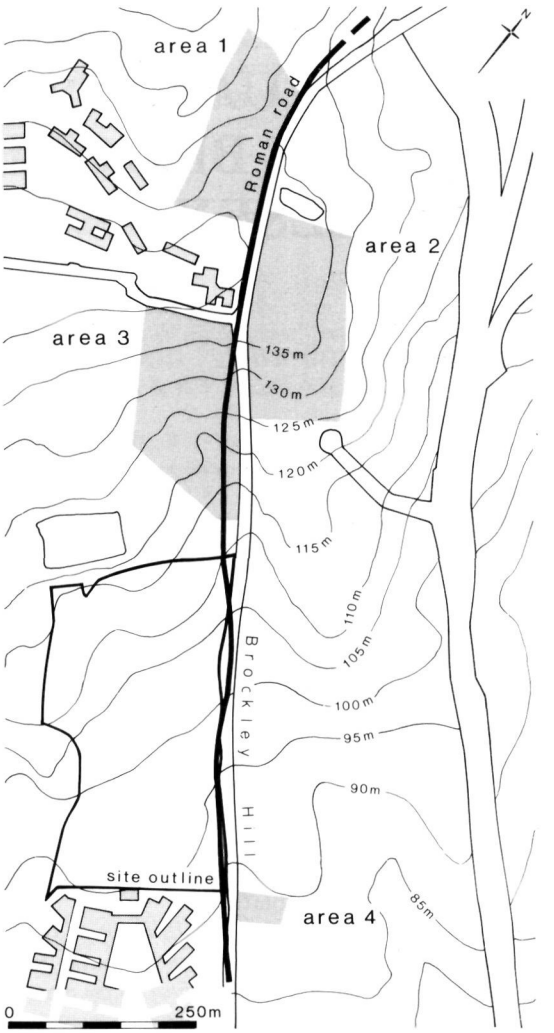


Fig 3. Plan showing the site, the four main areas of excavation (1937–1977) and the conjectured line of the Roman road (Watling Street)

GEOLOGY AND TOPOGRAPHY

The site lies on the southern slope of Brockley Hill which rises from 65m OD at Canon's Corner to 150m OD at the top of Brockley Hill. From the southern boundary the site rises progressively to the north from 90m OD to 115m OD, a break of slope occurs north of Trench 13 where the incline becomes a lot steeper (Fig 4). A majority of the southern half of the site has been terraced to form a flat area for the Wimpey sports ground playing fields and tennis courts.

On the northern half of the site, as well as the steep north-south slope there is a small valley

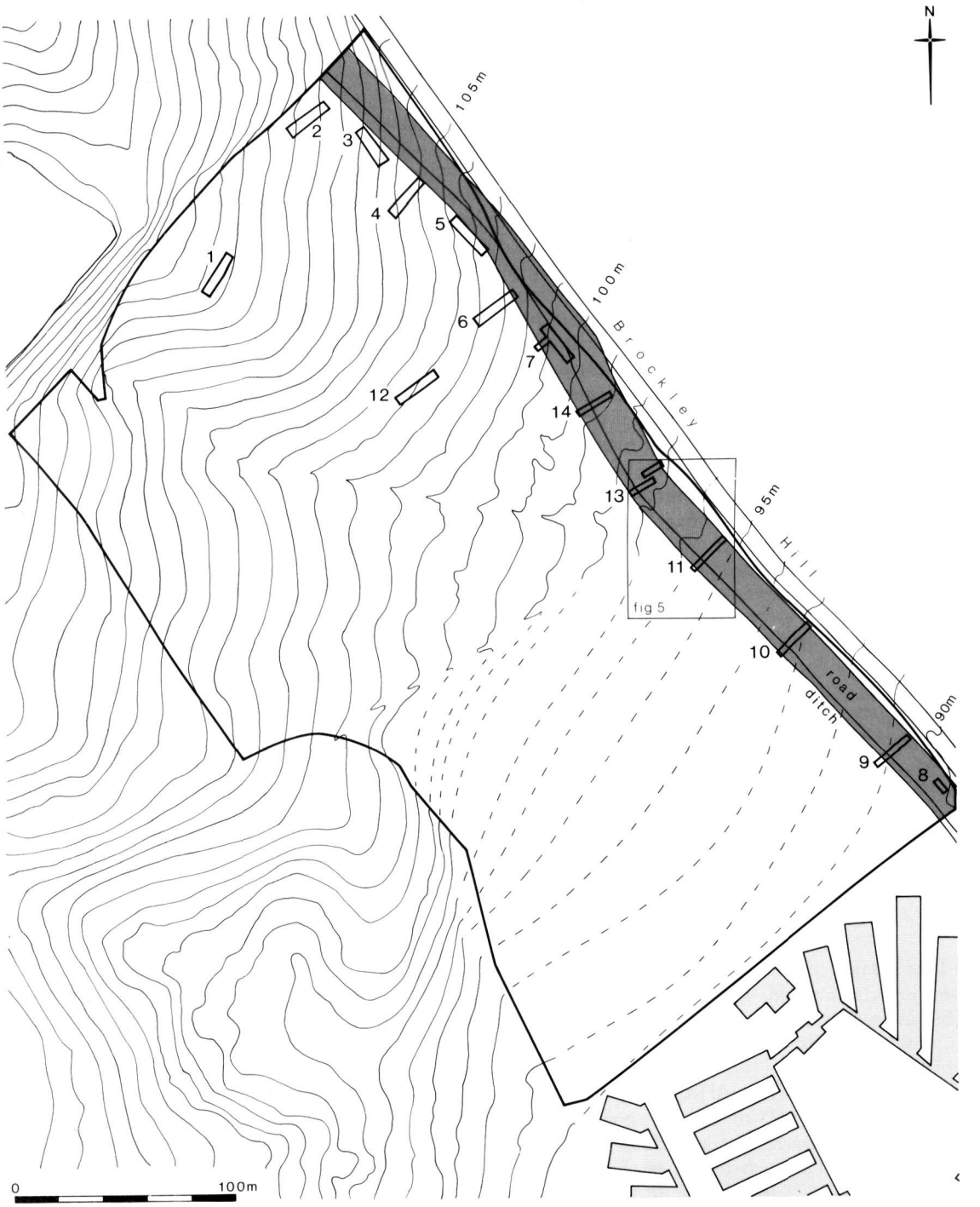


Fig 4. Plan showing the location of the archaeological evaluation trenches with conjectured line of the Roman road (Watling Street)

running approximately northwest-southeast across the centre of the site. The land also declines to the east, adjacent to the modern road.

The eastern half of the site lies on London Clay; on the west side of the site the London Clay is overlain by Claygate Beds. At the top of

Brockley Hill to the north west of the site the Claygate Beds are capped by a glacial pebble deposit. London Clay was the earliest deposit encountered in all the archaeological evaluation trenches and its surface topography was similar to the present topography of the site.

ARCHAEOLOGICAL RESULTS

Following English Heritage guidelines the evaluation was generally non-intrusive and so a complete archaeological sequence of the road was not recovered from any trench. In most trenches archaeological investigation ceased as soon as any road deposits were encountered or the small size of the watching brief pits (Fig 5) were too small to allow full understanding of the archaeological deposits. In two trenches, 7 and 10, small slots were excavated to allow an examination of the archaeological deposits whilst limiting the amount of disturbance. A full understanding of the foundation and development of road is therefore not possible due to the constraints of the archaeological evaluation; these constraints and the limited dating evidence do not allow the phasing or equating of the various elements of the road and associated ditches found in different trenches. The best archaeological sequence was seen in a slot dug at the west end of Trench 10. The basic sequence was a series of gravel and clay layers cut to the west by a north-south ditch. Overlying the east lip of the ditch was an extensive metalled surface. The road and the ditch were sealed by extensive dumps or accumulations of clay silt.

The main elements of the road are described below, from south to north.

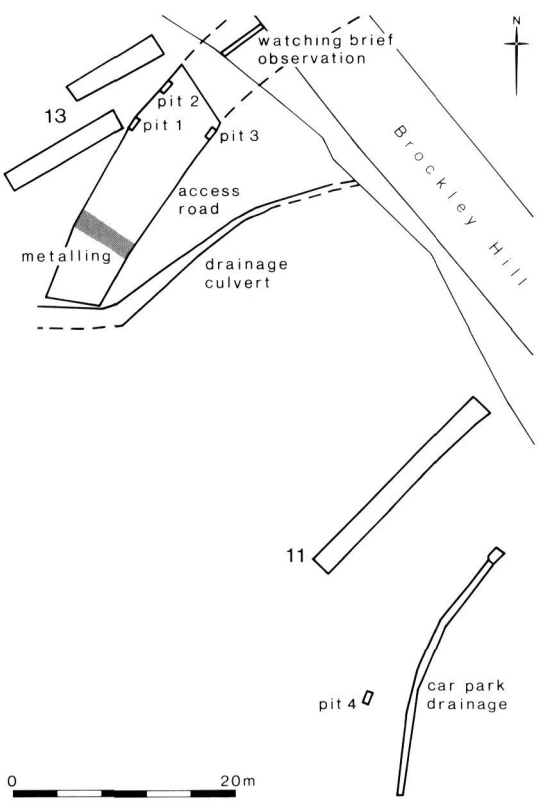


Fig 5. Plan showing the location of the archaeological watching brief work

The road and its construction

In Trench 9 a series of compacted gravels covered the eastern two thirds of the trench, the top of these gravels was at 90.50m OD. All these deposits sloped gently downwards from west to east and are assumed to be the eroded top of the road. A hollow in these gravels had filled with a sandy silt deposit which contained Roman pottery (AD 50–400). The eastern most compacted gravel contained Roman pottery (AD 50–160).

In Trench 10, in the excavated slot (Fig 6b), the earliest deposit was a compact gravel layer which was either an early road surface/gravel or part of the construction of the bank upon which the road was built. This was overlain by a clay dump which appeared to be a make-up for the overlying road gravels. No dating evidence was found from these deposits but they were cut by the earliest adjacent roadside ditch.

Above these layers and to the east of the ditch was a sequence of gravel layers. Overlying the clay dump was a highly compacted clean gravel layer overlain by a road surface. The lower gravel deposit was possibly a road but its 'clean' appearance suggests it is the foundation for the overlying road surface. The road surface consisted of small pebbles and 50mm beneath the surface it was highly compacted, the surface having suffered some erosion. It contained some Roman pottery (AD 50–400) and ceramic building material. The road surface was 9.40m wide (east-west), and its highest point was at 92.74m OD. The top of the road surface sloped downwards at its western edge reflecting the original camber of the road. The west edge of the road overlay the lip of the latest ditch; presumably some of

this material had eroded off the top of the road. To the east the road lensed out and it was unclear whether this was the original edge of the road or it had extended farther to the east and subsequently eroded away.

Underlying the road and beyond the east edge were a series of layers of gravel and silty clay with Roman pottery (AD 50–160) tipping down to the east. As they were not excavated it was unclear whether these deposits were part of the construction of the road bank, or earlier road and road make-up deposits.

A similar sequence of deposits was seen in Trench 11 to the north (Fig 6a). At the east end of Trench 11 the top of the deposits sloped downwards sharply to the east. The earliest recorded deposit was a fairly compacted pebble layer, thought not to be a surface but a dump related to the construction of the road bank and contained 1st to mid 2nd-century tile. The lowest point of the deposit was at 93.95m OD. Overlying this was a layer of clay and pebbles with a similar profile and also thought to be part of the road bank construction. A modern sewer pipe trench ran across the site and was partially removed. In the sections revealed in the sides of this trench was a clay dump overlain by a well compacted gravel layer, similar in composition and colour to a road gravel/surface seen in Trench 10 to the south which also overlay a similar clay dump. The top of the road gravel was at 95.10m OD.

Overlying the road gravel/surface and the bank construction deposits to the east was an extensive deposit of clay silt which appeared to be a make-up dump for a later road gravel/surface. This road surface was composed of small flint pebbles and included some small fragments of Roman ceramic building material and a Roman coin, which was worn, and dated from 1st to 3rd century AD. The road surface survived to 4.00m wide (east-west) and sloped down from west to east. It has probably been eroded and was probably originally wider.

In the drainage culvert north of Trench 11 the natural London Clay appeared to have been truncated and was overlain by a series of thin compacted gravels, 0.50m thick and assumed to be part of the road. In watching brief Pits 1,2 and 3 (Fig 5) the road was evident by a number of thin layers, 0.10m thick of compacted clay and pebbles. Limited ground reduction in the area for the new access road did not disturb archaeological deposits although a small area of loose pebble and cobble is interpreted as the eroded surface of the Roman road. The surface of the uppermost surviving road gravel in this area was between 96.36 to 97.00m OD, the difference probably due to the camber of the road.

In Trench 13 a series of bands of gravel of varying compaction and gravel and clay deposits were encountered over both parts of the trench. Some of these contained Roman ceramic building material and Roman pottery (AD 50–400). As with Trench 9 it was unclear whether these were remnants of an actual road surface or dumps related to the construction of the road.

In Trench 14, to the east of the roadside ditch, a number of gravel deposits formed a possible road surface at 98.90m OD, sloping gently downwards to the east. Underlying this gravel, to the east, a number of gravel and clay dumps (seen in plan only) may relate to the construction of the road bank.

North of Trench 14 the road must lie to the east of Trenches 2 to 7.

The road was constructed on a bank of clay and gravel layers: in places this survived to over 1.25m thick (Trench 11). Its slope mirrors the present slope of the land, rising from 90.50m OD in Trench 9 to 98.90m OD in Trench 14. There is evidence that it was resurfaced a number of times. There is no dating evidence for the foundation of the road although the road bank does contain pottery of AD 50–160. Pottery from the road gravels dates from AD 50–400 and a coin, datable only to the 1st to 3rd century AD, was found on one of the latest surviving road surfaces.

The western roadside ditch

In Trench 9 the presence of the ditch can be deduced from the edge of the road gravels and on the expected line of the ditch was a clay silt deposit similar to that found sealing the ditch in Trench 10.

The best evidence for the western roadside ditch was from Trench 10 (Fig 6b). The earliest form of the ditch was a north-south cut, 1.60m wide and at least 0.80m deep. The west side of this ditch had slumped and the east side had silted up. It was recut by a slightly narrower ditch, 1.40m wide. This ditch silted up with a series of interleaving silty clays and gravel bands, presumably material eroded from the road to the east. These ditch fills included Roman pottery (AD 50–400), ceramic building material and some

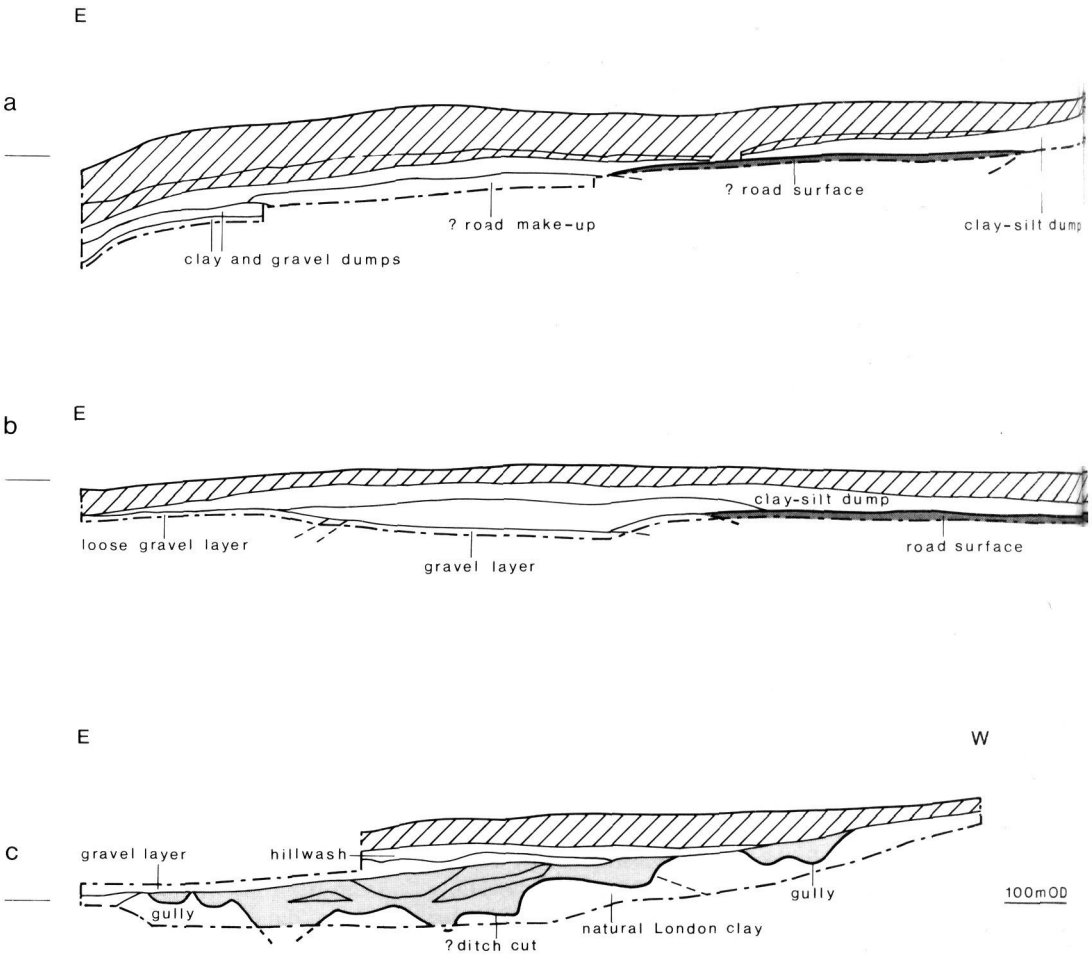


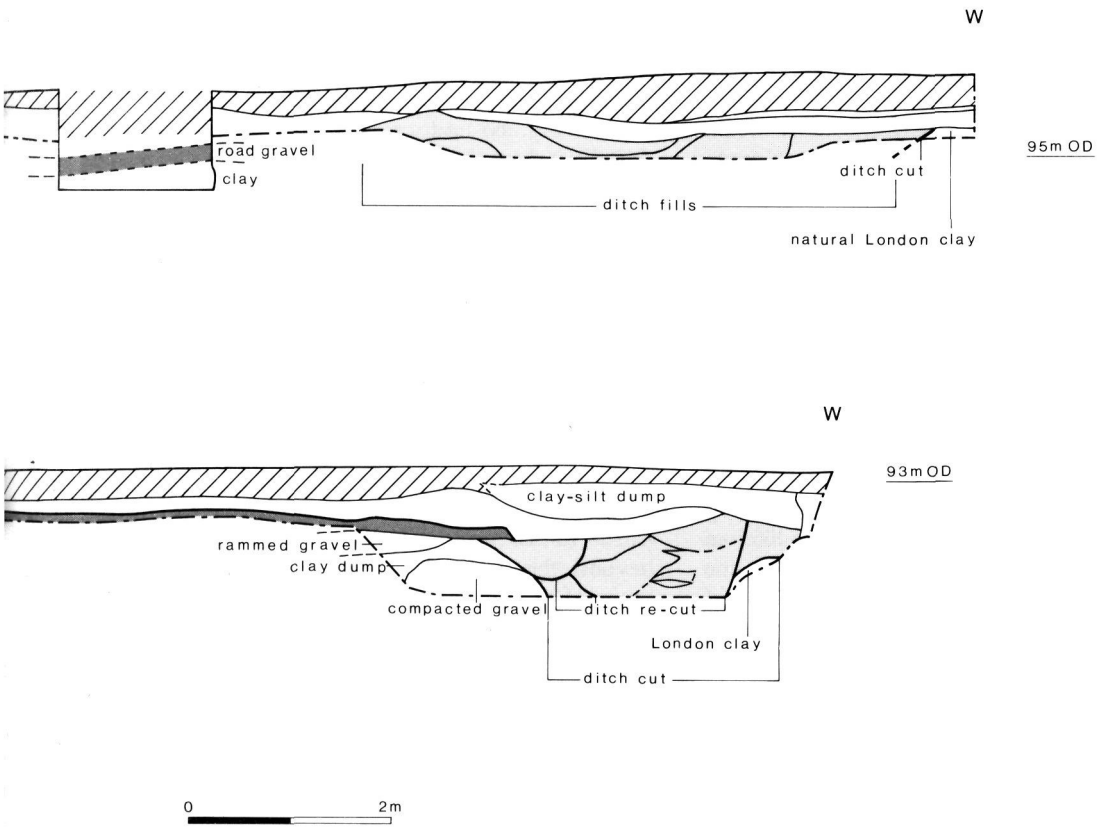
Fig 6. a) North facing section of Trench 11; b) North facing section of Trench 10; c) North facing section of Trench 7

metal slag. In turn this ditch having silted up was also recut, this time by a much smaller north-south ditch only 0.85m wide. The recut ditch was filled by a sandy silt clay with a high charcoal content and some Roman ceramic building material and pottery (AD 250–400). This complicated ditch sequence illustrates that the ditch was probably constantly silting up and being maintained by being recut.

A north-south linear cut in watching brief Pit 4 was suggested by a number of silty clay layers with pebbles filling a cut feature whose edges were beyond the limits of Pit 4, and which could be ditch fills of a western roadside ditch. However it is too far west to be the ditch seen in Trench 10; either the ditch was considerably wider at this point or it is a separate feature.

In Trench 11 (Fig 6a) the top of the western roadside ditch was 5.00m wide. The upper fills of clay and sandy gravel were seen to tip towards the centre of the ditch. Apart from these upper fills the ditch was not excavated. The line of the roadside ditch evident in Trenches 9, 10 and 11 to the south and Trenches 14 and 7 to the north was expected to be present in the west end of Trench 13. The absence of evidence for the ditch was either due to a change in line of the ditch or the fact that it was sealed by the gravel dumps thought to relate to the road or road construction which were not excavated.

In Trench 14 the profile of the roadside ditch had changed from that seen in Trench 10 to a shallower cut at least 5.00m wide. Within the ditch two homogeneous waterlaid deposits had accumulated containing small amounts of Roman ceramic building material. This ditch marks an increase in the steepness of the north-south slope up which the road was constructed, and with



evidence from Trench 7 to the north, the construction of the road and road drainage may have altered on the steeper slope.

In Trench 7 after removal of the topsoil an extensive gravel deposit was encountered and appeared to be filling a north-south linear feature. The trench was extended to the north in order to record a profile across the feature (Fig 6c). Natural London Clay falls to the east by 0.80m into which a number of linear features or ditches, orientated north-south, were cut. The most westerly was a shallow gully filled with a pebble-rich deposit with charcoal flecks and Roman ceramic building material and pottery (AD 50–160). Immediately to the east was a complex linear cut again orientated north-south. A majority of the cut was filled with similar material with gravel tipping down the sides of the cut, presumably eroded from the road. This fill included Roman pottery (AD 250–400), ceramic building material, and charcoal flecks and represents either silting up or material washing into the cut. Within the ditch fill, lenses with large amounts of charcoal, some Roman pottery (AD 250–400) and ceramic building material fragments, may indicate refuse dumps. A hollow in the top of the fill was filled by gravel. Further east of this cut was another shallow gully orientated north-south and filled with gravel and silty clay.

Sealing the ditches was an extensive loose gravel layer with frequent inclusions of Roman ceramic building material, Roman pottery (AD 270–400), some scraps of lead waste and a fragment of millstone. Whether this layer was deliberately deposited in order to consolidate the ground above the ditches or has naturally washed in, perhaps eroding down off the road to the north is unclear.

The ditches recorded in this trench must lie on the west side of the Roman road although they are dissimilar in form to the roadside ditch seen in Trench 10 to the south. However, in Trench 10 the ground is relatively flat whereas Trench 7 lies on both a north-south and east-west slope. The ditches recorded in Trench 7 are perhaps cut into the base of Roman terracing.

North of Trench 7 the line of the western roadside ditch appears to be to the east of the evaluation trenches. At the east end of Trench 6 the top of the London Clay was markedly sloping downwards to the east and may be the western edge of the ditch. In Trench 6 a shallow, 0.15m deep, linear cut orientated north-south contained some Roman pottery (AD 270–400) and ceramic building material. The function of the cut is unclear and it may be natural erosion of the top of the London Clay into which some Roman material has accumulated, or it may be the continuation of the westernmost gully seen in Trench 7.

Immediately above the natural London Clay in Trench 5, which slopes down from west to east, was a layer of sandy silt with some Roman pottery (AD 50–160) and ceramic building material. At the base of this layer was a band of rounded flint pebbles; it is possible that the London Clay had been truncated as part of a terrace cut on this east-west slope to form the level platform of the road.

The trenches to the north and adjacent to the east side of the site (Trenches 2, 3, and 4) revealed no evidence of a ditch and are positive evidence of the absence of the ditch, hence the road must have continued to the west of these trenches.

Dating evidence from the western roadside ditch shows it must have remained open until at least the late 3rd century AD. North of Trench 13 the increased north-south slope and the addition of an east-west slope seems to have altered the construction of the road. It is likely that in order to provide a level platform for the road a terrace was cut into the London Clay, removing material from the east side and dumping it to the west. Also the road on this slope would require increased drainage or protection to avoid being washed away by surface water running down the slope(s), particularly on the very poorly draining London Clay. This may be represented by the additional gully seen in Trenches 6 and 7 and by the more complex nature of the ditch also in Trench 7.

The eastern roadside ditch

The eastern roadside ditch is less obvious than the western. Deposits recorded at the east end of Trenches 9, 10 and 11 may indicate the line of the ditch but they could equally relate to the construction of a bank upon which the road was constructed and the ditch lies beyond this bank, that is, beyond the limits of the trenches.

In Trench 10 the camber at the east side of the upper road surface coincided with a depression in the underlying gravel layers into which a slightly sandy clay had accumulated and, although not excavated, may indicate the presence of the eastern ditch.

In Trench 11, to the east of the upper road surface, deposits thought to relate to the construction of the road sloped sharply downwards to the east. The eastern ditch would lie beyond the road bank and hence beyond the limits of the trench.

The same shallow north-south gully was recorded in watching brief Pits 2 and 3 sealed by road gravels; if this is the remnant of a roadside ditch, the road has shifted to the east. In Pit 1 layers beneath the road gravels tipped to the east, this may be the edge of a linear feature following the profile of the road bank.

Beyond Trench 13 there was no evidence of the eastern roadside ditch as it would lie to the east of all the subsequent trenches. A series of linear earthworks in the strip of woodland in the north east corner of the site may indicate the presence of such a ditch.

Trenches off the line of the Roman road (Trenches 1, 2, 3, 4 and 12) contained no evidence of Roman occupation.

Post-road deposits

In a number of Trenches (7, 9, 10, 11, 13 and 14) a layer of clay silt had accumulated over the road and ditch deposits. This is interpreted as hillwash as it was not seen in the northern trenches on the upper part of the slope. In Trench 7 the hillwash had accumulated in the hollow left by the cutting of the ditches and contained a large amount of Roman ceramic building material, an unworn but broken Roman coin of AD 268–93, pottery (AD 250–400) and a Roman folding knife (Figs 7, 8). In Trench 10 and 11 a clay silt layer sealed the road and ditch: it is possible that it represents a deliberate dump

for a later road that has subsequently eroded or accumulated once the road had gone out of use. In Trench 10 it contained both Roman pottery (AD 300–400) and ceramic building material. This deposit was thickest over the line of the western road ditch.

The date of this material is uncertain, though it post-dates the use of the road and contains only Roman material. A layer of topsoil covered all the trenches and included both small amounts of Roman material (AD 50–400) and post-medieval material (1600–1900).

Some of the archaeological investigations produced no evidence. Trench 8 was located over a gas main and the car park drainage followed an earlier pipe trench that had removed all archaeological deposits. The trial trench in the area linking the new access road to the present road showed that the construction of this road had removed any potential archaeological deposits.

DISCUSSION

Archaeological background

The site lies adjacent to, or on the line of, a Roman road known as Watling Street. Watling Street connects London (*Londinium*) in the south to St Albans (*Verulamium*) to the north (Fig 2). Watling Street follows the line of the Edgware Road towards London. At Marble Arch a spur road runs along the route of Oxford Street-Holborn and enters the City at Newgate (Margary 1955, 48). The exact line of Watling Street in the Brockley Hill area has yet to be definitely established or understood. Much archaeological work has been undertaken, mainly to the north of the site, to establish the line of the road and can be divided into four areas (Fig 3) (Seeley and Thorogood 1994, 224).

Excavations at Canon's Park roundabout (Suggett 1953, 276) recorded gravel metalling with a ditch on the east side under the modern road. However, earlier observations beneath the present A5 road (O'Neil 1942, 220) north of Canon's park roundabout found no evidence of the Roman road. It was subsequently suggested that the line of the Roman road could be traced up Brockley Hill on the east side of the present road (O'Neil 1951, 137–39). Excavations in Area 2 revealed no trace of the road on this line and in Area 4 observations of a trench indicated the road was probably post-medieval in date (Castle 1972, 152). Further work on this road line was inconclusive but dated a road as post-medieval (Braithwaite 1987, 4).

Evidence from excavations in Area 1 (Suggett 1953; 1954) and Area 3 (Castle 1972; 1973) appears to indicate that the Roman road lay on the west side of the present road. Various ditches, banks and metalled surfaces have been recorded and the conjectured line of the road based on this evidence was plotted (Castle 1976, 207). In the field immediately north of the present site the road varied in width from 13 to 25ft (3.96m to 7.62m), increasing in width as it descended the hill. It was constructed on a clay bank (9in thick) with a layer of rammed gravel (6in thick) and flanking ditches on both sides. The ditches contained both 1st, 2nd and 4th-century artefacts. It was seen some 80ft (24.40m) north of the present site.

The situation is complicated by a hollow way running between this line of the Roman road and the present road. It is thought the hollow way was in use during the 18th century and used until the present road was established in 1827 (Castle 1976, 223). It appears that subsequent roads have moved as they ascend the steepest part of Brockley Hill and this has left a slight curve to the west in the present road as it ascends the hill, leaving the earliest, Roman road to the east.

To the north of the site, Brockley Hill has long been thought to be the site of the Roman settlement of *Sulloniacae* mentioned in the Antonine Itinerary, being 12 miles from London and nine miles from St Albans. Archaeological investigations between 1937 and 1977 (Grew & Thorogood 1992) in the Brockley Hill area to the north of the site, in the vicinity of the Scheduled Ancient Monument, discovered considerable amounts of Roman material. However, there was little evidence of the settlement of *Sulloniacae* but these archaeological investigations revealed an important Romano-British pottery industry site. At least 14 kilns and numerous pits, many of which were initially used as quarries for clay and then backfilled with wasters and kiln debris, were found (Seeley & Thorogood 1994, 224). Excavations on the east side of Brockley Hill at the junction of Pipers Green Lane discovered a group of Roman cremation burials (Suggett 1956).

The line of the road

The conjectured line of the road (Figs 3 and 4) in the southern half of the site confirms the previous attempt to conjecture the line (Castle 1976, 207). The evidence north of Trench 13 suggests the road deviates to the west. In order to link the road to the evidence from the north of the site and to avoid projecting the road across Trenches 3, 4, and 5 where the road was absent it must swing back to the east (Fig 3). The size of this deviation is unknown and has been conjectured to show the smallest bend to link the two projections.

THE FINDS

Angela Wardle

Seven of the accessioned finds are of Roman date, six are post-medieval and the remainder are of indeterminate date. Most objects are from the topsoil and of mixed date, but one coin <1> is from the Roman road surface in Trench 11. A small group of Roman objects, including a distinctive folding knife <3> came from hillwash in Trench 7 (Figs 7, 8). The only securely dated Roman coin is 3rd century (AD 286–93); two others can only be dated broadly to the 1st–3rd century AD. An Elizabethan half groat highlights the mixed nature of the assemblage. The coin <20> was recovered from the topsoil and is an apparently unlisted type (Fig 9) (G Egan pers comm).

The Roman material attests a Roman presence in the area, but because of its generally abraded condition and provenance in later contexts, it adds little to the interpretation of the site. The condition of the Roman coins generally precludes precise dating and most are residual.

Despite the general poverty of the assemblage, one object is outstanding, both for its comparative rarity and its state of preservation. The folding knife <3> (Figs 7, 8) has a copper alloy frame and an iron blade. The back of the knife, which protects the folded blade and forms a handle when in use, is zoomorphic and apparently represents a dolphin, its curved tail at the blade end. The animal is attached to the straight-sided frame which has a slot to hold the well-preserved blade. The blade pivots at the squared end, the pivot clearly visible on a radiograph. An open-work section between the creature's tail and this end could act as a suspension loop. Length 69mm; width 18mm.

The object may have been used as a personal toilet instrument, perhaps the *cultellus tonsorius* 'barbers' small knife' or *onychisterion lepton* (Gk) a 'light nail trimmer' (Boon 1991), the ancient

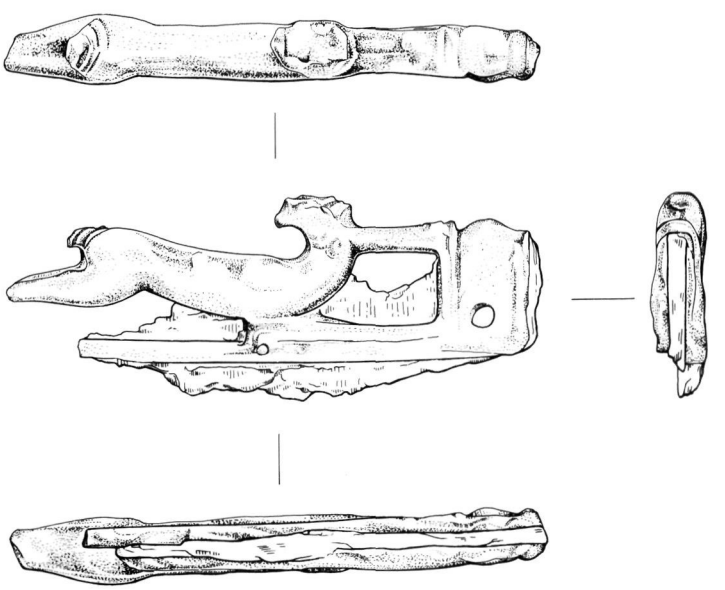
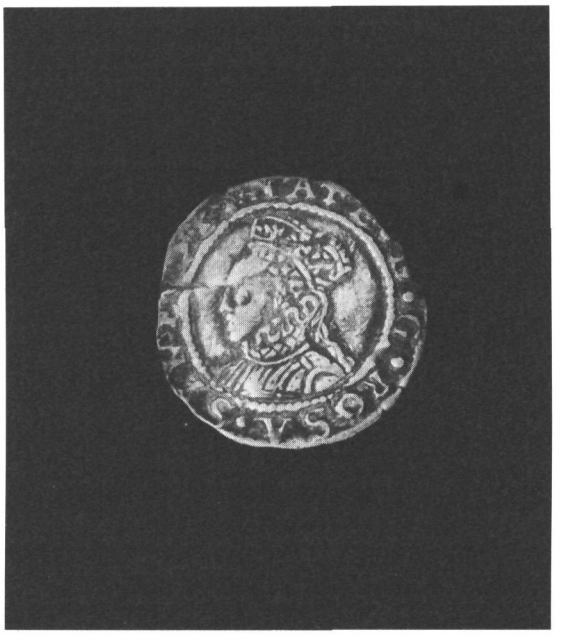


Fig 7. Roman folding knife

Fig 8. Roman folding knife (scale 2 : 1)



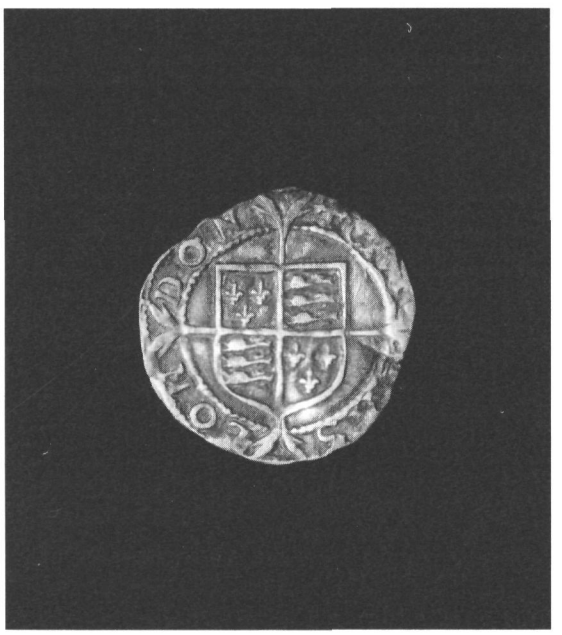


Fig 9. Elizabeth I half groat (scale 4 : 1)

equivalent of nail scissors. Such knives or razors are often found with bone handles, frequently elaborately carved, but the iron blade rarely survives. A copper-alloy razor of very similar construction and size, was found at Thetford (Gregory 1991, 132, fig 117, no. 19). The handle has an identical squared terminal with a pivot for the iron blade, which is lost, and shows a dog seizing a hare, the openwork figures again attached to the straight edge of the frame, which is apparently slotted in the same way. The Thetford knife was found in topsoil in the area of a late Roman structure and in association with late Roman coins; the type is likely to be late Roman, possibly 4th century.

The dolphin is a well known Roman decorative motif and can be seen, for example, on a folding

spoon from Colchester (Crummy 1983, 69), a related class of folding implement (Sherlock 1976).

The Roman pottery

Jo Groves

The majority of the pottery was very badly abraded and some burnt. Verulamium Region White ware (VRW) and possibly Verulamium Region Grey ware (VRG) are the only early Roman types identified in the assemblage. A high proportion of VRW is to be expected due to the close proximity of the Brockley Hill Roman pottery kilns. It is not possible to determine whether the material is kiln waste or rubbish from domestic use. None of the sherds show any characteristics of waster material although the small sherd and assemblage size is unfavourable to the identification of wasters. Some of the VRW sherds have sooting/burning which is consistent with cooking use. Samian is absent and there is only one definite sherd of an amphora in the assemblage, which is unusual for a London site and is perhaps an indication that the VRW sherds are not part of a typical assemblage.

The Roman ceramic building material

Jackie Keily

Most of the material consisted of small fragments, many of them soft and therefore also quite abraded. The majority of the material was of two fabric types (3006 and 2459A) that were produced at a kiln site at Brockley Hill and all dated from the 1st to mid 2nd centuries AD. The types of ceramic building tile found included brick, roofing tile (imbrex and tegula), combed flue tile and a few small fragments of daub.

CONCLUSIONS

The archaeological work recorded evidence for a Roman road (Watling Street) with a ditch on its west side. The projected line of the road is similar, *ie* on the west side of the present A5 road, to the line projected by Castle (1976, 207) based on previous archaeological work to the north of the present site. It appears there is a bend in the road as it rises up the hill. A linear north-south earthwork in the strip of woodland in the north-west corner of the site may be a relic of the Roman road or its ditch.

The Roman road builders were faced with the problem of constructing the road up the steep north-south slope of Brockley Hill, and where it runs up the northern part of the site there is also an east-west slope. There would also have been the requirement to protect the road from erosion from surface water flowing down the hill.

From the limited evidence of the archaeological evaluation the road was flanked by a ditch on the west side and the gravel road metallings were constructed on a bank of clay and pebble layers. There is also some evidence for attempts at terracing the natural London Clay (in Trenches 14, 7 and 6) to create a flat base for the road.

Apart from selected areas, little actual excavation was possible and the full extent of the road width was not established, nor was the full depth of the road deposits. Where small deeper slots were excavated (*eg* Trench 10) there was evidence for a sequence of road gravels and recuts of the adjacent ditch, indicating that the road was maintained during the Roman period. The road surfaces examined are obviously only the latest surviving surfaces and likely to be the most eroded.

The limited dating evidence suggests the road bank was constructed in the 1st to mid 2nd century AD and was in use into the 4th century.

Although Roman pottery kilns and associated deposits have been found in the field immediately north of the site, no kilns were found in this evaluation. Nor were there any large assemblages of pottery wasters or kiln furniture. A majority of the early pottery from the site is of the type produced at the Brockley Hill kilns.

A reasonable amount of Roman metalwork including three coins and, of most interest, a folding knife was recovered. Small amounts of animal bone and metal slag were found in the Roman deposits and a fragment of millstone. The Roman ceramic building material all dated from the 1st to mid 2nd century AD and included brick, roofing tile and flue tile. Interestingly the majority was of a fabric type produced from tile kilns found alongside Roman Watling Street.

In Trenches 1, 2, 3, 4, and 12 no archaeological features were revealed, although Roman material was recovered from the topsoil in all these trenches. Apart from the small amount of post-medieval material recovered from topsoil deposits

there was no evidence of any post-Roman development on the site until this century.

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All original field records, finds and archive reports are held at the Museum of London, under the site code BHL95, and available for consultation upon request.

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LONDON AND THE SAXON SHORE

Harvey Sheldon

THE 1994 LAMAS PRESIDENTIAL ADDRESS, DELIVERED FEBRUARY 1994

SUMMARY

The term 'Saxon Shore' is known from only one contemporary source, the Notitia Dignitatum. *The military stations on the Saxon Shore, popularly associated with defence against Saxon raids, appear to be distributed along the coast from the Wash to Portsmouth Harbour. Yet the antiquity of the command and indeed its precise function is unknown. The forts, probably built in the third century may have been constructed for other purposes and could have functioned for a considerable time before being incorporated within the Saxon Shore Command.*

Recent archaeological work in London has produced new evidence of late Roman military installations including a probable signal station at Shadwell and the City's Riverside Wall, behind which lies a 'palatial' complex of buildings erected at the end of the 3rd century. The continuing importance of London in the later Roman period suggests that there should have been a link between the coastal forts and the City, although little direct evidence exists.

I would like to begin by saying a little about the Saxon Shore – where the name comes from, what it is understood to be, what characterises the remains on the 'Saxon Shore', the strengths and limitations of the evidence. It's a fascinating but difficult subject. Then I will move on to London to see in what ways, if any, the later Roman City and the Saxon Shore might be drawn together.

The late John Morris, an intellectual explorer whose mind moved at breathtaking speed through the problems of late Roman Britain, was wont to say about archaeological evidence, or at least its interpretation, that 'you pays yer money and yer takes yer choice!' As far as the Saxon Shore is concerned he was probably about right!

The term after all is known only from one classical source and it applies to a command operating in the very last years of Roman Britain, making use of installations built a good deal earlier.

WHERE THE NAME COMES FROM

The name 'Saxon Shore' comes down to us more or less directly from late antiquity. It is contained in a Roman document known as the *Notitia Dignitatum.*

This is perhaps best described as a handbook of offices, both civil and military, in the eastern and western part of the Empire. It survives in medieval manuscript copies thought to be three or four removes from an early 5th-century original.

For army commanders it lists principal officers, their subordinates, the military units at their command, and often the location or bases where the units were stationed.

WHAT THE DOCUMENT TELLS US

First, it provides a name, a rather evocative name, the *Litus Saxonicum*, or 'Saxon Shore', an area in Britain presumably of coastal land. It also gives us an equally evocative named commander in charge of the units stationed there. He is described as the *'Comes Litoris Saxonici'* – the Count of the Saxon Shore.

Counts, together with Dukes, emerge as military commanders in the late Roman Empire linked with the major reforms that Diocletian, and especially Constantine, carried out in order

to put Imperial administration and military organisation on a more secure footing.

In total the *Notitia* lists three military commanders in Britain: a Duke and a Count of Britain, as well as the Count of the Saxon Shore.

Usually Dukes are seen as frontier generals; Counts more in charge of mobile field armies able to respond particularly when frontiers are breached. Nevertheless our Count of the Saxon Shore is usually regarded by historians, rightly or wrongly, as a *frontier commander* in charge of a *coastal command* strip running south and then west from The Wash round to Portsmouth Harbour or the Solent.

The picture which accompanies this section of the *Notitia* shows nine named stations of the command and the text repeats seven of them listing the units which might be found there, such as the 1st cohort of Baetasi at Regulbio. Two other military units are named, including the II legion, and it is usually assumed that they were in the forts which appear in the picture but are not named in the text.

WHERE FORTS MIGHT BE FOUND

A number of imposing military forts remain on this stretch of coast – or at least in the case of Walton Castle near Felixstowe remained long enough to appear in prints or be described by antiquaries.

Their survival probably owes much to their use as castles and monasteries in the medieval period, for they would undoubtedly provide potential strongholds for military authorities.

It is these remains which, on the basis of a combination of evidence – including similarity of modern name or appearance in the other ancient geographical sources – are considered to be the forts of the Saxon Shore listed or shown in the *Notitia* (Fig 1).

Generally – though not universally – the identifications are as follows:

Branodunum is taken as Brancaster, on the north Norfolk coast, close to the Wash. *Gariannonum* is believed to be Burgh Castle about two miles in from the coast on the river Yare and some 50 miles south of Branodunum. *Othona* is taken as Bradwell, a further 50 miles to the south on the Blackwater estuary.

Regulbium, on the north Kent coast is identified as Reculver on the southern flank of the Thames estuary some 25 miles south of Bradwell and possibly in view of it. *Rutupiae* is seen as Richborough, probably the main entry port into southern Britain, less than 10 miles south of Reculver and also on the Kent headland. *Dubris* appears to be Dover, another very important harbour, sandwiched between chalk cliffs little more than 10 miles south of Richborough. *Lemanis* is identified as Lympne, 20 miles or so west of Dover, close to the eastern edge of the Weald. *Anderita* is assumed to be Pevensey, thirty miles further to the south-west, and finally *Portus Adurni* is usually identified with Portchester, some 60 miles further west, at the head of Portsmouth harbour.

There are however difficulties here. There are – or were – at least two other substantial sets of remains that could also be candidates for Saxon Shore forts (Cunliffe 1977, fig 2).

One lies in the Solent, at Bitterne, close to Southampton, and is often thought to be *Clausentum*, a place recorded in an earlier Roman document known as the *Antonine Itinerary*.

A second is at Walton, near to modern Felixstowe close to where the Deben, Orwell and Stour empty in the sea. Some have argued that Walton was *Portus Adurni* and that the fort at Pevensey was the most westerly in the system listed in the *Notitia Dignitatium*.

But care needs to be taken with these interpretations. Recently Nick Fuentes has looked closely at the place-name evidence and has come up with a theory that would place the named Saxon Shore forts more or less entirely on the Kent, Sussex and Hampshire coasts (Fuentes 1991, p 61, fig 11).

Those remains north of the Thames, with the exception of Bradwell, which he suggests is *Portus Adurni*, he would place as unnamed coastal stations within an entirely different command.

Despite its bland title the *Notitia Dignitatum* is a notoriously difficult document to use, perhaps because of unconnected amendments and errors made in repeated copying. There are a number of questions that need to be raised about the *Litus Saxonicum*.

First, what does the name 'Saxon Shore' actually mean? To many it is a term that means a shore in danger of attack from beyond, presumably from the coasts of Europe north of the Rhine frontier. In that sense it would be an area of coast in danger from 'Saxons', whether the authorities meant precisely people from the area of 'Saxony' or used it interchangeably for all manner of barbarians who might spring out

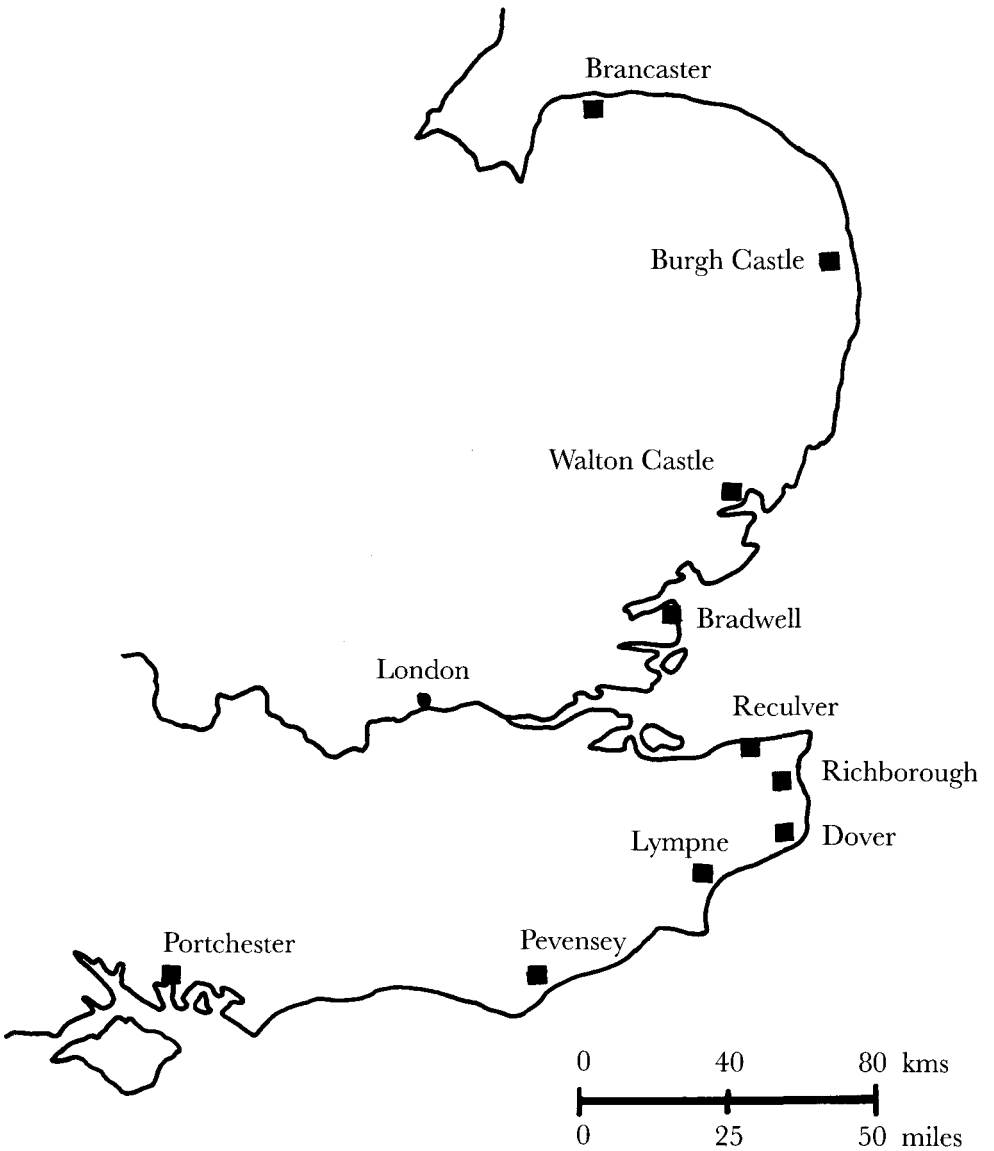

Fig 1. The Saxon Shore forts and London

from the coasts of what are today Holland, Germany and Denmark.

Yet it could be said that it was unusual – and not very good Imperial propaganda – to name an area of your land after actual or potential attackers. Could it be that this area of south-eastern Britain was already becoming Germanic?

The early 6th-century historian, Zozimus, tells us that Probus, emperor between 276 and 282, settled defeated Vandals and Burgundians in Britain in the aftermath of a rebellion, apparently giving them vacant land to farm. The tribesmen must have been in Britain in some number for, according to Zozimus, they helped put down later rebellions. If only we could locate them!

A hundred years or so later, according to the 4th-century writer Ammianus, the Emperor Valentinian sent a German king, Fraomarius, to Britain to command 'a large and strong force of Allemani' here.

So, is the Saxon Shore (a term we know of only at the very end of the Roman period) an area of Britain already becoming 'anglicised', if that is the right word, named after the origin of

its contemporary inhabitants, even if they themselves were likely to cause problems – perhaps in alliance with others from beyond the frontiers?

There is a passage in Ammianus concerning dangerous events in Britain in the late 360s; he informs us that: 'The areas [in Britain] facing Gaul were harassed by the Franks and the Saxons. They broke out *by land* [my italics] or sea, plundering and burning ruthlessly and killing all their prisoners.'

If the Franks and Saxons were breaking out *'by land'* to cause problems in Britain, the possibility that they were already here ought at least to be entertained.

Secondly, the term Saxon Shore does not seem to be geographically confined to Britain. In the *Notitia* the name also appears in relation to two continental commands, which lie opposite to the coast of Britain, and were controlled by Dukes (Johnson 1979, fig 43).

The Dux Belgia Secunda's command stretched along the Gallic coast from the Rhine down through what today is the Dutch and Belgian coast, through the Straits of Dover, to the mouth of the Somme, while that of the Dux Tractus Armorica lay further west, in what is now Normandy and Brittany down as far as the mouth of the Loire.

In the lists, each commander's forts begin with a station stated to be on the Saxon Shore. *Grannona* in the westerly command, *Marcae* in the more easterly one.

This has been taken to mean that the Saxon Shore is a term once applied to the coastal lands on both sides of the channel. Further, that the command originally was unified but by the time of the *Notitia* (*c.*400) had been broken up, perhaps to make it less powerful, with the Count of the Saxon Shore now only retaining control of the coast in Britain.

This is a feasible interpretation but continental scholars have not yet, as far as I know, been able to locate firmly either of the two specifically mentioned Gallic forts, *Grannona* or *Marcae.*

I would like to suggest one other possibility – that these two forts were located in Britain (a hypothesis which might help to explain our embarrassment of potential coastal remains!).

After all the *Classis Britannica* (the fleet of Britain), firmly attested at many coastal sites in the 1st and 2nd centuries, had a major continental base at Boulogne, obviously necessary for its cross-channel operations. I wonder, therefore, whether these two later continental commands had bases in Britain because of operational considerations. If so the Saxon Shore should be considered geographically as essentially a feature of the coast of Britain and not the Continent as well.

THE FORTS IN BRITAIN

Now I would like to say a little more about the forts themselves. They might best be described as substantial, both in area and in their defensive walls, but they are by no means identical (Cunliffe 1977, fig 3).

First, study of their designs has suggested that those at Reculver and Brancaster, with their rounded corners – similar in shape to the traditional late 1st and 2nd-century forts of the northern frontiers – are early in the series.

Secondly, the majority of the forts with their high walls and narrow gates indicate strongpoints built to withstand siege rather than springboards for attack. External bastions are found on most, an aspect of late Roman defensive works probably to provide additional firing positions and to prevent walls being breached during attack (Fig 2).

Thirdly, there is limited evidence for internal buildings, particularly when compared to other frontier forts in Britain.

One or two *principia* (headquarters buildings) as at Lympne are known, but evidence for the barracks, granaries, store houses, stables and other buildings that might be found within forts are noticeable by their absence.

The reason for this apparent emptiness within the Saxon Shore forts may lie in the method of construction. Most of the northern frontier forts that were long-lived, had stone foundations for their major internal buildings. The use of timber for construction, subsequent agricultural activities such as ploughing within the forts and the effect of earthworms are likely to have removed much of the evidence for buildings, together with any internal stratification that might once have existed (Fig 3).

WHEN THEY WERE BUILT

The lack of good stratification may help to explain why dating the actual construction and usage of the forts is so difficult. As Barry Cunliffe,

Fig 2. Portchester Castle, Hampshire. View west along the south wall showing bastions (Harvey Sheldon)

who has perhaps had more archaeological experience of the forts than anyone else, has written we suffer from a 'paucity of hard fact' (Cunliffe 1977, p 1).

A mixture of typological differences and excavation findings has led to the suggestion that Brancaster and Reculver were the earliest, perhaps built late in the 2nd century or early in the 3rd. Indeed an inscription from the Reculver *principia* is thought by some to belong to the early decades of the 3rd, though, it has also been argued that it could be as late as the end of that century, and that the style of fort building may reflect the conservatism of the military unit that built it, rather than the date of construction (Mann 1989, p 4).

The remainder of the forts are considered to have been commissioned during the last half of the 3rd century; thanks to dendrochronology, even Pevensey which differs from the others in its 'oval', rather than rectilinear plan, and was considered to be as late as the middle years of the 4th has now been re-assigned to the late 3rd century (Fulford & Tyers 1995).

What does seem probable is that, even if these forts were, at the end of the 4th century, within a specific Saxon Shore command, they had been built considerably earlier, perhaps for purposes entirely unconnected with that command.

CHANGES IN GEOGRAPHY

One point that needs to be borne in mind when discussing the forts is the geographical changes that have occurred since the late Roman period which may obscure their locational advantage.

Coastal changes in Britain appear to have

Fig 3. Burgh Castle, Norfolk. View from across the empty interior up the fort (Harvey Sheldon)

been most marked around the south and east coasts (Jones & Mattingly 1990, p 8. map 1–12). Essentially they seem to have taken two forms. First the erosion of cliffs, which has the effect of pushing the high ground back, and secondly the silting of estuaries, caused probably by the relative rising of the sea level and storms inducing sand and gravel movements offshore.

The dramatic effects of erosion are seen in the loss of walls as well as parts of the interior of the forts. The northern wall of Reculver, for example, the western wall of Burgh Castle and the eastern wall of Richborough have all vanished. Erosion may also have caused the collapse of the cliffs at Lympne, leading to the marked irregularity of the ground plan of the surviving fort remains.

Silting may also have obscured the advantages of the original sites.

Lympne, now on the edge of marshland three miles from the sea, might, in the Roman period, have been a natural sea port for the river Rother which today runs into the sea near to Rye.

Burgh Castle lying close to the Yare, four miles from the sea at Yarmourth, would, in the Roman period, have dominated a large estuary formed at the confluence of the Waveney, the Yare and the Bure, three important rivers flowing into the sea from East Anglia.

Reculver and Richborough, both lay to the west of the Wantsum channel, which then separated the Isle of Thanet from the mainland of Kent.

Pevensey, now landlocked, probably stood on a peninsula within a large sheltered bay where smaller rivers reached the sea from the centre of the Weald.

The site considered most likely to have remained unchanged is Portchester, at the head of Portsmouth harbour. This is probably because it is not on a river and that, together with tidal flow, may have prevented silt choking up the inlet.

At Portchester, both the scale of the standing fortifications and the sheltered harbour still in use, and close to the sea, give perhaps the best indication of what the forts once looked like and how they operated (Fig 4).

The forts therefore, now largely damaged by erosion and distanced from waterways by silting, are likely then to have occupied dominant positions commanding important natural harbours.

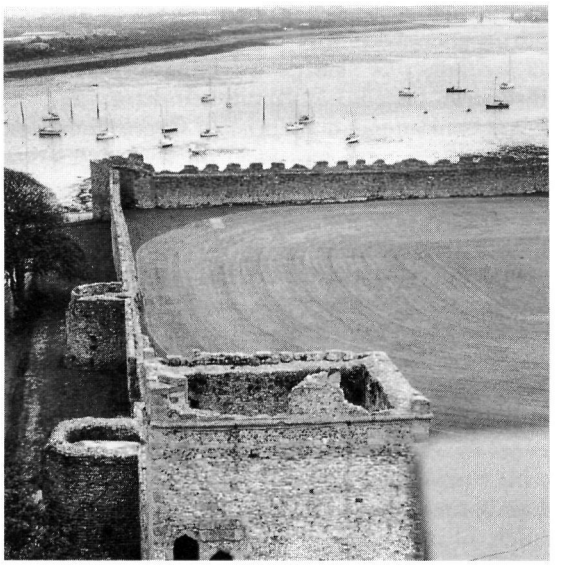

Fig 4. Portchester Castle, Hampshire. View east from the Norman keep towards the harbour, showing walls and bastions (Harvey Sheldon)

THE PURPOSE OF THE FORTS

Next we will turn to the question of what the purpose of the forts may have been. It may be that there is a distinction between their original function, or functions, and their use during much of the 4th century.

It is now generally accepted that most of the forts were built in the second half of the 3rd century, perhaps close to AD 300, although Reculver and Brancaster, dominating the Wash and the Thames may be earlier.

Only Cunliffe's excavations at Portchester have produced reasonably detailed information about internal occupation. His examination of that part of Portchester not occupied by castle, cricket pitch and church suggested a presence during the first half of the 4th century, possibly with timber buildings aligned along metalled streets. Discoveries of jewellery, women's shoes and infant burials though were somewhat surprising for the interior of a Roman fort in Britain (Cunliffe 1977).

John Mann has argued that a prime function of the forts would be to deal with piracy at sea and in this he sees them as extensions of the activities of the *Classis Britannica*, the fleet of Britain, for whose presence in the south we have little evidence after the beginning of the 3rd century, but which clearly had a major role here before. The forts would therefore house or protect units of the navy, though in the *Notitia* no marine detachments are listed as serving in the forts.

An important result of Brian Philp's excavation at Dover was the discovery of a demolished 2nd-century *Classis Britannica* fort partly buried beneath the remains of the later 3rd-century Saxon Shore fort.

The Saxon Shore fort, Philp argued, was erected in about AD 270, perhaps 70 years after the earlier fort was pulled down, and clearly on a different alignment.

If indeed the Dover Saxon Shore installation and most of the other forts were erected towards the end of the 3rd century what might their original function have been?

Clearly they could have been intended to harbour protective naval units and contain garrison troops to deal with attackers who landed. Intrusions might be expected in the later 3rd century, particularly with the overrunning of Gaul from 'barbarians' beyond the Rhine in the 250s and 270s.

For much of the 3rd century, particularly between *c.*AD 235–285, the Empire is considered to be in a state of crisis, characterised by an ineffective military response to increasing barbarian invasions coupled with economic disintegration and weak fragmented leadership.

Nevertheless the Imperial response did improve and it is possible that a stronger emperor, such as Probus in the late 270s, was responsible for erecting some of the forts against external pressures. However Britain does appear to have been disaffected for much of the later 3rd century. It was part of the independent breakaway Gallic Empire between 259 and 274 under Postumus and his successors. Even after peaceful re-unification with Rome unsuccessful rebellions are reported under Probus, while a period of fierce independence again occurred between 286 and 296 under the usurpers Carausius and his successor Allectus.

We do know that this rebellion was ended when troops of the legitimate Caesar, Constantius, landed in Britain to recover it by military means in 296.

Consideration of this episode did, in the 1960s, lead to the suggestion by D. A. White that the forts might have been built by Carausius to deny use to the legitimate authorities of the harbours and beachheads that might be required by an invading army (White 1971). This thesis has been

generally rejected, principally because of the differing dates that were envisaged for most of the series.

With the new dating evidence that has come from excavation or re-interpretation at Richborough, Portchester and, most recently, Pevensey, the time might have come to revive White's thesis. If not Carausius, then perhaps his successor, Allectus, could be considered responsible for erecting many of these fortifications in his attempts, ultimately unsuccessful, to keep the legitimate forces of the Tetrarchy at bay.

There is also the question of the role of these forts during much of the 4th century, whether or not they were for much of the time incorporated within a 'Saxon Shore' command.

It is generally acknowledged that there was considerable wealth – at least for some – in Britain during the 4th century. This wealth is most marked by the opulent villas with their elaborate plans and mosaic floors. Much of this affluence could derive from the export of grain and wool, perhaps supplied officially, particularly to the army on the Rhine.

Ammianus informs us that corn was regularly shipped from Britain to the army and the Emperor Julian recorded how he achieved food supplies from Britain, implying the arrival during one year on the Rhine of some 600 ships.

Whatever the original purpose of the forts then, it is possible that during the 4th century they played a part in the movement of such commodities.

The forts are situated on or close to the coast, often at the confluence of major rivers coming from the interior and could have functioned as guarded warehouses where supplies arriving from the interior could be stored before being transported, perhaps in convoy, across the Channel and the North Sea to the Continent.

LATE ROMAN LONDON

It is generally accepted – on the basis of literary, epigraphic and numismatic evidence – that London remained important as an official or governmental centre in the later Roman period. It is usually considered to have been not only a provincial but also a diocesan capital of Britain in the 4th century. There are a number of pointers to its pre-eminence.

First, the *Notitia* places the officer in charge of an Imperial Treasury at Augusta – a name which Ammianus suggests has been given to London during the 4th century.

Secondly, by early in the 4th century a Bishopric had been established here, and its incumbent attended a Christian Council at Arles.

Thirdly, a mint had been opened in London under Carausius in the 280s and it continued to issue coins under Constantine, and then again during the revolt of Magnus Maximus in the 380s.

Fourthly, London was the central focus of Constantius's attempt to recover Britain from Allectus in 296. He issued a medallion, found at Arras, showing grateful Londoners thanking him for their timely deliverance.

Fifthly, we are told by Ammianus that senior generals with their armies, sent to Britain to deal with problems in the 360s, arrived at Richborough and marched to London to take stock of the situation before putting matters to rights.

Such examples, as Ralph Merrifield has argued, suggest that London served as a 'base and springboard' for affairs in Britain. It seems likely therefore that emperors drawn to Britain to deal with problems – Constantius again in 306, perhaps Constantine twice in the following decade, and his son Constans in 343 – would have been present in London at least for a time while strategies were devised (Merrifield 1983, p 213).

It would not be surprising therefore to envisage in London palatial buildings fit to house the Imperial household and their retinue, enclosed within, or supported by, appropriate defences.

Much of the recent archaeological evidence that might relate to this has come from close to the London waterside, depicted on Constantius's medallion.

The Shadwell Signal Station

The first indications of late Roman defensive arrangements came in 1974 when the partially robbed stone foundations of what appears to have been a signal station was found at Shadwell just under one mile down river from the eastern side of the City.

This was an 8m sq building with 2m thick walls of chalk and mortar with flint facing. Double ditches were found to the south and traces of timber buildings that might be barracks to the east. Many coins of Gallienus (253–268) were found together with a large group of East

Gaulish samian – thought to have been manufactured as late as the middle years of the 3rd century – and up to then unparalleled in that quantity in Britain (Bird 1987).

The building is reminiscent in style to the signal towers on the Yorkshire coast, and it might be one of a chain built along the Thames estuary to provide warnings to London about possible attack by river.

In 1974 no riverside defences to complete *Londinium's* landward circuit had been proven, but shortly afterwards excavations, near to the south-west corner of the City, located an extensive well-built wall, constructed above a chalk raft lying over oak piles (Hill 1980, pl 4).

The riverside wall was considered to have been built in the late 4th century, but subsequent dendrochronological study of the timbers found here and beneath other stretches of it, all point to the construction being *c.*AD 255–270. There is a fair chance that it was erected during Britain's period of independence under the Gallic Empire. It may be not dissimilar in date to the Shadwell signal station (Sheldon & Tyers 1983).

The subsequent history of the riverside defences may be complex. A second, and later wall – perhaps blocking an inlet – was found a few metres north of the riverside wall at the Tower, while, in the west of the City the wall seems to have been extended using monumental architectural ruins from nearby. This might also be a late Roman extension – perhaps blocking a dock – though it could of course have taken place in the post-Roman period.

A late Roman palace

The extension to the riverside wall in the west referred to above contained re-used monumental masonry, not necessarily all of one period. This included part of an arch and a 'Screen of gods', perhaps derived from a large temple complex. The style of the architecture was considered to suggest 2nd or 3rd century-monuments (Blagg 1980, p 126).

Other stones included fragments of altars, referring to the rebuilding of temples, in one case by an unknown governor, in the other by a freedman of the Emperor. The inscription on the former is considered by Mark Hassall to belong to the 250s, possibly to the joint reign of Gallianus and Valerian (Hassall 1980).

So there are now some suggestions of a large monumental complex, perhaps partly early 3rd – partly mid 3rd, near to the river in the south-west corner of the City arising from those excavations that first revealed conclusive evidence of the riverside wall.

Dramatic additional information came from more excavations close by, at St Peter's Hill, in the early 1980s.

Here Tim Williams found evidence of massive foundations which he has suggested supported a series of individual buildings and monuments within an area of about four acres. The riverside wall seems to have formed a southern returning wall to this complex which, like the former, was supported on chalk and timber pile foundations (Williams 1991).

Dendrochronological dates suggest that the complex was being erected in 294, *ie* under the usurper Allectus, successor to Carausius. Williams has argued that it may have been intended to create a 'multi-functional palace' at the centre of his breakaway Empire, containing not only a palatial residence, but treasury offices, temples and other trappings of state, perhaps modelled on Diocletian's palace in Split.

Williams has drawn particular attention to the chalk foundations and the use of horizontal timber-framing. Similar work has been noted at a number of the Saxon Shore forts – including Richborough, Portchester, Pevensey and Burgh Castle. He suggests that all these constructions were the work of a single body of craftsmen, and asks whether they were redeployed from the Shore forts to undertake the London building as a prestigious project for Allectus. If so then the forts they built were presumably to protect the newly independent Britain from the legitimate forces of the Empire.

LONDON, THE FORTS AND THE SAXON SHORE COMMAND

How can these strands be drawn together? It seems likely that most of the forts identified in the *Notitia Dignitatum* as being on the Saxon shore were built towards the close of the 3rd century, though some may have been erected earlier, particularly Reculver and Brancaster. Britain was disaffected for much of the later part of the 3rd century and independent of Rome, on at least two occasions, between 259–274 and 285–296. It is therefore worth considering the possibility that forts were built to protect the usurper's

coastline from legitimate forces who might attempt to reconquer Britain.

It may be that a connection can be established between the time of building of a number of the coastal forts and the construction of the palatial complex in London, perhaps created to reflect the power and grandeur of the later 3rd-century usurpers.

Ralph Merrifield has argued that London, with its governmental role in later Roman Britain, would have been the 'nerve centre' for the Saxon Shore. As a walled city, he suggested, it would also form part of a second line of defence – a base from which counter-attacks could be organised if necessary. This view of course envisages the Saxon Shore as a defensive command directed against Germanic invaders into Britain. It also assumes an antiquity to the command, stretching back through the 4th century that cannot be proved through its appearance in the *Notitia* (Merrifield 1983, 216).

London with its considerable importance in the administration of late Roman Britain would have been of particular significance for usurper emperors who made it central to their affairs. The Shadwell Signal Station may be too early in date to have been established during the earliest of the two known periods of rebellion, although the Riverside Wall, which appears to complete the City's defensive circuit, may well have been erected during the period of the Gallic Empire.

Whether, after the fall of Allectus any links existed between London and the forts and their operations, either before or during their inclusion in the Saxon Shore Command remains, for the present, unknown. More information which could take us further forward is likely to come only, as at St Peter's Hill, through taking the archaeological opportunities offered by the process of redevelopment.

ACKNOWLEDGEMENTS

Although this paper is written much as it was read in February 1994, the author has included important new dating evidence from Pevensey (Fulford & Tyers 1995). Thanks are due to Gill Clegg, Torla Evans and Wendy McIsaac for their assistance.

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EXCAVATIONS AT THE DORTER UNDERCROFT, WESTMINSTER ABBEY

Peter Mills

With contributions by Naomi Crowley, Anne Davis, Richenda Goffin, Alison Locker, Catherine Mortimer, Alan Pipe, Mark Samuel, John D. Shepherd, Hedley Swain and Ian Betts, Lyn Blackmore, Jon Cotton, Karen Waugh, Barbara West, D. F. Williams

SUMMARY

Excavations at the dorter undercroft of Westminster Abbey revealed evidence of extensive mid 11th-century flooding. In the latter part of the 11th century a road was built and a possible precinct ditch was dug, to be followed soon afterwards by a substantial wooden structure, probably a building. Some details of the present undercroft (built late 1060s–early 1070s) were recorded, together with evidence for late 12th-century and early 16th-century uses of the building.

INTRODUCTION

The existing undercroft of the dorter (monks' dormitory) at Westminster Abbey was built in the late 11th century and since 1908 has served as the museum of Westminster Abbey. In 1985 the Dean and Chapter decided to refurbish the building, bringing it up to modern museum standards. The renovation included the installation of air-conditioning via a series of underfloor ducts, requiring trenches disturbing one fifth of the floor area. In 1986 the Museum of London's Department of Greater London Archaeology carried out a limited excavation at the south end of the undercroft in order to identify details of the undercroft and examine earlier uses of the site.

HISTORY (Fig 1)

Westminster Abbey lies on Thorney Island, the gravel and sand island formed where the River Tyburn meets the Thames (Fig 2). There has been occasional occupation here since the prehistoric period and sporadic discoveries have suggested that a Roman settlement of some sort existed.

According to 11th century and later traditions the minster was founded in the 7th century but this is uncorroborated by contemporary documentary evidence, although some Middle Saxon material was recovered during the excavation. The earliest surviving charter relates to the refoundation of the minster as a Benedictine abbey by St Dunstan *c.*958–61 (Brooks 1992, 22). This charter refers to the restoration of an existing church and to the reassertion of control over an extensive landed estate said to have been given by Offa, either Offa of Essex (*c.*700) or Offa of Mercia (757–?96), and confirmed at the time of Archbishop Wulfred (802–32). After that date there are few references to the abbey until the 11th century when Edward the Confessor decided to rebuild it. According to his chronicler Westminster was chosen because 'of his devotion to St Peter (the patron saint of Westminster); because of the prominent position of the place near London and the Thames; and because he planned to be buried there' (Gem 1986, 13).

The first phase of the church, the construction of the east end, was completed in 1065 and can be assumed to have started *c.*1050. The second phase of building the nave and commencing the eastern claustral range was begun in or after 1066; whether there was a significant break between the phases is not known. Details of the

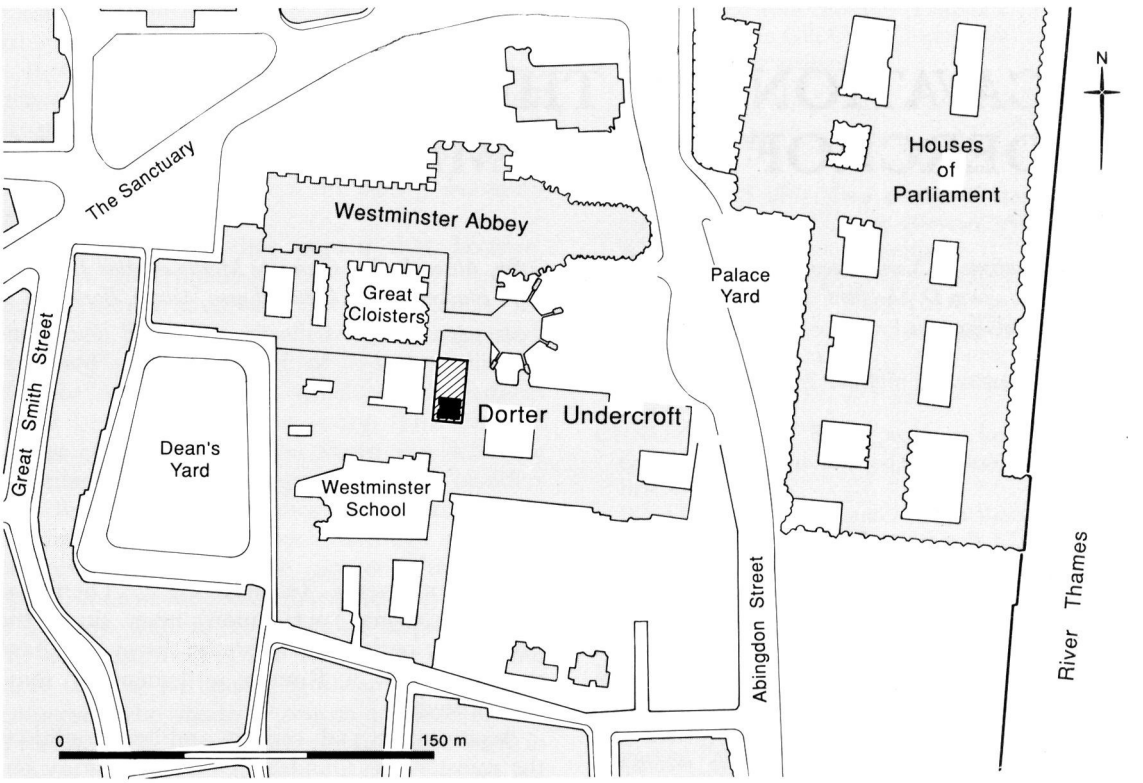

Fig 1. Plan of the area showing modern streets and the site outline (reproduced from OS 1:1250)

church, over 98m in length (322ft), were recorded earlier this century (Tanner and Clapham 1933, 235). Almost all the 11th century buildings have been replaced but the undercroft dorter, the Pyx chapel, and parts of the frater survive. The construction date of the surviving 11th century-elements has been discussed by Dr Richard Gem; in his view the historical and stylistic evidence indicate that the dorter undercroft was probably begun in the late 1060s or early 1070s (Gem 1980, 60; 1986, 17).

The abbey was dissolved in 1540, becoming a cathedral attended by a Dean and twelve prebends. The cathedral status was removed in 1550, though the prebends remained. The Benedictine abbey was restored by Mary in 1556 but in 1560 the Dean and chapter were re-introduced by Elizabeth I (Knowles and Hadcock 1953, 80).

BUILDING DESCRIPTION

The dorter undercroft lies on the east side of the cloister south of the chapter house. In the medieval period the undercroft or cellar of the dormitory was initially used for storage but was later subdivided to provide separate rooms with different functions (see Fig 6 below).

Seven bays of the undercroft have survived. Most of the doors and windows have been replaced but the internal layout has largely survived. A series of central piers, some with moulded bases, others with square plinths, support quadripartite groin vaults and transverse arches. The capitals were originally splayed with square *abaci* but several were subsequently decorated with carvings in the 12th century (RCHM 1924, 81). The east and west walls have wall arches.

The two northern bays are now divided off by a late 12th-century screen wall to form the Pyx Chapel. The two bays to the south of the Pyx Chapel were separated by a 13th-century wall (RCHM 1924), now demolished to form an entrance to the Chapel of St Dunstan. The area south of St Dunstan's Chapel was the warming house.

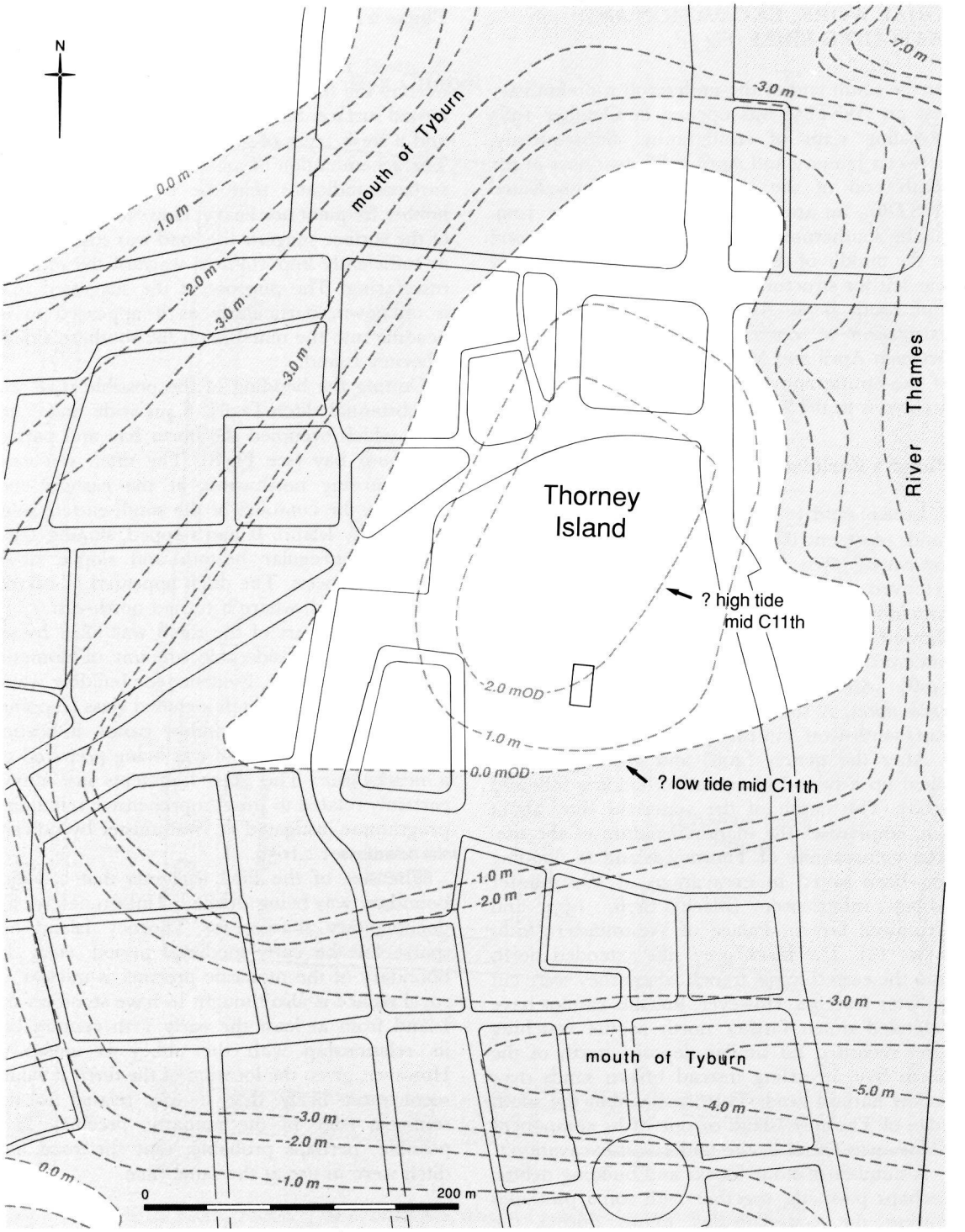

Fig 2. Suggested contour map of Thorney Island based on research by Chris Thomas (Sloane et al 1995).

TRIAL WORK, EXCAVATION AND WATCHING BRIEF (Fig 3)

At the south end of the undercroft a preliminary test pit (WST85) was opened in October 1985 revealing *c.*2m of stratigraphy. Subsequently, between January and April 1986, two bays at the south end of the undercroft were excavated (WST86), an area approximately 10m by 10m. As the southernmost pier of the undercroft stood in the middle of the area, a baulk some 2m wide was left for structural reasons between the north and south bays. After the completion of the excavation a watching brief was carried out between April and May 1986 and further details of the stratigraphy were recorded. The project archive is in the Museum of London.

Phase 1 Earliest occupation, *c.*1050 (Fig 4a)

A brown sand [381], sealing the natural yellow sand, represented the primary topsoil within the excavated area. Although later features had removed all but two small patches of this soil the watching brief north of the excavated area showed that a similar soil lay elsewhere in the undercroft. The topsoil was cut by a quarry [408] which extended beyond the limit of excavation. A small gully [394], running north-east/south-west, cut the quarry.

After the quarry [408] and gully [394] had silted up a period of extensive flooding followed [468]. The depth of the waterlaid silts, about 1m, emphasises the marginal nature of the site. The vulnerability of Thorney Island to flooding has been noted in excavations at Westminster Abbey misericorde (Black 1976, 135) and Cromwell Green, Palace of Westminster (Mills 1980, 18). The black/grey silts extended north into the eastern cross trench where they were cut by later features. However, the silts cannot have extended much further north as the watching brief recorded no similar deposits north of the north bay, revealing instead brown sands over yellow natural sand. This implies that the south edge of Thorney Island or one of its component islands was found in the undercroft excavation.

A number of stone blocks and building debris, perhaps postpads, together with some postholes cutting the waterlain-silts found during the excavation may represent traces of a simple structure, such as a jetty or mooring posts, in the marsh around Thorney Island. The pottery suggests a date for the phase of *c.*1050.

Phase 2 Road and ditch [238], 1050+ (Fig 4b)

A gravel surface [214] on bedding sand [251] overlay the flood silts. This probably represented a road surface. Silts accumulated over the surface and a fresh layer of gravel [250] was laid down. The accumulation of material on both the gravel surfaces indicates that the traffic using it was neither frequent nor heavy. However, the renewal of the surface suggests the road was still regarded as sufficiently important to warrant the effort of resurfacing. The purpose of the suggested road is unknown, particularly as it appeared to be heading into the marshes on the southern side of Thorney Island.

Cutting the bedding of the possible road was a substantial ditch [238], 6.4m wide and 1.7m deep which occupied the north bay and part of the south bay (see Fig 8). The ditch ran east-west, turning northwards at the eastern end, following the contours of the south-eastern edge of Thorney Island. It had stepped, sloping sides, a slightly irregular bottom and sloped down towards the west. The ditch appeared to narrow at the east end, where it turned north-east.

The lower part of the ditch was filled by silt containing a considerable amount of domestic and building refuse. Evidence for building works recovered from the ditch included glass chippings and pieces of grosed window panes, indicating that glazing for windows was being prepared on a nearby site. The glass fragments are almost certainly related to the comprehensive rebuilding programme instigated at Westminster by Edward the Confessor *c.*1050.

The size of the ditch suggests that a major boundary was being defined. Unfortunately, the documentary sources for Thorney Island are sparse for the early medieval period: even the boundary of the monastic precinct is unclear. A royal palace is also thought to have stood on the Island from at least the early 11th century but its relationship with the abbey is unknown. However, given the location of the ditch it would seem most likely that it was related to the southern edge of the monastic precinct. It is possible, perhaps probable, that the road and ditch were in use at the same time.

Phase 3 Ditch backfilling, 1050+

The primary fills of the ditch [238] were clearly derived from erosion and domestic debris but

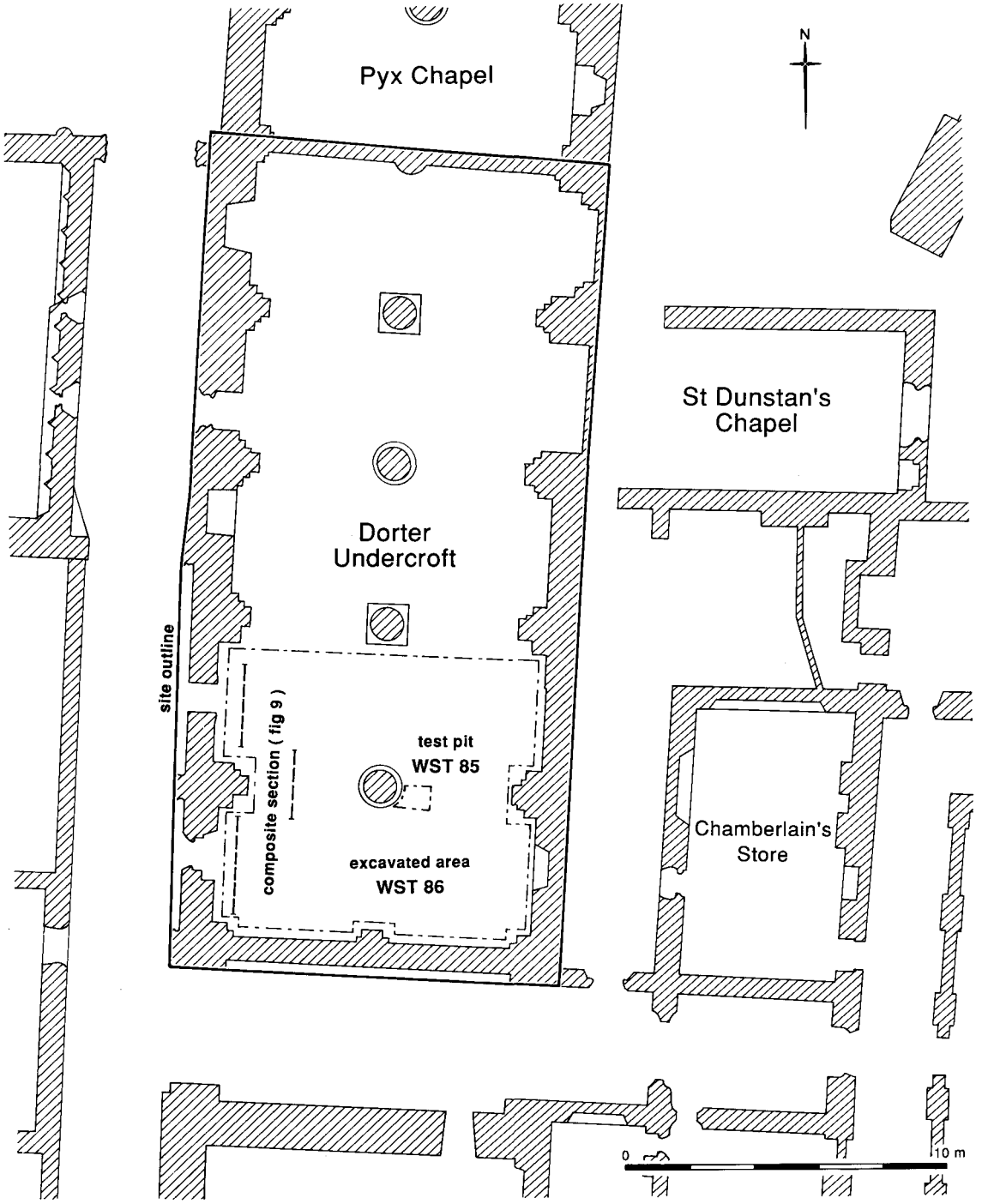

Fig 3. Plan of the site showing position of the excavated area, illustrated section and location of trench WST85.

the upper levels were the result of systematic backfilling. Dumps of distinctive orange clay, sand and gravel lay over the soft, silty refuse layers filling the lower half of the ditch. The first layers of clay and sand were cut by shallow slots, apparently ruts, possibly representing tracks left

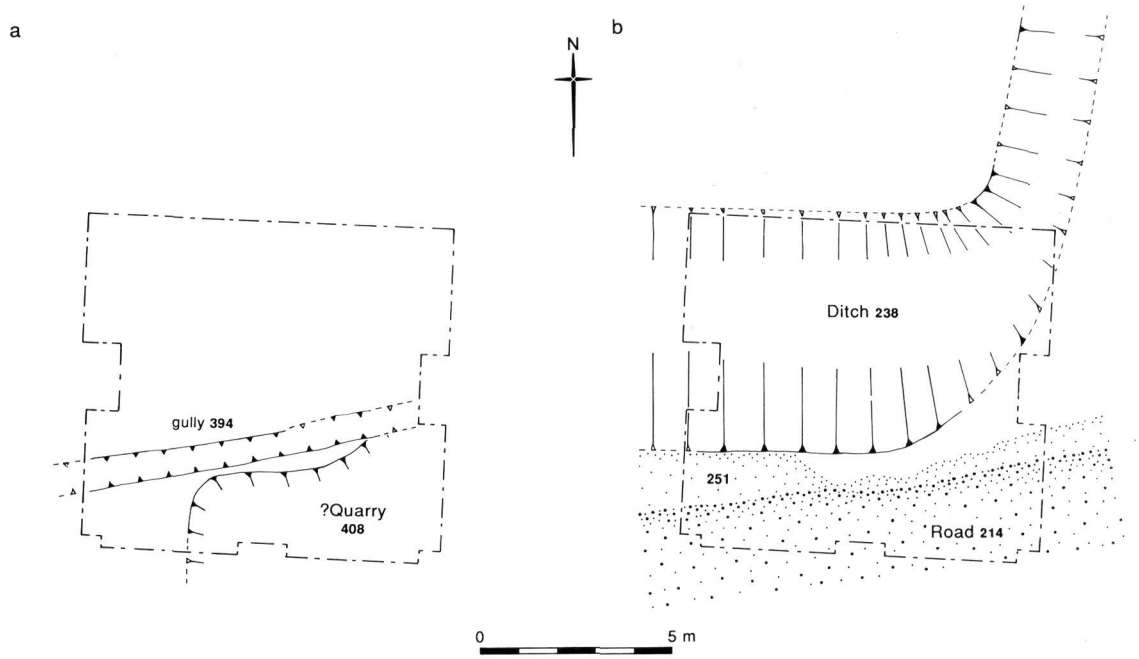

Fig 4. a. Interpretative plan Phase 1; b. Interpretative plan Phase 2

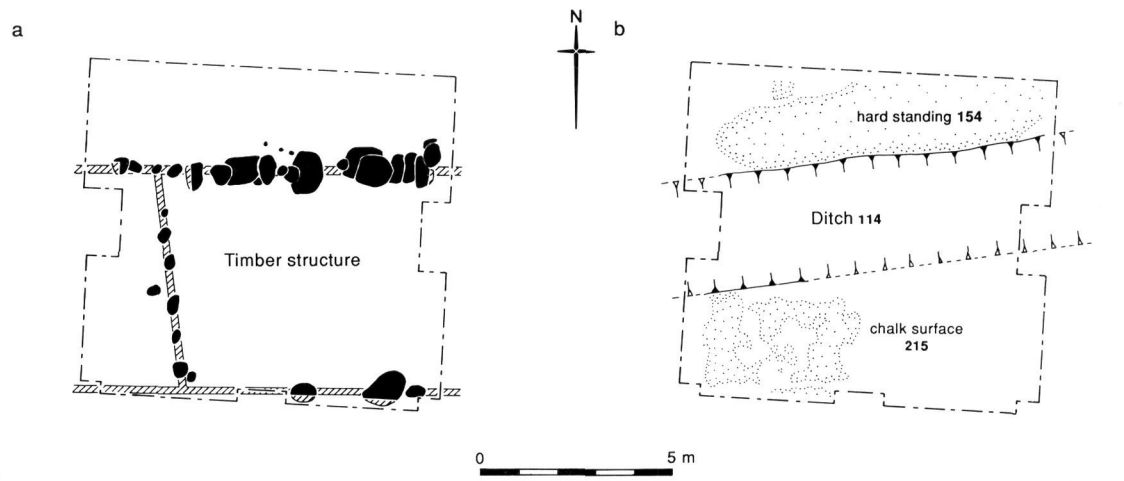

Fig 5. a. Interpretative plan Phase 4; b. Interpretative plan Phase 5

by a wheelbarrow used to bring in backfill material. Further dumping sealed the ruts and the fill of the ditch.

The ditch was almost certainly backfilled to provide additional building land on the southern edge of Thorney Island. The grandiose abbey planned by Edward the Confessor required a vast space, larger indeed than the available space on the Island itself, so land reclamation proved necessary.

Phase 4 Timber structure, 1050+ (Fig 5a)

Following the backfilling of the ditch and the abandoning of the possible road a timber structure was built. The structure extended beyond the limit of excavation but was at least 8.75m by 6.5m. It is probable that the structure was a building but could possibly have been fencing or animal pens. The siting of the structure over the backfilled ditch, the position

of which would have been probably known if not actually visible, implies that the building was only intended to be a temporary structure. The reason why the building was in that location is unclear.

The posts on the north side, that is those cut into the ditch fill, were more numerous than those on the south. This presumably was the result of the soft fill requiring additional posts to support the thrust of the structure. Postholes at right angles to the two postlines formed a partition. In some of the postholes a postpipe was visible but in most no indication of the size of the timbers survived.

Unfortunately, later features and two reductions of the floor level (Phases 8 and 9) within the undercroft removed most of the deposits associated with the structure. Those deposits not removed were largely within the central baulk and, therefore not available for excavation. The scanty deposits uncovered were stratigraphically loose and could belong to a number of other phases. Traces of burning slightly impinged on the excavated area but seemed to be fairly shallow. The burnt areas have been associated with the timber structure but could equally represent two or three bonfires associated with the hard standing (Phase 5).

As a result of later destruction and constraints on excavating the central baulk it is unclear what purpose the structure served. Assuming it was a building it could have been a storehouse, workshop or even a barrack block for labourers involved in the construction programme of the Confessor's abbey.

Little evidence survived for the length of time the timber structure remained in use or for the cause of its destruction. The only indication was a pit [184] which appears to have been dug to remove two of the posts of the timber structure. This would suggest that the structure was short-lived, being dismantled rather than abandoned. The absence of evidence for posts rotting *in situ* tends to confirm this.

The reason why the structure was dismantled or abandoned could not be determined with certainty but pottery recovered suggests the structure was in use during the construction of the church (*c.*1050–1070s; Gem 1980, 54; 1986, 14). As it became necessary to lay out the new cloister and associated buildings south of the church any temporary structures would have to have been cleared away. It should be noted that the pottery from the ditch, the possible road, the timber structure and the succeeding layers is chronologically very close (see pottery report below), implying that the sequence of these events took place in a comparatively short time.

Phase 5 Hard standing and ditch [114]

(Fig 5b)

A series of chalk and greensand dump layers [154] which overlay the ditchfill and the northern postline appear to have been make-up for a crude surface. The general increase in building rubble and debris in deposits indicates construction work taking place nearby, the surface probably forming a hard standing for the masons during their work on nearby buildings. The solid construction of the chalk and greensand surface may have been necessary to counteract the subsiding fill of the ditch [238]. A thin skim of crushed chalk [215] in the south bay may also represent the debris from building work but the underlying gravels of the possible road would have made a consolidated hard surface unnecessary.

Slightly cutting the hard standing in the north bay and the chalk skim in the south bay was a broad, shallow ditch [114], deepening to the west. This may have been cut to provide short-term drainage for the hard standing. The cutting of this ditch removed much of the area between the north and south postlines of the timber structure and separated much of the upper stratigraphy of the two bays.

Phase 6 Ditch backfilling and general levelling up

The partially silted up ditch [114] seems to have been deliberately backfilled. One layer [209] extended beyond the ditch into the south bay, apparently forming part of the levelling up the site for the new dorter. This layer contained an unusual decorated polychrome Late Saxon tile. A series of silty deposits, themselves cut by a scatter of stakeholes and postholes lay over the backfilling of the ditch. These deposits represent the last period when the site was open before the construction of the dorter undercroft.

The backfilling of ditch [114] indicates the construction sequence had progressed down the eastern side of the cloister range to the point that

the area needed to be prepared for the new buildings, including the dorter block.

Phase 7 Construction of the undercroft, late 1060s-early 1070s (Fig 6)

At this point the dorter undercroft was built. The building is described briefly in the introduction to this report and fuller descriptions can be found in RCHM 1924 and Gem (1980 and 1986); see also worked stone report below. The original floor is assumed to have been at the junction of the ashlar and the chalk foundations at *c.*3.5m OD. For structural reasons little of the undercroft foundations or adjacent stratigraphy could be examined. However, some limited information was gained regarding the construction of the building and its relationship to the adjacent deposits. The footings were loosely mortared, large to medium chalk blocks, apparently trench built to the offset level, then built as coursed rubble. The blocks were set in yellow sandy mortar.

A chalk footing [465] for the south-east corner of the undercroft cut through the levelling up over the backfilled ditch [114] (Phase 6). Other parts of the footings for the undercroft [130], [202], [338] and [461] were partially exposed but the investigation of the adjoining deposits was limited or prohibited. It has been assumed that these footings were contemporary with the footing [465].

Phase 8 First reduction of floor level, late 12th century (Fig 7a)

The excavation and watching brief revealed compact sand layers with patches of mortar, demonstrating that the floor level of the undercroft was reduced in the southern three bays from 3.5m OD to 2.9m OD. Pottery from features cut into this reduced floor suggest a late 12th-century date for the new floor level.

The new floor level probably formed part of a general rearrangement of the interior of the undercroft. The Pyx chapel was created in the 12th century by walling off the two northern bays of the undercroft and by the early 13th century the next two bays were walled off to form St Dunstan's Chapel. Alterations in the remainder of the undercroft are reflected by 12th-century carvings on some of the capitals showing the presence of (now vanished) screen walls. This shows that the undercroft was subdivided into a series of smaller rooms, including probably a warming room, its use in the later medieval period. The reason for the floor reduction may have been to permit greater air circulation in the warming room. Scorching on the late 12th-century carved capital on the southernmost pier perhaps indicates the use of braziers, the smoke from which would have been difficult to remove.

It was difficult to discern a coherent pattern in the scatter of cut features but the shallow gully [71/103] might represent the base of a wooden staircase from the south-west door to the lower floor level. The features were radically truncated by the later floor reduction in Phase 9. However, despite considerable damage, two small areas of occupation deposits survived, producing some late 12th/early 13th-century pottery. Although physically separated, the layers may represent a single period of occupation. Later intrusions make any further interpretation difficult.

Phase 9 Second reduction of floor level, 16th century (Fig 7b)

Perhaps just before the dissolution of the abbey in 1540, or conceivably in 1556–1560 when the abbey was refounded, the undercroft was extensively remodelled, the warming room refitted and a second floor reduction took place. The top of the new floor lay generally at *c.*3.1m OD (original 11th-century floor level at *c.*3.5m OD). The reduction in the late 12th century (Phase 8) had removed the floors associated with the construction of the undercroft and this second reduction removed most subsequent occupation deposits apart from fragments of occupation debris. The 16th-century reduced floor also occupied the three bays at the southern end of the dorter undercroft. It is likely that, as suggested for the late 12th-century floor reduction (Phase 8), it was carried out to allow better ventilation in the warming room.

Once the floor level had been reduced a series of walls, partitions and a fireplace were inserted. A partition wall was built between the central column and the west vault respond. The wall was subsequently thickened. On the east side of the central column another partition wall was built which was considerably more substantial than the western walls. The proximity of the central column to the east wall precluded detailed examination but the test pit (WST85) showed the foundations of the east wall to be 0.5m deep.

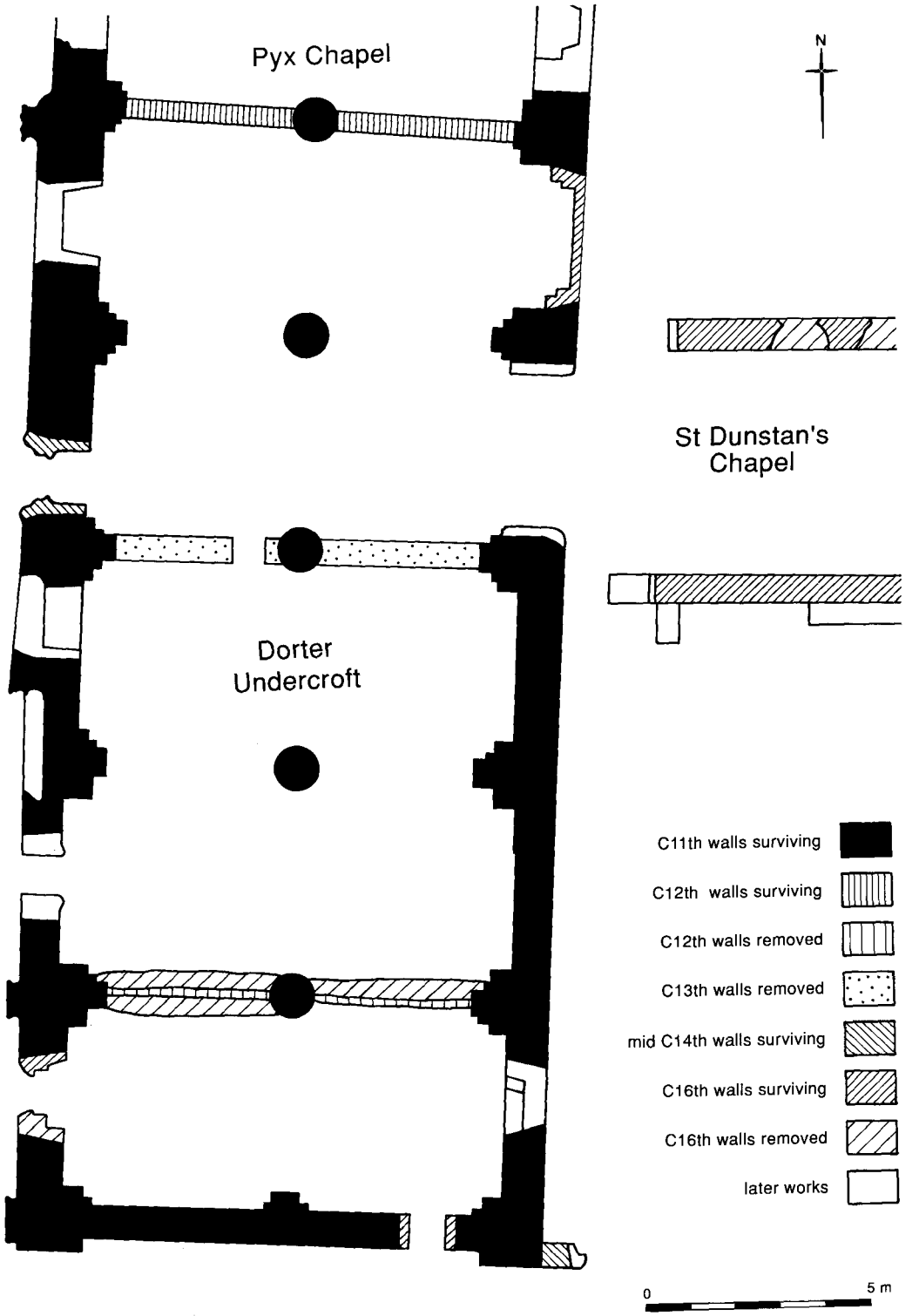

Fig 6. Historical ground plan of dorter undercroft showing construction dates (from RCHM)

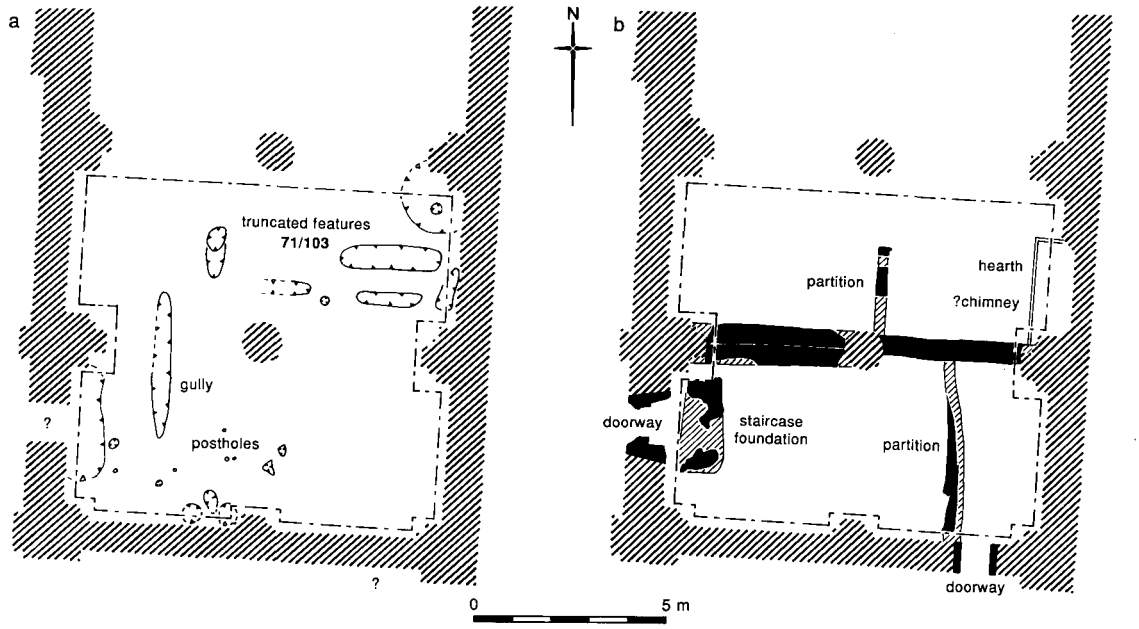

Fig 7. a. Interpretative plan Phase 8; b. Interpretative plan Phase 9

In the north bay a further subdivision seems to have been created by the insertion of a partition, perhaps in preparation for the construction of a sizeable pitched tile hearth. Although no remains of a chimney survived a butt joint and offset in the east wall of the north bay indicate that an external chimney was built for the fireplace.

In the south bay a clay floor [77] formed a compact surface. The remnants of a charcoal layer over the clay floor demonstrating that considerable burning took place in the room. A possible stone staircase was built by the south-west door, overlying a primary charcoal layer. The south-west doorway appears to be 16th century but could be a rebuild of an earlier doorway. Slots at the eastern end of the clay floor probably represent a wooden partition forming a separate room. A door, 16th-century in date, inserted in the south-east corner gave access to the screened-off eastern area.

Phase 10 Restorations, 16th–17th centuries

After the Dissolution the undercroft seems to have been used for storage. From the later 16th century onwards structural consolidation was undertaken, presumably as a result of visible subsidence. It could not be determined whether the underpinning took place at one time or represents a series of emergency measures in response to localised cracks and movement.

Phase 11, 17th–19th centuries

After the underpinning and repairs had been carried out the partition walls were demolished and rough floors were laid down, showing the building was still used for storage rather than domestic purposes. Further indications of structural problems are implied by postholes in both bays which may have been dug for posts propping up the vault. The make-up for the 20th-century floor sealed these.

THE FINDS

Introduction

Due to the relatively uncomplicated nature of the stratigraphy and small number of finds recovered, reports are presented in a traditional fashion with the minimum of integration.

In order to maintain easy cross-referencing with original records no attempt has been made to re-number contexts or registered finds for this report. As with the stratigraphic sequence,

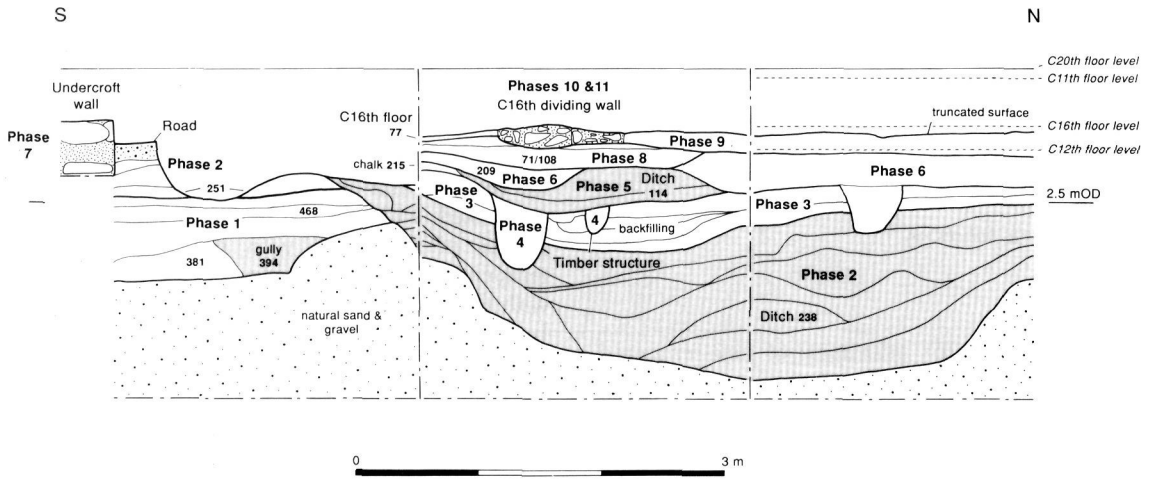

Fig 8. Composite N-S section showing sequence of deposits

contexts are given in square brackets []; numbers for registered finds in angular brackets < >.

As only selected feature and context numbers are discussed and illustrated in the sequence report above, it is necessary to identify the origin of those contexts which produced finds but are not referred to in the text. To this end all contexts in the finds reports are suffixed with their phase number ([393]1, for instance, is from context 393 from Phase 1 which is not reported on individually in the site report). In addition, a concordance of published feature-numbers-to-fill numbers containing published finds is listed below:

Phase	Feature	Fill
1	468	334
		339
		344
		349
		364
		368
		379
2/3	238	235
		238
		366
		372
		373
		392
		399
		402
		411
		418
		420
		421
		422
5	114	127
		189
		193

The pottery

Richenda Goffin

Introduction

The site provides a continuum of activity from the Late Saxon through to the post-medieval period. The residual pottery reflects the sporadic occupation of Thorney Island, perhaps from the Early Iron Age onwards. Some of the 8th/9th-century material may originate from the period following the foundation of the minster. This was traditionally thought to have occurred in the early 7th century, although the earliest documentary evidence suggests that it may have been later, in the 8th century (Brooks 1992, 22).

The most significant period of activity in terms of the ceramic assemblage is that which predates the construction of the dorter undercroft. The quantity of pottery, its well-stratified deposition, and the date of the construction of the undercroft, which has been postulated on stylistic and historical grounds as being sometime in the late 1060s or the early 1070s (Gem 1986, 17), provides a useful assemblage which can be compared to material from City sites and beyond. It will also contribute to establishing and refining the chronology of the development and distribution of Late Saxon/early medieval pottery types in this area of south-east England.

A total of 1,263 sherds of pottery (19,939 grammes), were recovered from WST85 and

WST86. The pottery was identified using the fabric identification descriptions and codes used by the Museum of London Archaeology Service. A description of the main fabrics for the Late Saxon/early medieval period can be found in Vince and Jenner (1991).

The prehistoric pottery

Hedley Swain

Fourteen sherds (95 grammes) of flint-tempered pottery were recovered, including a sherd with finger-nail decoration. These were dated to the early-mid 1st millennium BC.

The Roman pottery

Karen Waugh

Twenty seven sherds (356 grammes) of residual Roman pottery were present. Nearly all fragments were small and very abraded. The fabrics present ranged in date between AD 70 and 300.

The Middle Saxon pottery

Lyn Blackmore

A total of 32 sherds were recovered. The majority are of Ipswich-type ware. This ware is conventionally dated to *c.*650–850, although recent research suggests that it did not appear in the Middle Saxon settlement of *Lundenwic* until *c.*730 (Blackmore 1988, 85–7, 101–8; Blackmore 1989, 77–80, 104–7); it rapidly gained in popularity and remained the dominant ware until *c.*850/870.

In addition there is a small sherd of shelly or shell-limestone tempered ware, and a sherd of sandy ware. The former type is again associated with the later 8th and 9th centuries (Blackmore 1988, 88; Blackmore 1989, 83–4, 104–7). The latter, an abraded rim sherd, could be of Saxon or prehistoric date.

Imports are limited to a pitcher in a sandy orange ware from the Badorf/Walberberg area of Cologne Vorgbirge. This vessel which was probably spouted (Blackmore and Redknap 1988, fig 3 no.9) is strengthened by applied strips and has one of three original handles; similar wares have been found at Barking Abbey and at the Peabody site in the Strand (Blackmore 1989, 90). Badorf-type wares mainly seem to be found in 9th-century contexts in London, although the ware was probably reaching London from the late 8th century (Blackmore 1988, 92, 102–3; 1989, 104–7).

The above material, albeit residual, is of interest in that it comprises wares which are associated with the second and third ceramic phases of *Lundenwic*, with none of the chaff-tempered wares or earlier imports associated with the 7th and earlier 8th-century occupation. In this the site resembles others around the fringes of *Lundenwic* (*eg* Shorts Gardens to the north; the National Gallery basement (Blackmore 1989), Trafalgar Square and the Treasury site in Whitehall (Green and Thurley in prep), the finds from which suggest that the original settlement along the Strand gradually expanded inland and westwards. The Westminster Abbey finds are thus indicative of some activity in the area of the minster between *c.*750–850, a view which is supported by the presence on the site of other 8th to 10th-century finds.

The medieval and later pottery

Richenda Goffin

The fabrics discussed in the report are listed in Table 1, with their codes and date ranges according to current research from London sites.

Since many examples of similar material have been extensively illustrated in previous publications, pottery was only selected for drawing if it demonstrated unusual forms or decorations (see Fig 9). A full range of pottery types covering this period is illustrated in Vince and Jenner 1991, 19–119.

The significance of the early medieval pottery from pre-undercroft levels has been mentioned in the introduction. A brief summary of the pottery present in all the main phases is given here, followed by a discussion of the assemblage in comparison to similar excavated groups from the City and elsewhere.

Phase 1 (*c.*1050)

A single sherd of Late Saxon Shelly ware (LSS) was present in the silty sand overlying natural. No pottery came from the fills of the quarry [408], and an undiagnostic shelly sherd came from the gully [394] which cut it. The black and

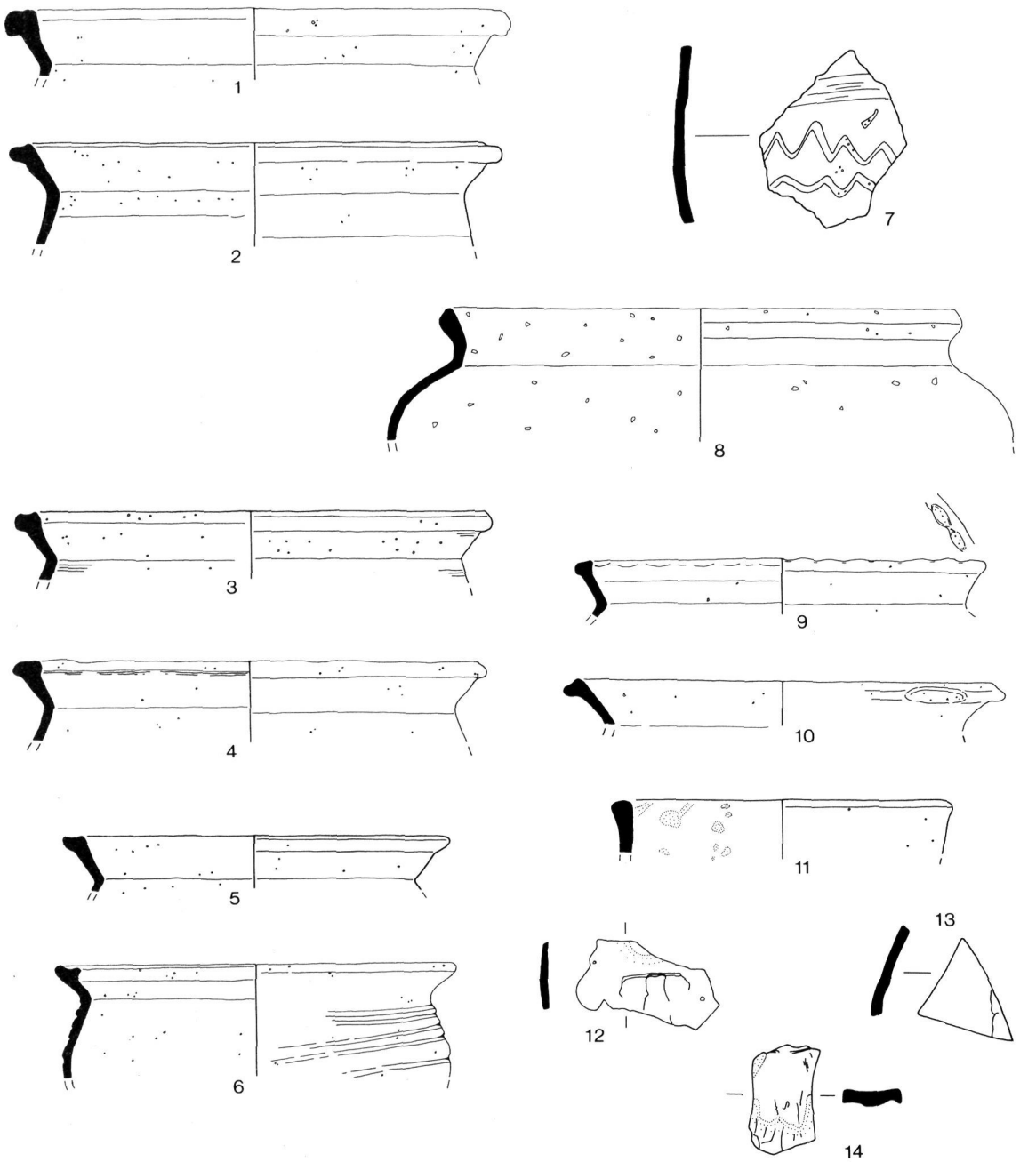

Fig 9. Early medieval pottery: 1–7 Early Surrey ware (1050–1150); 8 Early Medieval Sand and Shelly ware (1000–1150); 9–10 Local Greyware (1050–1150); 11 Winchester-type ware (970–1100); 12–14 Andenne-type wares (?1050–1200), 1:4

grey silty layers which covered the whole of the south bay contained a quantity of residual material (379 grammes, 17.8%), (prehistoric, Roman and Middle Saxon). LSS accounted for 57%; ESUR 4.8%; EMS 3.7%, with small quantities of EMSS and LOGR.

Phase 2 (1050+)

Small quantities of Late Saxon Shelly ware and a Local Greyware cooking pot were found in the sand makeup for the gravel surface [251]. There is a sherd link between the greyware vessel and

Table 1. Main pottery fabric types

Pottery type	Code	Date range
Late Saxon Shelly	LSS	900–1050
Early Medieval Sandy	EMS	970–1050
Early Medieval Sand and Shell	EMSS	1000–1150
Early Medieval Flinty	EMFL	1000–1100
Early Medieval Shelly	EMSH	1050–1150
Red Painted ware	REDP	970–1250
Winchester ware	WINC	970–1100
Andenne ware	ANDE	1050–1200 ?possibly 1000+
Early Medieval Chalky	EMCH	1050–1150
Early Surrey ware	ESUR	1050–1150
Local Greyware	LOGR	1050–1150
Coarse London-type ware	LCOAR	1080–1200
London-type ware	LOND	1080–1380 (mainly 1150+)
Kingston-type ware	KING	1230–1400
Coarse Border ware	CBW	1270–1500
Siegburg Stoneware	SIEG	1300–1550
Post Medieval Redware	PMR	1600–1800
London Stoneware	LONS	1670–1900

several other fragments in three different fills of ditch [238]. Three sherds of pottery from silt and sand layers over the gravel surface are LSS.

Eleven thousand eight hundred and ninety grammes of pottery were recovered from silt layers in the bottom part of ditch [238]. By weight, ESUR accounted for 74.3%; LSS 6.3%; EMSS 6.8%; LOGR 2.2% with small amounts of EMS. One point seven percent of the pottery was residual (prehistoric, Roman and Middle Saxon).

Phase 3 (1050+)

The half-filled ditch [238] was backfilled by sand and clay containing small sherds, mainly of LSS with ESUR and EMSS. These layers were cut by a series of linear features which contained no pottery.

Yellow sand dumped over these deposits contained a typical LSS rim cooking pot sherd, a LOGR body sherd and ESUR body sherds. This was in turn cut by three stakeholes, which were sealed by a thick layer of silty sand containing an ESUR rim sherd with the same well-made everted rim as another sherd found in the ditch fill.

Phase 4 (1050+)

The ceramic material associated with the timber structure which was raised over ditch [238] and the gravel surface is similar to that from within the ditch, indicating that no significant period of time had elapsed between the two events. One EMSS sherd links the fill of posthole [326] with the ditch fill [373]. Also present are some well-developed ESUR cooking pot rims, and a fragment of an EMSS spouted bowl which was recovered from the fill of a posthole on the northern side [332].

Much of the interior surface of the structure had been removed by later features, especially the ditch [114]. On the north side of the south bay a possible hearth and floor surfaces contained ESUR and LSS.

Partially sealing the northern postholes was a sandy silt containing ESUR. One sherd had an almost lid seated rim profile which was very similar to another found in [403], possibly belonging to the same vessel.

Phase 5

A number of deposits ([246], [252], and [257]) which sealed the silts contained building material and small amounts of ESUR and EMSS. Context [257] contained a sherd of Red Painted ware (REDP), probably from the same vessel as the three sherds found in [227], a green sandstone rubble layer. An irregular surface [154], sealed the dumping, which contained a sherd of EMSS and a sherd of LSS.

A narrower ditch ran along the same alignment as the larger previous ditch. It contained sherds of ESUR, ANDE and a sherd of intrusive London stoneware of post-medieval date.

Phase 6

Three contexts which may form the deliberate backfilling of the ditch contained ESUR, LSS, and EMSS.

A number of silty layers lay over the backfilling of the ditch and the remnants of the occupation levels of the timber structure. The fills of scattered postholes [112], [143] and [198] contained sherds of LOND, ESUR, and EMSS.

Phase 8 (late 12th century)

After the construction of the undercroft a small quantity of pottery was deposited which may have represented evidence of a deliberate levelling of the floor. In the northern bay this consisted of sherds of ESUR, LOND, and ANDE. One sherd of ESUR was found in the southern bay.

A number of features cut the sandy layers described above. In the northern bay several fragments of London-type ware were recovered. Some of these sherds were decorated in Rouen-style, and can be dated to the late 12th/early 13th century. A shallow pit [175] also contained a similar group of sherds of London-type ware. There was also a sherd of post-medieval redware in [132] – a long subrectangular scoop in the north bay. Further sherds of London-type vessels with North French and Rouen style decoration were found in the fill of a posthole cutting into the sandy surface.

In the northern bay a series of thin occupation layers [84] and [108] contained small quantities of ANDE, EMS, EMSS, ESUR and MG as well as some sherds of highly decorated LOND jugs, of a similar date to those just mentioned (late 12th/early 13th century). The partition wall between the central column and the west vault respond contained a sherd of a Siegburg drinking jug, probably a Jacobakanne of 15th-century date (Hurst *et al* 1986, 180).

Phase 9 (16th century)

A dump of rubble in the north bay contained a sherd of Kingston-type ware, with a sherd of Coarse Border ware (1270–1500) in the hearth area.

Phase 10 (16th–17th centuries)

Floor layers and occupation debris patches following the rebuilding of the foundations in the northern bay, contained pottery that ranged in date through the 16th–17th centuries; there was also some earlier material. Contexts [30], [43] and [44] contained pottery of late 14th-century date.

Phase 11 (17th–19th centuries)

Late 16th-century pottery was found in a layer of ash and clay [69], which was dumped over the east side of the south bay, forming a floor surface. The west partition wall was covered by a layer with pottery dated to 1600–1750. Contexts [21] and [26], however, contained pot of 14th/15th century date.

In the northern bay five postholes cut the rubble and mortar floor. Pottery from the fill of a posthole [14] was of late 16th-century date. Over these postholes was a deposit of demolition material dated 1600–1800. The fill of the brick drain also contained pottery of this date.

The pottery in relation to the site

Most of the pottery from the excavation came from activity which occurred before the undercroft was built in the late 11th century (82.8% by weight, 16,515 grammes). A summary of the main fabrics and their weight, percentage by weight, and estimated vessel equivalents can be seen in Table 2.

The narrow range of pottery fabric types in the features predating the undercroft construction suggests that these periods of activity took place within a comparatively short space of time. This is reinforced by the existence of sherd links between features in Phases 1 and 2 and Phases 2 and 4. The only pottery considered as being possibly of later date is two sherds of London-type ware found in the fill of posthole [111]6 in the phase of activity immediately predating the construction of the undercroft. Current research suggests that London-type wares (LOND and LCOAR) have been found in well-stratified deposits in the City as early as *c.*1080. Sherds at Billingsgate, for example, were found in a deposit dating between *c.*1085 and *c.*1108 (Vince 1991, 268). However, one of the sherds from the posthole comes from an early rounded London-type jug with red slip decoration, which is generally dated in the City to the second half of the 12th century (Pearce *et al* 1985, 19). It seems likely that this sherd is intrusive.

The disproportionate quantity of Late Saxon Shelly ware present in the backfill of ditch [238]2, *c.*44%, confirms the suggestion that there was secondary dumping over the initial ditch filling.

The dating of the first reduction of the floor levels is unclear, since the ceramic evidence is sparse, as much of the original deposits were removed by the later reduction of the floor. Once again the presence of several sherds of

Table 2. Main fabric types with percentages and rim EVEs from pre-undercroft features. Weights are given in grammes. EVEs = estimated vessel equivalents (see Orton 1975)

Phase 1						
Fabric	LSS	ESUR	EMSS	EMS	LOGR	Pre-med
Weight	1213	102	59	78	39	379
Eves	0.61	0.12	0.08	—	0.12	—
%Weight	57	4.8	2.8	3.7	1.8	17.8
TOTAL 2128g						
Phase 2						
Fabric	LSS	ESUR	EMSS	EMS	LOGR	Pre-med
Weight	744	8845	815	296	260	205
Eves	0.91	4.87	0.74	0.05	0.29	
%Weight	6.3	74.3	6.8	2.5	2.2	1.7
TOTAL 11890g						
Phase 3						
Fabric	LSS	ESUR	EMSS	Pre-med		
Weight	241	153	33	92		
Eves	0.25	0.11	0.04			
%Weight	43.9	27.8	6.0	16.7		
TOTAL 549g						
Phase 4						
Fabric	LSS	ESUR	EMSS	Pre-med		
Weight	99	373	208	10		
Eves	—	0.39	0.17			
%Weight	14.1	53.1	29.6	1.4		
TOTAL 702g						
Phase 5						
Fabric	LSS	ESUR	EMSS	LOGR	Pre-med	
Weight	118	432	55	22	191	
Eves	0.07	0.31	—	0.05		
%Weight	10.8	39.7	5.0	2.0	17.5	
TOTAL 1088g						
Phase 6						
Fabric	LSS	ESUR	EMSS	LOND	Pre-med	
Weight	2	83	15	6	52	
Eves	—	—	—	—		
%Weight	1.3	52.5	9.5	3.8	32.9	
TOTAL 158g						

Early Surrey wares, some Local Grey ware and a small quantity of plain London-type ware with some Andenne sherds suggests that it could have occurred *c.*1080 onwards, and that it was cut by features containing pottery of late 12th/early 13th-century date.

The floor surface was reduced a second time and a tile hearth built. Pottery evidence suggests that this took place *c.*1300–1500 (Coarse Border ware and Siegburg stoneware jug).

The significance of the pottery in relation to the ceramic sequence of the London area

Forms and decorative techniques (Fig 9)

The range of forms within the early medieval fabrics appears to reflect the proportions of vessel types in other assemblages excavated from within the City. Seven point two percent of Late Saxon Shelly (by weight) was positively identified as dishes, 3.2% was from a spouted pitcher. The remainder consisted of cooking pot rims and body sherds which were unassignable to a particular form. The type and quantity of vessel forms of EMS, EMSS and EMCH also appear to reflect similar proportions to those excavated from the City, with cooking pots making up most of the assemblage. Some EMSS cooking pots were large (Fig 9, 8). Only one sherd of EMS was identified as coming from a dish, and only a single example of a spouted bowl in EMSS was noted. Cooking pots were the only form identified in Local Greyware. Both EMSS and LOGR included rims with thumb impressions around the top of the vessel, a decorative feature which

appears frequently among the fabric types of this period (Fig 9, 9–10). Almost all the Early Surrey wares were cooking pots, although there was evidence of storage jars or pitchers, in the form of rim sherds and large body sherds. The wares varied considerably in colour, fabric, rim form, and surface decoration. The majority of cooking pot types were well made, with well-developed rim forms, although some were unevenly shaped (Fig 9, 1–5). Many had everted necks with rim forms that almost formed a lid seating, while others had simpler everted rims. Several sherds had incised banding round the shoulder and/or the girth (Fig 9, 6–7). It has been suggested that this effect was achieved with a wooden tool with a jagged edge (Vince & Jenner 1991, 29).

The Early Surrey ware sherds found in post-undercroft deposits were compared to vessels made in the same fabric from earlier on in the sequence. The rim forms were similar, with a mixture of simple everted and more elaborate styles. There appears to be little typological development in form within the different phases. Overall the range of forms and decorative techniques for the Early Surrey ware recovered from Westminster is very similar to the material excavated from the City.

Fabrics

The early part of the assemblage predating the undercroft was compared with the research undertaken on the Late Saxon/early medieval pottery sequence in the City of London. Although much work has been done to establish a chronology of fabric types from excavations in the City, the research has been enlarged and refined by subsequent work, mainly by Vince and Jenner (1991). By studying the pottery from a series of waterfront excavations in the City, it has been possible to establish a series of ceramic phases for this period, based on relative dating and, where possible, dendrochronological and coin evidence. Ceramic developments can therefore be suggested, which can be modified if necessary in the light of additional data from new sites.

Shell-Tempered Wares

Evidence from waterfront sites in the City suggests that the mainly wheel-thrown Late Saxon Shelly ware (LSS) was used in association with hand-made EMS and EMFL fabrics in the mid 10th to early 11th century (Ceramic Phase (CP) 2), forming nearly 70% of the assemblages in stratified contexts by weight. In the early to mid 11th century (CP3), it appears with EMS and EMSS, making up nearly 50% of the total pottery. LSS is present in the New Fresh Wharf deposit associated with CP3, which was dated from dendrochronology to *c.*1030. LSS is also present in a comparable deposit at Billingsgate dated *c.*1039–40. However, it is thought not to have been in use *c.*1055, although over 20% is still present in assemblages dating from the mid to late 11th-century (CP4) (Vince & Jenner 1991, 49).

The interpretation of the presence of LSS in 11th-century deposits in the City is the subject of much debate (Vince & Jenner 1991, 42–4; Jones 1991, 80–1). Petrological examination of the clay from which Late Saxon Shelly pottery was made indicates a possible source in Oxfordshire (Vince & Jenner 1991, 49). The discussion therefore centres on the question of identifying LSS as the same fabric as Oxford B ware, which is found in the Oxford area. LSS is present in City deposits belonging to CPs 3 and 4 (1020–1100), some years after Oxford B type ware was no longer being produced in the Oxford area, after the sacking of the city in the early 11th century (Mellor 1980). Since there appears to be too high a quantity of LSS present in CP3 assemblages to be residual, one possibility is that the City of London continued to be supplied by the Oxfordshire potters, although they were no longer distributing their wares closer to home markets. Another possibility is that the clay came from a different, albeit similar source. Further research, both on the petrological analysis of LSS and on its presence on other well-dated sites in the Greater London area should enable a fuller picture of the production and distribution of this ware during this period to emerge, together with other similar shelly wares. The lack of Early Medieval Shelly ware (EMSH) from Westminster Abbey is noticeable, since it is present in City assemblages in small quantities *c.*1055, although much more prevalent in the latter part of the 11th century through to the mid 12th (Vince & Jenner 1991, 64). The shell inclusions in this fabric suggest that an outcrop of the Woolwich Beds, perhaps in north-west Kent, may have been the likely source (Vince & Jenner 1991, 63).

Early Surrey and Local Greywares

The earliest City deposits containing small quantities of Early Surrey wares can be dated at

Billingsgate to a group dated between 1039–40 and 1055, although it is much more prevalent in CPs 4 and 5 (mid 11th to mid 12th century). Although Local Greyware is present in deposits in CP4, it is much more common in CP5 (late 11th to mid 12th century (Vince & Jenner 1991, 75, 79).

The association of Late Saxon Shelly with Early Surrey ware and Local Greywares found at Westminster does not altogether reflect this pattern. The first substantial ceramic group from flood deposits in Phase 1 consists of 1,213g of LSS and 102g of ESUR (57% and 4.8% by weight respectively), with small amounts of EMSS, EMS and LOGR. On present evidence this suggests a deposition date of *c.*1050, although it is possible that ESUR and/or LOGR was being distributed in this part of London slightly earlier than in the City. The fills of the large ditch [238]2 contained a considerable quantity of LSS, and this increased in the backfilled deposits which represent secondary dumping. However, the dominant fabric is ESUR, with smaller quantities of LOGR and EMSS and EMCH. The presence of these fabrics may suggest that the ditch was filled around 1050, or even shortly predating the undercroft itself, allowing for the other phases of activity which took place before its construction.

Unassigned or Unusual Fabrics

130g of pottery recovered from the pre-undercroft layers were made from a distinctive fabric which has not been assigned a formal identification code in the reference material for the London area. The fabric is soapy, and usually oxidised with a grey core. It is micaceous, with sparse translucent quartz and sparse flint inclusions usually less than 1mm in diameter. The two rim sherds are of simple everted type.

In addition, 63g of another distinctive fabric, which also could not be formally identified, came almost exclusively from pre-undercroft contexts. The sherds were partially oxidised with grey cores. They were characterised by abundant large angular and sub-angular quartz inclusions up to 1mm, flint inclusions up to 3mm, and abundant inclusions of shell up to 5mm in length.

A single sherd from a Winchester ware pitcher from the ditch-fill [238]2 is a very unusual find for sites in the London area (Fig 9, 11). Small quantities of this pottery type have been found in the City (Vince 1985, 39; Vince 1991, 271).

Imports

84g of Andenne-type ware (ANDE) was recovered from WST85 and WST86. The vessels represented are fragments of glazed pitchers, one decorated with an applied strip and one with rouletted decoration (Fig. 9, 12–14) (Borremans & Warginaire 1966, 30). The earliest sherds in the sequence come from the main ditchfill ([418]2 and [421]2), in association with ESUR, EMSS, and EMS. Other sherds from later features are found with ESUR and LOND. Vince suggests that Andenne-type wares are found first in City deposits in small quantities as early as the first half of the 11th century, although they are absent from deposits of that date at Billingsgate and New Fresh Wharf. They were present in the succeeding levels from these sites, dating to the late 11th century. At St Nicholas Acon church, pits containing ESUR, STAM and ANDE with a coin dated to 1018–24 or later, were sealed by the earliest structure of the Church, which is first recorded *c.*1080 (Vince 1985, 40). Andenne-type ware is however, most common in City deposits dating from the late 11th to the middle of the 12th century (CP5) (Vince & Jenner 1991, 106).

99g grammes of Red Painted ware was also recovered, probably from a single vessel. The fabric was hard, although not properly fused like stoneware, and the vessel was salt-glazed. It was probably made near Cologne or Bonn in the Rhineland and may date to the late 11th century or later (Hartwig Ludtke, pers comm). The sherds came from a surface associated with a phase after the demolition of the timber structure, and were found with ESUR, EMFL and EMSS.

Conclusion

The pre-undercroft ceramic assemblages (Phases 1–6) from Westminster Abbey appear to provide a snapshot of pottery fabric types from a narrow date range, *c.*1040 to the early 1070s. More substantial, well stratified assemblages from beyond the City need to be studied before conclusions on the significance of the Westminster Abbey pottery can be reached. Such sites as Bermondsey Abbey and Merton Priory (both MoLAS in prep) may provide more material. Pottery has been recovered from pits and ditches at the nearby Treasury site, Whitehall Palace, but this is of mainly 12th-century date (Huggins in prep).

The early medieval pits at Winchester Palace just south of the City on the other side of the Thames contain considerable quantities of comparable material of mid 11th to late 12th-century date (Goffin in prep). The features, though, cannot be tied to sequences of great stratigraphic value, and provide no additional dating evidence. However, the fabrics, their relative proportions and associations with each other appear to be consistent with the ceramic chronology established within the City. It is hoped that future work on large assemblages of similar pottery from recent excavations, such as Guildhall Buildings, may enable existing chronologies to be refined still further, especially for key fabrics such as Late Saxon Shelly, Early Surrey ware and Local Greyware.

The pottery from the Westminster Abbey excavations provides a useful addition to the chronology of fabric types in London. The archaeological activity occurring immediately before the construction of the undercroft appears to coincide with a period of ceramic transition which predates the imminent political upheavals. How far the assemblage is characteristic of patterns of distribution in this area of London cannot yet be ascertained. Are there 'significant differences between the supply of London, and, for example, that of Lambeth and Westminster?' (Vince 1985, 42). The evidence so far suggests that this is not the case.

The accessioned finds

Richenda Goffin

A total of 155 accessioned artefacts were recovered from the excavations in the undercroft. The finds represented a wide range of material types: flints, quernstone fragments, worked stone, metalwork, window glass and ceramic objects. Much of the ironwork was in a poor state of survival and little could be identified even after x-radiography.

The accessioned finds were catalogued and computerised, according to the standard procedures used by the Museum of London. Where necessary, objects were conserved and X-rayed. Selected objects are on display at the Undercroft Museum in Westminster Abbey.

This report discusses the main artefacts from the site that could be identified, with illustrations. The other artefacts have been included in specific reports, such as the glass and the worked stone, or are unpublished but available at archive level.

The small quantity of residual worked flint, together with pottery recovered from the site, suggests some activity in the vicinity of the site during the prehistoric period.

No features of Roman date were excavated although some sherds of abraded Roman pottery and considerable quantities of ceramic building material were recovered. The stamped tile <13> is of particular significance (Fig 14, 28). No other artefacts dating to this period were found.

Evidence of Middle Saxon activity from the original foundation of the minster is sparse, consisting of some sherds of pottery dated *c.*750–850. Other artefacts, such as some of the decorated metalwork, may be of Middle Saxon date, but these could also be attributed stylistically to the Late Saxon period and the refoundation of the minster under Dunstan in the 10th century.

Many artefacts were recovered from the fills of the ditch [238]2. In particular, small quantities of window quarries and grozing debris indicate considerable activity associated with new construction work undertaken on behalf of Edward the Confessor.

A fragment of polychrome relief tile of Late Saxon date may be associated either with building modifications undertaken during the time of Dunstan or with the later rebuilding undertaken by Edward the Confessor.

Certain objects found in post-undercroft deposits can be associated with the life of the abbey during the medieval period. These include the double-sided ivory comb <17> (Fig 11, 22), the bone writing implement <70> (Fig 11, 25), and copper alloy buckle <2>. Further evidence of the buildings themselves was supplied by the ceramic building material and worked stone.

Catalogue

Silver

<43> Fragment of coin of Ecgberht of Wessex dated *c.*AD 835–9 ECGBE(RT)REX. Diameter 20mm. As North 1.579 (rev, cross potent), but two arms of cross (opposing) replaced by wedges (Mike Hammerson, pers comm). This coin of 9th-century date is extremely rare. Discussed and described in Stott 1991, 285–6. [379]1. Fig 10, 15.

Copper alloy

TWEEZERS

<41> Copper alloy tweezers with copper alloy suspension loop. Gradually expanding and slightly flared shafts, with

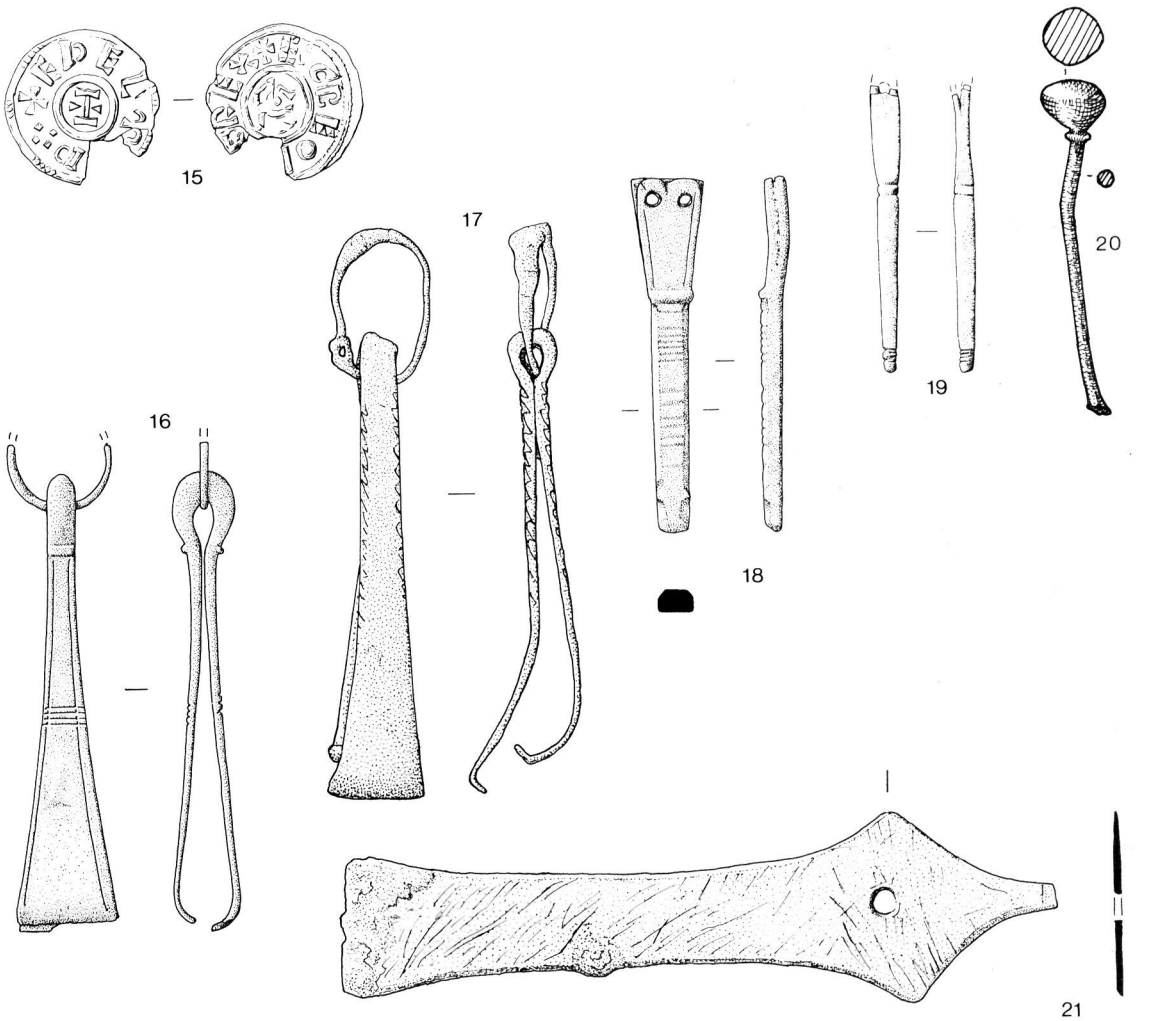

Fig 10. Silver and copper alloy objects: 15 silver coin of Ecgberht; 16–17 copper alloy tweezers; 18–19 copper alloy strap ends; 20 copper alloy pin; 21 copper alloy clasp, 1:1

inturned arms. Both sides decorated with continuous incised lines running parallel to the shaft sides. Shallow tranverse incised decoration half-way down shaft. Length: 61mm. [375]2. Fig 10, 16.

<12> Copper alloy tweezers with copper alloy wire suspension loop, twisted at the end. Gradually expanding and slightly flared shafts, with inturned arms. Both sides decorated with diagonal shallow slashes on the upper half of shaft. Length 62mm. [265]2. Fig 10, 17.

Both sets of tweezers are well preserved, although <12> is slightly bent. <41> in particular is of extremely good quality and carefully decorated. It was found on the earliest ground surface over the natural subsoil, which also had some Late Saxon Shelly ware (900–1050). <12> was recovered from one of the silt and sand layers, which built up over a gravel surface in Phase 2. This tweezer-type, with expanding and incurved arms appears to have a long lifespan, so dating is problematic. Such implements follow in the tradition of Roman tweezers, and similar types have also been found in pagan Anglo-Saxon graves, such as at the cemetery at Monkton, Thanet, and Lyminge, both 6th century in date (Chadwick *et al* 1974, 70, fig 9, no.2; Warhurst 1955, A, nos 3 and 4, fig 6).

Tweezers with these characteristics continued to be made into the 9th century and beyond. Five types of tweezers were recovered from the excavations at Whitby Abbey (North Yorks), several of which are not dissimilar to those from Westminster Abbey. The closest in shape to both pairs, although not in terms of decoration, is Peers and Radford 1943, 61, no.13, fig 13. A second set has a similar type of decoration to <12>, with curved impressions running down both sides of the shaft (*ibid* no.10, fig 13). The abbey at Whitby was in existence from AD 657–867 when it was destroyed by the Vikings.

Similar tweezers are also found in Late Saxon deposits, although it is possible that they are Middle Saxon and

therefore residual. A pair of gilded silver tweezers of this shape were recovered from the upper fill of a Period I ditch at North Elmham, which contained a few sherds of Late Saxon pottery (Goodall 1980, 506). The closest parallel to <41> typologically is a pair of tweezers with the same incised decoration along the shaft which was recovered from a ditchfill at Shepperton Green, dated 1050–1150 (Clark 1979, 118, no.7).

Closer to the site at Westminster, two pairs of copper alloy tweezers (of Middle Saxon date) were recovered from excavations at Peabody Buildings in the Strand (Blackmore 1989, 119, nos 211–212). They were less well preserved than the Westminster Abbey examples, and the shafts were less flared.

STRAP ENDS

<50> Copper alloy strap end with stylized zoomorphic decoration. Length 46mm, width at widest point 9mm. [381]2. Fig 10, 18.

The strap end is styliform in shape, with two rivet holes at the split end. The shaft is decorated with a collar and transverse grooves which have been shallowly and crudely incised. The terminal is decorated with a stylized portrayal of an animal head, with a rounded snout and indentations for the shape of the head and eyes. The reverse side is flat.

The object was recovered from the same fill as tweezers <41>. In view of the accompanying pottery and the stylistic details which will be discussed below it seems likely that it is of Late Saxon date.

The strap end comes from a well researched category of Saxon artefacts. A brief discussion of the different types and functions can be found in Wilson 1964, 62. Although such items can be found in 7th-century Saxon graves in Britain, they are more usually associated with the 9th century. Elaborately decorated examples with finer representations of animals on the terminals have been found in hoards such as the Trewhiddle hoard which was deposited *c.*875. Strap ends with animal-head terminals are also found in early 10th-century hoards although later on in the century they become much heavier.

Strap end <50> appears to represent a degenerate form of the zoomorphic type. It is more elongated in shape than most 9th-century examples and crudely executed with little detail. It does however share the same basic features as the fine example in the Ashmolean Museum, registered as from Ixworth, Suffolk (Hinton 1974, 22, no.16). Here, the strap end is long and slender with a single rivet. It is more finely decorated with a collar, the ovoid shaft probably originally decorated with niello, and a delicately modelled head further embellished with a niello panel. Although the strap end is recognised as being of a less common type than usual, it is still thought to date stylistically to the 9th or early 10th century.

The Westminster strap end is far closer in style to one from Portchester Castle (Cunliffe 1976, 216, fig 136, no.52). This has a similar long and narrow shape, and transverse grooves in bands on the shaft. It has a faceted terminal which may be a crude representation of an animal head.

<25> Copper alloy strap end, slightly broken at rivet end. Surviving length 38mm. Rounded shaft with flattened split plate with single rivet hole. Rounded terminal, decorated with incised bands all the way round the shaft. Incised bands at the other end of the shaft before flattening out for the attachment plate. [344]1. Fig 10, 19.

This strap end was found in a flood deposit early on in the archaeological sequence. Although Late Saxon shelly ware was present in fill [344]1, there was also a quantity of Early Medieval Sand and Shell pottery (1000–1150).

Although smaller and simpler in terms of decoration than <50>, strap end <25> is well made and delicate. It ressembles a smaller strap end recovered from dark earth deposits at Peabody Buildings (Blackmore 1989, 121). Another parallel can be found at Maxey, Northants (Addyman 1964, 63, fig 17, no.1).

<45> Copper alloy pin. Pin with slightly flattened globular head and collar at the junction between the head and shaft. [393]1. Fig 10, 20.

Similar pins, although with more biconical-shaped heads, have been found at the Middle Saxon sites of the National Gallery Extension and Peabody Buildings (Ross 1989, 119), also at Shorts Gardens (MoLAS in prep), all in the Strand. Although they are usually associated with the Middle Saxon period, there are examples of similar pins in later features, but these may be residual. An example is the simple type of pin with an ovoid head recovered from a ditch fill dated 1050–1150 at Shepperton Green (Clark 1979, 118).

<49> Copper alloy clasp. Surviving length 96mm, widest point 25mm. Shaped, but undecorated and crudely fashioned. The clasp may have belonged to part of a casket, being part of a hinged attachment. It is possible that it was a book clasp, although these were usually more highly decorated. There is no evidence of any hooked attachment at the end to which a strap would have been attached to keep together vellum pages. It was found in the fill of [238]2, with pottery of Late Saxon, early medieval date. Fig 10, 21.

<2> Copper alloy plain circular buckle with single loop frame and transverse pin, diameter 27mm. This simple undecorated buckle was recovered from a clay floor associated with the refurbishment of the undercroft as the abbey warming room in the early 16th century. Such buckle types are difficult to date, but most examples recovered from the Billingsgate Lorry Park watching brief come from Ceramic Phase 11, (*c.*1350–1400), with some from CPs 9, 10 and 12 (Egan & Pritchard 1991, 57–59). [77]9.

<54> Copper alloy fragment, length 103mm, diameter 3mm at widest point. The shaft is not completely circular, but appears to be more rectangular towards the centre. The fragment was recovered from the fill of the ditch [238]2, and may be Late Saxon in date. [411]2.

<71> Copper alloy fragment, perforated, possibly part of a mount or fitting. Undecorated. Perforations *c.*2mm in diameter, spaced at an interval of 30mm. Length 50mm, width 12mm, thickness 0.5mm. [77]9.

<81> Copper alloy jetton. French, 14th century. Also from clay floor [77]9.

<1> Copper alloy Nuremberg token, *c.*1607–10. Obverse: HENRI.IIII.D.G.FRANCOR.ET.NAVAR.REX; Reverse: REGIS.SACRA.FOEDERA.MAGNI (Identification Mike Hammerson). [6]11.

<36> Copper alloy ovoid disc, not a coin. [238]2.

<51> Concreted mass of copper alloy corrosion, nothing visible on the x-ray. [403]2.

Lead

<10> Scrap of lead. [236]5; <11> Solid lead fragment. [245]5; <23> Scrap of lead. [213]3; <53> Strip of twisted lead. [411]2.

These fragments of lead could not be recognised as being from identifiable artefacts such as window cames. They were found in late Saxon layers predating the construction of the undercroft. Other unidentifiable lead fragments were recovered from contexts [322]4 and [418]2, also of a similar date.

Iron

<16> Fragment of whittle tanged iron ?blade with wood handle, identified as ash (*Fraxinus*) (Ian Tyers, pers comm). The fragment is in a very poor state of preservation and very little of the ?blade survives. [235]2.

<74> Iron shoe for attachment to wooden spade. Length 225mm, width at widest point 109mm. Post-medieval in date, pottery 1550–1750. [50]11.

Ivory

<17> Complete double-sided comb made from walrus ivory (Ian Ridler, pers comm). Fine teeth on one side and coarse teeth on the other. Dimensions: length 59mm, width 35mm. Incised lines on both sides of the fine teeth side of the comb indicate the depth to which the teeth should be cut. The overall shape is oblong, but the piece from which the comb is cut is chunky and lozenge-shaped in section. This means that the teeth themselves are deep, although from above they look quite slender. The comb has a narrow solid zone *c.*3–4mm in width. Indications of transverse wear marks on teeth. [109]10. Fig 11, 22.

Comb <17> was recovered from the fill of a pit [109]10, which was probably dug to check the underpinning on the west side of the north bay. Among other earlier medieval pottery from the pitfill were four sherds of London-type ware (1150–1350).

This one-piece comb can be dated stylistically to a type associated with the 11th/12th century (MacGregor 1985, 81). Many examples, particularly in bone, have been recovered from sites in northern Europe, such as those from the Plessenstrasse, Scheleswig (Ulbricht 1984, tables 61–63). However, single-piece combs of this type are rarely found on British excavations. This may be due largely to the combination of the nature of the raw material used for the manufacture of combs, which during this period was often boxwood, with the type of soil conditions in which they were buried (Pritchard 1991, 366).

An exception is the elephant ivory comb recovered from a construction trench at Tackley Church Oxfordshire (MacGregor 1986, 38). This is smaller than the Westminster Abbey comb, and has a wider decorated solid zone. It is thought to be of 11th-century date. A small one-piece bone comb, probably of similar date, was found at Wallingford, Oxfordshire (Hedges 1881, 184).

Walrus ivory appears to have been used from the Alfredian period until the end of the 12th century, when supplies of elephant ivory were once more forthcoming after the period of prolonged disruption of trading routes (Ian Ridler, pers comm). Arthur MacGregor notes how it was used for the production of devotional and secular objects from the 10th to the 12th or 13th centuries, and was traded by Scandanavian merchants as far as the Middle and Far East (MacGregor 1985, 40).

Worked bone

<24> Bone needle, made from pig fibula, pierced at distal end with hole 4.5mm in diameter. Proximal end broken. Surviving length 65mm. [339]1. Fig 11, 23.

Bone implements like this have been found in Middle Saxon features in the Strand sites and in Late Saxon/early medieval City deposits of the 10th to 12th centuries (Blackmore 1989 132, Pritchard 1991, 207).

<37> Fragment of worked antler tine, probably from red deer. Cut at both ends. [368]1. Fig 11, 24.

<70> Bone writing implement, parchment pricker (?). Length 95mm. Polished and turned with incised transverse decoration incised on top half of shaft. Rounded and well carved head. Pointed end has the remains of a corroded iron tip. [77]9. Fig 11, 25.

Such implements are often recovered from monastic sites (Geddes 1985, 150–1). Several were recovered from excavations at Bermondsey Abbey (Beard in prep). Although sometimes considered as being stylii, it is likely that these implements were used to prick out straight lines on vellum before the lines were ruled properly with lead or ink.

Miscellanea

<62> Small fragments of egg shell were recovered, attached to a fragment of ragstone. This has not yet been identified, although burnt it is thought most likely to be chicken egg (Jane Sidell pers comm). [209]6.

Flints

Jonathan Cotton

A total of seven worked flints were recovered from the site, which were all residual. Similar material has been recorded on other sites in the vicinity such as Cromwell Green (Collins 1980, 27).

<14> Blade core, probably Mesolithic or early Neolithic. [300].

<151> Reworked crested blade, very heavily abraded. Bulb of percussion removed. Early Mesolithic or even Late Glacial (10,000–6,000BP). [193]5. Fig 11, 26.

<150> Struck distal end of broad blade narrow flake. [339]1.

<38> Retouch of broken blade or narrow flake. [364]1.

<79> ?failed removal fragment from blade core. [352]3.

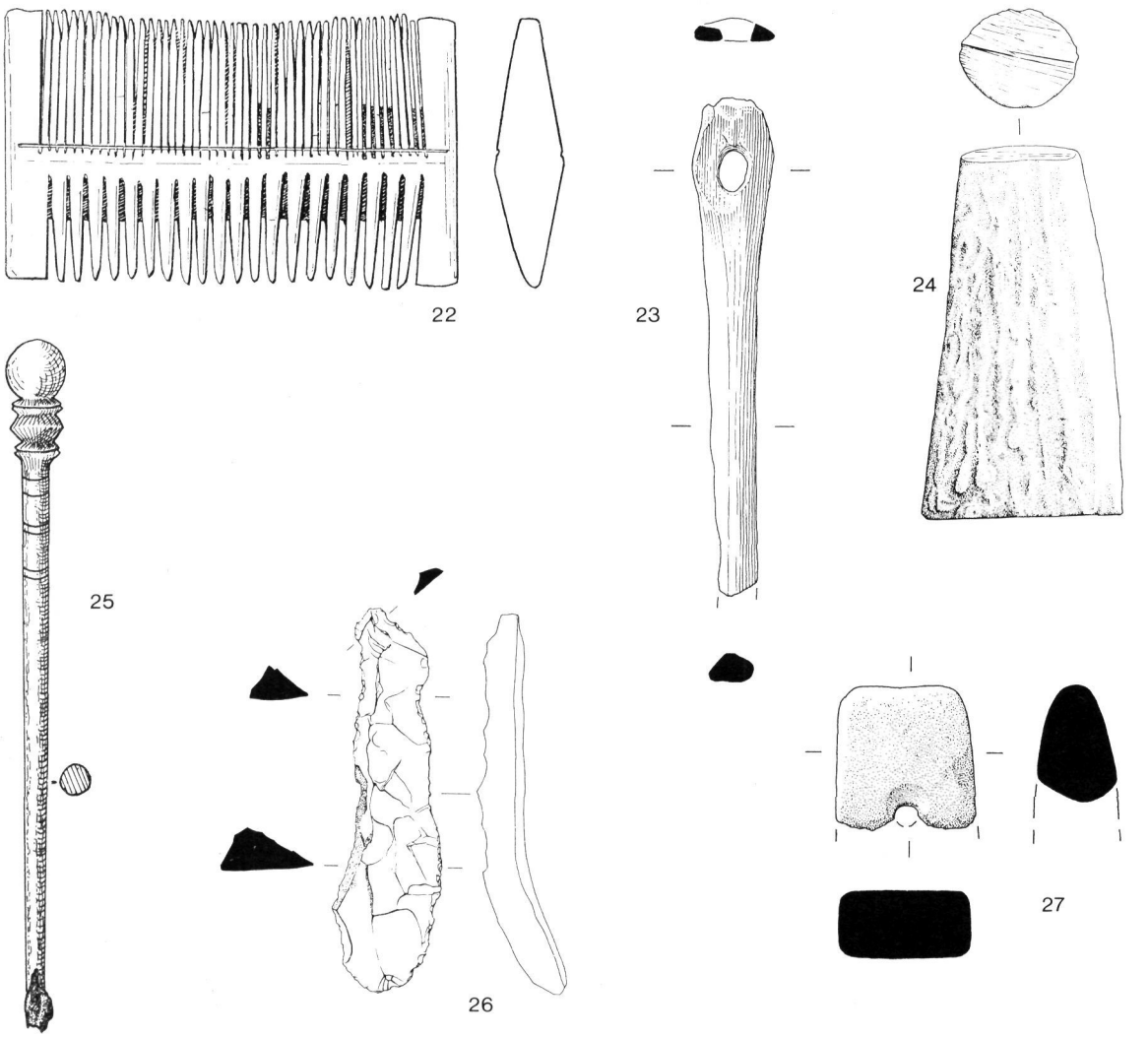

Fig 11. Bone, ivory, antler and stone objects: 22 ivory double sided comb; 23 bone implement; 24 worked antler tine; 25 bone writing implement; 26 flint blade; 27 stone hone fragment, 1:1

Hones

(Petrological identifications by Ian Betts)

<44> Fragment of large perforated hone. Dimensions: Surviving length 35mm, width 36mm, depth 22mm. Soft, very fine grained sandstone. [379]1. Fig 11, 27.

<75> Fragment of stone, possible worn by grinding. One edge has a white deposit still adhering. Hard, fine grained laminated micaceous sandstone. [364]1.

<77> Fragment of stone used for blade sharpening. Several impressions of blades on one surface. Hard, fine grained, partly laminated sandstone. [399]2.

Lava quern fragments

D. F. Williams

<70> [402]2, and <80>, [166]8.

These two quern fragments were made from a grey, fairly coarse vesicular lava which contained conspicuous dark phenocrysts of pyroxene. A small sample was thin sectioned and studied under the petrological microscope. This revealed that the most prominent minerals are frequent grains of green and colourless clinopyroxene, mainly augite, set in a groundmass of small lath-shaped crystals of andesine/labradorite felspar, opacite, leucite and some xenomorphic nepheline. The composition of the rock is particularly distinctive and it can be classified as a nepheline-tephrite.

This type of rock is found in the lavas of the Mayen-Niedermendig area of the Eifel Hills of Germany, a region well-known in both Roman and Saxon times for supplying quernstones and millstones (Parkhouse 1976; Kars 1980; Peacock 1980). The Westminster Abbey lava quernstones undoubtedly originate from this part of Germany.

Window and vessel glass

Catherine Mortimer & John D. Shepherd

Introduction

A detailed study of the window glass from Winchester (Biddle & Hunter 1990) highlighted the need for the publication of more well-dated early medieval assemblages. Such assemblages are rare and so the window glass from this site is a particularly important addition to the small corpus of sites currently available for study. Although it does not dramatically affect our overall understanding of the production and use of window glass during the early medieval period, this assemblage, including as it does some grozing debris from 11th-century contexts, has been catalogued in full below.

One hundred and seventy-four fragments of window glass totalling 782.46cm squared were submitted for examination. One hundred and fifty six fragments (Nos 1–157, a total of 656.98cm squared) come from contexts dated from the 10th to the 19th centuries and the remaining 17 (Nos 158–174, 125.48cm squared) come from poorly dated or unstratified layers. The majority of the fragments are plain fragments with no grozing or decoration and so not normally worthy of detailed analysis. Only six fragments of vessel glass (Nos 175–180) were recorded, including a single fragment of a Late Saxon vessel decorated with opaque yellow trails (No.175).

The window glass is catalogued first, followed by the few vessel glass fragments. In both cases the fragments are arranged according to their stratified context. This is particularly important with regard to the window glass as numerous medieval windows in churches throughout Europe show that the date of use and ultimate deposition may have little relationship with the date of manufacture. It is probable, therefore, that the window glass from, say, the 13th or 14th century contexts is much earlier in date. The Winchester definitions of durable and degraded glass can be applied here also.

It should be stressed that there is very little possibility of any window glass pre-dating the 10th century occurring among this assemblage. In this respect, the Westminster assemblage from the 11th century contexts presents a most valuable sealed group of early medieval window glass. The possibility that it is the waste from the glazing of the building on the site only enhances its value. Larger panes must have been brought to the site for cutting and grozing down into quarries. Such debris takes us one step closer to the glassworker and his glasshouse.

The window glass is catalogued according to dated context. The chemical analysis and discussion of seven samples of window glass from the 10th and 11th-century contexts follows the window glass catalogue. The catalogue of the few vessel fragments from this site follow this and includes a chemical analysis of the early medieval fragment decorated with an opaque yellow spiral trail.

Catalogue

John D. Shepherd

Window glass from 11th-century contexts

One hundred and forty three fragments of window glass and numerous small splinters of grozing debris (trimmed waste from the edges of quarries) came from contexts dated on ceramic evidence to the 11th century. One hundred and twenty two of these, a total area of 501.34cm squared are of non-durable glass and 21, *c.*84.68cm squared are durable (*ie* soda-based window glass (Biddle & Hunter 1990, groups 1 to 3)). The significance of these two groups is not evident at this stage since, as the analyses below show, there appears to be no difference in composition between the two types (compare Samples A-C, non-durable fragments, with Samples E-G, durable fragments). However, it is only in contexts of this date that the two types of glass appear together in quantity. Only two other fragments of durable glass come from the site, No.153 from a late 13th or 14th-century context and No.157, from a 17th to 19th-century context. It is most probable that these two fragments are residual from this earlier glazing programme.

The presence of the grozing debris must indicate that panes were being cut and the resulting quarries were being made up into leaded windows on site. It is most probable, therefore, that the window fragments found in association with this waste are themselves waste material, perhaps discarded off-cuts from once larger panes. It is tempting to suggest that the quarry (No.4) snapped during grozing, a common mishap when trimming a piece of glass so small, and was thrown away.

The grozing debris is difficult to quantify. The individual chips are large, *c.*5mm wide maximum but the majority are *c.*2–3mm wide. This compares with the state of the grozing on the few fragments here which retain a grozed edge. This

is much coarser than the fragments of late 7th or 8th-century window glass, such as those from Monkwearmouth (Cramp 1970) and Jarrow (Cramp 1975) and compares well with glass of similar date from Winchester (Biddle and Hunter 1990).

NON-DURABLE GLASS.

1. [284]5 <88> Fragment from a possible quarry. Indeterminate colour. 4mm/7.88 cm squared.

2. [424]2 <61> An edge fragment. Rolled lip. Indeterminate colour. 3mm/10.24 cm squared.

3. [424]2 <61> Fragment from the edge of a quarry. One coarsely grozed side. Indeterminate colour. 4mm/13.8cm squared.

4. [424]2 <61> Fragment from a small rectangular quarry, broken across the short width, with a grozed notch in one corner. Indeterminate colour. 4mm/9.20cm squared.

5–87. [424]2 <61> A further eighty-three fragments of degraded glass with no distinguishing features also come from [424]. These are:

2mm	28 fragments	total area – 34.96cm squared
2.5mm	17 fragments	total area – 69.26cm squared
3mm	18 fragments	total area – 21.00cm squared
4mm	17 fragments	total area – 74.88cm squared
5mm	3 fragments	total area – 2.08cm squared

88. [113]6 <99> Fragment from the edge of a square or rectangular quarry with three grozed sides. Natural green in the core. 3mm/10.32cm squared.

89. [258]5 <94> Fragment from a probable triangular quarry. Two cut(?) edges. Indeterminate colour. 4mm/13.44cm squared.

90. [370]2 <42> Right-angle corner fragment from a quarry. Grozed on two sides. Indeterminate colour. 5mm/2.88cm squared.

91. [417]2 <57> Part of an irregular-shaped quarry. Indeterminate colour. 3mm/13.36cm squared.

92. [417]2 <108> Part of a small rectangular quarry. Three grozed sides, fourth side missing. Indeterminate colour. 3mm/7.92cm squared.

93. [414]2 <95> Edge fragment with a rolled lip showing traces of a lead mark along the edge. Indeterminate colour. 2–3.5mm/7.00cm squared.

94–98. Five fragments with rolled edges. Irregular thicknesses on individual fragments, 3 to 5.5mm. Indeterminate colour.

[188]6 <82>	5.72cm squared
[211]5 <87>	7.52cm squared
[396]2 <17>	11.16cm squared
[399]2 <104>	4.00cm squared
[417]2 <108>	8.36cm squared

99–123. Twenty-five fragments of degraded glass, indeterminate colour, with no distinguishing features.

2.5mm degraded glass, indeterminate colour.

[213]3 <22>	23.92cm squared
[213]3 <81>	4.92cm squared
[403]2 <89>	1.48cm squared
[417]2 <107>	15.20cm squared, 3 fragments

3mm degraded glass, indeterminate colour

[154]5 <+>	2.44cm squared
[213]3 <81>	3.40cm squared
[258]5 <100>	1.60cm squared, 5 small fragments
[322]4 <19>	6.60cm squared
[392]2 <48>	5.92cm squared
[417]2 <56>	30.28cm squared, 3 fragments

3.5mm degraded glass, indeterminate colour

[322]4 <101>	7.80cm squared
[399]2 <104>	4.40cm squared
[414]2 <111>	3.52cm squared 3 small fragments
[417]2 <108>	3.12cm squared

4mm degraded glass, indeterminate colour

[213]3 <81>	5.48cm squared
[370]2 <42>	15.40cm squared

5mm degraded glass, indeterminate colour

[417]2 <108>	30.88cm squared, 5 fragments

DURABLE GLASS

124. [424]2 <61> Fragment from the corner of a quarry of unknown shape. Coarsely grozed on two sides. With grozing debris adhering to it. Dull yellow-brown glass. 3mm/7.16cm squared.

125–144. [424]2 <61> A further twenty fragments of durable glass came from [424]2. These are:

2mm	7 fragments	total area – 10.40cm squared
2.5mm	13 fragments	total area – 67.12cm squared

GROZING DEBRIS

145. [424]2 <61> Small lumps of concretion containing numerous splinters and chips of glass, the product of grozing. See also No.88. It is not possible to determine whether they come from durable or non-durable glass.

Chemical analysis of window glass from [424]2

Catherine Mortimer

Chemical analysis was performed using energy-dispersive X-ray micro-analysis in a scanning electron microscope (a Cambridge S200 SEM with Link Systems AN10000 X-ray analyser) as in previous projects (Mortimer 1991).

Description of samples

Much of the material examined has blue corrosion products on the surface, ranging from pale blue to dark blue. Some of this corrosion gives the glass a very crumbly appearance and the glass feels rather light, but in many of these cases solid glass is preserved in the middle of the fragment (non-durable, *eg* Samples A-C). Much of the material is covered by further layers of concreted material consisting of smaller chips of glass, pieces of stone and what appears to be mortar. A small proportion of the fragments are solid, relatively dense and still transparent, showing a natural mossy green colour (durable – *eg* Sample G). There are a few examples of brown-tinted or clear blue-green glass which is also well preserved (durable, *eg* Samples E and F). It is not possible to determine precisely the nature of the grozing chip (Sample D).

The seven samples from Context [424] are as follows:
A Thick mid-blue corrosion deposits, the original colour of the glass is not evident in the hand sample: pale mossy green in cut section, depth of corrosion at least 1mm. Non-durable.

B as for A. Non-durable.
C as for A but with added concretions. Non-durable.
D Tiny fragment from grozing debris, tinted pale green. Indeterminate.
E Tinted pale green, light corrosion deposits. Durable.
F Tinted brown, light corrosion deposits. Durable.
G Tinted strong blue-green, good preservation, small patches of concretion. Durable.
Analysis showed that the samples are all chemically similar despite the range of appearances (Table 3).

All the glass is potash glass, with high lime, magnesia and phosphorous pentoxide values. The results of analyses on a relevant glass standard suggest that the method is reasonably accurate and reproducible (Table 4).

Table 4. Comparison of results of three analyses by SEM-EDAX with quoted values for the glass standard Corning D

Sample	A	B	C	Average	Corning D
Na_2O	1.39	1.44	1.61	1.48	1.32
MgO	3.82	3.95	4.00	3.93	4.09
Al_2O_3	4.59	4.64	4.45	4.56	5.43
SiO_2	54.49	54.27	53.44	54.07	55.24
P_2O_5	4.05	4.14	3.63	3.94	4.0
CaO	14.55	14.76	14.56	14.63	15.05
K_2O	10.97	10.91	11.05	10.97	11.46
TiO_2	0.60	0.53	0.60	0.58	0.40
MnO	0.35	0.74	0.57	0.55	0.57
Fe_2O_3	0.37	0.45	0.31	0.38	0.50
CuO	0.20	0.49	0.15	0.28	0.40
SnO_2	nd	nd	0.11	0.04	0.13
PbO	0.23	0.35	0.36	0.31	0.27
TOTAL	95.84	96.79	94.98	95.87	98.86

NOTE: Sulphur, chlorine and chromium were not detectable by SEM-EDAX (detectable limits = *c* 0.2% in all cases): these elements were not analysed for in the quoted compositions for Corning D. nd = not detected

Discussion of chemical analyses

Potash glass, also known as 'forest glass' or 'green glass', was a common type of glass in use during the medieval period. The major oxide contents of glass reflect the raw materials used; potash glass was made using plant ash (*eg* from trees and ferns) as alkali, together with a silica-rich material, such as sand. Apart from potash, such glass has typically at least percent levels of calcium, magnesium, phosphorous and aluminium oxides, much of which originated in the alkali. Variation in oxide content may indicate the use of different types of plant, variation in the degree of purification of the raw materials, or differences in high-temperature technology.

Material visually comparable with the Westminster samples formed the largest sub-grouping of early medieval window glass at Winchester ('non-durable' glass, Biddle & Hunter 1990, group 4). Analysis of 17 fragments of this glass type from early 10th-century contexts at Wolvesey Palace (Newton 1990) and Cathedral Green (Yates 1990) shows the material to be a potash glass with very similar chemical compositions to the Westminster material, as a comparison of some of the major oxides demonstrates (Figs 12 and 13). At Lurk Lane, Beverley (Humberside), a 9th-century fragment of window glass was found to be high in potash, lime and magnesia (Henderson 1991, n4).

The evidence from Winchester suggests that this glass type was introduced during the 9th century, but only became common in the 10th and 11th centuries, when it was used interchangeably with 'durable.' Subsequently potash glass was commonly used for windows. Later (12th to 15th-centuries) potash vessel glass tends to have lower lime, phosphorous and potash levels (Mortimer 1991, table 2); analyses for later potash window glass is not available. The evidence from the Westminster glass assemblage therefore conforms to this pattern.

The source of the 11th-century potash glass from Westminster, and of the technology that produced it, is clearly of some interest. Potash glass is thought to have been introduced from the Continent but it is not known whether potash glass was made in England at this early stage, or merely imported from other areas. The Westminster excavation did not produce furnace or crucible fragments, nor did it produce any molten dribbles or other waste, so it is unlikely that the glass was made on the site, or even melted or worked at high temperatures at the site.

The Westminster material cannot be compared with excavated evidence for potash glassworking, since this is

Table 3. Chemical composition of window glass fragments from [424]2 < 61 >

Sample	A	B	C	D	E	F	G
Na_2O	0.6	1.0	0.7	1.0	0.6	0.9	1.0
MgO	5.5	5.0	3.9	4.5	4.4	5.1	5.8
Al_2O_3	1.1	0.8	0.5	0.7	0.4	1.0	0.9
SiO_2	47.9	51.1	52.0	50.5	50.7	54.3	56.4
P_2O_5	6.9	5.7	5.6	5.8	5.4	3.6	4.2
CaO	21.9	19.5	19.6	19.0	17.3	19.5	22.0
K_2O	13.9	16.5	18.3	16.3	15.8	12.9	11.3
TiO_2	0.3	0.2	nd	nd	nd	0.2	0.1
MnO	0.8	0.4	0.3	0.3	0.3	0.7	0.2
Fe_2O_3	0.6	0.4	0.3	0.4	0.4	0.7	0.6
TOTAL	99.6	101.2	101.5	98.9	95.6	99.0	102.6

NOTE: S, Cl, Cr_2O_3, SNO_2 and PbO were analysed for but were at, or below detectable limits in these samples (which are *c*.0.2% for all except PbO, which is *c*.0.1%). nd = not detected

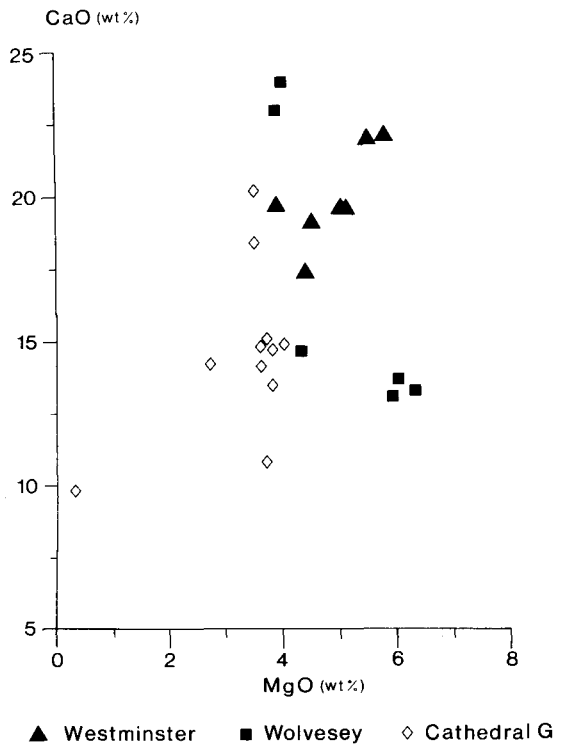

Fig 12. Early medieval potash glass; Westminster (WST86) and Winchester (Wolvesey and Cathedral Green) finds. Lime (CaO) versus magnesia (MgO) content

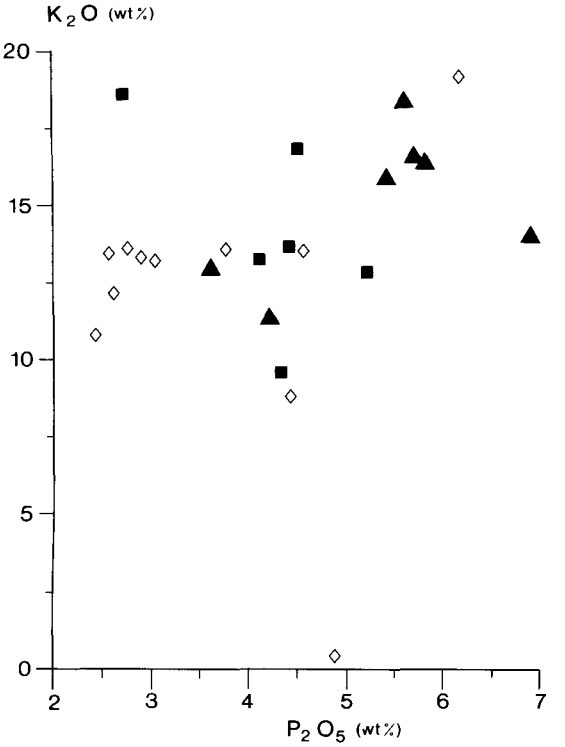

Fig 13. Early medieval potash glass; Westminster (WST86) and Winchester (Wolvesey and Cathedral Green) finds. Potash (K_2O) versus phosphorus pentoxide (P_2O_5) content (see Fig 12 for Key)

lacking for the 11th century, both in this country and abroad. Evidence from two 9th or 10th-century English glassworking sites have recently been examined at Glastonbury Abbey, Somerset and Barking Abbey, London (Heyworth 1992), but the glass here is presumably soda glass. At the time of writing chemical analysis has not been carried out on this material. Data for glassworking of this period in other areas of north-west Europe currently consists of small amounts of evidence (crucibles, droplets *etc*) from a few sites, notably Paderborn and Cordel in Germany (Evison 1989) and more substantial evidence from Haithabu, also in Germany (Dekwna 1990). The potash worked at Cordel was a mixed alkali glass (*ie* nearly equal amounts of soda and potash were present) (Evison 1989, 137). The majority of the glass worked at Haithabu was soda glass, but six examples of potash glass were identified through analysis as well as two beads of mixed alkali glass (Dekwna 1990, tables 3–11). The Haithabu potash glass is of two types, one of which has similar potash and soda contents as the Westminster glass, but lower lime levels (11.3–12%) and the other which has lower potash levels (8.6–11.6%) but lime levels roughly comparable with the Westminster glass (15.5–24%); phosphorous levels are uniformly lower than those at Westminster (2.05–3.48%) and alumina levels are higher (1.2–2.6%). So, although the Haithabu glassworking included potash glass, the type is not directly comparable to that at Westminster. The evidence at Haithabu does not contain material diagnostic of glassmaking, only of glassworking. Glassworking at the site was probably based on glass imported from other areas of Europe, so the wide variety of glass types is not surprising. The Haithabu material pre-dates the Westminster material, since occupation at the site finishes by *c.*AD 1000. The description of the finds at another early medieval glassworking site, San Vincenzo al Volturo (Molise, Italy), suggests that soda glass was worked (Moreland 1985) but this has yet to be confirmed by analysis.

Evidence about the place of manufacture can be sought in the glass composition itself. Very little contemporary glass from the Continent has been analysed. Three 9th to 12th-century pieces from three sites in France are potash glass with broadly similar compositions to the Westminster glass (Barrera & Velde 1989, Annex III. The analyses from periode 1 are from vessels, not from production sites). There are far more analyses of finished glass and of production debris from later periods, both in this country and on the Continent (*eg* Kenyon 1967; Barrera & Velde 1989).

Different types of plant ash have different chemical compositions (Sanderson & Hunter 1981, Turner 1956), so attempts have been made to chemically characterise glass made by particular traditions or in particular areas (Berrera & Velde 1989, 92–4). The small number of fragments currently available means that it is not practical to carry out such work for the early medieval period. In the high medieval and post-medieval period, compositional patterning can be seen between groups of debris from individual production sites, but it is still not possible to provenance material by chemical means.

In summary, the Westminster window glass could have

been made on the Continent, imported in the form of large rectangular sheets, and the quarries shaped on site, producing the copious grozing debris. Equally, it is possible that the glass was made somewhere in England, transported from there and finished on site. The variation in observed colour has no analogue in the compositional data; all the glass fragments analysed had similar compositions. Differences in preservation may be due to different deposition environments and differences in colour may be due to differences in the oxidisation states and relative quantities of iron and manganese.

Window glass from late 12th to 14th-century contexts

Only one very small fragment of non-durable glass came from contexts broadly dated to the late 12th to 14th centuries. No durable glass or grozing debris was recorded.

146. [112]6 <84> 3mm degraded glass, indeterminate colour. 1.60cm squared.

Window glass from late 13th or 14th-century contexts

Six fragments, including a durable fragment, came from contexts dated to the late 13th or 14th century. No grozing debris was recorded. The total area is only 40.44cm squared.

147. [84]8 <90> Edge fragment with a rolled lip. Non-durable glass, indeterminate colour. Irregular 4 to 5mm thick/6.72cm squared.

148–152. [84]8 <90> Five fragments of 4mm degraded glass, indeterminate colour. 4mm thick/total area 30.12cm squared.

153. [84]8 <90> One fragment of durable, natural green glass. 2.5mm thick/3.60cm squared.

Window glass from 15th and 16th-century contexts

None recorded.

Window glass from 17th to 19th-century contexts

Four fragments, including one with traces of dark red paint, come from the latest contexts on the site. This fragment appears to be medieval, but is too small to enable it to be dated precisely.

Non-durable Glass

154. [16]11 <109> Fragment of degraded glass, indeterminate colour. Painted with a foliage design of which only traces survive. 2mm/13.20cm squared.

155–156 Two fragments of degraded glass, indeterminate colour, with faint lead marks on one edge.
[9]11 <110> 1.5mm/5.92cm squared
[105]5 <91> 3.5mm/7.12cm squared

Durable Glass

157 [16]11 <109> A small fragment of durable, natural green glass. 2mm/2.68cm squared.

No grozing debris was recorded.

Window glass from unstratified, undated and poorly dated contexts

Seventeen other fragments of non-durable glass, were recorded on the site in insecure contexts. No durable glass or grozing debris was found.

158. [420] <93> Fragment from a large triangular quarry. Three cut edges. Indeterminate colour. 3mm/23.32cm squared.

159. [109] <92> Fragment from a small triangular quarry with three grozed edges. Indeterminate colour. 2.5mm/4.60cm squared.

160. [205] <96> Distorted edge fragment with a rolled lip. Indeterminate colour. 2 to 4mm/8.24cm squared.

161–174. Fourteen fragments of degraded glass, indeterminate colour, with no distinguishing features.
3mm degraded glass, indeterminate colour
[242] <83> 4.28cm squared
[301] <15> 2.08cm squared
3.5mm degraded glass, indeterminate colour
[34] <102> 6.88cm squared
[183] <105> 6.36cm squared
4mm degraded glass, indeterminate colour
[+] <85> 23.00cm squared, 3 fragments
[34] <98> 14.16cm
5mm degraded glass, indeterminate colour
[299] <20> 4.00cm squared, 5 small fragments
4.5 to 7mm irregular thickness degraded glass, indeterminate colour.
[65] <103> 28.56cm squared

Vessel glass

John D. Shepherd

Only six fragments of vessel glass were recovered from the site, emphasising the importance of the window glass assemblage. The most important is the pale green fragment decorated with opaque yellow trails, probably a spiral. This colour of decoration is not common in this country although it is known on some Scandinavian forms from the 8th century. The pale green body colour of the Westminster fragment matches that of two similarly decorated fragments, probably funnel-shaped vessels, from Southampton (Hunter 1980, 63, GL20/26 & 65, GL24). Hunter notes that this green tint contrasts with the blue tint of the majority of the glass from Southampton. It may be of significance, therefore, that the green tint is shared by many of the Scandinavian vessels.

11th-Century Contexts

175. [368]1 <40> A small fragment of free-blown glass from a vessel of indeterminate form. Pale green glass

decorated with a ?spiral trail of opaque yellow glass. 8th to 10th century.

14 TO 16TH-CENTURY CONTEXTS

176. [44]10 <97> Small fragment from the side of a free-blown vessel of indeterminate form. Natural blue green glass with a slight surface decomposition.

FROM UNSTRATIFIED, UNDATED AND POORLY DATED CONTEXTS

177. [+] <86> Fragment from the side of a vessel of indeterminate form. Non-durable glass, indeterminate colour. Medieval.

178. [+] <86> A small fragment from the side of a vessel with a folded horizontal 'figure-of-eight' rib. Non-durable glass, indeterminate colour. Medieval.

179. [34]11 <-> Two fragments from the base of a bottle. Free-blown; natural green glass with a surface decomposition layer. Pushed-in domed base. Medieval.

180. [7]11 <-> Fragment of thick olive green glass from the body of an 'English' wine bottle. Post-medieval.

Chemical analysis of No.175

Catherine Mortimer

Compositional analysis of the vessel glass and the trail of No.175 has allowed this fragment to be compared with other mid to late Saxon material.

A small section was cut from the sample so as to include a portion of the trail. The sample was mounted in epoxy resin, polished to 1m, carbon-coated and analysed using an energy dispersive X-ray analysis system (Oxford Instruments ISIS) attached to an electron microscope (Leica Cambridge S440i). Analysis was carried out using the default ZAF calculations at 15kV, 1000pA, 50 seconds live counting time. The analytical results are shown below. Corning glass standard A was analysed under the same conditions and this indicated that the analytical technique gave acceptable answers for the vessel glass matrix, although the magnesia (MgO) values calculated may be a little high and the alumina and lime (Al203 CaO) values a little low. Analysis of the trail material was more complex, as the layer is heterogeneous, but approximate values are given in Table 5.

Analysis showed that the vessel was made from a soda-lime-silica glass. Many comparable compositions have been found in other mid to late Saxon vessel material (*eg* Sanderson & Hunter 1984). This composition, with its low amount of magnesia, is comparable to Sayre and Smith's 'Roman' type of soda glass (1961) which is thought to be based on the use of a mineral soda source, natron (hydrated sodium carbonate) and can be contrasted with the high magnesia content of some later soda glass. The 'Roman' type of soda glass does not necessarily imply a Roman source for the glass artefact or the use of Roman glass as cullet.

The cross-section of the trail showed many crystals of lead-tin oxide. When viewed, using the back-scatter detector, these were very bright, reflecting the high atomic number of the compound. Many of these crystals were quite large and clustered together in groups 10–20pi long, but a fine bright 'mist' in some areas suggests that there are smaller crystals, probably of the same composition, present. Three other types of structure were occasionally also observed in the trail – rather darker grey crystals of tin oxide, dark rounded 'bubbles' (containing mostly sodium, calcium and silica) with lead-tin oxide crystals within them and very dark, parallel-sided crystals, containing sodium, calcium and silica.

The overall or bulk PbO:SnO squared ratio calculated for the trailed glass is greater than 1:1. This gives the trail its yellow colouration, because of the dominance of yellow PbSnO crystals; a ratio of *c.*1:1 would have resulted in many more white SnO squared crystals (Freestone *et al* 1990, 275). Antimony-opacified glasses were often used in the Roman period, but tin-opacified glasses are normal for the post-Roman period (*eg* Rooksby 1962).

Table 5 Comparison of results of the analysis of No. 185 by SEM-EDAX with the quoted values for the glass standard Corning A

	No.175 Pale green matrix	Op yellow trail	Corning A EDX Analysis	Standard values
NA_2O	17.4	10.2	14.5	14.52
MgO	1.5	0.7	3.2	2.81
Al_2O_3	2.1	1.2	0.6	1.01
SiO_2	65.7	36.3	65.5	66.56
P_2O_5	0.6	0.9	0.4	na
SO_3	1.4	na	nd	na
K_2O	1.1	1.8	3.1	2.93
CaO	6.6	1.6	4.6	5.3
TiO_2	nd	nd	1.0	0.8
MnO	1.6	tr	1.1	1.18
FeO	1.3	0.5	1.2	Fe_2O_3 = 1.09
SnO_2	na	10.4	na	0.3
CuO	na	tr		
PbO	na	25.1	na	0.1

NOTE: nd = not detected; na = not analysed; tr = trace

Building materials

Richenda Goffin and Naomi Crowley

The building materials were catalogued and quantified by fabric and form by context, using the standard Museum of London recording sheet and fabric codes. The results of the identifications are only briefly summarised in this report; detailed information is in the archive.

Roman

Although no features of Roman date were excavated, the building material from the features which predated the construction of the undercroft consisted almost entirely of brick and tile made

from Roman fabrics. The forms represented were bricks, tegulae, imbrices and occasionally fragments of combed flue tile. Some fragments showed evidence of reuse, as mortar was present on broken edges.

The most significant fragment of Roman ceramic building material was a tegula <13> which was recovered from a post-hole cut into the fill and levelling of the large ditch [238]2. This was inscribed with ... P.PR..B, the stamp of the Procurators of the province of Britain (Hassall & Tomlin 1987, 371) (Fig.14, 28). Tiles with these stamps have been found on many sites in the City of London, but are less common beyond. They have been comprehensively catalogued (Collingwood & Wright 1991).

Several fragments of Roman brick with signature marks were recovered, including one from [109]10 which has a type previously unrecorded. There was also a fragment from

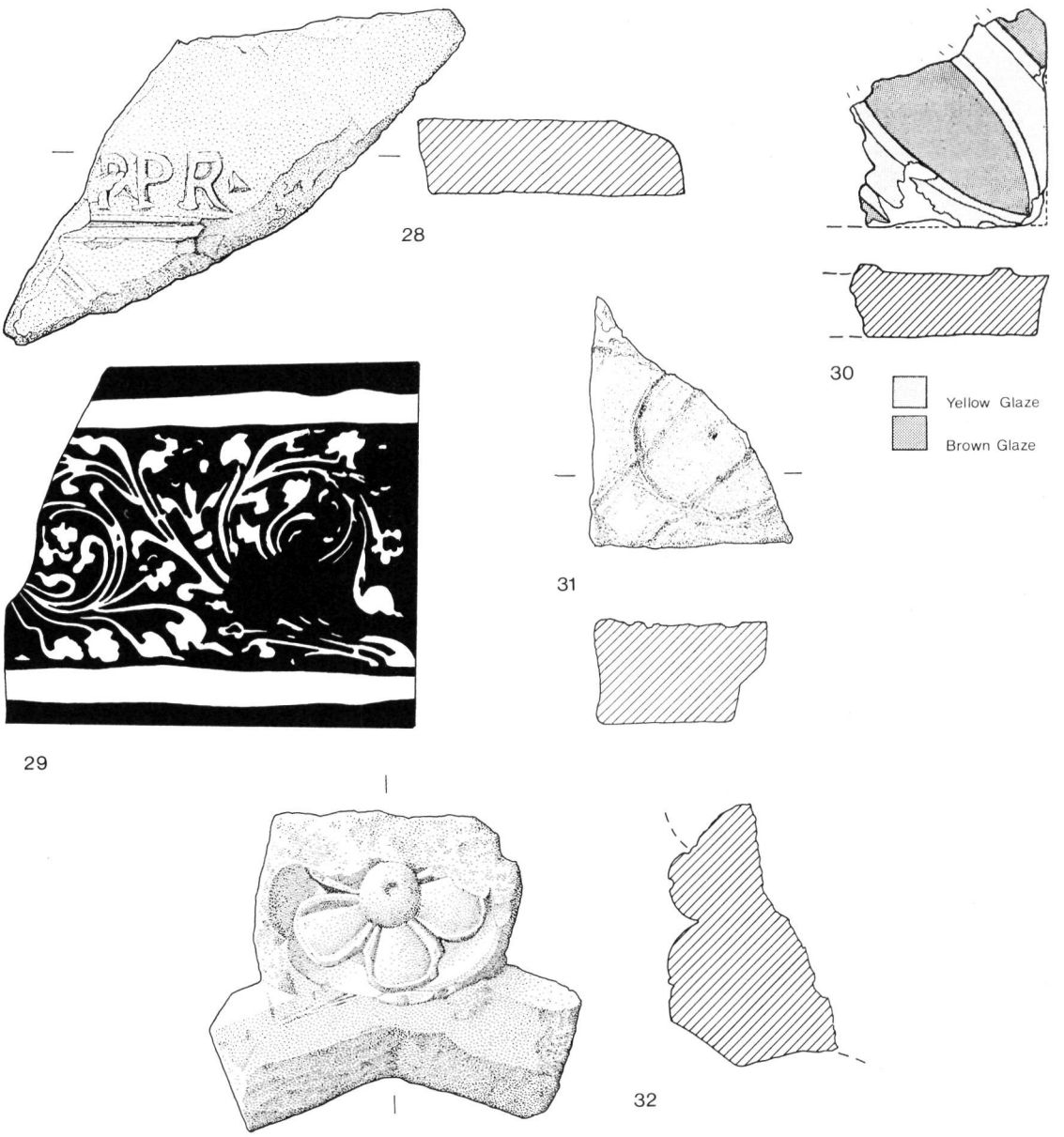

Fig 14. Ceramic building material and stone objects: 28 Roman stamped tile; 29 medieval inlaid floor tile; 30 polychrome relief tile; 31 decorated and glazed tile; 32 Tudor rose finial, 1:2

[213]3 which bore the impression of a hobnail boot print.

In addition to the ceramic building material, a quantity of stone fragments was also recovered, including fragments of Kentish ragstone, oolitic limestone, sandstone and a fragment of Purbeck marble limestone.

Further quantities of Roman ceramic building material were found in the dumps following the reduction of the floor level after the construction of the undercroft. In addition, two fragments of marble were recovered ([98]8 and [87]8). The fragments are composed of a white matrix which has dark grey and purple veining. There is no parallel for this in the Museum of London fabric collection. It is not a marble type known to be used in Roman London.

Medieval

Five hundred and fifty grammes of peg tile in fabrics 2271 and 2586 was recovered from ditch fills [418]2, [420]2 and [422]2. Information from excavations in the City suggests that fabric 2586 was manufactured from the late 12th century onwards, so this material is undoubtedly intrusive.

The scatter of features cut into the reduced floor level after the undercroft construction contained a mixture of building material. As well as fragments of tegulae, there was a small quantity of medieval peg tile fragments (325g) and a piece of moulded Reigate stone.

Evidence of the substantial modifications which took place when the undercroft was remodelled for use as a warming room is reflected in the building material. Ten fragments of painted wall plaster were found in a mortar dump of likely medieval date, along with a peg tile. An abraded fragment of white slipped floor tile was found in a mortar rubble laid down as preparation for a new floor. More fragments of peg tile, made from several different fabrics, were recovered from a tile hearth. One was made from fabric 2271, the first appearance of which, from other London sites, is thought to be *c.*1180.

The structural consolidation which then occurred involved rebuilding the foundations on the west side of the north bay. The new work incorporated a fragment of carved Reigate stone, which is of early 16th-century date (see below). The only other building material associated with these changes was 675g of Roman brick and tile which was recovered from a pit [110]10 dug to check the new underpinning.

Other medieval building material recovered from floor layers and occupation debris in the north bay includes more redeposited tile, including 1,505gs of peg tile, and 1,895gs of plain glazed floor tiles. One fragment was a Flemish import, of probable late 15th/early 16th century date. Two inlaid floor tiles were also recovered from this deposit. <68> was a large fragment of a good quality tile with the same design as a border tile from the floor of Westminster Abbey Chapter House (Type E1264) (Fig 14, 29). It features a scroll-type design with leaved terminals. The date of the pavement which contained this tile-type is uncertain, although it seems likely that it was laid down between 1253 and 1258 (Eames 1980, 172). A second inlaid floor tile <67> from this deposit was not so well made, also in poorer condition. The design consists of a central petal with a roundel and fleur-de-lys in each of the corners, (E2342). It was a product of the Penn industry, one of the most prolific and successful tile manufacturing centres of 14th-century date.

Further evidence of patches of flooring was identified in the south bay. Dumps and layers forming a rough floor at the west end of the bay contained 6,975gs of floor tiles. These included fragments of plain glazed Penn tiles and plain green and yellow glazed tiles which were the products of another tile producing centre, distinguished by the term 'Westminster'. The exact provenance of these tiles is a subject for further research; their name derives from their presence in the floor of the muniment room and St Faith's chapel in Westminster Abbey (Eames 1980, 207). The dating of this industry is also unclear, although decorated tiles of this fabric

Table 6. Summary of quantities of Roman (RCBM) and medieval (MCBM) ceramic building material and stone from the main features predating the construction of the undercroft. Weights in grammes

	RCBM	Stone	MCBM
Phase 1	35000	6225	
Phase 2	40625	7500	550
Phase 4	10075		
Phase 5	10820	3350	
Phase 6	2800	25	
TOTAL	99320	17100	550

appear to date to the second half of the 13th century. A fragment of a Flemish floor tile in fabric 2323 was also found, dated to the late 15th or 16th century.

In addition a large fragment of a ceramic hip tile made in fabric 3090 was recovered. This was part of a curved tile with nail holes at the top, designed to be set on the ridge between two angles of the roof.

The evidence of more postholes suggests further attempts at inhibiting structural problems in the later post-medieval period. The fills of two of these holes contained 300g of peg tile fragments. A shallow pit in the rubble floor in the south bay contained a fragment of a brick which may have been made from a Roman fabric and which had been re-used. It had been covered with a green lead glaze, over which mortar had been applied (see below).

Fragments of three plain glazed floor tiles were recovered from demolition debris over four of the postholes.

Peg tiles

Rectangular ceramic roof tiles with two peg holes were one of the most common forms of roofing used in London from the late 12th century onwards. The main fabrics found in the deposits at Westminster Abbey are 2271 and 2276. Fabric 2271 appears to have been produced from *c.*1180 until the end of the 15th century. The exact sites of production are not known, but it is thought that the tiles were made at various kiln sites in the London area using the deposits of sandy clay found in Quarternary deposits throughout the Thames Valley. Many of these tiles have a clear lead glaze splashed onto the lower half of the tile to provide some rainproofing.

Peg tile fabric 2276 was also present in the excavations at Westminster. It seems to have replaced fabric 2271, among others, from the end of the 15th century. At St Mary Spital peg tiles in this fabric first occur in the period 1400–1538 (Crowley forthcoming).

Fabric 2273 is also represented in the excavations. Peg and bat tiles were manufactured in this fabric between 1135–1200 in the Fleet Street area. Excavations at Niblett Hall, Inner Temple, revealed a truncated kiln with wasters of shouldered peg tiles or bat tiles (unpublished).

Early ceramic tiles

Ian Betts

Three fragments of early medieval tile justify individual description.

Polychrome relief tile

Broken corner fragment measuring: ? × ? × 21mm (thickness excluding raised ribs 17–19mm). Fig 14, 30.

A fragment of decorated polychrome relief floor tile was found in the backfill of the broad shallow ditch [209]6. The upper surface of the tile shows a raised lentoid shape and the remains of two straight lines. The pattern on the top surface has been highlighted by the use of brownish-yellow and brown glaze in different areas of the design. It is possible that the tile was never used for its original purpose as there are mortar traces attached to the top surface. The sides of the tile, which taper inwards towards the base, are scraped smooth lengthways, while the base has also been scraped smooth. Tiles of this type are referred to as polychrome relief tiles.

The white and pale pink coloured clay matrix is characterised by the presence of frequent sub-rounded to sub-angular quartz grains (mostly 0.1–0.5mm) which gives the fabric a granular appearance. There is a scatter of bright red and orange iron oxide inclusions (mostly up to 0.7mm with occasional larger inclusions up to 2.5mm), together with a single fragment of quartzite.

This is one of two polychrome relief tiles found in London. The other tile was recovered from excavations just south of the medieval Guildhall in the City of London in 1993 (Bateman 1994, 169). Both belong to a distinctive group of predominantly decorated tiles found elsewhere – at Canterbury, Coventry, Bury St Edmunds, St Albans, Peterborough, Winchester and York (Keen 1993, 67). The design on the Westminster tile has not been found elsewhere although the lentoid element has a parallel on tiles from Bury St Edmund's and Winchester.

All the tiles in this group are believed to be of Late Saxon date, although it is only known for certain that they were manufactured sometime during the mid 10th to the later 11th-century (Keen 1993, 80). Late Saxon tiles may have been used as decoration in Edward the Confessor's church, construction of which started in *c.*1050 and continued until the 1070s (Wilson *et al* 1986,

14) in which case the example found may represent a broken tile discarded during building work. A second possibility is that the tiles may be associated with building work which followed the refoundation of Westminster as a Benedictine Abbey in the mid-10th century. Decorative tiles could have been added at any time prior to the building's demolition which presumably took place upon completion of Edward's 11th-century church (*ibid*, 11).

No Late Saxon tiles have been found in their original position so their initial purpose is not clear. There is no evidence of wear on the upper surface of the Westminster example which would suggest that if it was ever part of a building it is unlikely to have been used as flooring. It has been suggested by Keen (1993, 82) that such tiles were probably used as either facing to an altar, or as part of a retable above, or as walling on either side of an altar.

The fabric of the Westminster tile matches very closely that used to make the late Anglo-Saxon tiles found at Winchester, St Albans and Bury St Edmunds. There seems little doubt that all these tiles originated from a single kiln source, probably in the Winchester area. Biddle and Barclay (1974, 152) have pointed out the close similarity in fabric between late Anglo-Saxon polychrome relief tiles and locally-produced Winchester Ware glazed pottery of similar date.

Decorated glazed wall? tile

Broken corner fragment measuring: ? × ? × 28–30mm. Fig 14, 31.

The second early ceramic tile example came from the fill of large Ditch [238]2. This tile is totally different in both appearance and fabric type from the polychrome relief tile discussed above. The top of the tile is covered by a poor quality brown lead-glaze which has badly bubbled during firing. Part of the glaze has a greenish-brown tinge where it covers a small area of cream coloured slip. The glaze covers a shallow incised decoration comprising a circle crossed by two diagonal lines. The circle was clearly made by a compass as the mark of the compass point is still visible in the centre. The tile has a thickness of 28–30mm which is significantly thicker than the polychrome tile. The sides and the base have fine moulding sand attached which would indicate manufacture in a wooden mould. Neither of the two surviving sides are bevelled and there are no signs of wear on the upper glazed surface which would suggest that it was not used as flooring.

The clay matrix comprises frequent very small sub-rounded to sub-angular quartz grains and calcium carbonate inclusions (up to 0.2mm), with occasional isolated larger quartz grain (up to 0.4mm). There are frequent fairly rounded dark red, orange and black iron oxide inclusions (up to 0.5mm) and two large white calcium carbonate inclusions measuring 2mm. Most of the tile is reduced, resulting in a light grey coloured interior, but the margins of the tile are reddish-brown.

The clay used to make the tile is similar in appearance to Roman tiles made at Radlett in Hertfordshire (although these have less calcium carbonate) which are found in large quantities in London. This does not necessarily imply that the Westminster tile came from Radlett, but it does indicate that it was probably made from clays found somewhere in the Greater London or Hertfordshire area. The fabric also shows certain marked similarities with medieval London-type ware pottery believed to have been manufactured using clays found in the London area.

A possible clue for the purpose of the Westminster tile can be found in the abbey itself. Tiles with identical coloured glaze were used as wall decoration in the 11th-century rebuilding work. These tiles still survive *in situ* in the east wall of what was the reredorter or lavatory block (now the Little Cloister) and the west wall of the refectory which ran along the south side of the cloister (now in an area known as Cheyneygates). The reredorter or lavatory block was constructed in the 1060s or early 1070s but the refectory seems slightly later, a late 1070s or 1080s date seems likely (Gem 1986, 17). If the decorated tile from [238]2 belongs to the same series, then it may have been a broken fragment which was discarded during building work in the 1060s or early 1070s.

Plain glazed wall? tile

A corner fragment measuring: ? × ? × 35mm (broken length of 126mm).

A second fragment of what may be a wall tile came from a shallow pit cut into the rubble floor of the south bay of the undercroft.

Extremely fine sandy fabric comprising frequent very small quartz (up to 0.1mm) and

common dark red and black iron oxide. The quartz is too small to accurately determine grain shape.

The tile fragment is clearly reused as mortar covers the upper glazed surface. The greenish-brown glazed surface is slightly irregular and the sides have been left sanded rather than knife-trimmed, both features suggest that it may have been intended as walling rather than flooring. There is, however, evidence of wear on the upper glazed surface which indicates that it must have been used for flooring, at least at some stage during its life. It is not certain whether this tile belongs to the same series as those used in the 11th-century building work, although both have a similar red coloured clay body. The glaze colour of the *in situ* Cheyneygate wall tiles are, however, darker in colour, although one tile has a patch of lighter glaze of similar appearance.

Worked stone

Mark Samuel

Introduction

The southernmost five bays of the undercroft (the 'Monks' Common Room') were heavily painted over shortly after the completion of the excavation when the undercroft was converted into a museum. At the same time a new door was driven through the wall (Mrs Maters, pers comm). The Treasury or Pyx Chapel (the two bays immediately to the north of the Undercroft Museum) has escaped any recent alteration. The special circumstances of the Pyx Chapel have meant that it has been, in effect, hermetically sealed for much of its existence. This means that important features, such as the original tooling and renders, have survived very well.

This report describes the Pyx Chapel as it is not possible to describe the building materials used in the Undercroft Museum. It is unlikely that there is any significant variation in materials, although the Pyx Chapel is not in the immediate vicinity of the 1986 excavation.

The undercroft structure is described in as general terms as possible, but it is necessary to make some points that only apply to the Pyx Chapel, as these have some bearing on the later history of the undercroft, otherwise known entirely from documentary sources.

The extent of the undercroft

The total original extent of the undercroft is uncertain. It originally extended further north. The fabric suggests that the Pyx Chapel directly communicated with further structures to the east which have now vanished (see below).

The original ground level of the undercroft was uniformly truncated by *c.*0.80m. This must have occurred when the two blocking walls on the north and south sides of the Pyx Chapel were inserted. The east and west responds have a projecting ground table marked by a simple chamfered plinth absent from the intervening east and west walls. The responds are dressed with large quoins. These are normally Greensand, but one respond apparently consists entirely of Tufa(?). One of the distinguishing factors of the undercroft is the manner in which Greensand, Caen stone, Clunch and Tufa were used in a completely interchangeable manner.

The east end of the second bay from the north in the Pyx Chapel shows two phases of blocking. The wall rib was largely hidden by flanking blockings flush with its outer face that formed the reveals of a door. This opening is respected by the pattern in the 13th-century tiled floor. The door was subsequently partially blocked to form a new opening. This may have occurred when the chapter house was built (1245–60). A similar blocking can be seen in the opposite west wall. The walls to either side of the blocked door are covered by the same plaster screed as the wallrib, and it is possible that the west opening was an original feature of the undercroft.

The central round piers of the undercroft have wide mortar joints, and the courses vary in height. The outer casing of the piers was Greensand, but some blocks of what appears to be Caen stone were also used. The exterior of the blocks was tooled with a boaster chisel to create a vertical corrugated effect. This probably formed a keying for plaster.

The capitals were positioned in a roughly-finished state, and it is generally assumed that there was no intention to carve them. The capitals variously consist of Greensand and an unidentified hard coarse-grained stone. The large 'blocky' form of the capitals in their uncarved state suggests that the original intention was to carve them *in situ* at the time of the undercroft's construction. For some reason, this was never carried out. The styles of carving, where present, are very varied and may be of different dates.

The simple groined vault is similar to Lanfranc's Canterbury crypt, perhaps the closest surviving analogue. Another very similar undercroft once existed in Southwark and was recorded by Victorian antiquarians prior to its destruction during the building of London Bridge Station (Corner 1859). In that case, the undercroft seems to have been a cellar for a house but the technical similarity of the two undercrofts is striking.

The vault webs that survive in the Pyx Chapel are almost certainly original. They are notably irregular, and the groins are poorly defined, the webs blending into a single surface well below the apex. The north compartment's vault webs have an irregular stepped surface. The 'steps' are the impressions of thin planks used for the centering, a characteristically Norman method of vault construction also seen at Durham Cathedral in the high nave vault (Wilson 1990, 27).

The webs are coated with a thick layer of mortar *c.*30mm thick. This almost entirely conceals the structure of the vault, but damage to one of the groins reveals a large block of dressed Greensand. It shows that the masons built the vaults out of carefully fitted stones, rather than simply pouring mortar and rubble on the centering and waiting for it to set. Usually, the groins were built of dressed stone and the intervening webs formed from mortar and rubble. This means that, despite their groined appearance, the vaults are 'ribbed' in the structural sense. Given the rarity of 11th-century vaults, the Westminster undercroft may be of importance in understanding the obscure origins of the diagonal vault rib. Conclusive evidence of 'structural ribs' is however lacking.

The simple oblong-section semi-circular arches that separate the compartments of the vault were probably completed in advance of the vault proper. The intermediate arches are wide and only the corners are dressed with square voussoirs, the median part of the arch being mortar and rubble. The 'wallribs' are a single voussoir in depth and are not bedded into the walls. The voussoirs are less sharply radiused than the arch, any lack of conformity being taken up by the varying thickness of the mortar beds. They were finished with boaster (wide-bladed) chisels resulting in a diagonal corrugated surface. This surface provided a secure keying for a thin plaster screed and traces of two plaster coats remain. The arches were painted a dark colour (red?) at some date, and as there is no apparent build up of paint it is possible that this is an early, if not original feature. No signs of decorative patterns survive.

The voussoirs are dressed from Greensand and Clunch in roughly equal quantities, and Caen also occurs more rarely. In one wallrib, the Greensand and Clunch can be seen to alternate, but this cannot have been a decorative effect. The majority of the voussoirs are scored with an 'X'. These vary greatly in size and shape and are probably not masons' personal marks but setters' marks. Two instances of 'hourglass' masons' marks occur on the (visible) voussoirs, but no other certain marks are visible. The many marks at lower level are probably graffiti.

The two blocking walls that demarcate the Pyx Chapel are very probably contemporary. They are built entirely from re-used Greensand, Clunch and Caen Stone ashlars. The petrology, tooling and the irregular form of the ashlars strongly suggests that they derive from a demolished part of the same undercroft. The round pier embedded in the south wall was cut back flush with the inserted wall using a *Claw Tool* with rectilinear 'claws' made by sawing into the blade of a boaster chisel at regular intervals. This tool does not seem to have been employed before *c.*1250 (author's observation).

Conclusions

Upper Greensand is the sandy equivalent of the Gault formation and it was formed in shallow water (Sherlock 1960, 17). It owes its colour to the presence of dark green grains of fresh glauconite and consists largely of sponge spicules and colloidial (uncrystallised) silica. Its softness and fine grain allows it to be quickly cut into mouldings, ornaments and other dressings, but it deteriorates rapidly if unprotected from the weather, and the Normans no doubt took against it for that reason. Caen stone is an impermeable Oolitic limestone and it is, except in academic folklore, a much more resistant stone. The extensive use of Reigate stone in the Confessor's church has long been recognised (Jope 1964, 96) but the apparent near-disappearance of this building stone in the London area after the Norman invasion requires further research.

After the Conquest, Caen stone from Normandy or English stone that resembled it were favoured as freestones to the near-exclusion of all others (author's observation) and it was not

until the final decades of the 12th century that Greensand was again exploited on a wide scale. The Saxo-Norman masons of the undercroft must have had access to developed quarries of chalk (of which Clunch is a hard variety) and Greensand, and it is probable that the two were mined together, perhaps from quarries in the neighbourhood of Reigate and Merstham, Surrey. These quarries were intensively exploited in the later medieval period (Salzman 1951, 129). The quarrying of Greensand seems to have halted with the Norman Conquest. Chalk continued to be exploited but only for foundations and the rubble core of walls.

The occasional use of a stone with a close general resemblance to Caen stone in the undercroft deserves further study and a more scientific identification is required. The belief that there was virtually no importation of freestone from north France before the Conquest (Jope 1964, 112) needs re-examination.

The survival of plaster screeds on the arches clearly illustrates that the builders of the undercroft rendered over and painted all the stonework with the exception of the capitals. The mixed use of stone was therefore immaterial to the final effect.

The concentration of tufa(?) in one respond does not necessarily indicate a difference in date. It is more likely that the masons simply used whatever source of stone came to hand. There is however little other evidence to suggest that stone was being re-used. Almost all the stone was probably freshly quarried.

The excavated fragments of worked stone

The assemblage of architectural material is for the most part very fragmentary. The fragments have been described, the tooling recorded with rubbings and, where necessary, measured drawings have been made of the moulding profiles.

<4> Rose finial. Greensand. 1350–1500. [159]10. Fig 14, 32.

This element consists of a Tudor Rose carved to form the finial on the apex of a small pointed arch. The treatment of the reverse indicates that it was set into a field or wall face. The rose has a large central stamen and six petals. It was painted red and traces of the paint survive.

An ornamental fragment on this scale would certainly have been internal and would have derived from the microarchitecture of a late medieval internal church structure, such as a reredos, sedilia or tomb monument.

The stylistic similarity of this fragment to the carved roses on the tomb of Henry VII has already been pointed out (Mills, pers comm). The tomb of Henry VII was severely damaged during the Commonwealth and it is possible that this fragment derives from subsequent cleaning of the interior of the church. This would allow the date of the context to be fixed with some precision.

<66> Window jamb/label stop. Caen stone. 1275–1350.

The fragment is the largest from the excavation, apparently representing about 50% of the original dressing. It derives from the external part of a glazing reveal and its upper bed represents the springing line of the window tracery. There are traces of a label stop for the hood moulding which has been cut away.

The moulding is finished with a serrated (sharp) claw tool, a chisel that seems to have been favoured in Britain and France *c.*1240–1300.

There is a single 'black letter' word carefully cut into the jamb moulding. Stylistically it must date from *c.*1350–1525. The rubbing of the inscription cannot be interpreted (John Clark, pers comm).

<68> Fragment of carved drapery? Greensand. [16]11.

This small fragment of relief sculpture is painted red. It is too small to be oriented or dated.

<144> Roll with fillet. Greensand. 1280–1350. [70]11.

This small fragment has spalled off a larger moulding. It incorporates a roll, elliptical or 'squashed' in section with an asymmetrical positioned sharp fillet as a termination. The profile of the roll consists in effect of two waves.

The exterior of the roll was finished with a boaster *c.*6cm wide. This suggests that the fragment is of 13th-century date.

<145> Ashlar(?) fragment. Greensand. 1050s? 1180–1275? [50]11.

The coarse and erratic diagonal boasting suggests that this small fragment may derive from an undercroft arch voussoir similar to those *in situ*. It has therefore been sampled for possible petrological study.

<146> Ornamental casing. Greensand. 1400–1550.[50]11.

This small block formed part of a projecting bead moulding. It was carefully tooled to fit its surrounding elements with joints of minimal thickness. The precision and small size of the piece indicate that it derives from the decorative casing of a freestanding tomb.

<147>&<148> String course. Greensand. 1180–1275. [156]8.

These two fragments probably derive from the label of a string course. The simple chamfered mould can only be broadly dated by its tooling. The lack of weathering suggests that it was part of an internal feature.

<149> Moulding fragment. Greensand. 1300–1500. [44]10.

This roll fragment can be broadly dated by its tooling, as it is finished with a comb, a tool that does not seem to have been widely used until *c.*1300.

ENVIRONMENTAL EVIDENCE

The animal bones

Alan Pipe (identification and recording by Barbara West)

Introduction

This report describes and attempts to interpret the bird and mammal bone assemblages reco-

vered by hand-collection and wet-sieving from the excavations, and to consider their implications for understanding local human activity. Analysis and interpretation of the data were carried out by the author.

Methods

The hand-collected bones

The hand-collected bird and mammal bones were identified and described in terms of species and skeletal element by Barbara West, using reference collections at MoL/MoLAS and the British Museum (Natural History) ornithology department, Tring. The material was recorded directly onto computer using the codes and techniques adopted by the MoLAS Environmental Archaeology Section.

Bones were weighed to the nearest 0.1 gramme using an electronic balance, and measured to the nearest 0.1 millimetre using manual Vernier calipers and following von den Driesch 1976. Withers ('shoulder') heights of the major domestic mammals were calculated using conversion factors given in von den Driesch and Boessneck 1974. Estimates of age at death were made using data on epiphysial fusion and tooth eruption and wear from Payne 1973; Schmid 1972; Silver 1971; and Wilson, Grigson and Payne 1982. Fragmentation was described using the zone method devised by Rackham 1986.

The wet-sieved bone

Soil samples were wet-sieved through 1mm nylon mesh using a Siraf tank. The residues were then visually sorted for animal and plant remains following MoLAS Environmental Archaeology Section procedures. Bird and mammal remains were identified in terms of species and anatomy using MoLAS reference collections and references as for the hand-collected material. They were then described in terms of species-composition, anatomy, abundance, preservation and fragmentation onto paper record sheets.

For both categories of material, bones that were too fragmented or poorly preserved to allow definite identification to species or skeletal part, particularly ribs, vertebrae and long-bone fragments, were assigned to the approximate categories: 'unidentified bird', 'thrush species', 'duck', 'goose-size', 'unidentified mammal', 'cow-size', and 'sheep-size'.

Results

Fragments and weights

A total of 8,445 fragments (75.48kg) were recovered by hand-collection. These were grouped into 74 contexts and 5 phases. Table 7 summarises the total bone recovery by hand-collection.

A scanty assemblage of very highly fragmented bird and mammal bone was recovered from the wet-sieved material. No amphibian or small mammal bones were recovered from any phase. The recovery is summarised in Table 8.

Context [403] (sample 22) in Phase 2, contained an adult chicken metacarpal. This bone compares very closely with an example illustrated as bantam-sized by Cohen and Serjeantson 1986, 53. This context and contexts [235] and [345] from Phase 2 also contained bones from a wild duck species (not mallard) and from an unidentified thrush. The remainder of the assemblage included material only from Phases 2 and 4 and contained only very small unidentifiable mammal fragments.

As Phase 2 yielded the largest sample of hand-collected poultry and wild duck bones, the wet-sieved material corresponds to expected recovery of smaller fragments from these species and is not discussed further as a distinct assemblage.

Species-composition

Hand-collected bones were recovered from a range of domestic and wild species. The domesticates were cattle: (*Bos taurus*), sheep/goat (including sheep *Ovis aries*), pig (*Sus scrofa*), horse (*Equus caballus*), domestic cat (*Felis catus*), domestic goose (*Anser anser*), domestic duck/mallard (*Anas*

Table 7. Total recovery of hand-collected bone

Phase (No./description)	Date	Nos	Wt (g)
5 Surfaces/hrd. standing	1050+	99	401.3
4 Timber structure	1050+	410	1654.6
3 Ditch backfill	1050+	696	2935.8
2 Road/yard and ditch	1050+	3496	30636.7
1 Earliest occupation	*c.*1050	3744	39853.2
TOTAL		8445	75481.6

Table 8. Recovery of wet-sieved bird and mammal bone

Context	Sample	Phase	Supplies	Bone	Abundance
[235]		2	duck unid	metacarpal	1
[322]		4	duck unid	metacarpal	1
[345]		2	duck unid	metacarpal	1
[365]	9	2	unid mammal	unidentified	<20
[391]	17	2	unid mammal	unidentified	<100
[391]	17	2	roe deer	metacarpal	1
[403]	22	2	chicken	metacarpal	1
[403]	22	2	duck unid	metacarpal	1
[403]	22	2	thrush unid	metatarsal	2

platyrhynchos) and chicken (*Gallus gallus*). A diverse assemblage of wild species was recovered. These included birds: crane (*Grus sp.*), white stork (*Ciconia ciconia*), tufted duck (*Aythya fuligula*), wild goose (*Anser sp./Branta sp.*), widgeon (*Anas penelope*), pintail (*Anas acuta*), teal (*Anas crecca*), goldeneye (*Bucephala clangula*), buzzard (*Buteo buteo*), marsh harrier (*Circus aeruginosus*), jackdaw (*Corvus monedula*), snipe (*Gallinago gallinago*), woodcock (*Scolopax rusticola*), blackbird (*Turdus merula*) and fieldfare (*Turdus pilaris*); and mammals: mole (*Talpa europaea*), rabbit (*Oryctolagus cuniculus*), hare (*Lepus europaeus*), roe deer (*Capreolus capreolus*), red deer (*Cervus elaphus*) and dolphin (probably bottle-nosed dolphin *Tursiops truncatus* or white-sided dolphin *Lagenorhynchus albirostris*).

Table 11 summarises the recovery of species from each phase in terms of fragment count, weight and percentage of total weight. In each case, the weight of cattle was combined with that of 'cattle-size' and that of sheep/goat combined with 'sheep-size' to give a more realistic estimate of the total weight of cattle and ovicaprids.

Table 9 gives the relative abundance by weight of cattle, sheep/goats and pigs for each phase if these three species are considered as 100% of the bone from each phase. The assemblages from Phases 4 and 5 are too small for further detailed consideration although the groups are dominated by cattle with sheep/goat and pig providing lower and roughly equal weights.

Some information on ecology and economy may be drawn from the recovery of wild species. Red and roe deer fragments were recovered in very small numbers from Phases 1 and 2; one roe deer fragment was recovered from Phase 3. These species are both indigenous and occur, by preference, in open deciduous woodland (*eg* Corbet & Ovenden 1980).They may therefore be assumed to have been available for hunting in reasonable proximity to the site, although the small numbers in which they were recovered suggest small-scale, opportunistic sport hunting rather than planned exploitation of a food resource.

An unidentified dolphin, probably bottle-nosed or white-sided, was recovered from Phase 2. Both these species are widely distributed and are known to occur in the North Sea and therefore, presumably, the outer Thames Estuary. It may probably be asssumed that a wide range of cetacean species was available and was exploited around British coasts, certainly a Norwegian whale fishery is known to have existed in Saxon times (Jackson 1978, 3). Butchered porpoise bones have been recovered from medieval London sites *eg* context [187] at Calvert's Buildings, Southwark (site code CB81), and this dolphin maxilla fragment may well indicate a consumed animal.

Brown hare was recovered from Phases 1, 2 and 5. This is an esteemed food species and,

Table 9. Recovery of major mammal domesticates

Phase/% weight Species	1	2	3	4	5
Cattle	77.70	69.7	70.39	62.40	53.74
Sheep/goat	15.64	15.23	20.26	18.11	22.73
Pig	6.66	15.07	9.35	19.49	23.53
Total weight	35777	28732	2650	1442	368
Cattle, sheep/goat, pig in grammes					

again, may be assumed to have been deliberately hunted in adjacent open country. Rabbit was recovered as single bones from Phases 2, [251], and 5, [211]. However, as this species is generally regarded as a Norman introduction, and obviously has considerable burrowing capacity, these contexts must be regarded with some caution.

The edible bird species include: ducks, *ie* mallard, teal, tufted duck, goldeneye, widgeon; wild geese; waders, *ie* snipe, woodcock, crane and white stork; and thrushes, *ie* blackbird and fieldfare. All these species would have occurred locally even if only on a seasonal basis, fieldfare, for example, are winter visitors to the southern British Isles. The recovery of these species, each in small numbers of fragments, again implies small-scale use of probably extensive local wild resources plus possibly some disposal of chance local casualties. The Thames itself plus its marshy and seasonally flooded margins may be expected to have carried large, although seasonally fluctuating, populations of waterfowl and waders in close proximity to the site.

Two raptor species, buzzard and marsh harrier, were recovered. Buzzards can be expected to have been common throughout mainland Britain at this period; they are catholic feeders (Sharrock 1987) and able to exploit a wide range of prey species and carrion. Although not as esteemed as, say, goshawk or peregrine falcon, they are used in falconry, particularly for ground game. It is impossible to determine whether these fragments indicate such a use, and the species may have been recovered as a chance kill or as a local casualty.

Marsh harriers are very much confined, as a breeding species, to *Phragmites* reed beds and tend to feed in such terrain plus adjacent open country (Sharrock 1987). They may be expected to have been common in and around the marshy Thames margins close to the site. They are of no real use for falconry and, again, these bones probably reached the site as the result of a chance kill or local casualty.

The remaining bird species – stock dove and rock dove ('feral pigeon' ?) and jackdaw – are very tolerant of man and commonly occur in and around towns as opportunistic feeders *eg* on food scraps and spilled grain.

Analysis of assemblage by phase

In each phase, the assemblage is dominated by cattle, sheep/goats and pigs in terms of bone-weight. For Phases 1–4, cattle provide 62.4–77.7% of the total of these three species, with sheep/goat and pigs respectively providing 15.23–20.26% and 6.66–19.49% of the total. There appears to be little overall variation in the relative proportion of the major domesticates between phases although it should be stressed that only Phases 1 and 2 provide adequate samples. If these two phases are compared, then there does appear to be a real, although slight, increase in the relative weight of pig bones at the expense of cattle in Phase 2, with the incidence of sheep/goat remaining constant. In all phases, the incidence of poultry and wild game species is insignificant in terms of bone-weight, although the species-composition is generally diverse (see Table 11).

Phase 1 (Earliest Occupation)

This bone-group is dominated in terms of fragment count and weight by the major domesticates. The relative contributions to the bone-weight were: cattle (69.8%), sheep/goat (14.0%), pig (6.0%) and horse (5.7%). Domestic poultry provided only 0.7% of the total fragment count and 0.10% of the total weight. Wild game species accounted for only 0.3% of the fragment count and 0.6% of the total weight.

Phase 2 (Road/Yard and Ditch)

This bone group is dominated in terms of fragment count and weight by the major domesticates. The relative contributions to the bone-weight were: cattle (65.4%), sheep/goat (14.3%), pig (14.1%) and horse (1.2%). Domestic poultry accounted for only 0.4% of the fragment count and 0.7% of the total weight. Wild game species accounted for only 1.5% of the fragment count and 1.3% of the total weight.

Phase 3 (Ditch Back-fill)

This bone group is dominated in terms of fragment count and weight by the major domesticates. The relative contributions to the bone-weight were: cattle (63.0%), sheep/goat (18.3%), pig (8.4%) and horse (0.2%). Domestic poultry accounted for only 0.7% of the fragment count and 0.2% of the total weight. Wild game species accounted for only 0.4% of the total fragment count and 0.5% of the total weight.

Phase 4 (Timber Structure)

This bone group is dominated in terms of fragment count and weight by the major domesticates. The relative contributions to the

bone-weight were: cattle (54.4%), sheep/goat (15.8%) and pig (17.0%). Domestic poultry accounted for only 4.6% of the fragment count and 2.28% of the total weight. Wild game species accounted for only 1.2% of the total fragment count and 0.2% of the total weight.

PHASE 5 (SURFACE/HARD STANDING)

This bone group is too small to justify discussion of relative weights. However, the species represented were cattle, sheep/goat, pig, rabbit, hare and domestic chicken.

Carcase-part representation and butchery

Using the zone method of Rackham 1986 in combination with age-estimates it is possible to suggest an approximate relative contribution to the total meat-weight provided by the three major domestic mammal species. Thus, a possible total minimum number of individual animals from the *complete* assemblage is cattle (5), sheep/goat (7) and pig (7). Although these estimates are quoted merely to give an impression of the total number of individual animals processed through the site, they do illustrate the rather small size of the identifiable sample available and suggest that caution is necessary in the interpretation of the results.

CATTLE

In each phase all major areas of the carcase were recovered. However only the samples from Phases 1–3 are large enough to justify comment on the relative importance of particular carcase areas. All three phases contain only very small quantities of horn core but relatively large weights of head, upper limb, lower limb and feet with smaller quantities of vertebrae and ribs. Although areas of good (*eg* upper-limb and vertebrae), moderate (*eg* lower-limb) and poor (*eg* feet) meat-bearing quality are represented, the upper and lower limbs tend to predominate, together making up more than 50% of the group weight. The apparent relative lack of vertebrae and ribs is probably a reflection of the allocation of much of the highly fragmented material from this body area to the approximate 'cow-size' category, plus the lack of identifiable zones (Rackham 1986) recovered.

Butchery marks were recorded from Phases 1–4. Although only Phases 1 and 2 provided sufficient material to indicate patterns of carcase processing, the marks from Phases 3 and 4 appear to correspond to the patterns seen in Phases 1 and 2. The samples from both phases indicate thst the carcases were chopped sagittally into sides. The head was also split, presumably to allow extraction of the brain. Vertebrae, ribs and costal cartilages showed transverse cuts and chops resulting from further sub-division of the sides. The fore and hind-limbs were detached at the shoulder and hip and then further disarticulated at the elbow, wrist, knee and ankle to produce manageable joints for distribution, cooking and consumption. There was also definite sagittal chopping of long-bones, particularly the humerus, radius, metacarpal, femur, tibia and metatarsal. This would have allowed extraction of the marrow for future consumption.

SHEEP/GOAT

In all phases the bone-weights were too small to justify detailed comment. However, although all major carcase parts were represented, again areas of good/moderate meat-bearing quality; the upper and lower limbs, were predominant. Small quantities of horn core were recovered from Phases 1 and 2.

Although butchered bones were recovered from Phases 1–4, these were mainly derived from Phases 1 and 2. Again the main processing pattern appears to be splitting of the head, sagittal splitting of the body into sides, followed by transverse division of the vertebral column to produce 'chops'. The limbs also showed knife-cuts and chop marks indicating removal from the body and then sub-division into smaller 'joints'. In some cases, particularly on the pelvis and tibia, there were also indications of meat removal/'boning out' using both knives and cleavers. Two sheep horncores, both from context [334] in Phase 1, had been chopped through at the base, one had also been knife-cut several times at the mid-shaft. This indicates that the horny outer sheath had been removed, probably for use as a raw material in the manufacture of small objects *eg* knife handles, spoons, and gaming pieces.

PIG

In each phase, all areas of the carcase are represented although only in Phases 1 and 2 is the sample of sufficient size to allow comment. In both these cases the head, upper and lower limb predominate; in Phase 1 the upper-limb and in Phase 2 the head provided the majority of the bone-weight. In all cases, the feet and

vertebrae/ribs are very much a minor component of the samples. The feet are areas of low meat-bearing value although the lack of ribs and vertebrae is again probably a reflection of the difficulty of allocating this material to species when highly fragmented.

Butchered material was recorded from Phases 1 and 2. This again showed sagittal splitting of the skull, including separation of the mandibles, although no definitely butchered vertebrae were recovered. One skull had been transversely chopped posteriorly indicating that the animal had probably been decapitated. The limbs showed evidence of disarticulation at the hip, shoulder, and knee with some indications of 'boning out' of the pelvis and radius. Knives and cleavers had been used for both operations.

HORSE

This species was represented by only teeth, upper limb (humerus and femur) and feet (metapodials and phalanges). Three butchered bones were recovered. A femur, [413] and a metatarsal, [334] from Phase 1 showed chop-marks; a humerus from Phase 2, [351] had been chopped distally at the knee. These marks probably all resulted from disarticulation into manageable joints, possibly for consumption by dogs or other kept animals.

RED DEER

This species was represented by upper limb (humerus) and lower limb (radius and calcaneum). No butchery marks were present.

ROE DEER

This species was represented by skull (and antlers), upper and lower limb and metapodials. A radius from Phase 3, [213], had been knife-cut at the proximal end. This would have resulted in disarticulation at the elbow joint and confirms that the species was consumed, probably after primary processing at the site.

CHICKEN

This species was principally represented by bones from the wing (scapula, humerus, radius, ulna and metacarpal), leg (femur and tibia) and feet (metatarsal). Chops were noted on femurs from Phases 2, [373], and 3, [213] presumably as a result of removal of the leg. Knife-cuts were recorded on femurs [345], tibia [369] and a metatarsal [372] from Phase 2 and a tibia from Phase 4 [322]. These may have arisen from production of joints or as accidental marks produced during eating.

GOOSE

A knife-cut and chopped humerus was recovered from the fill of ditch [238]. This was probably a result of the removal of the wing and subsequent 'carving' and division during consumption.

Conclusion

In general, the carcase-part representation of all three major domesticates suggests utilisation of complete carcases with consumption of areas of both low and high meat-bearing quality. The general bias appears to be towards consumption of the upper and lower limb; areas bearing good quality meat. The high incidence of skull and mandibles for all three species implies that primary butchery and possibly slaughter was carried out at, or close to, the site. The relative lack of horn cores recovered from cattle and sheep/goat imply that in general little if any horn-working was carried out on-site. There is no evidence for antler working.

Age-structure of the population

CATTLE

Evidence from the teeth: Although the available material is rather sparse for the whole assemblage, some general inferences may be made. No neonates or juveniles were recovered and all the animals appeared to be adults in at least the second year of life, most were probably in at least the third/fourth year. This applies to material from all phases although only Phases 1 and 2 provided adequate samples for comparison.
Evidence from epiphysial fusion: The material from all phases shows a very similar age distribution although only Phases 1 and 2 provide sufficiently large samples to justify comment. The fusion data strongly imply that all the animals consumed were adult; no neonates or juveniles were recovered from any phase. The animals were predominantly in at least the second year of life when slaughtered, with a large proportion in at least the fourth year of life. In Phase 1 individuals were allocated to the second, fourth and eighth (minimum) year of life. In Phase 2 the overall age distribution was very similar although there were also a few individuals in the third year. This age distribution implies that

although the younger individuals may have been reared solely for beef production, a large proportion of the animals were slaughtered and consumed after having previously fulfilled a primary function *eg* milk production, traction or breeding.

SHEEP/GOATS

Evidence from the teeth: As the sheep/goat sample was very small and consisted mainly of single loose teeth with a very few mandibles, there is insufficient material to merit comparison between phases. There were no neonate, infant or juvenile individuals recovered from any phase. All the material was derived from adult animals probably in the second, third and fourth year of life *ie* animals that had probably fulfilled a primary function *eg* milk or wool production, prior to slaughter for meat.

Evidence from epiphysial fusion: Epiphysial samples were obtained from all phases although only those from Phases 1–4 are sufficiently large to discuss in any detail. The animals from Phase 1 are all sub-adult or adult; no neonates or infants were recorded. The animals were in the first, second, fourth and fifth years with a few individuals possibly older than this. This indicates consumption of lamb and mutton with exploitation of animals reared specifically for meat, and of those having fulfilled a primary function.

Phases 2, 3 and 4 show a broadly similar picture although in each case there is a small proportion of very young animals probably of three months or less. This may imply that sheep and/or goats were reared at the site.

PIG

Evidence from the teeth: For all phases the assemblage appears very similar in terms of age. There are no neonate or infant animals and all the material appears to derive from juvenile or sub-adult animals in the first and particularly second years of life *ie* animals purposely reared for optimum meat production.

Evidence from epiphysial fusion: For all phases, the epiphysial fusion corresponds to the pattern suggested by the larger samples from Phases 1 and 2, indicating that a very small proportion of older animals, probably in the third year, is also present.

Pathology

Pathological changes were very sparsely represented throughout the whole assemblage and were confined to cattle, sheep/goat pig, and chicken.

CATTLE

One horn-core from a Phase 1 context, [413], showed a constriction/indentation 1cm above the base. An innominate (pelvis) from context [299] in Phase 3 bore a well-healed fracture of the ilium. Rib fragments from contexts [387] and [392], both in Phase 2, showed callus formation indicating healed fractures. A maxillary molar from context [392] showed considerably greater height of the posterior cusp in comparison with the anterior. This presumably implies a weakly developed or missing posterior cusp in the corresponding mandibular molar. There was probably little effect upon feeding ability.

SHEEP/GOAT

Pathological changes were recorded only from Phase 1 material and were confined to the distal humerus and proximal radius; the 'elbow joint'. One humerus from context [349] bore extra bony growth on the lateral edge of the distal articulation; extra bony growth was also recorded on proximal articulations of radii from contexts [370], [379] and [413]. These changes are not completely understood but may have originated from physical trauma, *eg* kicks, sustained when the animals were penned close together.

PIG

One tibia recovered from context [334] in Phase 1 showed a large proximal swelling. There were no indications of fracture and the effect may have been the result of infection or haematoma.

Measurements

Although measurements were taken from all sufficiently well-preserved fused bones, there are no groups large enough to justify statistical comparison between phases or feature-types. The recovery of complete bones does, however, allow calculation of approximate withers ('shoulder') heights for the major domesticated mammals. Table 10 summarises the data for cattle and sheep/goat (including one definitely identified sheep). As no complete fully-fused pig bones were recovered, no withers heights were calculated for this species.

The calculated heights for cattle are similar to values previously determined for Saxo-Norman material (*eg* Armitage, 1982).

Table 10. Withers heights of major domestic animals (from von den Driesch and Boessneck 1974)

Phase	Species	Bone	Ht range (mm)	Ht mean ht (mm)	Number in sample
1	Cattle	metatarsal	1081–1199	1142	4
2	Cattle	radius		1274	1
2	Cattle	metacarpal	1065–1183	1097	6
3	Cattle	metatarsal		955	1
1	Sheep/goat	humerus	552–636	594	2
1	Sheep/goat	radius		630	1
1	Sheep/goat	metacarpal		621	1
1	Sheep	metacarpal		625	1
1	Sheep/goat	calcaneum	534–646	583	3
2	Sheep/goat	radius	526–648	587	2
2	Sheep/goat	metacarpal		619	1
2	Sheep/goat	tibia	554–592	571	3
2	Sheep/goat	calcaneum		558	1
3	Sheep/goat	calcaneum	605–618	612	2

Conclusions

This assemblage generally represents a pattern of animal consumption based primarily on cattle and to a lesser, and roughly equal extent, on sheep/goats and pigs.

The carcase-part representation of these species implies that the bulk of the meat diet arrived at the site in the form of intact carcases of the major domesticates, probably on the hoof, and was butchered *in situ*. This also applies to the roe deer remains. The consumption of all body areas and the presence of a range of age-classes implies that consumers of a range of economic status were present. There is no real evidence for the disposal of discrete groups of either 'elite' or particularly low-status domestic waste.

The relative lack of cattle and sheep/goat horn-cores implies that these had probably been removed for use in horn-working elsewhere. There are no indications of bone or antler working on the site.

There is a diverse, although not abundant, component of wild mammal and bird species indicating some low-level exploitation of local faunal resources.

The overall pattern of diverse species-exploitation and cattle-dominated domesticate use closely resembles that described for late Saxon York (O'Connor, 1994) in which it has been interpreted as representative of 'a market big enough to draw in commodities from a wide area by consumer demand'. This would appear to correspond with the interpretation of Westminster Abbey as very much more indicative of the consumer end of the supply chain than any other Saxon London site (Rackham, 1994).

The Fish Bones

Alison Locker

Introduction

Soil samples were taken from a number of Saxon features and context groups from which fish bones were recovered. Some bones were hand collected on site. Table 12 indicates the total number for each species or group in the different phases and contexts. Ninety eight percent of the fish bone came from ditch [238]2, where a number of samples were taken at various points.

Soil samples were sieved down to 1mm to ensure the recovery of the very smallest species. The following species and families were identified: Elasmobranch indet., roker (*Raja clavata*), Rajidae, sturgeon (*Acipenser sturio*), eel (*Anquilla anquilla*), herring (*Clupea harengus*), salmon (*Salmo salar*), Salmonidae, smelt (*Osmerus eperlanus*), pike (*Esox lucius*), tench (*Tinca tinca*), bream (*Abramis brama*), barbel (*Barbus barbus*), dace (*Leuciscus leuciscus*), chub (*Leuciscus cephalus*), roach (*Rutilus rutilus*), Cyprinidae, cod (*Gadus morhua*), haddock (*Melanogrammus aegleinus*), whiting (*Merlangius merlangus*), ling (*Molva molva*), Gadidae, garfish (*Belone belone*), tub gurnard (*Trigla lucerna*), Triglidae, thin-lipped grey mullet (*Liza ramada*), Muglidae, bass (*Dicentrarchus labrax*), mackerel (*Scomber scombrus*), brill/turbot (*Scophthalmus rhombus/Scophthalmus maximus*) and plaice/flounder (*Pleuronectes platessa/Platichthys flesus*).

The identifications are largely to species level, with some categories confined to group or family where specific identification was not possible. For the cyprinids, species were identified largely from

Table 11. Total species recovery from phases 1–5 (NB all weights are given in grammes)

	PHASE 1			2			3			4			5		
Species	**Nos**	**Wt**	**%wt**	**Nos**	**Wt**	**%wt**	**Nos**	**Wt**	**%wt**	**Nos**	**Wt**	**%wt**	**Nos**	**Wt**	**%wt**
Cattle	974	27800	69.8	683	20025	65.4	135	1865	63.0	69	900	54.4	14	198	49.3
Sheep/goat	1593	5595	14.0	906	4377	14.3	184	537	18.3	73	261	15.8	43	84	20.9
Pig	152	2383	6.0	341	4330	14.1	41	248	8.4	31	284	17.0	22	87	21.6
Horse	21	2289	5.7	4	351	1.2	1	5	0.2	0	0	0	0	0	0
Cat	1	4	<0.1	4	16	0.1	0	0	0	0	0	0	0	0	0
Red deer	2	138	0.4	2	121	0.4	0	0	0	0	0	0	0	0	0
Roe deer	3	46	0.1	12	250	0.8	1	11	0.4	0	0	0	0	0	0
Brown hare	1	<1	<0.1	5	8	<0.1	0	0	0	0	0	0	1	11	2.7
Rabbit	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.2
Mole	2	1	<0.1	0	0	0	0	0	0	0	0	0	0	0	0
Dolphin	0	0	0	1	72	0.2	0	0	0	0	0	0	0	0	0
unid. mammal	941	1509	3.8	1245	791	2.6	225	263	9.0	151	149	9.0	12	19	4.8
Chicken	21	29	0.1	154	200	0.7	5	6	0.2	13	23	1.4	1	1	0.2
Goose, dom.	3	8	<0.1	6	16	0.1	0	0	0	1	5	0.3	0	0	0
Goose, wild	3	12	<0.1	0	0	0	0	0	0	0	0	0	0	0	0
'goose-size'	0	0	0	4	13	<0.1	0	0	0	1	7	0.4	0	0	0
Mallard	0	0	0	15	17	0.1	0	0	0	2	2	0.1	0	0	0
Pintail	0	0	0	1	1	<0.1	0	0	0	0	0	0	0	0	0
Teal	0	0	0	1	<1	<0.1	0	0	0	1	1	0.1	0	0	0
Tufted duck	0	0	0	3	2	<0.1	0	0	0	0	0	0	0	0	0
Goldeneye	0	0	0	1	1	<0.1	0	0	0	0	0	0	0	0	0
Widgeon	1	1	<0.1	0	0	0	0	0	0	0	0	0	0	0	0
Duck	2	1	<0.1	8	4	<0.1	0	0	0	2	1	0.1	0	0	0
Crane	1	17	<0.1	0	0	0	0	0	0	0	0	0	0	0	0
White stork	1	8	<0.1	0	0	0	0	0	0	0	0	0	0	0	0

the characteristic pharyngeals which were numerous. Other less specifically identifiable vertebral centre and skull fragments were assigned to 'cyprinid'. Similarly, plaice and flounder were specifically identified from premaxillae and dentaries with other skull fragments and vertebral centra categorised as plaice/flounder or where less determinable as flat-fish.

Measurements (recorded in the archive) were taken on dentaries and premaxillae using Wheeler and Jones (1976) and Morales and Rosenlund (1979) to estimate the range of whiting total lengths. Although the accurate measurement of small specimens is difficult the suggested total length range for whiting is approximately 36 to under 50cms, of average size (Wheeler 1978, 153). The size of cyprinid pharyngeals suggested that small immature specimens were present as well as larger more mature individuals.

Discussion

Excluding ditch [238]2 the amount of fish bones recovered was small *ie* not exceeding 84 identifiable bones in any one group. The small size of these samples limits the viability of comparison between these groups and the ditch. However, there is some similarity between all the groups, which can be seen in Table 12 with species that could be caught inshore or in estuarine/freshwater conditions predominating. The proportion of freshwater species is exaggerated by the partial skeleton of a roach from pit [211]5.

The large sample of fish bones from the mid 11th-century ditch [238]2 is dominated by herring (31%), smelt (17%) and plaice/flounder (15%) in descending order of occurrence. Cyprinidae (8%), whiting (8%), elasmobranch/roker/ray (7%), eel (6%) and pike (2%) were also of importance, the remaining species comprise less than 1% each.

This distribution also reflects species that can be caught in shallow marine, estuarine and freshwater conditions. Both herring and whiting occur in large shoals and could have been netted in the shallower waters of the southern North Sea. Roker, plaice, flounder and turbot could have been trapped or caught on lines along the shoreline or in shallow waters. Smelt (related to salmon) are migratory, breeding in freshwater or

at the edge of the tidal influence (Wheeler 1979, 151). These small fish were netted in large numbers as they entered the Thames. Eels were also commonly caught in the Thames by hook, trap or net. Exclusively freshwater fish are represented by the cyprinids, of which dace and roach were most common. Tench, barbel and chub were also identified. Of these species only roach and tench are now considered worth eating. Pike was also present in 13 out of the 15 samples from this ditch and appears to have been regularly eaten, if not in large quantities. Of the remaining species, all of which comprise less than 1% of the whole ditch sample, only cod and haddock suggest any offshore fishery. The remainder could all have been caught in marine inshore waters or in the Thames itself and were not purchased in large quantities. The single identification of sturgeon is of interest, it was highly regarded, a 'royal' fish, owned by the crown and used to be found in the Thames when it returned from the sea to spawn.

Table 12. Fish bone remains

	1	2	3	4	5	6	7	8
Elasmobranch				99		2		
Roker				329	2	2	1	
Sturgeon				16	1	4		
Ray			5	231		2		
Eel			1	561	7	2		
Herring		1	10	2903		7		2
Salmon				1				
Salmonid				78		1		1
Smelt		1		1608		2	2	1
Pike				195		3		
Tench				5				
Bream				4			1	
Barbel				4				
Dace				27				
Chub				1				
Dace/Chub				74				
Roach				42	1		21	1
Cyprinid				643			2	
Cod			4	48		4	1	
Haddock				19	1			
Whiting			1	791		11	2	
Ling			1					
Gadoid					1			
Sm Gadoid			1	31				
Lg Gadoid			3	16		2		
Garfish				35				
Tub Gurnard				17		2	1	
Gurnard				87				
TLG mullet				35				
Mullet				1				
Bass				3	1			
Mackerel		1		43		1		
Brill/Turbot				8			1	
Plaice	1			185		30	5	
Flounder				53				
Plaice/Flounder			1	1205	6	9		
Flatfish indet.		1		33	1			
TOTAL	1	4	27	9431	21	84	37	5

KEY: 1. Phase 1[381]; 2. Phase 1[408]; 3. Phase 1[468]; 4. Phase 2[238]; 5. Phase 3; 6. Phase 4; 7. Phase 5 surfaces; 8. Phase 5[114]. Numbers refer to numbers of bones recovered

Comparison with the fish identified by Jones (1976) from the excavations in the sub-vault of the misericorde of the abbey suggest a similar species composition although most of the samples are later in date, *ie* 12th to 13th century. However, both in the 12th/13th century, and in the smaller samples dated up to the 16th century the emphasis is more on deep water fish such as cod, haddock and, in one instance, ling. The small numbers of cod, haddock and only one vertebra of ling in the earlier deposits from the undercroft may reflect a change in the availability, with a greater exploitation of deep water in the medieval and post-medieval period.

Since abstinence from meat was strictly observed by the Benedictines up until the end of the 12th century (Bond 1988, 70), fish would have been an important part of the monastic diet until this date and still made a significant contribution afterwards.

The marine fish could all have been purchased locally, except for ling which would have been imported from a more northerly port, salted or dried. The freshwater fish would either have been purchased or caught on the river where the monastic house may have retained fishing rights. Certainly in the 15th century the abbey had fishing on the river Colne shown on a map of 1460 (*ibid*, 72) and it is possible that in earlier periods they may have had rights in other areas. The presence of small immature cyprinids, unlikely to have been purchased for eating may be evidence to support this. Alternatively they may represent the stomach contents of a carnivorous fish such as the pike.

Plant remains

Anne Davis

Introduction

Soil samples for environmental analysis were taken from a number of features on the site, most of them Late Saxon/early medieval in date,

Table 13. Charred plant remains from phases 1, 4 and 11

Species	Common name	Habitat	⟨ph. 1⟩				⟨ph. 4⟩		⟨ph. 11⟩
		context no.:	413	349	344	335	322	333	22
		sample no.:	24	6	4	2	0	0	1
Triticum aestivum L. s.l.	bread/club wheat	FI		10	8		2		
Triticum sp.	wheat	FI		2	4				
Triticum sp.	wheat, rachis	FI			4				
cf. Triticum sp.	wheat	FI	2	2					
Secale cereale	rye	FI	4	27	6			1	
Secale cereale	rye rachis	FI		3	1				
cf. Secale cereale	rye	FI	8	9	5		3		
cf. Secale cereale	rye rachis	FI							1
Triticum/Secale sp.	wheat/rye	FI		4	1				1
Secale/Hordeum sp.	rye/barley rachis	FI			1	1	1		
Hordeum sativum	barley	FI	1	9	5	2			2
Hordeum sativum	barley, rachis	FI			2				
cf. Hordeum sativum	barley	FI		1			1		1
Hordeum/Triticum sp.	barley or wheat	FI	1	3					
Avena sp.	oat	AFI		6	2				
cf. Avena sp.	oat	AFI		4	5				
Cerealia	indet. cereal	FI	14	30	30	10	5	2	2
Cerealia	indet. cereal, culm node	FI		2	11				1
Cerealia	indet. cereal, rachis	FI							
Ranunculus cf. flammula	lesser spearwort	EG			1				
Silene sp.	campion/catchfly	ABCDF		1					
cf. Myosoton aquaticum	water chickweed	E		1					
Stellaria cf. media	chickweed	AB		1	4				
Stellaria spp.	chickweed/stitchwort	ABCDEG					5		
cf. Stellaria spp.	chickweed/stitchwort	ABCDEG			2				
Caryophyllaceae indet.	—	—		3					1
Caryophyllaceae/Chenopodiaceae	—	—		2	1	1			
Chenopodium cf. album	fat hen	ABFH			1				
Chenopodium murale L.	nettle-leaved goosefoot	BD							
Chenopodium sp.	goosefoot etc.	ABCDFH		1	2	1			
cf. Chenopodium sp.	goosefoot etc.	ABFH				1			
Atriplex sp.	orache	ABFGH			1				
Chenopodium/Atriplex sp.	goosefoots/oraches	ABFGH			1				
Malva sp.	mallow	BCDF							1
cf. Trifolium sp.	clover	BDI		1	1				
Vicia/Lathyrus spp.	vetch/tare/vetchling	CD			4				
Rumex acetosella L.	sheep's sorrel	AD		1	4	1			
Rumex spp.	docks	ABCDEFG	1	2	38	2			
Urtica dioica L.	stinging nettle	BCDEFGH			1				
Corylus avellana L.	hazel	CF							
Solanum nigrum L.	black nightshade	BF			1				
Prunella vulgaris L.	self-heal	BCDG			1				
Lamium sp.	dead-nettle	ABC			1				
Plantago lanceolata L.	ribwort	D		2	4				
Galium sp.	bedstraw	ABCDE		1			1		
Sambucus nigra L.	elder	BCFGH		2					
Anthemis cotula L.	stinking mayweed	ABGH		6	16		1		
Compositae indet.	—	—		2					
cf. Compositae indet.	—	—							
Juncus spp.	rush	ADEH			1	1			
Eleocharis palustris/uniglumis	spike-rush	E		2					
cf. Eleocharis sp.	spike-rush	E			3				
Carex spp.	sedges	CDEH		2	9				
Poa type	poa	ABDE			2				
Bromus spp.	bromes	ABD		3					
cf. Bromus spp.	bromes	ABD			3				
Avena/Bromus spp.	oat/brome grasses	ABCDFI	5	4	4		1		2
Phleum type	—	—		3	2				
Gramineae indet.	—	ABCDEFHI		6	6	3		2	
Indeterminate	—	—		18	13				1

KEY to habitat codes: A. Weeds of cultivated land; B. Ruderals. Weeds of waste places and disturbed ground; C. Plants of woods, scrub, hedgerows; D. Open environment (fairly undisturbed); E. Plants of damp/wet environment; F. Edible plants; G. Medicinal and poisonous plants; H. Commercial/industrial use; I. Cultivated plants.

Table 14. Waterlogged plant remains from phases 1, 4 and 11 (for KEY see Table 13)

Species	Common name	Habitat	413	349	344	335	322	333	22
		context no.:	413	349	344	335	322	333	22
		sample no.	24	6	4	2	0	0	1
Ranunculus sceleratus L.	celery-leaved crowfoot	E				1		1	
Papaver somniferum L.	opium poppy	BGHI		1					
Stellaria cf. media	chickweed	AB		1					
Chenopodium rubrum/glaucum	red/glaucous goosefoot	AB						1	
Malva sp.	mallow	BCDF		1					
Fragaria vesca L.	wild strawberry	CDF		2					
Conium maculatum L.	hemlock	CEG			1				
Apium graveolens L.	celery	EFI							1
Urtica urens L.	small nettle	AB						1	
Urtica dioica L.	stinging nettle	BCDEFGH			12	1			
Prunella vulgaris L.	self-heal	BCDG							2
cf. Marrubium vulgare	white horehound	BG				30			
Labiatae indet.	—	—						1	
Sambucus nigra L.	elder	BCFGH	8	2	4			1	
Juncus spp.	rush	ADEH		1200		50			
Eleocharis palustris/uniglumis	spike-rush	E		2					
Cyperaceae indet.	—	—		1					
Gramineae indet.	—	ABCDEFHI		14	1				
Indeterminate	—	—			2				

and probably contemporary with the building of the 11th century abbey.

From Phase 1, a single sample was taken from a gravel fill of the possible quarry [408], and three from silty flood deposits overlying the disused quarry. The largest number of samples came from primary fills (Phase 2) and levelling layers (Phase 3) of the massive boundary ditch [238]. All these phases date to the mid to late 11th century.

Two postholes from the north side of the Phase 4 timber structure were sampled, but any deposits associated with the occupation of the building were not available for excavation.

A single sample dates from the post-medieval period (Phase 11) and was taken from a patch of flooring in the abbey undercroft.

Processing

A total of 29 samples was processed using a modified Siraf flotation tank with a 0.25mm mesh to catch the floating material and a 1.0mm mesh to retain the residues. The flots were dried prior to sorting for plant remains. Sample size varied from 2kg to 37kg but the majority were smaller than 10kg. Twenty four flots were sorted in the laboratory, five of the smallest ditch samples being omitted, and seeds were identified with the help of the modern reference collection at the Museum of London.

The plant remains identified are shown in Tables 13–16.

Results

The richest assemblages of plant remains came from Phase 1 flood deposits and the Phase 2 ditch fills. Both charred and waterlogged material was recovered from most samples, but the charred remains were generally in poor condition – often distorted and fragmented. Waterlogged seeds were well preserved in some of the ditch fills.

Charred plants

Charred cereal grains, chaff and weed seeds were found in all samples. Identification to species was impossible in many instances, and in some contexts the majority of grain was composed of unidentifiable fragments.

Rye (*Secale cereale*) was the most abundant cereal identified in the majority of samples and also on the site as a whole, although it always occurred mixed with other cereals. In addition to the firm identifications of rye grains a number of specimens were impossible to distinguish from wheat due to their poor preservation.

Wheat grains were also present in almost all samples. This was almost certainly bread or club wheat (*Triticum aestivum* s.l.), although it is

Table 15. Charred plant remains from ditch 238, phase 2 (for KEY see Table 13)

Species	Common name	Habitat															
		context no.:	421	418	417	414	403	396	391	389	388	366	365	345	352	323	213
		sample no.:	27	26	29	28	22	19	17	15	14	11	9	8	10	7	3
Triticum aestivum L. s.l.	bread/club wheat	FI	4	6		2		5				3	4	8	2	1	
Triticum sp.	wheat	FI					1	1	1		1		4	7			
cf. Triticum sp.	wheat	FI	1	1					1			1			1		2
cf. Triticum sp.	wheat, rachis	FI		1													
Secale cereale	rye	FI	3	6	1	1		6				4	4	6	3		2
Secale cereale	rye rachis	FI										2					
cf. Secale cereale	rye	FI		5		2	4	3			1	2	9	7	3		3
cf. Secale cereale	rye rachis	FI															1
Triticum/Secale sp.	wheat/rye	FI		3			1	3				1	1	5			2
Secale/Hordeum sp.	rye/barley	FI													1		
Secale/Hordeum sp.	rye/barley rachis	FI							1						1		
Hordeum sativum	barley	FI		2		1		1	2	1		2	5	11		1	1
Hordeum sativum	barley, rachis	FI		1					1				3		1		
cf. Hordeum sativum	barley	FI	1	1		1		2				3	5	7			2
Hordeum/Triticum sp.	barley or wheat	FI						4					4	8	2	2	1
Avena sp.	oat	AFI	1	4				1		1				3			1
Avena sp.	oat awn	AFI		1													
cf. Avena sp.	oat	AFI		4		1							6	7			
Cerealia	indet. cereal	FI	7	21	1	5	2	12	8	4	2	12	35	30	7	3	20
Cerealia	indet. cereal, culm node	FI		1													2
Cerealia	indet. cereal, rachis	FI		2													
Ranunculus sp.	—	ABCDEG								1							
cf. Raphanus raphanistrum	wild radish/charlock	A											1				
cf. Myosoton aquaticum	water chickweed	E											2				
Myosoton/Stellaria sp.	chickweed/stitchwort	ABCDEG				7											
Stellaria media (L.) Vill.	chickweed	AB	2	1	6	1						1					
Stellaria cf. media	chickweed	AB		3													8
Stellaria graminea L.	lesser stitchwort	CD							1								
Stellaria spp.	chickweed/stitchwort	ABCDEG	2	2	2					1		1			2		1
cf. Stellaria spp.	chickweed/stitchwort	ABCDEG															6
Caryophyllaceae indet.	—	—				1						1					8
cf. Caryophyllaceae	—	—															9
Caryophyllaceae/Chenopodiaceae	—	—			1			1				1					1
Chenopodium sp.	goosefoot etc.	ABCDFH												1			
Chenopodium/Atriplex sp.	goosefoots/oraches	ABFGH				1											
Chenopodiaceae indet.	—	—								1							
Malva sp.	mallow	BCDF			1	1	1	2	1								1
cf. Trifolium sp.	clover	BDI		2													
cf. Vicia faba	celtic bean/horsebean	FI		1													
Vicia/Lathyrus spp.	vetch/tare/vetchling	CD	1	1				1					2	1			1
cf. Vicia/Lathyrus sp.	vetch/tare/vetchling	CD							1								

Vicia/Lathyrus/Pisum sp.	vetch/tare/vetchling/ pea	ABCDEFI												2					
cf. Potentilla sp.	cinquefoil/tormentil	BCDEFGH				2													
Prunus avium/cerasus	sloe/cherry	CFGI						1											
Polygonum sp.	—	ABCDEFG								1									
Rumex cf. acetosella	sheep's sorrel	AD											1						
Rumex spp.	docks	ABCDEFG	1	1		1		1						1					2
Corylus avellana L.	hazel	CF	1							1	1								1
cf. Corylus avellana	hazel	CF		1															
cf. Menyanthes trifoliata	bogbean	EFG							1										
Plantago cf. lanceolata	ribwort	D	1	1															
Galium cf. aparine	cleavers	BCG	1																1
Galium sp.	bedstraw	ABCDE							1	1			2	1					1
Sambucus nigra L.	elder	BCFGH											1						1
Anthemis cotula L.	stinking mayweed	ABGH	13	28		2	1						4				1		3
Chrysanthemum segetum L.	corn marigold	AHI		4															
Leontodon autumnalis/hispidus	hawkbit	BD		1															
Compositae indet.	—	—		1															
Eleocharis palustris/uniglumis	spike-rush	E																	1
Cyperaceae indet.	—	—		2															
Poa type	poa	ABDE	5	3															6
Bromus spp.	bromes	ABD		3									2						
cf. Bromus spp.	brome	ABD												2					
Avena/Bromus spp.	oat/brome grasses	ABCDFI	9	26		2	1	4		3			4		2	2			3
Gramineae indet.	—	ABCDEFHI		1	3		1					1	4	3					
Indeterminate	—	—	2	7		2	2		2	3			10	3					6

Table 16. Waterlogged plant remains from ditch 238, phase 2 (for KEY see Table 13)

Species	Common name	Habitat	421	418	417	414	403	396	391	389	388	366	365	345	352	323	213
		context no.:	27	26	29	28	22	19	17	15	14	11	9	8	10	7	3
		sample no.:															
Ranunculus acris/repens/bulbosus	buttercups	ABCDEG			12								1	1			
Ranunculus sceleratus L.	celery-leaved crowfoot	E			10	9	3	5	23	1		1	134		9	1	
Ranunculus sp.	—	ABCDEG							1								
Papaver somniferum L.	opium poppy	BGHI								1			2				
cf. Capsella bursa-pastoris	shepherd's purse	AB							3				7				
Rorippa islandica (Oeder) Borbas	marsh yellow-cress	E						1	4	1		2	46		3		
Reseda luteola L.	weld/dyer's rocket	ABGHI				2			2				1	1			
Hypericum sp.	St. John's wort	CDE								1							2
Silene sp.	campion/catchfly	ABCDF			1												
Stellaria media (L.) Vill.	chickweed	AB							8				21				
Stellaria cf. media	chickweed	AB											6				
Stellaria graminea L.	lesser stitchwort	CD											2				
Stellaria spp.	chickweed/stitchwort	ABCDEG							1	1							
cf. Stellaria spp.	chickweed/stitchwort	ABCDEG			1								5				
Chenopodium album L.	fat hen	ABFH			26	1							2				
Chenopodium cf. album	fat hen	ABFH			9												
Chenopodium cf. murale	nettle-leaved goosefoot	BD			3												1
Chenopodium rubrum/glaucum	red/glaucous goosefort	AB			2	4			1				29		1		1
Chenopodium spp.	goosefoot etc.	ABCDFH			3	2											
Atriplex sp.	orache	ABFGH			3	1											
cf. Atriplex sp.	orche	ABFGH				1											
Chenopodium/Atriplex sp.	goosefoots/oraches	ABFGH			10												
Malva sp.	mallow	BCDF										3		4			
Potentilla cf. argentea	hoary cinquefoil	D							1								
Potentilla cf. erecta	tormentil	CDEGH											2				
cf. Pontentilla sp.	cinquefoil/tormentil	BCDEFGH							1								
Aphanes arvensis agg.	parsley piert	ABD											1				
Conium maculatum L.	hemlock	CEG			68												
Apium graveolens L.	celery	EFI			1				1	1			13				
Apium nodiflorum (L.) Lag.	fool's watercress	E							1				2				
Apium sp.	—	EFI				1									1		
cf. Umbelliferae indet.	—	—															1
Rumex acetosella L.	sheep's sorrel	AD											1				
Rumex spp.	docks	ABCDEFG			10												
Urtica urens L.	small nettle	AB					1										
Urtica dioica L.	stinging nettle	BCDEFGH			6	6			12	3		1	41				1
Ficus carica L.	fig	FGI			1	3											
Hyoscyamus niger L.	henbane	BDG			1												
Prunella vulgaris L.	self-heal	BCDG												1	1		
cf. Marrubium vulgare	white horehound	BG			15												
Labiatae indet.	—	—				3				1							1
cf. Labiatae indet.		ABCFEFI										2					
Sambucus nigra L.	elder	BCFGH	1	1	9	4				1		7	2	3	1		4
Sambucus nigra/ebulus	elder/danewort	BCFGH										1					
Juncus spp.	rush	ADEH			300	15		1				2	50			700	32
Eleocharis palustris/uniglumis	spike-rush	E			72	1			1						1		
Carex spp.	sedges	CDEH			5	2							3				
Cyperaceae indet.	—	—							1								
Gramineae indet.	—	ABCDEFHI			5							1	2			52	9
Indeterminate	—	—			4							1		2			

impossible to be certain from the grains alone. A few rachis fragments of wheat were found, which were also suggestive of bread or club wheat.

Hulled Barley (*Hordeum sativum*) was frequently found, but was not particularly abundant. Several of the barley grains were twisted, indicating the presence of the 6-row variety. Preservation of grains and rachis fragments was not sufficiently good to work out ratios of straight to twisted grain, so it is not known whether two-row barley was also present.

Oats (*Avena* spp.) were quite common in the samples but, because of their poor condition, could not in many cases be reliably separated from brome grasses (*Bromus* spp.). This obviously made it difficult to compare them with the other cereals in terms of abundance. No florets were found so it was not possible to tell whether the grains were from cultivated oats or from a wild variety growing as a weed of other crops.

Several rachis fragments (pieces of the stalk onto which cereal grains are attached) from wheat, rye and barley were found. When present in higher quantities and better condition, rachis fragments can help to identify more precisely the species or variety of cereal present, but this was not possible with the Westminster samples.

A few culm nodes and fragments of hay or straw were found, but only in very small numbers except in the flood deposits which contained slightly more.

Most of the charred weed seeds found in these samples are from plants which grow habitually in cultivated fields and are likely to have arrived on site with the cereal crops already described. Examples of these are stinking mayweed (*Anthemis cotula*), corn marigold (*Chrysanthemum segetum*), brome grass (*Bromus spp.*) and wild radish (*Raphanus raphanistrum*). Many species are very catholic in their habitat requirements, and are common on all sorts of disturbed and waste ground as well as in arable fields. Clover (*Trifolium spp.*), vetches (*Vicia/Lathyrus spp.*) and ribwort (*Plantago lanceolata*) are characteristic of grassland, and several species *eg* bog bean (*Menyanthes trifoliata*) and spike rush (*Eleocharis palustris/uniglumis*) grow in damp habitats. All these are commonly found in association with cereals, growing in appropriate habitats in and around corn fields.

The only charred food plants found, apart from the cereals, were fragments of hazel nut shell (*Corylus avellana*), which are common on most Saxon sites, and single examples of cherry (*Prunus avium/cerasus*) and celtic bean (*Vicia faba*).

Waterlogged seeds

Waterlogged preservation was best in the ditch fills, as might be expected, although it was very variable. Despite the flots having been dried, a number of fragile seeds were recovered from the samples, so it is hoped that losses were not too great. In some samples only robust, woody seeds survived, suggesting that drying of these deposits had taken place at some stage prior to excavation, leading to the decomposition of most of the organic remains.

The species occuring most frequently and in the highest numbers, particularly from the ditch fills, were those which grow in marshy places or on muddy banks by rivers and ditches, such as celery-leaved crowfoot (*Ranunculus sceleratus*), marsh yellow-cress (*Rorippa islandica*), wild celery (*Apium graveolens*) and spike-rush (*Eleocharis palustris*).

Also common were plants of disturbed ground, including waste places, fields and gardens. Stinging nettle (*Urtica dioca*), elder (*Sambucus nigra*), red or glaucous goosefoot (*Chenopodium rubrum/glaucum*) and hemlock (*Conium maculatum*) are frequently found on rubbish tips and other nitrogen-rich waste places, while chickweed (*Stellaria media*), fat hen (*Chenopodium album*) and white horehound (*Marrubium vulgare*) also grow in waste places as well as on cultivated ground.

The only waterlogged remains of food plants found were a few fig seeds (*Ficus carica*) from two of the ditch fills, and wild strawberry (*Fragaria vesca*) from a flood deposit. There was no sign of the brambles after which Thorney Island was traditionally named (Weinreb & Hibbert 1983).

Discussion

Rye was the most common cereal found in all feature types at Westminster Abbey, but in all cases it was mixed with other cereals. Charred plant remains from sites in the mid Saxon settlement of *Lundenwic* tend to be dominated by barley and wheat, with rye and oats as minor components, probably weeds of the two major cereal crops (Davis forthcoming). Late Saxon/early medieval samples from the City contained slightly higher proportions of oats and

rye however, and were the major cereals in one assemblage which was interpreted as animal fodder (Jones *et al* 1991). Rye was common at sites in East Anglia (Murphy 1983) and at late Saxon Stafford (Moffet 1994). The features sampled here do not necessarily give a balanced picture of cereal use on the site as a whole, as these deposits probably represent the disposal of only a small part of the domestic waste produced.

Study of the chaff and weeds associated with charred cereals can often provide information on the stage of crop processing reached before the assemblage was burnt, and occasionally on methods of cultivation and harvesting (Hillman 1981). This is difficult where products of several crops may be mixed, as in domestic waste, as it is impossible to know which chaff and weeds came from which crop.

It is possible to say, however, that much of the charred grain found at Westminster was fully cleaned and ready for consumption, as there are few residual weeds and chaff in most samples. The best examples of fully cleaned crops come from the upper layers of the ditch fill.

In contrast, in samples from lower down the ditch [238]2 ([414], [417], [418] and [421]) and one of the flood deposits ([344]1), over 60% of identified items are weeds suggesting that at least some of the fine sieving neccessary to get rid of small weed seeds may have taken place on site. The assemblages found in these samples may thus include semi-clean grain complete with its impurities, or fully cleaned grain mixed after disposal with cleaning waste. Context [418]2 for example contained the usual mix of rye, oats wheat and barley but with about twice as many weed seeds as cereal grains. Many of these were weeds commonly associated with cereal crops, notably stinking mayweed and corn marigold, as well as a relatively high number of oats and brome grasses.

Flood deposit [344]1 also contained many weeds, as well as rachis fragments of wheat, rye and barley, suggesting that at least one of the components was a semi-cleaned crop product. The other flood deposit, [349]1, had fewer weeds, but both these samples contained slightly more grassland weeds than others, and some fragments of cereal or grass stems, and may thus have included burnt hay. Sample [349]1 shows a greater domination of rye than usual, and also contains only rye rachises, so may be less mixed than most.

The prominence of rye, and also oats and brome grass, in so many samples at Westminster Abbey, combined with the possibility of hay in some samples, and the lack of remains of other human plant foods, may suggest that these deposits contained remains of animal fodder or stable sweepings rather than domestic waste.

Rye is usually considered to be a low-status food for humans, and rye bread was eaten by the poorer people in the Middle Ages. Most of the samples were contemporary with the construction of the abbey, and an alternative interpretation is that the cereal waste may have derived from the building workers living on site at this time.

The low incidence of food plants, apart from cereals, agrees with evidence from earlier mid Saxon sites in London (Davis forthcoming). However, as waterlogged preservation was good, in some ditch fills at least, it must be assumed that the plant element of domestic waste was disposed of elsewhere.

The ditch fills contained waterlogged seeds from plants of disturbed habitats, including those which often grow near buildings and on rubbish tips, mixed with those from damp, muddy places in or by ditches and streams. This suggests that the ditch contained water all or most of the time, although deposits were not waterlain, and the other seeds fell or blew in from the surrounding area.

CONCLUSIONS

The refurbishment of the Undercroft Museum provided a rare opportunity to examine in part the development of one of England's foremost monasteries. Importantly the excavation has shown that from *c.*1050 to *c.*1060 a complex outbreak of activity took place, so providing a tight chronological framework for the pottery, metalwork and environmental material recovered.

The waterlain silts uncovered show that until the middle of the 11th century the occupation on the south side of Thorney Island was not intensive. The excavation demonstrated, however, that the site was near enough to the abbey for dumping refuse and for personal items such as tweezers and a silver coin to be lost. A scatter of prehistoric, Roman and Middle Saxon material suggests some limited presence in the area but the finds and environmental material recovered confirm the stratigraphic evidence that the

southern part of Thorney Island was desolate marshland until the mid 11th century.

The construction of *c.*1050 of a rammed gravel surface, perhaps a road, across an area of boggy ground reflects a change in the importance of this part of Thorney Island. Furthermore, the digging of a substantial ditch indicates that a boundary, almost certainly that of the abbey, was being defined in a very noticeable way.

The ditch initially silted up through erosion and waste disposal. The rubbish dumped into the moist fill of the ditch is of particular interest in the development of the Late Saxon/early Norman ceramics and the dump of window glass similarly has revealed examples of 11th-century technology. The environmental material has indicated that the ditch acted as a general rubbish dump for the abbey, hence the promiscuous blend of exotic food debris, sturgeon and dolphin, with the more mundane peasants' rye bread.

The subsequent backfilling of the ditch enlarged the area of Thorney Island which could be used for building. The implication is that the higher, dry sand and gravel heart of Thorney Island was too small for the anticipated new abbey of Edward the Confessor. Clearly, the effort of digging the ditch would have been considerable so it is difficult to understand why the ditch should have been excavated, then, soon afterwards, deliberately backfilled. Perhaps the final plan for the abbey was much more extensive than anticipated when the large ditch was dug. The commencement of this second phase of building in or after 1066, and the accession of William the Conqueror may indicate that at the time there was a revision of the Confessor's scheme which resulted in a larger cloister and hence long claustral ranges.

The timber structure built over the backfilled ditch and abandoned road was probably a building, perhaps a temporary workshop, an interpretation reinforced by the evidence that it was dismantled rather than abandoned.

The preparation of a rough but serviceable area of hard-standing is probably related to the progressing construction of the abbey's east range during the 1060s, the marked increase in building debris demonstrating that stonecutting and preparation were happening nearby. A ditch was probably cut to help drain the area, perhaps regularising subsidence along the line of the large precinct ditch, and then the site was levelled in the late 1060s in preparation for the construction of the undercroft and dorter.

The undercroft itself could be only superficially investigated, structural constraints preventing examination of the foundations. The 11th-century floor levels were removed by a reduction in the floor level in the late 12th century, probably to allow greater ventilation in the smoky warming room. The floor was reduced again in the 16th century as part of a reorganisation of the undercroft, screens and a fireplace completing the transformation of the building into a number of smaller rooms. The abrupt end of moanastic life saw the southern part of the building turned over to storage until the Undercroft Museum was established in the early 20th century.

The excavation, although limited in scale and resources, has provided a useful insight into the occupation of Thorney Island. The closely dated ceramic, building and environmental material is providing further data on the development and changes in late Saxon London, and further light has been shed on the late Saxon growth of the abbey and the development of an element of its claustral range during the medieval period.

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THE PRIORY AND MANOR OF HOUNSLOW: EXCAVATIONS AT HOUNSLOW POLICE STATION, MONTAGUE ROAD, HOUNSLOW

Robert Cowie

SUMMARY

Excavations during 1995 at Hounslow Police Station uncovered archaeological evidence for Hounslow Priory, which historical sources suggest was in existence by c.1200, and for the post-Dissolution manor. Remains relating to the religious house included strata dated to the 14th or 15th centuries, and a ditch backfilled in the late 15th century. A clay hearth also appeared to be contemporaneous with the priory, as did an overlying pitched tile hearth, although the latter could have been of post-Dissolution date. Evidence for the manor included deposits and cut features dating to the 17th and 18th centuries, and a brick wall, which was identified as part of the east wing of the manor house (added to the original Tudor mansion in 1711). Most of the wall had been removed by a robber pit, presumably dug when the manor house was demolished in the early 19th century.

INTRODUCTION

This report summarises the results of excavations undertaken by the Museum of London Archaeology Service at Hounslow Police Station (site code HPO94), which is on the site of the priory and subsequent manor of Hounslow (in this paper the term 'manor' denotes the manor house and its grounds and adjacent buildings). The excavation area was located in the car park behind the main building of the police station in Montague Road, and was bounded to the north by York Road (TQ 1373 7573; Fig 1).

In March 1994 an evaluation was carried out prior to the submission by the Metropolitan Police Service of a planning application to the local planning authority for permission to build an extension to the existing police station. The two trial trenches dug during the evaluation revealed post-medieval strata associated with the manor (Cowie 1994).

An excavation was subsequently undertaken from 3rd April to 3rd May 1995 as a condition of planning consent for the proposed extension (Fig 2). Archaeological work was strictly limited to those areas that would be affected by the foundations of the new extension. Ten trenches (designated 1–10) were proposed, but due to practical constraints the excavation of Trench 7 was abandoned. Archaeological strata were found in the nine remaining trenches, which were generally buried beneath 0.50m to 0.70m of modern material.

The police station car park was crossed by numerous underground services, especially in the northern half of the site where archaeological strata were divided into small isolated blocks by trenches for modern drains and cables.

GEOLOGY AND TOPOGRAPHY

Hounslow Police Station is situated about 60m north of the High Street, which is on the conjectured line of the London to Silchester Roman road, and was an important route from

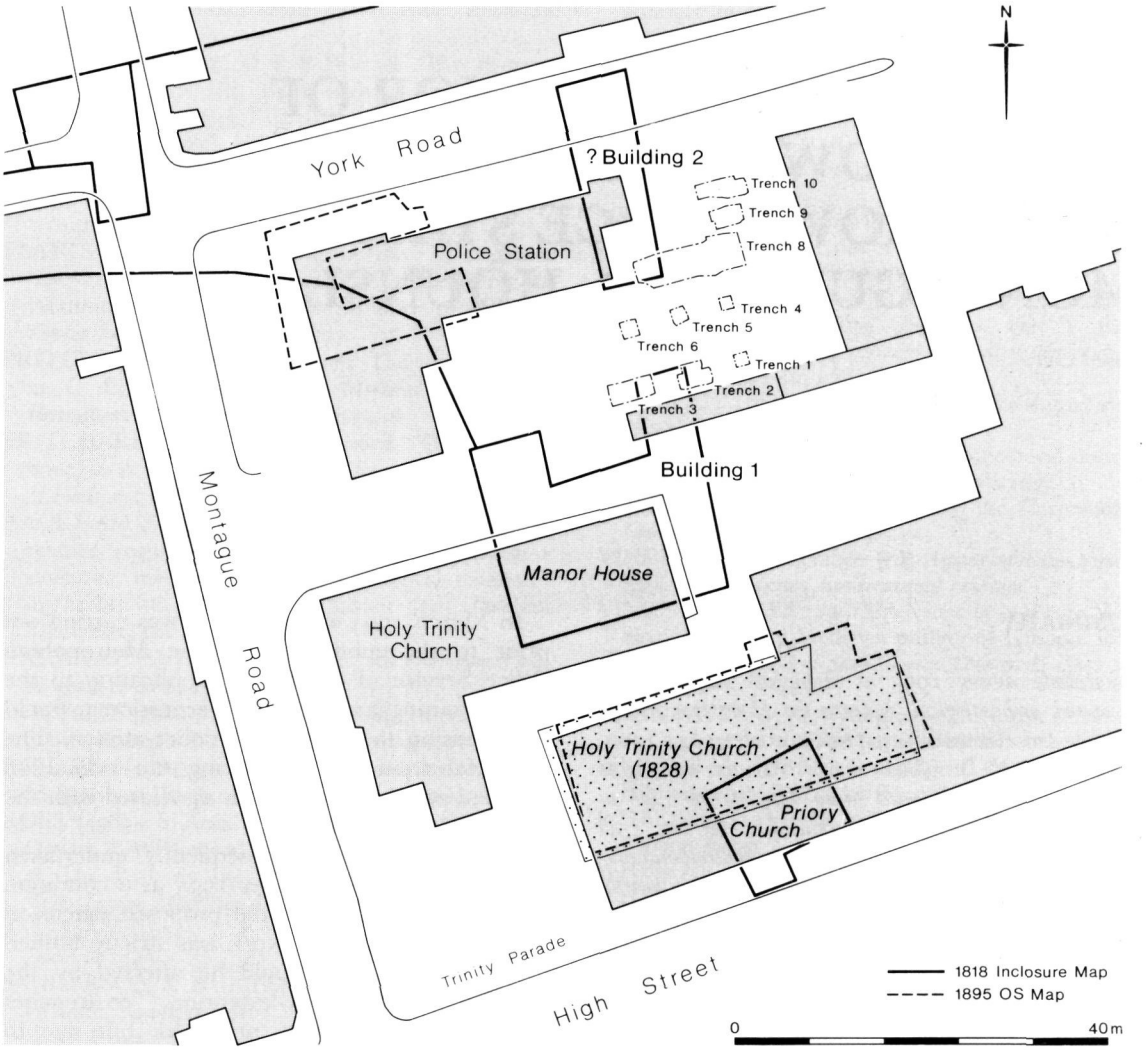

Fig 1. Hounslow Police Station: site location plan, also showing details from the Heston Inclosure Award map of the 1818 (shown as a continuous line), and the Ordnance Survey map of 1895 (dotted line)

London to Windsor and the west in the medieval and post-medieval periods. The site lies just above the 20m contour in an area of fairly flat land; the surface of the car park was at *c.*20.90m OD.

According to the 1:50,000 geological map (British Geological Survey, 1981) the site lies on sands and gravels of the Taplow River Terrace. A borehole survey of the site indicates that the terrace deposits are between 5.5m and 5.9m thick, and that they overlie London Clay.

In the excavation area, terrace gravel comprised compact fine to coarse flint pebbles and cobbles, with some orange-brown sand. Its surface was generally fairly level, and was located between 19.96m and 19.78m OD. However, on the north side of the site, in Trenches 9 and 10, the surface of the gravel was slightly lower, mostly between 19.78m and 19.66m OD.

ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

The Priory

In the medieval period the site lay within the precinct of Hounslow Priory, which was built on

Fig 2. Hounslow Police Station: the site under excavation in 1995

heathland on the western edge of the medieval settlement of Hounslow. The first reference to a religious house at Hounslow occurs in 1200, but it gives no indication of the order to which the house belonged (VCH 1969, 191). Later sources indicate that Hounslow Priory (also known as the Friary, the Hospital or House of Hounslow) belonged to the Trinitarian Order. Hounslow may have been a Trinitarian house from the very beginning, although it is more likely that it was given to the Trinitarians sometime during the early to mid 13th century. According to Bate (1948, 11–12; see also Aungier 1840, 484) the priory was established in 1211 by the friars of the Trinitarian Order, who received letters of protection from King John in 1214. However, it is also suggested that Hounslow may have been given to the Trinitarians in the mid 13th century by Richard, King of the Romans, brother of Henry III (VCH 1969, 191). Nevertheless, despite the priory's uncertain early history, there can be little doubt that Hounslow was among the earliest of the 10 Trinitarian houses founded in England.

The Trinitarian movement, 'The Order of the Most Holy Trinity for the Redemption of Captives', was founded in France by John de Matha of Provence and Felix de Valois in 1198. Its purpose was to collect alms to be devoted in equal parts to the release of Christians held prisoner by the infidels, the sick and poor, and the Order's own maintenance (see Gray 1993, 10–15). Trinitarians, otherwise known as Maturines or colloquially as the 'Donkey Brothers', have often been incorrectly classed with mendicant friars (probably because they travelled a great deal to collect funds), whereas in fact they followed the Rule of St Augustine, making them more akin to Augustinian Canons. Moreover, unlike the friars, they could receive endowments and own property.

By the Dissolution Hounslow Priory was the richest Trinitarian house in England. Much of its income came from its estates (see *Valor Ecclesiasticus* 1810, 402). It owned and farmed local lands, which became known as the manor of Hounslow by the end of the 13th century, and at the Dissolution comprised 73.5 acres of arable and 33 acres of meadow (Aungier 1840, 490). During the 14th century the priory was also given land or properties in the parish of St Botolph without Bishopsgate (London), Bedfont, Staines, Stanwell, Uxbridge, Heston and Harlington, as well as a mill and two fisheries at Kingston (Aungier 1840, 491; Bate 1948, 20; Bate nd, 44; VCH 1969, 191). Among its benefactors were members of the royal family, including Edward III, who granted Hatton Grange in 1376. Support was sometimes acknowledged by the issue of 'letters of confraternity' (certificates giving benefactors honorary membership of the religious community). In all there are 13 surviving Trinitarian letters, including four from Hounslow, which were issued in 1446, 1466, 1479 and 1508 (Clark-Maxwell 1926, 56). Ironically, the latter was issued to Henry Prince of Wales (later Henry VIII).

The priory's market and fair was another source of revenue. In 1296 Edward I issued a charter entitling the friars of Hounslow to hold a weekly market on Tuesday and an annual fair 'on the vigil, the feast, and the morrow of Holy Trinity and for the five days following'. In addition the priory raised funds from the collection of alms. It seems that brethren from Hounslow travelled far and wide in their search for funds, for a seal matrix from the priory was found at Oare, near Faversham, in Kent, while another was recovered from the River Peterill, 'about a mile from Carlisle' (Aungier 1840, 493–4). A particularly successful fund-raiser of the House was Robert de Hounslow, who was

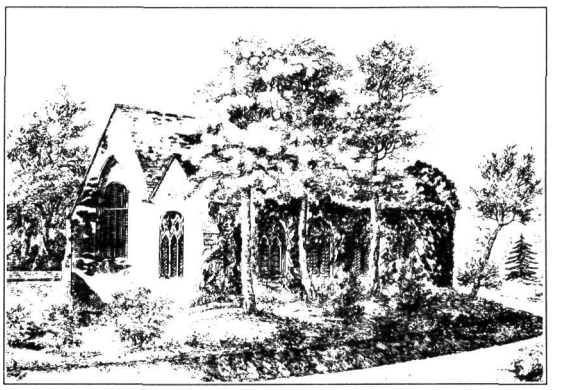

Fig 3. Hounslow Police Station: an engraving of the medieval church of the Holy Trinity, as it appeared in the late 18th century (from Lysons 1795, Plate X). It shows that the 'south' aisle was in fact on the north side of the building

Grand Provincial of the Order of the Holy Trinity for England, Scotland and Ireland (Bate 1948, 15; Lysons 1795, 36).

Little is known about the appearance and layout of the priory, for by the late 16th century only its church, which had become the manor house chapel, survived. In the late 18th century Lysons described the building thus:

> The only remaining part of the priory is the chapel, which exhibits evident traces of the architecture which prevailed in the early part of the 13th century, ... particularly in the stone-stalls, three of which are to be seen in the south wall of the chancel, and a double piscina, with narrow-pointed arches divided by a column. The chapel consists of a chancel, nave, and south aisle.
>
> (Lysons 1795, 38–9)

An 18th-century engraving (Fig 3) and a watercolour of 1805 (framed photograph in Hounslow Library) show that the chapel consisted of a nave and a lower, separately roofed, north aisle, both apparently of 14th-century date (VCH 1962, 127). To the south-west the nave was adjoined by a low tower with a pyramidal roof. A door in the south wall of the tower served as the entrance to the chapel.

The Dissolution of the Priory

At Henry VIII's instigation the smaller religious houses (those with an income of less than £200 a year) were dissolved by statute in 1536. Although the annual income of Hounslow Priory amounted to £74 8*s* 1 $\frac{1}{2}$*d* the friars apparently did not hand over their property until the end of 1538. In that year Robert Cheeseman, the King's Escheator for the County of Middlesex, drew up a lease in which he would receive the priory's farm buildings and lands, while the friars were to keep their living quarters, ancillary buildings and chapel (Aungier 1840, 489). In the lease were included:

> all the barnes, stables, garnars, orchards, dove-house, gardens, and all other housez and edyfycyons, whyche they have in or aboute the seyd monastery, or house of the Trynyte of Hounslowe aforesayde, except and recervyd unto the seyd mynystre and covent, and ther successors, the churche, and the only mancyon place, with the chambers wher the seyd mynystre and covent do lye, the kechyn, breuhouse, and bakehouse, within the seyd monastery and house.

This transaction was never fulfilled, for the matter was reported to Cromwell, the Vicar-General, who confiscated the property (Bate 1948, 16–18).

The Manor of Hounslow

In 1539 Richard Awnsham, groom-porter to the king, was the first layman to lease the confiscated estate from the Crown.

In 1552 the lease was granted to the Marquess of Northampton, and six years later the freehold reversion was granted by Queen Mary to William, Lord Windsor (VCH 1962, 107). William's son, Edward, Lord Windsor, sold the property in 1571 to Anthony Roan, auditor to Elizabeth I, who demolished the remaining priory buildings (with the exception of the chapel), and built a manor house. The manor briefly returned to the Windsor family in 1596, when it was bought by Henry, Lord Windsor, but was sold later that year to Thomas Crompton, and over the next hundred years it passed through the hands of several owners.

In February 1704 the Manor of Hounslow was advertised in the *London Gazette*, where it was described as:

> The House, Gardens and Fish Ponds, consisting of 8 acres Walled in with Pigeon House, Barns, Stables, Coach houses and Out-houses with 16 acres of Arable and pasture land adjoining to it

In 1705 the manor was bought by Whitelocke Bulstrode, and was to remain in the ownership of the Bulstrode family for over a hundred years (Bate 1948, 28–30; Morris 1980). In 1710 Whitelocke restored the chapel, which had been seriously damaged by fire in 1705, and in the following year he added two new wings to the house. Lysons described the manor house thus:

> The manor-house, which stands at the western extremity of the town, and adjoins the Heath, is an ancient brick structure; the north and east wings were rebuilt by Whitelocke Bulstrode Esq in 1711
>
> (Lysons 1795, 38)

The building is also incidentally mentioned by Grantley Berkeley (1865, 216) in his memoirs, who noted that in 1774, when Whitelocke Bulstrode's grandson, Richard, lived there it was 'an old house surrounded by a brick wall, about where the new [19th-century] church in Hounslow stands'. In fact, as the Heston Inclosure Award map of 1818 shows, it actually stood a little further north on the site now occupied by the east end of the present church.

In the early 19th century the manor of Hounslow was owned by George Gardner Bulstrode, who unlike his predecessors was not interested in the property as a home, and allowed the house to lapse into a bad state of repair (Morris 1980, 34). Finally, in August 1816, he put the manor up for auction. The original bill of sale (in Hounslow Reference Library) describes the manor lands as including:

> a meadow and pleasure grounds together with the fishponds, adjoining Lampton Hills, being airy pleasant and healthy, having several sheets of ornamental water and a beautiful plantation.'

The stable, cow sheds, coach houses and brewhouse were to be demolished, and sold as building materials. A large part of the manor house site was purchased by Richard Goatley and Thomas Cane in 1817. However, several substantial buildings, including the manor house itself, apparently survived long enough to appear on the Inclosure map. Some appear again on a map of 1865, by which time most of the grounds, including the site of the manor house, had become orchards.

The 19th-century Holy Trinity Church

The chapel had also been neglected, and by 1816 was in sufficiently poor condition for the curate, Joseph Benson, to decide that a new church should be built (VCH 1962, 127). Following the break up of the manor estate the chapel was bought by the Rev H. S. Trimmer, vicar of Heston, and was subsequently demolished in the spring of 1828 to make way for the proposed church. As the foundations of the new building would cut through the vaults of Whitelocke Bulstrode and the Blathwayt family the burials within these vaults were moved (Aungier 1840, 502–3). Construction of the new Holy Trinity Church began in June 1828, and it was opened the following year. It was enlarged in 1855 with the addition of a chancel.

The church was badly damaged by arsonists in June 1943, and was demolished in 1959/1960 so that the site could be redeveloped. The new development included a row of shops (Nos 1–10 Trinity Parade) on the site of the 19th-century church and earlier chapel, while the old graveyard immediately to the north-west was chosen as the site for a new parish church. Before the new church was built the graveyard was cleared of burials. During this work walls were uncovered, which were probably part of the manor house:

> Two walls of old red bricks were discovered about six feet below the surface. These walls, some four feet high, began about half way across the site and ran in a northerly direction, apparently continuing below the police station yard. Lt Col W. E. Cross, who is architect for the proposed new church, says he thinks it likely that the walls were in some way connected with the old Manor House ...
>
> (*Middlesex Chronicle* 18.3.60)

The Police Station

In 1882 a police station was built in the newly laid out Montague Road. It was demolished in 1963, and replaced by the present police station, which was officially opened in April 1965.

THE EXCAVATION

Undated features (not illustrated)

The earliest features on the site were 16 shallow hollows and/or pits cut into the natural gravel, and filled with brickearth. The fills were generally sterile, although occasionally they contained flecks of ceramic building material, most probably introduced by root or worm action.

Some features were almost certainly of natural origin, but others were possibly anthropogenic. They appeared to antedate the medieval occupation of the site, and may have been much earlier judging from their stratigraphic position and apparent lack of artefacts and other occupation debris.

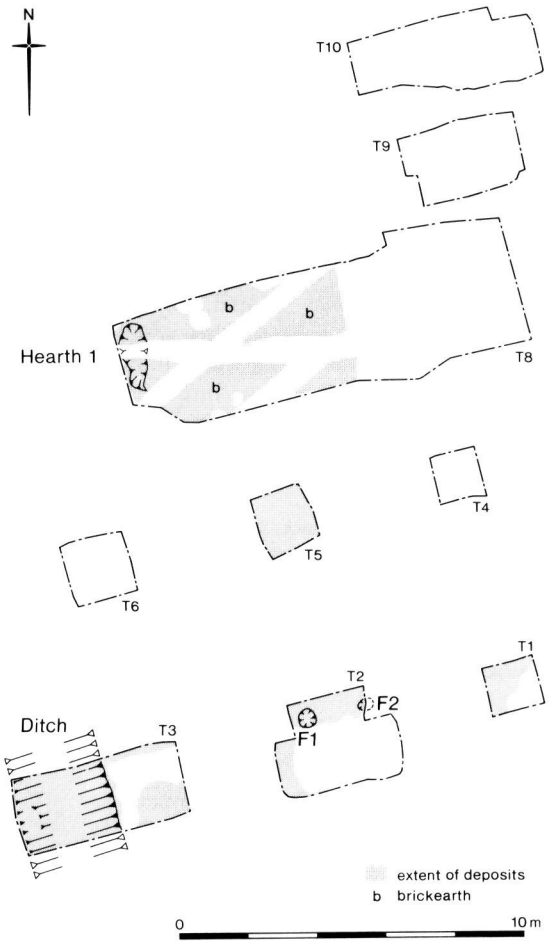

Fig 4. Hounslow Police Station: Medieval and ? early post-medieval features

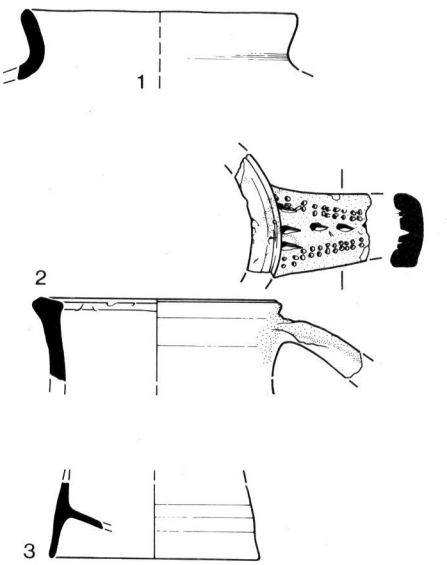

Fig 5. Hounslow Police Station: Late Saxon and medieval pottery: early medieval flint-tempered ware (1), Surrey whiteware (?Kingston ware) (2), Andalusian lustreware (3), scale 1:4

Medieval and ?early post-medieval strata
(Fig 4)

Disturbed or redeposited brickearth

The natural gravel and undated features in Trench 8 were covered by light brown clayey silt (brickearth), which was up to 0.40m thick and contained occasional fragments of peg tile and pottery. Apart from a residual sherd of possible prehistoric date, the earliest sherd was from an apparently handmade cooking pot with everted rim in a coarse gritty fabric of mid to late 11th-century date (Fig 5, No. 1). Also present were sherds of South Hertfordshire greyware, dated to 1150–1300, and Kingston-type whiteware, dated to 1270–1350. Their presence suggests that the brickearth was either redeposited or that it was natural subsoil which had been disturbed in the medieval period.

The deposit may have extended to Trench 5, where brickearth overlying the natural gravel produced fragments of peg tile, a schist honestone of either medieval or post-medieval date, and part of a rim and decorated strap handle in Surrey whiteware, probably from a baluster jug dated to about the 14th century (Fig 5, No. 2). A similar, but apparently later, deposit in Trench 4 yielded a clay pipe stem.

Hearth 1

At the west end of Trench 8 a subrectangular pit, 0.23m deep, had been cut into the brickearth to make a hearth (Fig 4). The highest point of the cut was at 20.14m OD. The sides and base of the pit had been scorched and reddened by fire. The primary fill consisted of ash and charcoal, up to 0.18m thick. The entire fill was processed in a Siraf flotation tank for the recovery of plant and animal remains. It produced a large number of fruits belonging to heather (*Calluna vulgaris*), and a small quantity of very fragmented burnt bone derived from cattle (a metatarsal), 'sheep-sized mammal' (three rib and long-bone fragments), and unidentified bird (four long-bone fragments). The heather was probably collected

from the nearby heath, and although its final use was apparently for kindling or fuel (Giorgi 1995), it may represent residues of heather used for other purposes such as animal fodder, bedding, brooms, or building material (see Greig 1988, 125). The bones included joints of relatively high meat-bearing value, and most probably represent leavings from the table (Pipe 1995).

The fill was overlaid by burnt clayey silt and a mixed deposit of brickearth, burnt clay and white mortar, both containing fragments of peg tile.

Hearth 2 (Fig 6)

Hearth 1 was sealed by a sequence of layers, mainly comprising brickearth, which contained Coarse Border ware of 14th or 15th-century date, and fragments of peg tile. This material had been laid down to form a level base for another hearth. The surface of the hearth, located at *c.*20.30m OD, was mainly made of peg tiles laid on end and bonded with clay. The tiles were of a type not usually found in London before the 15th century. The hearth also incorporated a number of stone fragments, including what appeared to be part of a window sill and jamb in Reigate stone dated to *c.*1175–1275, and two bricks dated to between the late 15th and early 17th centuries. The hearth was large, for although it extended beyond the excavation area and had been badly damaged by later features, the exposed remains measured 2.40m north-south by 1.94m east-west. Its size suggests that the hearth belonged to a service building such as a kitchen. This hypothesis could not be confirmed, however, because no associated structural features or floor levels survived within the excavation area.

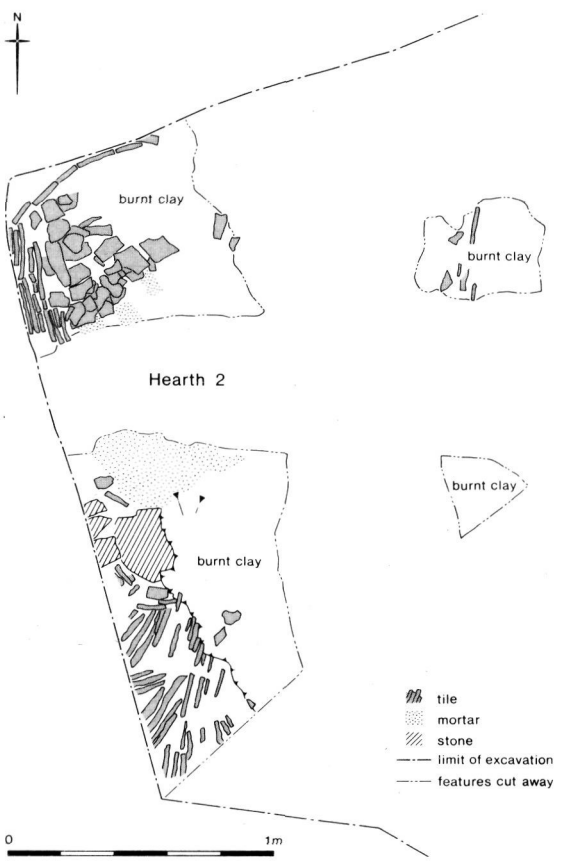

Fig 6. Hounslow Police Station: Hearth 2

Unfortunately, there was little associated dating evidence for either hearth, and as both were badly damaged by modern power/telecommunication cables they were not considered suitable for archaeomagnetic dating. Nevertheless, it seems likely that the hearths were contemporaneous with the priory, although a post-Dissolution date cannot be ruled out. This is particularly the case with Hearth 2, which included tiles and bricks that could possibly have been made after 1538. Furthermore, while the moulded stone in Hearth 2 may have come from a structure demolished during the lifetime of the religious house, it could just as easily have come from one of the buildings pulled down following the Dissolution.

The ditch and other strata

The natural gravel in Trench 3 was cut by a north-south ditch with shallow sloping sides and a flat base. The ditch was up to 0.40m deep and 2.50m wide, and was filled with fine sandy, silty clay. It was apparently backfilled in the late 15th century, since it contained sherds from a number of vessels in Coarse Border ware (one represented by 29 fragments), and an unusual base from a 15th-century jug in late Andalusian lustreware (Fig 5, No. 3) for which no parallels have been found. The ditch also contained a small fragment of floor tile of Westminster type dating to *c.*1225–1250+, pieces of peg tile and curved ridge tile, occasional oyster and mussel shells, and a few bone fragments of cattle (*Bos taurus*), sheep/goat (including sheep *Ovis aries*), and pig (*Sus scrofa*).

A sample of the ditch fill, processed in a Siraf flotation tank, yielded a small assemblage of poorly preserved charred cereal grains, including grains of possible rye (*Secale cereale*), wheat (*Triticum sp.*) and oat (*Avena sp.*), but most could not be identified. Weed seeds included corncockle (*Agrostemma githago*), a characteristic weed of cultivated fields, and possible brome (*Bromus sp.*), two species which are often found in charred cereal assemblages (Giorgi 1995). The sample also produced two skull bones of whiting (*Merlangius merlangus*), a fragment of cattle mandible, a 'cattle-sized' long-bone, and a pig mandible fragment. 'Sheep-sized' mammals were represented by 45 mandible fragments, a skull fragment and a tooth (Pipe 1995).

The plant remains represent accidentally burnt crop residues from the advanced stages of crop-cleaning, while the faunal remains appear to be a mixture of refuse from primary carcass processing (head bones) and domestic consumption (long bones), which suggests that the ditch may have been located near the kitchens. This fits well with the ditch's proximity to the tile hearth, which probably belonged to a service building.

The back-filled ditch was sealed by a layer of silty clay, up to 0.37m thick, containing occasional fragments of ridge tile and peg tile.

In Trench 2 the natural gravel was cut by two possible postholes (F1 and F2), which were 0.16m and 0.11m deep respectively. Both were filled with material from a layer of silty clay which covered the natural gravel to a depth of 0.35m, and contained fragments of peg tile and 14th-century pottery, including sherds of Kingston ware.

17th and 18th-century strata (Fig 7)

In Trench 2 the late medieval strata were covered by deposits of silty and sandy clay, up to 0.55m thick, which produced Border ware, a small amount of Tudor Brown and Guys ware, and a single sherd of tin-glazed ware. While a few sherds could have been of 18th-century date, most were typical of the mid 17th century. The deposits were cut by a brick structure (Building 1).

Building 1

The remains of the north end of a rectangular brick building were found in Trenches 2 and 3.

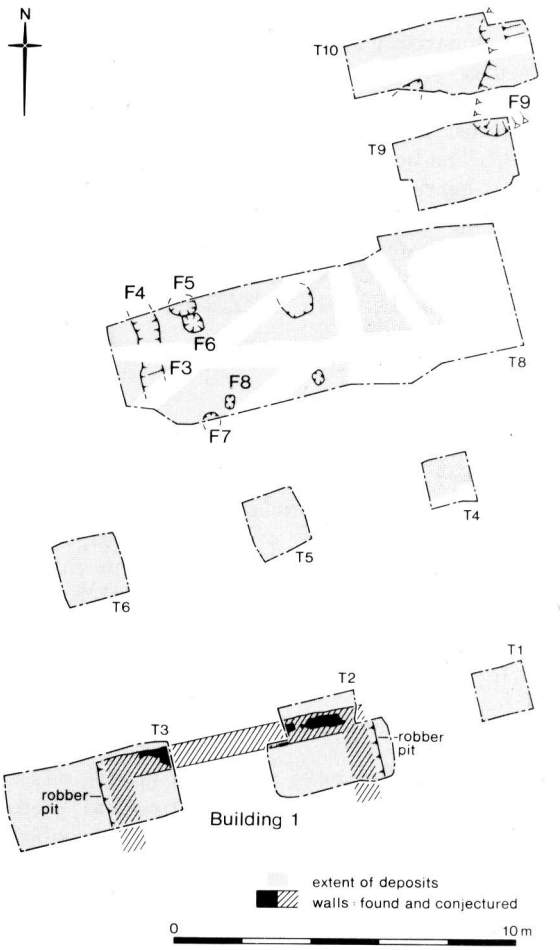

Fig 7. Hounslow Police Station: 17th and 18th-century features

Only short stretches of the north wall of the building survived; these stood to a height of up to 0.21m (three courses), and were *c.*0.60m wide. The wall was made of soft friable red brick bonded with buff sandy mortar. One brick was apparently of 16th-century date, but others were dated to the late 17th century or very early 18th century (Keily 1995).

The building was almost certainly part of the manor house, for its position coincided with that of the east wing of the manor house as shown on the Heston Inclosure Award map of 1818 (Fig 1). Moreover, the date of the brickwork fits well with the documented construction of this wing in 1711.

Most of the building had been destroyed by a large robber pit. This was up to 0.60m deep, and had steep to vertical sides and a fairly flat

base, which was cut slightly deeper near the sides, presumably to remove the external walls of the building. It was partly filled with demolition rubble comprising buff sandy mortar and fragments of red brick (materials similar to those in the north wall). In Trench 2 the upper part of the pit had been backfilled with sandy clay containing fragments of brick, tile and mortar. The pit presumably dates to the early 19th century when the manor house was pulled down.

?Building 2

A timber structure (or structures) was indicated at the west end of Trench 8 by several postholes and slots (F3–F8), most of which were filled with silty clay. These features might be associated with the south-east corner of a building, which, according to the Inclosure map, stood there in the 19th century. Two, F3 and F4, had cut through Hearth 2 (see above). On the west side of F3, which was 0.36m deep, a small slot appeared to be a timber setting. The feature contained frequent fragments of burnt clay and peg tile, which had probably tumbled in from Hearth 2. A linear cut, F4, was *c.*0.20m deep, and was possibly associated with or part of F3.

To the east were two intercutting postholes, F5 and F6, which were 0.30m and 0.22m deep respectively, and contained occasional fragments of tile and coal. A residual sherd of late 11th/12th-century pot was recovered from Posthole F6.

Posthole F7 was 0.36m deep, and produced a rim sherd from a large 17th or 18th-century storage jar. A large cobble near the base of the feature had probably been used for post-packing.

Posthole F8 was 0.18m deep and filled with clayey silt containing occasional fragments of peg tile and mortar.

Postholes F3-F8 were truncated from above by a large shallow pit (not illustrated) which extended across the west half of Trench 8. The pit was filled with silty clay and demolition debris, which produced part of a possible cooking vessel in Border ware, dated to 1550–1750, and two pieces of window glass of late medieval date. The feature may have extended south to Trench 5, where a similar deposit was observed.

Other strata

An irregular pit (F9) cut the natural gravel in Trenches 9 and 10. It was 0.60m deep and contained fragments of peg tile, late 17th-century brick, and the bones of cattle (11 fragments, some with butchery marks), 'cattle-sized' mammal (six fragments), and pig (two fragments). The cattle were at least four years old, which suggests that they were kept primarily for dairying or for use as draught animals, rather than for beef production. The assemblage included post-consumption refuse (*eg* pig tibia), and possibly some primary carcass processing waste (cattle mandibles) (Pipe 1995).

Pit F9 was sealed by a sequence of layers of late 17th and/or 18th-century date. Most comprised brown to grey-brown silty clay and clayey silt, and appeared to be garden soil. Many produced fragments of peg tile, and a few yielded small amounts of pottery including sherds of Metropolitan slipware, and post-medieval redware and Border ware.

DISCUSSION AND CONCLUSIONS

Prehistoric and Roman

No definite evidence for prehistoric activity was found, although one residual sherd of possible prehistoric date was recovered from the disturbed/redeposited brickearth.

Similarly, no evidence for Roman activity was found with the exception of an unstratified Roman potsherd from Trench 8. This lends weight to the current view that the line of the London-Silchester Roman road most probably runs along the course now taken by the High Street.

Late Saxon/Saxo-Norman

No evidence for Saxon activity was found apart from a single rim sherd of a handmade cooking pot from the disturbed/redeposited brickearth, which would appear to be of late 10th or 11th-century date. A sherd dated to 1050–1150 was found in posthole F6. This suggests that there may have been some activity in the area prior to the foundation of the priory, although this may have amounted to no more than manuring of fields (Blackmore 1995).

Medieval

The archaeological data, together with documentary, pictorial and cartographic evidence, allow some speculation about the appearance and layout of the priory. It was built on the north side of the road now known as Hounslow High Street, which has been an important route since at least the 13th century, and possibly the Roman period. The priory church was located on the site now occupied by the shops along Trinity Parade. It appears to have been small, an attribute typical of Trinitarian churches (see Gray 1993, 12). There can be little doubt that the claustral buildings would have been located immediately to the north, roughly where Holy Trinity Church stands today. Various ancillary buildings such as the kitchen, brewhouse and bakehouse would probably have been sited further north still, and archaeological evidence suggests that some may have stood on the site of the present police station, for it is suggested that the hearths in Trench 8 were probably contemporaneous with the priory and may have belonged to its kitchens, while animal bones and shells from the 15th-century ditch in Trench 3 probably represent rubbish from a nearby kitchen or refectory. Beyond these would have stood the agricultural buildings.

The excavations provided limited evidence for the Trinitarian priory, and few structural remains could be attributed to the pre-Dissolution period. Of particular interest were two fragments of moulded Reigate stone dated to *c.*1175–1275. One unstratified piece probably came from a small unglazed window. The other fragment appeared to be the junction of a window sill and jamb (Mark Samuel pers comm), which was later incorporated in Hearth 2. Two pieces of late medieval window glass, recovered from a post-medieval feature, derive from a building of some quality (Geoff Egan pers comm).

As was to be expected from the location of the site, most of the medieval wares were of Surrey origin, although a few South Hertfordshire types were also present, together with a sherd of Andalusian lustreware. Most of the earlier medieval sherds were cooking pots, while in the 14th to 15th-century jugs predominated. The South Hertfordshire greyware fits well with the foundation of the priory in the early 13th century, while the Surrey whitewares relate to its use during the 14th and 15th centuries. The Andalusian lustreware jug bears witness to the wealth of the priory in the 15th century, being probably for display as much as for use (Blackmore 1995).

The post-medieval manor

Cartographic and documentary evidence still provides the most useful information about the layout and nature of Hounslow manor. The Heston Inclosure Award map of 1818 is of particular importance, since it clearly shows the individual buildings that comprise the manorial complex. The former priory church, which after the Dissolution served as the chapel for the manor is depicted as a small building next to the London Road (now the High Street). The manor house stood immediately behind the chapel on the site of the present Holy Trinity Church, and is shown on the map as a square building with two wings projecting from its north side, a configuration roughly consistent with Lysons's description of the manor house in the late 18th century. Both wings apparently extended north on to the site of the police station car park, and during the excavation the north end of the east wing was revealed by Trenches 2 and 3 (Building 1). Although most of the masonry had been robbed the outline of the building was clearly marked by the limits of a large early 19th-century robber pit. It is likely that the two walls discovered during the clearance of the 19th-century graveyard in 1960 also belonged to this building, and were correctly identified at the time as part of the manor house (see p00). Ancillary buildings were located to the north and north-west of the manor house. Evidence for one such building may have been found at the west end of Trench 8, where a group of postholes were located (?Building 2). Other archaeological evidence relating to Hounslow manor included a large pit (F9) and strata which apparently mainly consisted of garden soil.

The post-medieval wares were more varied than the medieval pottery, although fine whitewares from the Surrey Hampshire borders accounted for *c.*45% of the material, while assorted post-medieval redwares accounted for another 45%. No actual Dissolution groups were noted, although some wares could have been in use in the mid 16th century (Blackmore 1995).

Although the results of these investigations clearly show that elements of the priory and the manor survive beneath the police station car

park, it seems likely that most of the archaeological remains relating to the chapel and the manor house would have been destroyed when the 19th-century church and its graveyard were swept away during redevelopment in the 1960s. This would matter little if appropriate measures had been taken at the time to record any threatened archaeological remains. Unfortunately, until now, archaeological work in the Borough of Hounslow has concentrated almost exclusively on the Brentford area, while other historic centres such as Hounslow have been largely ignored (see Clegg 1991). Indeed, despite the largescale redevelopment of Hounslow since 1960 virtually no archaeological work has been carried out in the area, with the exception of one small trial trench excavated about 130m south-east of Hounslow Police Station at 1–3 Douglas Road in 1985, which revealed evidence of late medieval or early post-medieval gravel quarrying (site code DRH85; Richardson 1986, 162).

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AN INSCRIBED SILVER-GILT CHAPE OF THE 16TH CENTURY

Hazel Forsyth

SUMMARY

In 1989, an inscribed chape (a protective metal cap for a belt end) was recovered from the Thames foreshore. A chance find of exceptional interest and historical significance, the chape can be dated with some confidence to the first half of the 16th century. It is now in the collections of the Museum of London.

DESCRIPTION

The chape has been constructed from three pieces of sheet silver, soldered together to form a 'box' frame. The front plate of the chape (Fig 1) has been cut down and shaped along the upper surface; and in the remaining peltate crescent, there are opposing incised motifs of a rose and pomegranate. The ornamentation is enclosed within a chased border: within which, and divided by the cast relief soldered-on figure of St Barbara, is an engraved, inverse inscription +RAF+FEL+MIGHAM. There is a decorative finial, below the Saint, on the outer edge. Patches of gilding remain on the rose and pomegranate motifs, the Saint, and along the lower border edge and finial. Enough remains to suggest that the entire front plate was gilded. The back plate shows signs of abrasion, but is otherwise plain.

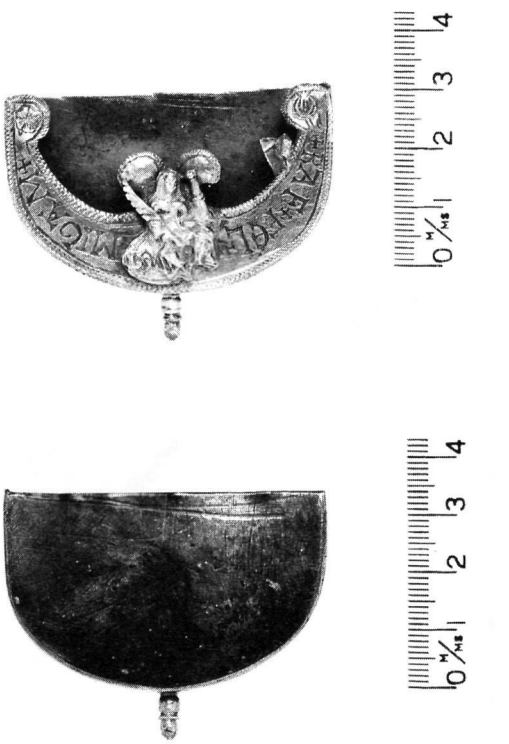

Fig 1. Silver-gilt chape (42mm high; 53mm wide; 7mm deep). Top: front plate; bottom: back plate. Museum of London acc no. 90.295

THE INSCRIPTION

The object is decorative, but why so remarkable? The answer lies in the inscription. So far as we know, no chape of similar magnificence exists which has the name of the owner inscribed upon it. In English collections it would appear to be without parallel. The following details emerge from rather sparse documentary evidence which has enabled us to establish the identity of this individual. The inscription seems to be an abbreviated form of the name Ralph Felmingham, who is recorded in the *Letters and Papers Foreign and Domestic, Henry VIII*, as a Sergeant-at-arms;

present at the trials of Lord Dacre in 1534 and Anne Boleyn and Lord Rocheford in 1536.

The first reference to Felmingham occurs in correspondence between John Williamson and Thomas Cromwell on 5th September, 1529.[1] In this letter, Williamson reports that he has fulfilled Cromwell's demands, has done what he ordered, except concerning a Mr Eston and Mr Felmingham, who are not in town.

The next reference, for 30th June, 1534[2] is more significant. It concerns the Indictment of William Lord Dacre and Sir Christopher Dacre for treasonable communications and alliances with the Scots. In this matter, the Precept of the Lord High Steward, the Duke of Norfolk, was addressed to Ralph Felmingham, Sergeant-at-arms, commanding him to summon such and so many of the Lords, Proceres and Magnates, of the kingdom of England, in effect, a jury of Peers for the arraignment of Lord Dacre. The Warrant returnable at Westminster on 'Thursday next after the Feast of the Translation of Saint Thomas the Martyr' (9th July, 1534). A schedule of the names of the 18 Peers returned, each having been severally summoned, is appended to this document. Ralph Felmingham returns his writ in person.

The third reference concerns the trial of Anne Boleyn and Lord Rocheford.[3] Again we find a Precept issued to Ralph Felmingham, detailing his office as Sergeant-at-arms, to summon such and so many lords of the kingdom, peers of the said Queen Anne and Lord Rocheford, by whom the truth may appear. The pleas to be held before Thomas Duke of Norfolk, Treasurer and Earl Marshal, Lord High Steward of England at the Tower of London on the 15th May, 1536. Felmingham duly summoned the peers: 26 in all.

Herein lies the importance of the chape. It is remarkable, because it bears a name, and moreover a name which can be traced; not only to an individual in the first part of the 16th century, but of greater significance, to a member of the royal household. The quality of the material and choice of decorative motif in the form of rose and pomegranate, the royal badges of Henry VIII and Katherine of Aragon, also support the view that this piece was made for someone of high degree with royal association. There is no sign of any hall or maker's mark, but perhaps the absence of the former is significant. The personalised nature of the chape and the inclusion of royal badges suggest that the piece was a special commission; possibly even made to royal order. It was usual to dispense with the formality of a hallmark for items not offered for sale, and it is quite possible that the chape was given as a New Year's gift. But this supposition is pure conjecture, and there is no substantive evidence to support it. The *Gift Rolls* do however show that small pieces of plate were given to the humblest members of the royal household; 'Maiftres Golding', for example, received 'iij fponnes weing xiij onz'.[4] Occasionally gifts seem to have been chosen with particular care; thus Thomas Alwerd received 'a fhirte wrought w[t] blake worke' a 'coverpayne of diaper' and a 'penne and an inkhorne w[t] ij fandboxes of Alliblafter'.[5]

The figure of St Barbara occupies a prominent and central position on the chape. She has a halo and sits with a martyr's palm in her right hand, possibly an open book or sacramental wafer in her left, and behind, to her left a tower (Fig 2). What then is her relevance? St Barbara had attracted a cult following by the end of the 15th century. Veneration was such that Barbara was generally recognised as one of the *quattor virgines capitales*, and her miraculous powers were equated with those of St Catherine.[6] The degree of interest in the cult of St Barbara was partly stimulated by the proliferation of manuscript compilations of her life and passion; but principally, one supposes, by her supposed powers to protect against gunpowder and sudden death. She was adopted as the patron saint of armourers; but artillerymen, architects, masons, quarrymen and miners were also amongst her devotees.

There are many and various accounts of the legend of St Barbara but most agree on the principal elements of her story. Barbara was the daughter of Dioscurus, a pagan Satrap of Bithynia, Egypt. According to some versions of the legend, Dioscurus built a tower with two windows to protect her from the attentions of suitors. During the process of construction, Dioscurus was called away on diplomatic business by the Emperor Maximius of Thrace. In her father's absence, Barbara converted to Christianity, and then, it appears, instructed the workmen to add a third window to the tower to symbolise the Trinity. Upon learning of her conversion, Dioscurus, enraged, tried to force his daughter to recant, even dragging her to the judge Marcianus, who submitted her to dreadful tortures. But Barbara held steadfast to her faith and Dioscurus eventually took her to a mountain

Fig 2. Panel detail showing St Barbara from Cologne/Frechen stoneware Schnelle c.1550. Found in Whitecross Street (Museum of London acc no. Z3453)

top and beheaded her. Divine retribution was swift and Dioscurus was killed by lightning. For this reason, Barbara was held to be a protectress against thunder, lightning, gunpowder, fire-arms and sudden death, especially if the *viaticum* (communion given to the dying) had not been given.

The image of St Barbara is frequently found in 15th and early 16th-century decorative and fine art; rings[7] and pilgrim badges[8] featuring prominently. There are innumerable stained glass panels: the St Barbara cycle at King's College Chapel, Cambridge, perhaps the most remarkable of these.[9] The figure of St Barbara and scenes from her life are also engraved on a suit of German armour made for Henry VIII, presented to him in 1509 on the occasion of his marriage to Katherine of Aragon, in the collection of the Royal Armouries.[10]

The inclusion of St Barbara on the chape of Ralph Felmingham is not surprising. St Barbara may have been added to this piece merely because of her cult status at the time. But perhaps, for a Sergeant-at-arms, the association of St Barbara as tutelary saint of armourers is significant and pertinent. Then again, a further connection, albeit somewhat tenuous can be drawn: the duties of a Sergeant-at-arms were occasionally those of a messenger and envoy, and in one version of the St Barbara legend, the Saint's conversion hinged upon the safe delivery of her messages by a trustworthy courier.

METHOD OF ATTACHMENT

The overall style and dimensions of the chape suggest that it was probably designed to form a protective and decorative cap for a belt. But the form of this chape is unparalleled in British collections and not represented within the published archaeological corpus. It does however compare in general style and size to an example depicted in Jan van Eycks' painting of St George, dated 1436 and shown in detail in Fingerlin's *Gürtel des hohen und späten Mittelalters.*[11] How was the chape fastened and secured? The precise method of attachment is unclear and there are no rivet holes in the back plate. Would simple clamping of the metal framework over a leather belt suffice to hold the chape in place? Adhesive could have been used to supplement the metal casing of the leather; but if so, no physical trace remains. It is possible that the chape is incomplete. There are two transverse grooves at the top of the back plate, visible on both sides, but no other sign of breakage or damage, apart from a jagged piece of metal extending out from the inner edge on one side. This curious tab is aligned with the plane of the frame and forms an integral part of it. Did this irregular piece of sheet metal serve to secure the leather belt? If so, it is difficult to see how. It is possible that the tab is part of a much larger foil backing, but if so, one would expect signs of damage to the border elsewhere. Even if the tab was originally recurved inwards to catch the belt and hold it in position, there is no evidence of a similar feature on the opposite side. In short, the tab is an intriguing puzzle in an otherwise finished object. Viewed as a whole the chape is attractive, but when examined in detail the individual elements vary in quality and skill of execution. The inscription is particularly crude, and one wonders

whether this was added at a later date, to personalise the object.

THE FIND SPOT

The chape was recovered from the Thames foreshore at Vintry (Fig 3) and the anaerobic conditions of burial have ensured its remarkable preservation. Although the actual circumstances of deposition are unknown, the function, material value and location of the find suggests accidental loss, and the apparent absence of any secure method of attachment may well have been a contributory factor. Since the duties of the Sergeant-at-arms required frequent river travel, it is possible that the chape was lost in transit when a high tide prevented recovery. The conjunction of the badges of Henry VIII and Katherine of Aragon would suggest that the chape was made between 1509 and 1526/7; and as member of the royal household it is unlikely that Felmingham would have continued to wear an object with obvious Aragon association after Henry's divorce.

THE OFFICE OF THE SERGEANT-AT-ARMS

For the Tudor period we have no other example of a belt accessory, perhaps sword belt accessory, which points to a member of the royal household in our national collections.[12] What does it tell us in general terms about the office of Sergeant-at-arms for this period, and by implication Ralph Felmingham?

Sadly, nothing is known of Ralph Felmingham beyond the few details referred to above; and every effort to add to this information has so far

Fig 3. Detail of the Vintry foreshore from the 'Agas' map (Guildhall Library)

failed. However, the name Felmingham is extremely unusual; associated largely with the county of Norfolk. There are scattered references to the name in the 13th century, but the first reference which the author has been able to trace for London is dated 6th June, 1368; a will proved at the Court of Husting, London for a Thomas de Felmyngham 'chaundler', leaving among other things, his tenement in the parish of St Mary Magdalen in the Old Fish Market to his wife and her sister.[13] Thereafter, the name, with one exception, seems only to be found among the wills proved in the Consistory Court of Norwich. The first of these, in 1429, to a Roger Felmyngham of the village of Blychying. Then in 1504 to Edmond Felmyngham, parson of Brampton. A Robert Felmingham in 1506 of Raundworth, St Helen, and in 1524, reference to Elizabeth, 'late the wif of Robert Felmingham, gent. .... '. There is also a Thomas Felmingham, 1531 gent of Greate Hobbeys.

Among the Visitations of Norfolk[14] under the name Croftes, we find a reference to Sir William Felmingham of Felmingham in Norfolk, his arms represented as sable, a chevron ermine between three covered cups or. Finally, recorded among the marriage licences granted by the Bishop of London, for 29th January 1574–5,[15] is a Richard Felmingham, Gent., and Alice Lewes, widow, of St Mildred, Poultry. Since the name is so unusual, one can assert with a reasonable degree of confidence, that Ralph Felmingham, the Sergeant-at-arms, was probably related to these people; even though the precise nature of that link is unknown.

If we know nothing about Ralph Felmingham as a man from the documents, what can we deduce from his office, of his bearing and status in society? The title of Sergeant-at-arms suggests the military origin of the office, and the *Black Book* refers to 31 'sergeaunts of armez sufficiauntly armed and horsed, rydyng before his highnes (Edward ..) whan he iourneyde by the cuntrey, for a gard corps du roy'.[16] The reference to 'sufficiauntly armed' must refer to the Sergeant-at-arms' mace, originally borne as a war mace, as befitting the Sergeant's bodyguard rôle. Towards the end of the 15th century, as St John Hope has argued,[17] the mace assumed a more decorative, symbolic function, the lower end was enlarged and embellished with engraved and/or enamelled royal arms. By the Tudor period, maces seem to have been reversed, thereby giving prominence to the end with the royal arms, and emphasising the authority of the bearer; whilst the flanges, originally designed for offensive purposes, became vestigial and ornamental, losing all functional significance. This reversal is clearly demonstrated on the memorial brass of John Borrell (1531) one of the Sergeant-at-arms of Henry VIII (Fig 4). The ceremonial use of the mace is supported by pictorial evidence.[18]

'Serjeauntes of armez' are described in the *Black Book* as 'chosen prouyd men of conducion and of honour'.[19] From *The Ordinances* of 1526 made for Henry VIII's household and chamber, we learn that officers must be 'both honeft in their yefture and behaveour and alfo experte in fuche roumes and offices as be duputed unto theym'.[20] Further evidence concerning the status of Sergeants-at-arms comes from a manuscript in the British Museum entitled 'The Office of a

Fig 4. Memorial brass of John Borrell (d. 1531), Sergeant-at-arms (Broxbourne, Herts)

Seriante at Armes Attendinge the Kings Ma^tie'^21 which states:

> ... and knowe that in Tymes paste Noe gentleman performed the servis of a Serieante of Armes nor was evere Sworne to the kinge yf hee wear not the sonne of a knighte at the leaste, but of late tyme it hathe pleased our soveringe to ellecte the worthie sonne of a gentleman therunto without Reproche.

The number of royal Sergeants-at-arms was usually limited to 30, although this number was exceeded by Henry VIII. Appointments were usually for life, and normally made by Letters Patent, but sometimes by Lord Chamberlain's Warrant. The following entry from the *Calendar of Patent Rolls* is typical:

> Grant for life to Thomas Penyngton, King's Servant, of the office of one of the King's Serjeant-at-arms, with 12*d* a day at the receipt of the Exchequer and other emoluments and a gown at Christmas of the suit of Serjeants or esquires of the household.[22]

There are many references in the State Papers and Calendars to the duties of the Sergeant-at-arms. In essence, the duties of the Sergeant-at-arms may be divided into three areas: their function admirably defined by Giles Jacobs in 1772 'to attend the person of the King to arrest persons of condition offending, and give attendance to the Lord High Steward of England, sitting in judgement on a traitor'.[23] But the duties were far more comprehensive and wide-ranging than this definition probably suggests. As Major-General Sitwell, in his detailed study of 'Royal Sargeants-at-arms and the royal maces' has shown: 'In addition to arrest, a Sergeant-at-arms was used to impress arms, transport, or men in the King's Service, as a messenger or envoy, and in war as a harbinger. He also served on Royal Commissions concerned with smuggling, piracy and similar matters.'[24] The Sergeant-at-arms also provided escort duties for the Sovereign on state and ceremonial occasions.[25]

No letters patent or warrant of appointment survive for Felmingham; neither is he included in the fairly frequent listings of sergeants in post, for new appointments upon a vacancy arising.

In addition to the wages of 12*d* per day, the Sergeant-at-arms was entitled to incident fees for his most important responsibility, that of arresting and escorting prisoners. These fees were levied upon immediate execution of duty, and the amounts are specified in Harley 297 and Rawlinson B120, the latter is transcribed in the Appendix.

What do we know of the appearance of the Sergeant-at-arms in the 16th century? Harley 297 states that every Royal Sergeant should stand before the king 'in suche fashion attired his head bare and all his Bodye armed to the feete with the armes of a knighte Ridinge with a peione [feathered dart] Roiall or mace of Silvere in his Right hande and in his Lefte hande a little Troncheane'.

On Christmas Day Sergeants were issued with a gown from the Great Wardrobe. In 1538 John Knottesford[26] was appointed to the office and granted six yards of 'tawny melley' (brownish purple) with trimmings of good 'boge' (lambs' wool) for a cloak. The colour tawny was much used in liveries and when Henry VIII entertained the French King at Calais in 1533 all the 'seruyng menne of England' wore coats of French tawny.[27] 'Melley' or murrey was a favourite colour and there are frequent references to its use in the Great Wardrobe.[28] The only other indications of appearance come from pictorial sources, and by and large these depict state or ceremonial occasions of formal splendour. The marvellous painting of *The Field of the Cloth of Gold* in the Royal Collection at Hampton Court, shows Gentlemen flanked by mounted mace-bearers: Sergeants-at-arms. The clearest and most intriguing image of a Sergeant-at-arms comes from the Great Tournament Roll of Westminster. The tournament was held at Westminster on New Year's Day, in 1511, to celebrate the birth of a son to Queen Katherine and Henry VIII. The scenes were commemorated on a huge vellum roll. Membrane 3 (see cover illustration) shows a Sergeant-at-arms holding a silver-gilt mace surmounted by an open-work crown in his right hand.

APPENDIX

Transcription of Bodleian Library Rawlinson Manuscript B120 11491 221v

A perfect demostration of all fuch infident fees and duties as belongeth to a Serjant at armes to be always levied at y^e^ execution of y^e^ fd office

A Serjant at Armes may arreft any Subject in the fower feas. The kinges eldeft fonne and alfoe the Ladies his daughters onlie excepted

And for the arreft of a Duke, Archbyfhopp or Bifhopp the fayd ferjant at Armes ys to have the fome of v [li], and 10^s^ for his gard by day

Item he is to have for the arreft of any Marquesse, Barron, Abbott or Prior the fome of x markes and on[e] pound for his gard by day

Item he is to receave every day, that he rideth to take or feeke any offendor the fome of xj[s] and xiij[s]

Item yow muft note that the horfe faddle and Bridle of everyon arrefted by the Serjant at armes if he rideth the fjant at armes ought to have them

Item yow muft note, that any man arrefted by the Sjant at Armes that pfon is infranchised from all manner of arrefts whatfoever

Item he is to receaive of a knight Batchelar or Banneret the fome of 3 markes for his arreft and a pound for his gard by day

Item he is Receave of a gentleman for his arreft, one pound and half a pound for his gard by day

Item, yf any be made againft a Serjant at armes in doing of his arreft, he may rayfe the ftrengthe of the Countie to affift him for fo accompolishing his arreft, yf otherwife he cannot he may breake downe houfes caftles and houlds

Item when a Serjeant at Armes is fent of a meffuage of truft to conferr and not to arreft, then he may not take of a Duke but xx[s] and of a Baron as much and alfoe of a Knight gentleman or verlit half a pound

Item, if a fjant at armes be gonn to arreft any man whom he cannot find yet all times after the price that fhoulde gave him arrefted must pay unto the Serjant all fuch fees as he fhould have donne if he had him arrefted

Item if any man fhall denye or with any kind of violence with ftand him in fuch wife as the fayd Serjant cannot make his arreft that pfon foe mifbehaving himself fhall pay unto the fayd S[er]jant as much as the perfon ought to doe whether he be arrefted or not

Item yf the fayde Sarjant at Armes fhall fuffer an arrefted willinglie to efcape the shalbe amerfede greevouflie and ranfomed at the Kinges' pleafure

NOTES

[1] Cal. S P Dom. Henry VIII, Vol IV pt 3, Appendix 237.

[2] Cal. S P Dom. Henry VIII, Vol VII no 962 (ix); Cal. Baga de Secretis (M 6) 30 June, 26 Hen. 8.

[3] Cal. S P Dom. Henry VIII, 15 May 1536, no 876 (6).

[4] PRO E101 420/4 xix.

[5] PRO E101 421/13.

[6] Decoration of Cologne stoneware Schnelle. Central panel Madonna and Child, flanked by panels depicting on the left St Catherine with her sword and St Barbara with her tower, 1500–50. Museum of London Accession number Z3453. See also left panel of large folding triptych, oil on wood, by Matthew Grunewald (*c.*1470/80–1528) in the Royal Collection.

[7] Nos 721 and 722 both silver-gilt, 15th-century rings, and 723 15th-century gold decade ring, Waterton Collection, all depicting St Barbara in Oman C. C. *Catalogue of Rings* F1 Religious subjects and emblems, p 110, Victoria & Albert Museum, Department of Metalwork, 1930, HMSO.

[8] Pewter badges, Acc Nos 81.160 and 8733, Museum of London, 15th century.

[9] Wayment, H. *King's College Chapel, Cambridge: The side-chapel glass*, Ch. 8 'The St Barbara cycle', pp 31–35 and fig 27 f6, g6 and f7, Cambridge Antiquarian Society, 1988.

[10] Blair, C. 'The Emperor Maximilian's gift of armour to Henry VIII and the silvered and engraved armour at the Tower of London' *Archaeologia* **XCIX** (1965), pp 1–52, and Meyrick, Sir Samuel 'Description of the engravings on a German suit of armour made for Henry VIII in the Tower of London' *Archaeologia* **XXII** (1829), pp 106–13.

[11] Cat no. 413 Ausschnitt vom Paele-Altar Jan van Eycks (1436) Schwertgurt des Heiligen Georg. zu S. 171, 189 p 365

[12] The hunting hangar or woodknife of Henry VIII, attributed to Diego de Çaias, 1544 bears a personal inscription, HENRICI OCTAVI ... , see Blair, C. 'A Royal Swordsmith and Damascener. Diego de Çaias' *Metropolitan Museum Journal* Vol 3/1970, pp 149–73.

[13] Roll 103 (127) in *Calendar of Wills proved and enrolled in the Court of Husting, London AD 1258–AD 1688*, ed R. R. Sharpe, Part II, Corporation Record Office, 1890.

[14] Harl. 1552, 186b and 180b, Harl. Soc 32, 1891.

[15] Harl. Soc 25, 1887 Vol I, 1574–5 Marriage licences granted by the Bishop of London 1520–1610.

[16] Myers, A. R. *The Household of Edward IV: Black Book* Manchester University Press, 1959, Section 52 'Sergeauntes of Armes, iiij, b 214, p 131.

[17] Jewitt, L. (ed) Hope W. H. St John *The Corporation Plate and Insignia of Office of the Towns of England and Wales* Vol I Anglesey to Kent, London 1895, p xxxviii.

[18] *A List of Monumental Brasses in the British Isles* 1926/A 1938 under Hertfordshire, p 182, Broxbourne IV John Borrell 'Serjeant-at-arms to Henry VIII, 1531, in arm, holding mace ...', fig 28.

[19] Myers, *op cit* Section 52, iiij, b 214, p. 131.

[20] BM Landsdowne Ms Misc 597. The Ordinances of 1526.

[21] BM Hanley 297 pp 254 *et seq.*

[22] PRO Calendar of Patent Rolls Henry VII Part 1 Membrane 34(2) 1485 Nov 4th.

[23] Jacobs, G. *A New Low Dictionary* 1772, O. Puffhead & J. Morgan (eds), London p 335.

[24] Sitwell, H. D. W. 'Royal Sergeants-at-Arms and the Royal Maces' *Archaeologica* CII (1969), pp 203–38.

[25] Harl. 297.

[26] PRO *Great Wardrobe Accounts* HMSO, 1893, Vol XIII, Part II, Henry VIII-5B 11g 967 (5) 1538 3rd Nov.

[27] Hall, *Chronicle* 793

[28] E 101/209 (1524), E 351/3026 (1548)

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'AN EXAMPLE TO OTHERS': PUBLIC HOUSING IN LONDON 1840–1914

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SUMMARY

For much of the 19th century and into the early 20th century, concern over the housing conditions of the working classes, and especially the poorer sections of those classes, was mixed with uncertainty as to how the problem was to be solved and whose responsibility it was to solve it. As a result, the progress of public housing in the metropolis in this period was slow and torturous. Nevertheless, by the outbreak of the First World War the basis of a London-wide housing programme had been laid and nationally the main political parties had accepted the principle of state housing subsidies.

THE ORIGINS OF PUBLIC HOUSING IN LONDON

Both the physical and moral conditions of the working classes became the focus of attention in the 1840s, and excited the concern of the middle and upper classes. The reasons behind this concern very largely determined and, to some extent bedevilled, the course of public housing for the rest of the 19th century and beyond.

First of all, there was much genuine pity for the plight of the poorer classes, linked with a sense that it was the duty of the better-off to do something to improve the lot of the poor, or at least that part of it considered to be 'deserving'. However, as much as philanthropy, this concern derived from the fact that urban working-class slums, especially in London, often existed cheek-by-jowl with more well-to-do areas, and that these slums therefore posed all sorts of threats to the well-being of the middle and even the upper classes. Slums were seen on the one hand as dens of lawlessness, violence, crime, and immorality; on the other as being anarchic and even possibly cradles of popular violent uprisings. The 1840s, after all, witnessed the culmination in this country of Chartism, a radical working-class movement dedicated, amongst other things, to universal suffrage and vote by ballot. Fear of revolution was at its height in 1848, when not only did the last great Chartist demonstration take place in London, but the rest of Europe was rocked by a series of revolutionary uprisings.

Obviously it was imperative that as many as possible of the working classes and the poor should be rescued from this contagion of criminality, immorality, and potential revolution, and should instead be encouraged to live well-ordered, law-abiding, and moral lives. So, inevitably, in the minds of those seeking to provide new housing was the idea that in some ways the working classes were a fallen, or at least a falling, race who needed to be saved and improved; whose disordered way of life needed to be properly regulated.

Even more disturbing was the threat the slums presented to everyone's health. Whereas the death-rate in England had declined between about 1780 and 1810, it was noted with alarm that the death-rate then began to rise again and continued to do so until the 1840s.[1] And although the periodic epidemics of cholera and other fevers might start in the poorer areas and it was the lowest classes who were worst affected, once these epidemics were rife, they might threaten the lives of even the highest in the land.

This increase in the death-rate, if allowed to continue unchecked, might have serious economic repercussions, since, according to the orthodoxy of the day, an economy could only expand if population increased to provide more producers and more consumers. Furthermore wealth was needed to maintain the country's military dominance, which in turn was essential to keeping Britain as a leading international power. Also, military might was still thought to rely as much on sheer weight of numbers as on power of armaments. Moreover, those who might have to fight for their country needed to be fit and healthy.

Yet Edwin Chadwick's great Report on the Sanitary Conditions of the Labouring Classes, published in 1842, and the reports of the Royal Commission on the Health of Towns which followed shortly afterwards showed that the physical conditions in the large expanding towns were actually getting worse. Old properties were becoming increasingly rundown and over-crowded, while many new dwellings were no better and were badly built, poorly ventilated, and lacking even basic sanitation.

It was, therefore, clearly in the general public interest that the lower classes should live in healthy dwellings, and the oldest surviving public housing in London is a splendid example of such accommodation. Parnell House, situated in Streatham Street, Bloomsbury, just to the north of New Oxford Street, was built in 1849–50 by the Society for Improving the Condition of the Labouring Classes, and was designed by the Society's architect, Henry Roberts (Pl 1).[2] It bears comparison, at least as far as appearance is concerned, with local authority blocks of flats of the 1920s. The internal accommodation was also excellent. Each flat had one or two bedrooms, a living room, a scullery and a separate w.c. (Fig 1). A communal bathroom and washhouse were also provided on each floor.

Here, almost from the outset, Henry Roberts and the Society for Improving the Condition of the Labouring Classes had provided an excellent model for working-class housing. Yet, it was not followed, because, in terms of the Society's stated aims and in the eyes of contemporaries, it was a financial failure. This highlights the problems and dilemmas which were to beset 19th-century attempts to provide public housing. At the heart of these difficulties was the belief that widespread adequate housing for the working classes could only be provided in sufficient quantity by private builders and developers operating on a normal commercial basis. The Society's dwellings were, therefore, intended not simply as models of well-built housing with good accommodation, but also as models of providing such housing while at the same time producing a profit. Hence the term 'model dwellings'.

By making a profit, it was hoped the private sector would be persuaded to follow these exemplary models. The Society for Improving the Condition of the Labouring Classes limited its dividend to four per cent, although five per cent became more usual, hence the widely used phrase, 'five-per-cent philanthropy'. Yet even five per cent was a very modest return and there were many commercial ventures at the time where a much higher profit could be obtained. It meant really that only those who were themselves philanthropically minded would invest in the five-per-cent housing companies.

At Parnell House the wish to provide a building of exemplary standard at rents which the poorer classes could pay, resulted in very little profit at all, let alone a four or five per cent return. In any case, the rents, of between four shillings and seven shillings a week, were not cheap in comparison with the existing accommodation for the poorer classes. As a result, Parnell House was occupied only by the least needy and top level of the working classes, namely the skilled artisans.[3]

'SOCIAL REALISM' SETS IN

The failure of schemes like Parnell House made people stop and think, with the result that there was something of a hiatus in the construction of model dwellings in London in the 1850s, not least because building costs rose steeply at this time, making it difficult to obtain any sort of profit out of building working-class dwellings.

What then was to be done? The view began to be formed that Roberts and the Society for Improving the Conditions of the Labouring Classes had been too idealistic and impracticable. What was needed was a more socially realistic view. The standards of accommodation designed by Roberts had been far too high, and it was now deemed necessary to provide accommodation of a much lower standard.

Today, Octavia Hill is remembered largely as one of the founders of the National Trust, but she was also the pioneer of housing management.

Plate 1. 'Model Houses for Families' (now Parnell House), Streatham Street, Bloomsbury, 1849–50, by Henry Roberts for the Society for Improving the Condition of the Labouring Classes. Watercolour perspective produced by Roberts's office (photo of original in possession of the Peabody Trust, RCHME copyright, neg no. BB96/824)

For all her idealism, Octavia Hill was also a hard-nosed member of the social realism school, and she argued that:

> It is far better to prove that you can provide a tolerable tenement which will pay, than a perfect one which will not. The one plan will be adopted, and will lead to great results; the other will remain an isolated and unfruitful experiment, a warning to all who cannot or will not loose money. If you mean to provide for the family that has lived hitherto in one foul dark room, ... be thankful if you can secure for the same rent even one room in a new, clean, pure house. Do not insist on a supply of water on every floor, ... and in other ways moderate your desires somewhat to suit the income of your tenant.[4]

This new social realism was taken to heart by the Peabody Trust which was founded in 1862 by George Peabody, a wealthy American businessman, who had settled permanently in London in 1837.[5] His gift, which eventually totalled £500,000, was intended 'to ameliorate the condition and augment the comforts of the poor' of London. Although the Peabody Trust was a wholly charitable venture, the Trustees decided that the principle of 'five-per-cent philanthropy' should still apply, and that each housing scheme should show a modest return, so that the Fund would be self-perpetuating for the benefit of future generations. The first Peabody housing was completed in Spitalfields in 1864. It was something of an experiment and was in the Gothic style. Thereafter the Peabody Trust built a series of estates in various parts of London, all very similar and instantly recognisable. The individual blocks, with their brickwork cleaned up, would not be unpleasing in appearance. The trouble is the sheer physical bulk, especially when, as at Westminster, several such blocks were built around a square, or, even more dauntingly, are ranged in a line along a seemingly endless avenue, as on the Peabody's Pimlico Estate, where the effect is very much of barrack blocks flanking a parade ground (Pl 2).

Of course, the problem was, especially on large sites such as those on which the Peabody Trust usually built, that the slum dwellings which

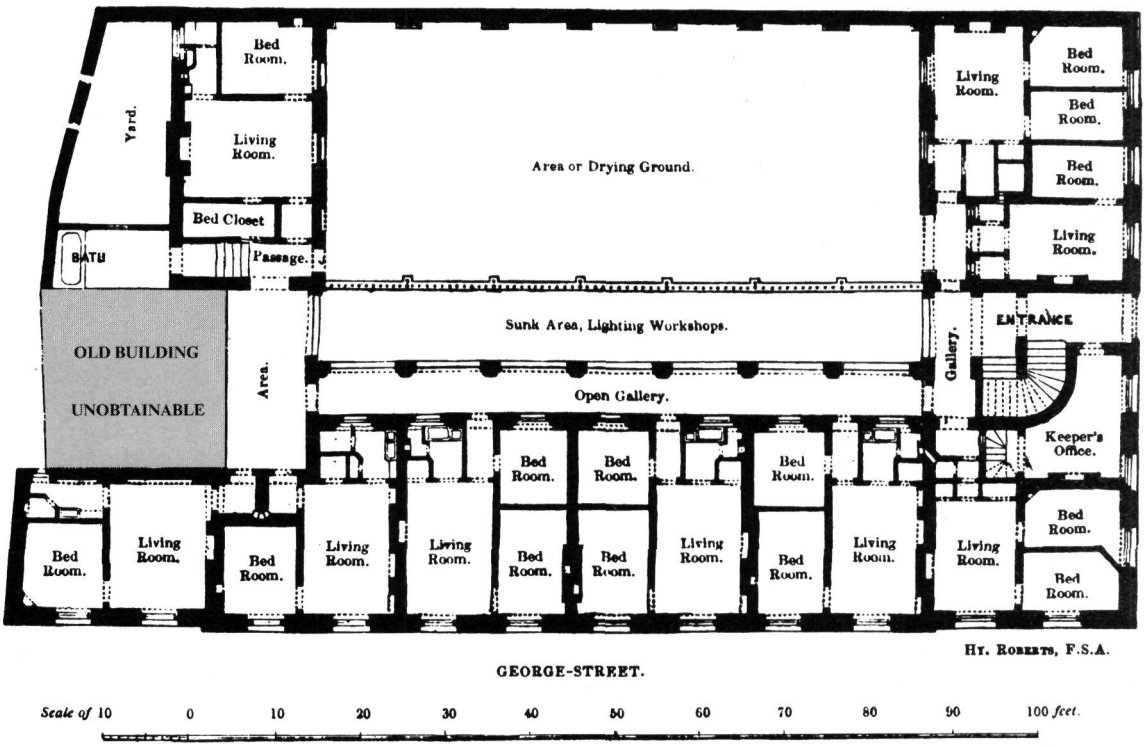

Fig 1. Ground-floor plan of Parnell House, No. 2 Streatham Street, Bloomsbury, 1849, designed by Henry Roberts for the Society for Improving the Condition of the Labouring Classes (from The Builder *14 July 1849, p 326)*

were demolished were horrendously overcrowded. And if the overcrowding was not to be made even worse, then as many replacement dwellings as possible had to be erected on a cleared site. There was, therefore, no real alternative to making the new blocks as large as possible and packing them together as tightly as the requirements of healthy ventilation allowed. At Great Wild Street, off Drury Lane, for example, a one-and-half acre site was cleared by the Metropolitan Board of Works about 1880. Yet the Peabody Trust, despite increasing their new blocks to six storeys (and remember there were no lifts), only succeeded in cramming in just over 1,600 people, whereas about 1,900 had been displaced by the scheme. Moreover, less than five years after completion, the buildings were severely criticised as being unhealthy by the Royal Commission investigating the housing of the working classes.[6]

Ostensibly the Peabody blocks were well appointed. For instance, every corridor had rubbish chutes. The passages were all kept clean and lighted by gas without any cost to the tenants. There were baths free for all who wanted to use them, and every occupant could use communal laundries, with wringers and drying lofts. However, the Peabody Trustees had employed as their architect Henry Darbishire, who was thoroughly imbued with 'social realism' and had a pretty low opinion of the working classes, describing their children as 'destructive little animals'.[7] The interiors of Peabody flats were, therefore, designed with spartan finishes intended to be durable, sanitary, and easily maintainable, rather than homely. The walls were left unplastered to minimise the risk of vermin and bugs, and wallpaper was forbidden, although the bare walls were painted. Even more soul-destroying, no pictures or decorations were permitted which required putting a nail into the wall. In a decidedly retrograde step, flats in the Peabody blocks were not self-contained but 'associated', that is a number of flats shared communal w.c.s and sculleries. Fig 2 shows an example of this type of layout, at the Islington Peabody Estate, built in 1865, with w.c.s and sculleries at either end of the central corridor. It

Plate 2. Characteristic Peabody Trust blocks (Peabody Avenue, Pimlico) designed by Henry Darbishire and completed 1876–7 (Greater London Record Office copyright, neg no. 68/1979)

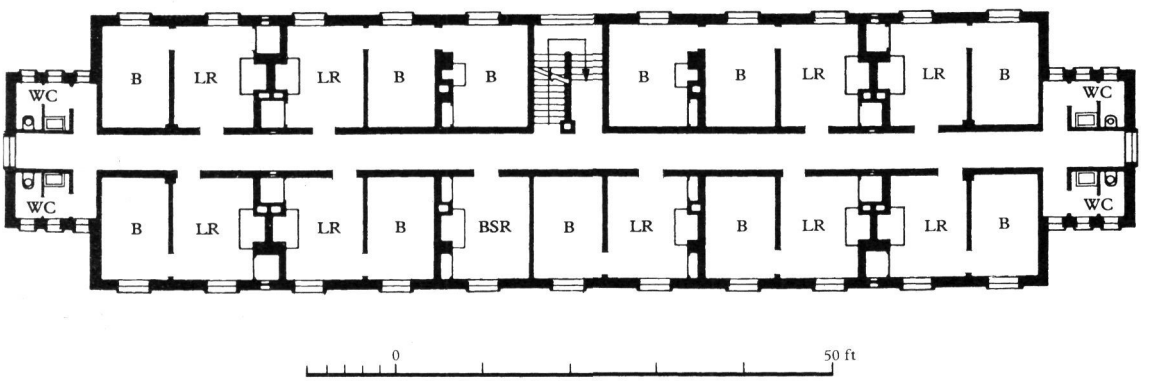

Fig 2. Typical floor plan of early Peabody Trust block of associated dwellings designed by Henry Darbishire, Peabody Square, Greenman Street, Islington, 1864–5 (Re-drawn by Michael Clements from an original plan. Copyright RCHME)

was argued that by having the lavatories externally from the flats it was easier to supervise them and ensure they remained clean, and that it was more healthy to have them well away from living-rooms and bedrooms.

Others followed the Peabody's example. From

the mid 1880s to the early 1900s, the East End Dwellings Company, the Artizans', Labourers' and General Dwellings Company, and the Guinness Trust all built minimal-standard blocks where many of the tenements were not self contained, and where in many instances w.c.s and sculleries were shared.[8]

Nevertheless, not everyone at the time agreed with the Peabody reduction in standards of accommodation. In particular, Sydney Waterlow, a partner in the well-known family printing firm and a City Alderman, was a strong advocate of self-contained flats, and in 1863 he built on his own initiative, and at his own expense, Langbourne Buildings, a model dwellings block in Mark Street, Finsbury. The design and layout of this block which was worked out by Waterlow and his builder, Matthew Allen, was adopted as standard by the Improved Industrial Dwellings Company, which Waterlow was instrumental in forming in 1863. Normally all the Company's dwellings had their own individual w.c.s and sculleries, but there was a brief experiment by the Company in 1867–8 with associated dwellings, at Derby Buildings, Britannia Street, King's Cross. These proved so unpopular with tenants that the experiment was quickly abandoned and not repeated by the Company.[9]

THE PROBLEMS OF HOUSING THE POOREST

This contrast in standards of accommodation can be explained very largely by the differing aims of agencies like the Peabody, Guinness, and the East End Dwellings Company, who were all supposedly intended to provide for the poorest of the working classes, and the Improved Industrial Dwellings Company, which made no bones about not catering for the poorest, and argued:

> We must take the class as of various degrees; the upper, middle and lower of the labouring classes; it would not have been right to build down to the lowest class, because you must have built a class of tenement which I hope none of them would be satisfied with at the end of 50 years; we have rather tried to build for the best class, and by lifting them up to leave more room for the second and third who are below them.[10]

Here we see another principle which underpinned the policies of almost all the 19th-century philanthropic housing societies, the idea of filtering up. That while they might not directly be able to rehouse the very poorest in society, they could ameliorate their conditions by rehousing those a little above them in the social order. This would then leave room for the poorest to move into the vacated premises which would be better than their previous homes. This filtering up theory was more believable in the case of small-scale infill schemes, like those carried out by the Improved Industrial Dwellings Company in its early days; it was less convincing where large redevelopment schemes were involved, as undertaken, for example, by the Peabody Trust, where demolitions, even after replacement housing, might, as has been seen, exacerbate rather than relieve overcrowding.

In fact, despite Peabody's donation fund supposedly being for the poor, it quickly became clear that it was the Trustees' policy to house those of the working class who were better off, so once again it was the artisans or people like policemen who benefited rather than the desperately needy. It also happened that many tenants prospered in their new homes, but quite understandably the Peabody Trustees were reluctant to evict simply because a tenant's increased income had taken him above the normal level entitled to philanthropic benefit.[11]

The Victoria Dwellings Association in their first scheme at Battersea Park, opened in 1877, tried to get round the problem of catering for the poor, to some extent, by providing two classes of tenement: the first, for artisans, were self-contained and generally had three rooms, the other class, for labourers, had one or two rooms and were associated, three tenements sharing one lavatory.[12] Similarly the Artizans', Labourers' and General Dwellings Company built self-contained dwellings, intended for better off artisans, on its three suburban cottage estates: Shaftesbury Park, Battersea (from 1872); Queen's Park, Kilburn (from 1874, Pl 3); and Noel Park Hornsey (from 1882). While, in inner London, the Company built blocks for poorer labourers, where groups of flats shared w.c.s and sculleries.[13]

What at first is even more remarkable is that the locations chosen for the erection of philanthropic housing were in many cases not in the most needy areas. Ironically, the very poverty of an area could militate against the chances of philanthropic housing agencies building there. This was particularly the case in East London: the evidence in Poplar, for example, is that contrary to what might be thought, land was relatively expensive to purchase, and in a poor area like this the rates were high, both factors

Plate 3. Nos 116–130 (even) Fifth Avenue, Queen's Park, Kilburn, built by the Artizans' Labourers' and General Dwellings Company. The houses on this part of the estate date from between 1874 and 1880 (Greater London Record Office copyright, neg no. 79/2836)

which would increase rents and tend to put them above what most local people could pay.[14] Added to this, was the uncertainty of regular employment in these poorer districts. For instance, the Improved Industrial Dwellings Company had difficulties over vacancies, especially during lean times, at blocks in Wapping, Greenwich, and, at first, Bethnal Green. At Shadwell, on a Peabody Trust housing scheme opened in 1867, about a quarter of the tenements were still unoccupied in 1870.[15]

In other words, in many of the poorest areas, few of the existing population could afford the rent of a model dwelling. George Arkell, researching for Charles Booth's surveys of working-class conditions in London, published in 1891, found that over 8% of the population of Westminster School Board District lived in philanthropic blocks, whereas, in Tower Hamlets the percentage was only 2.1 and in Southwark 2.8, although the proportion of the population classified by Booth as very poor in the latter two districts was much higher than in Westminster.[16] In fact, in one parish in the Tower Hamlets School Board District, that of Poplar, no philanthropic blocks were built there at all throughout the 19th century or, indeed, before the mid-1920s.[17]

In central London, the philanthropic agencies found they had many more applications than tenements available. At Southwark Street in the 1870s, for example, the Peabody had upwards of 1,000 applications for 264 tenements.[18] In the case of the Improved Industrial Dwellings Company, Sydney Waterlow pointed out that:

> In the central districts, that is to say near Oxford Street,

> Westminster, and Pimlico, the tenements yield a better profit than they do in the outlying estates, namely the Tower, Greenwich and Deptford; there we do not earn 5 per cent, but taking the average of the earnings of the whole estates, St. George's, Hanover Square, pays for Deptford and the Tower.[19]

Not surprisingly, in these circumstances, the Peabody and the IIDC turned their attention westwards during the 1870s and 1880s, and by the turn of the century even the East End Dwellings Company was beginning to abandon its roots and erect blocks in Islington and St Pancras.

These moves westward were facilitated in some cases by the zeal of aristocratic landlords to have philanthropic working-class block dwellings on their London estates. The Artizans', Labourers' and General Dwellings Company, for example, built blocks on the Portman, Grosvenor, and Northampton Estates. The Society for Improving the Condition of the Working Classes, the Strand Buildings Society, and the Peabody Trust all built on the Bedford Estate, while the Improved Industrial Dwellings Company erected blocks on the Northampton Estate in Clerkenwell, and on the Grosvenor Estate in both Mayfair and Pimlico. On the Northampton Estate, the IIDC was charged only 1.42*d* and 2.01*d* per foot, as compared with a market value of between 3*d* and 4*d* per foot.[20] Similarly the Duke of Westminster granted cheap sites on the Grosvenor Estate.

This willingness on the part of the aristocracy was very much a mixture of philanthropy and astute estate management. A man like Hugh Lupus Grosvenor, First Duke of Westminster, was undoubtedly an outstanding example of that peculiarly Victorian archetype, the high-minded, chivalric, philanthropic, pious (and often evangelical) nobleman. At the same time, in return for granting sites at cheap rents, he was able to tidy up his fashionable West End estates. Simultaneously he could eradicate any unhealthy or unsightly slums, and rehouse in healthy and orderly new model dwellings those of the working classes required to be on hand to provide the servants, shop assistants, and service workers, needed by the well-off and fashionable occupants of the Grosvenor Estates.

Clarendon Flats, Balderton Street on the Grosvenors' Mayfair Estate, just off Oxford Street, was built in 1871–2 by the Improved Industrial Dwellings Company, and is simply an upmarket version of the Company's standard design. On the other hand, Stalbridge Flats, is one of several later blocks of model dwellings put up by the same company around Brown Hart Gardens, also on the Grosvenor's Mayfair Estate, 1886–7 (Pl 4). The street fronts are almost indistinguishable from fashionable West End apartment blocks of the period, although round the back, overlooking the courtyard, the blocks have a much more utilitarian look. They are very much a case of 'Queen Anne' at the front, 'Mary Anne' at the back.[21]

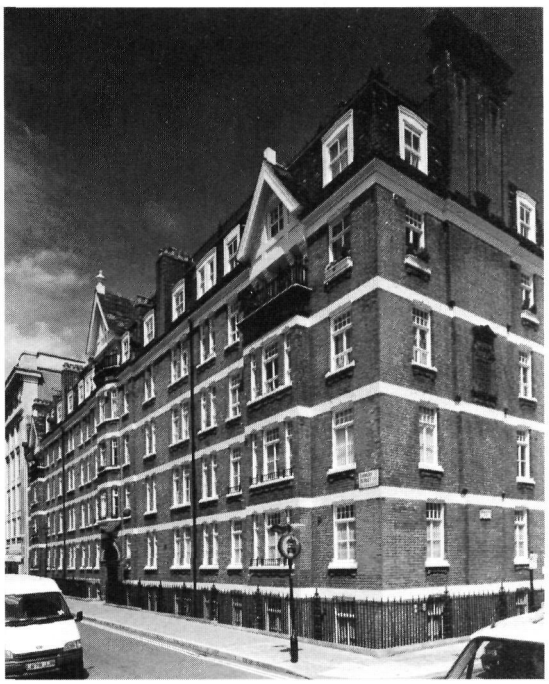

Plate 4. Stalbridge Flats: front and side elevations to Lumley Street and Brown Hart Gardens, Mayfair, built by the Improved Industrial Dwellings Company, 1886–7 (photo by Sid Barker, RCHME copyright, neg no. BB96/729)

THE MANAGEMENT OF MODEL DWELLINGS

So-called 'social realism' also dominated the management of model dwellings, with Octavia Hill, of course, being to the fore. She thought the poorest classes, if simply moved to a nice new home and left to their own devices, would quickly turn their new homes into slums. They had to be educated in the art of decent living in order that they would be fit and proper to inhabit their new dwelling. To aid her in her

work, Octavia Hill gathered together a band of lady (the emphasis being on lady) rent-collectors, who were actually also an early and rather fearsome form of social worker. Eventually, her rent-collectors became so highly regarded by landlords, that they were called in to manage other working-class dwellings, and her management methods were widely copied by other housing agencies, including local authorities. To middle-class observers these rent collectors were the working-class tenants' 'best and kindest friend. It is he, or she, that teaches them to take a pride in being clean and neat themselves, and in keeping the room clean and neat as well'.[22]

Needless to say the recipients of these ministerings did not have such a rosy view. According to John Law's *A City Girl*:

> Several times in the week ladies arrived in the Buildings armed with master-keys, ink-pots and rent books. A tap at a door was followed by the intrusion into a room of a neatly-clad female of masculine appearance. If the rent was paid the lady made some gracious remarks, patted the head of the children and went away. If the rent was not forthcoming, they took stock of the room (or rooms), and said a few words about the broker
>
> 'She takes bread out of a man's mouth, and spends on one woman what would keep a little family', grumbled a tenant.
>
> 'I pity her husband', responded a neighbour.
>
> 'Females like 'er don't marry', mumbled a misanthropic old lady.[23]

The prospect of this strict regime of regulations, visits and social surveillance must have deterred many would-be tenants of model dwellings. And many of those who did become tenants must have felt that they could never really relax and call their home their own; that they were constantly being monitored to ensure that they and their families kept up to the mark, not only in terms of physical cleanliness, but also in respect of sober, orderly, and moral behaviour; that, in fact, the tenants, as much as the blocks they lived in, were to be held up as models to the rest of society. The design and layout of estates frequently reflected a desire to shield the tenants from any threat of moral or physical contamination from the surrounding neighbourhood. In particular, the Peabody Trust's estates were protected by railings, and the tenement blocks usually turned their backs on the adjacent streets and were often entered from an enclosed courtyard or square.

As we have seen, Octavia Hill and her collectors were particularly ruthless in almost immediately evicting any tenants who fell into arrears, and the fear of not being able to pay the rent must have been a source of anxiety for many tenants of model dwellings. It was in the nature of things that on top of all the normal adversities, such as sickness, which might visit a family, many working-class people had uncertain employment and an income which was likely to fluctuate – who might well be capable over a year as a whole of paying an annual total rent which amounted to say 52 shillings, but who at times in the year might not be able to pay the weekly rent of one shilling for a number of weeks.

In Lambeth, around 1910, it was found in the model-dwelling blocks that:

> The rent must be paid or the tenant must quit. The management of most buildings exacts one or two weeks' rent in advance in order to be on the safe side. A tenant thus has one week up her sleeve, as it were, but gets notice directly she enters on that week. In some buildings the other people, kindly souls, will lend the rent to a steady family in misfortune.[24]

With such a regime there was every likelihood that those most in need, physically and morally, would never be allowed the chance to be improved. Beatrice Potter, better known as Beatrice Webb, was a volunteer rent collector for Katherine Buildings in the East End. In 1885, she was told by a Peabody superintendent: 'We had a rough lot to begin with, had to weed them of the old inhabitants – now only take in men with regular employment'. And she asked herself: 'are the tenants to be picked, all doubtful or inconvenient persons excluded or are the former inhabitants to be housed so long as they are decently respectable?'.[25] And the report in 1885 of the Royal Commission on the housing of the working classes pointed out that where demand for accommodation exceeded supply: 'it follows that a system of selection must be followed, and it would be strange if the most orderly and respectable were rejected'. And then added, 'There is no injustice in this'.[26] Indeed, the Artizans' Company stated that they wanted as tenants only 'the most quiet and provident portion of the industrial classes'.[27] The East End Dwellings Company found in their earliest blocks that the poor were unreceptive to the closely managed regime, and there was trouble with fighting and other unruly behaviour. In an attempt to remedy this, the Company at Strafford Houses (erected in 1890 at Wentworth Street, on the boundary between Spitalfields and Whitechapel) built a mixture of dwellings, with some that had deliberately better accommo-

dation, so that the poor could be mixed with cleaner, more respectable families, who, it was hoped, would have a refining effect.[28]

PRIVATELY BUILT BLOCK DWELLINGS

While Sydney Waterlow was happy that his Improved Industrial Dwellings Company had demonstrated that good standard working-class housing could be provided at a five per cent profit, it is very clear that the philanthropic societies signally failed to get private builders to follow their example. Not that private developers could not, on occasion, provide decent tenement blocks. One example is Mall Chambers, Kensington, a block of improved industrial dwellings (which still exists) erected apparently as a speculative venture by the well-known building contractors, Lucas Brothers, in 1865–8. However, this block was 'intended for a class somewhat above ordinary mechanics and labourers'. Indeed, many of the early occupants were highly skilled craftsmen or clerks, and there was even a wine merchant living there in 1871.[29]

It is also true that it was possible to make a profit from building working-class blocks, as Isobel Watson's researches on James Hartnoll have shown.[30] At his death in 1900, at the early age of 46, James Hartnoll left £440,000 and had housed more than 4,000 people in industrial dwellings. His success seems to have stemmed from buying sites offered by the Metropolitan Board of Works (MBW) or the London County Council (LCC) as the result of demolitions for various improvement schemes. These sites usually had to be sold cheaply (see below), and Hartnoll seems to have been prepared to accept the irksome rehousing conditions which were attached to such sites and which often put off many of the philanthropic societies. For example, as the result of a large slum clearance scheme of three and a half acres in Poplar, in the Wells Street/Robin Hood Lane/Cotton Street area, the MBW offered the land for sale for rehousing, but the Peabody Trust, the Metropolitan Association, and the Improved Industrial Dwellings Company all declined invitations to take the site, and the land did not reach its reserve price at auction in 1885. In such circumstances Hartnoll was able to step in and offer the now desperate Board a cheap price for the land. On it he built Grosvenor Buildings, which were described as model dwellings and, indeed, each flat was self-contained, with its own kitchen and lavatory. But there were 542 flats in buildings of such gargantuan proportions that the Peabody blocks seem positively homely in comparison (Pl 5). Large as it was, Grosvenor Buildings was immediately allowed to become overcrowded, with the total occupancy rising to above 2,000, over 600 more than the 1,392 the building had been designed to hold.[31]

In fact, one of the major problems of privately owned blocks was the poor management and the laxity of the landlords, who allowed not only gross overcrowding, but often poorly maintained their buildings. Worst of all, as Chadwick found in 1842 and the Royal Commission investigating the housing of the working classes was to find in 1885, many privately built speculative ventures were instant slums, little or no better than those they replaced. Most notorious was Arnold's Buildings, also in Poplar. This was a six-storey block containing 110 tenements, put up in 1884–5 by E. Nathan. Within ten years, in 1894, Poplar Board of Works served a closing order, although it took another ten years or so before it was finally pulled down.[32]

THE BEGINNINGS OF LOCAL AUTHORITY INVOLVEMENT IN HOUSING

If the philanthropic agencies and private developers were failing, what about local authorities? The 1890 Housing Act and the resulting activities of the London County Council have had such an impact that it is often forgotten that local authorities had been able to build working-class housing since Lord Shaftesbury's Labouring Classes Lodging Houses Act of 1851. Since the Act did not define what it meant by lodging houses, it could legally be taken to include self-contained houses or flats. In fact, the Act was only invoked on one occasion in the whole country, and then probably in mistake for another Act.[33]

The trouble was that during much of the 19th century local authorities were only just beginning to find their feet and many, especially in London, were inefficient and unrepresentative. Also, the prevailing attitude of *laissez faire* and fear of incurring the wrath of ratepayers inclined local authorities where ever possible to do nothing.

The only three local authority public housing schemes in London before 1890 were all erected

Plate 5. Grosvenor Buildings, Robin Hood Lane and Mackrow Street, Poplar, built by James Hartnoll in the late 1880s. View taken in 1928 (RCHME copyright, neg no. BL29455/2)

by City of London authorities. The City Corporation was responsible for erecting two blocks. Corporation Buildings in Farringdon Road, built in 1864–5,[34] was not only the first local authority housing in London but in the country as a whole. However, this block was demolished in the 1970s, and so Viaduct Buildings, at the foot of Saffron Hill, Holborn, built in 1875,[35] although now converted to private flats and known as St Andrew's House, is the oldest surviving local authority public housing in London, and amongst the oldest in the country (Pl 6). The third and most ambitious scheme was that executed in 1885 by the City Commissioners of Sewers who built five blocks of dwellings on a cleared site in Petticoat Square.[36]

Yet all three schemes were indistinguishable from philanthropic housing either in terms of appearance or standards of accommodation, the blocks at Petticoat Square for example were not self-contained but associated. Nor were these early local authority schemes any more successful in either rehousing those displaced or in providing for the very poor. Indeed it was complained that Viaduct Buildings was occupied by 'clerks, who keep pianos'.[37] Most significantly, these schemes were isolated cases, which really did not offer, and were never intended to offer, any precedent for a general programme of local authority housing in London.

What was far more important in bringing about a gradual and often very grudging general acceptance of state and local authority involvement in housing provision, was the legislation passed from the 1860s onwards which gave public bodies an increasing part to play in the inspection, in the control, and in the clearing away of slum properties, and at least some say in the provision of rehousing. The 1866 Labouring Classes Lodging Houses Act, for example, allowed the Public Works Loan Commissioners

Plate 6. Viaduct Buildings, Saffron Hill, Holborn, built by the Corporation of London in 1875, now converted into private flats and known as St Andrew's House (photo by Sid Barker, RCHME copyright, neg no. BB96/724)

to lend money to local authorities and philanthropic housing agencies. That is, the Government was, at last, prepared to accept the principle of lending public money to provide public housing. Similarly, the 1868 Torrens Act (called after its sponsor, the Liberal MP William McCullagh Torrens), although virtually a dead letter as far as slum clearance was concerned, did establish one important principle. Under the Act, when the owner of an insanitary house refused to undertake repairs and remedial action, a local authority was given compulsory powers of repair and demolition, and might recover any costs from the owner. Here, for the first time, the sacrosanct rights of property owners might be legally invaded by a local authority for the public good.

In an attempt to remedy the shortcomings of the Torrens Act, the Artizans' and Labourers' Dwellings Act of 1875 was passed, popularly known as the Cross Act, after R.A.Cross, the Conservative Home Secretary responsible for formulating the measure. This Act was far more important in London than elsewhere in the country. Under the Cross Act a whole area could be designated for improvement by the local authority, which, for the City of London, was the City Commissioners of Sewers, and, for the rest of London, the Metropolitan Board of Works. The local authority, having designated an area, was then obliged to acquire all the land, lay out the streets, and sell off plots to anyone willing to build working-class housing, but it was also the duty of the local authority to ensure that rehousing provision was made for at least the same number of people as had been displaced. This was not only quite a tall order for the MBW, but gave parish vestries and district boards of works the opportunity to throw responsibility for slum clearance on to the Metropolitan Board. The local authority could itself only build replacement dwellings with the express approval on each occasion of the Home Secretary. In fact, the MBW never attempted to obtain this permission.

The biggest weakness of the 1875 Cross Act was that, in an attempt to assuage the opposition of property owners, it allowed those with slum properties to claim compensation as though the condition of their buildings was perfect. It was, as Joseph Chamberlain put it, virtually a directive to bad landlords 'to allow your property to fall into disrepair, to become a nest of diseases, and a centre of crime and immorality, and then we will step in and buy it from you at a price 70% above what you could obtain in the ordinary market'.[38] Moreover, these slum dwellings were usually valued on the basis that the land on which they stood, often in the heart of London, was ripe for lucrative commercial redevelopment. Whereas, of course, the Metropolitan Board had to sell the land specifically and only for working-class housing, which would give any purchaser only a small profit. As an added disincentive to would-be buyers, the 1875 Act gave the Board the right, which it exercised, to have control over the design of any new housing to be erected on the site. The upshot of all this was that the Board had to pay high and sell low.

In effect, therefore, the 1875 Act provided the housing companies and societies with a hidden form of subsidy coming from the rates of the MBW. It was alleged that in carrying out 22 clearance schemes between 1876 and 1888 the MBW sustained a net loss to the public of £1,483,175.[39] More certainly, the Board reported in its final report that it had spent over £1½ million in carrying out these clearance schemes.[40] Nevertheless, although the Board's selling prices

were artificially low, and from its own point of view financially disastrous, they were still higher than most private builders and even most model dwellings companies really wished to pay, and at first only the Peabody Trust with its charitable status and large funds was prepared to purchase sites from the Board. In fact, the Peabody Trust got a very good deal, acquiring six sites for about £100,000, for which the Board had paid about five times as much. So close was the relationship the Trust built up with the MBW that Lord Salisbury, the future Conservative Prime Minister, observed in the early 1880s that the Peabody Trust had 'already assumed an almost official position'.[41]

Although the legal processes under the Cross Act were painfully slow, the MBW did manage improvement schemes in 17 different parishes or districts, ranging from Marylebone in the west to Greenwich in the east, and averaging a scheme a year between 1876 and 1888, involving in all a grand total of 59 acres. On the cleared sites 263 blocks of improved dwellings were erected, accommodating about 27,000 people.[42]

The report issued in 1885 by the Royal Commission set up to investigate the housing of the working classes made very depressing reading to an age which believed in progress. Here was a dreadful indictment, even after 40 years of building model dwellings, of the failure to bring about any general improvement in the standards of housing occupied by the majority of the working classes. Indeed, progress had exacerbated the situation, since the development of railways, road improvements, and the clearance of slums had all made overcrowding in London worse than ever, while, at the same time, as in Chadwick's day, new working-class dwellings were often instant slums.

By now the Metropolitan Board was thoroughly discredited, although in hindsight this seems rather unfair and ignored the difficulties under which the Board operated, and the 1885 report called for the reform of the local government system, especially in London. As a result, the Local Government Act of 1888 established a new County of London presided over by the London County Council, which superseded the MBW in 1889.

THE LONDON COUNTY COUNCIL'S EARLY BLOCK DWELLINGS

The first LCC administration (1889–1892) consisted of an alliance of Liberals and early socialists, known as the Progressives, and, as is well-known, the Council was instrumental in getting the Housing of the Working Classes Act passed in 1890, Parts I and II of which made it easier for local authorities to rebuild housing on slum clearance sites. Yet the LCC could not immediately throw off the prevailing reluctance of local authorities to provide housing. It initially decided that where a responsible company or trust offered to erect dwellings, it would be best to accept that offer, and it was the original intention that cleared sites on the Boundary Street area would be sold off. In part what compelled the Council to provide housing itself was the failure between 1887 and 1892 to find any buyer prepared to fulfil the rehousing obligations on various derelict sites inherited from the MBW. Also, the LCC was unhappy with the poor standard of some of the blocks erected on sites sold by the Metropolitan Board, and in some cases thought the rents charged were unreasonable.[43] The Council, for example, went to great pains to prevent James Hartnoll from acquiring and building on another slum clearance site it owned in Poplar, and they clearly did not wish to see another Grosvenor Buildings go up in the area.[44]

Yet, the first two LCC housing schemes – Beachcroft Buildings, Cable Street, Stepney (1892–3, Pl 7) and Council Buildings, Yabsley Street, Poplar (1894) – were still pretty barrack-like and scarcely distinguishable from the usual sort of model dwellings. The LCC also followed the philanthropic societies in trying to make a profit, and laid down that each housing scheme should be expected to earn three per cent profit on capitalisation.[45] Even such a socialist group as the Fabian Society advocated that public housing should be erected 'only in places where [it could] be built at a fair profit'.[46]

The LCC also inherited some of the philosophy of the philanthropic housing agencies. Supposedly the Council's own researches and Octavia Hill's claims persuaded it that 'the difficulties with the very lowest classes were not financial, but moral'. So the Council, in its own words, 'devoted its attention to the provision of accommodation for classes of the population a little above the very lowest'.[47] That this was indeed the policy is borne out by the fact that in 1912, out of a total of just over 8,600 LCC tenants, most were skilled workers, clerks or servants, and only 549 were classified as labourers.[48]

In 1892 the Progressives were returned to

Plate 7. Beachcroft Buildings, Cable Street, Stepney, built by the London County Council, 1892–3 (Greater London Record Office copyright, neg no. 75/11389)

power on the platform of municipalising London's services and institutions, and at last the LCC began to throw off some of its inherited traditions and to become genuinely innovative. For the first time in London a local authority undertook a systematic programme of municipal housing. A Housing of the Working Classes Branch was set up in the LCC's Architect's Department, and a Works Department was established to build wherever possible the Council's housing by direct labour.

Now also, for the first time, the LCC began to turn its back on the traditional grimness of so many philanthropic blocks of model dwellings. J. N. Tarn argues that much of the failings of the tenement blocks and the grimness of their appearance was due to the lack of 'a first-rate architect involved in housing work between 1860 and 1880', and adds 'housing architects, in fact, were bad designers'.[49] While it is true that no leading architects of the day were involved in such housing, there is plenty of evidence in the architectural press of the time that aesthetics did not come into it. The whole concern was to erect healthy buildings, well drained, well ventilated, and with proper sanitary facilities. In other words, the architects were much ahead of their time in regarding the design of model dwellings as being entirely a matter of function, and in regarding them as 'machines for living in', long before Le Corbusier coined this phrase. For instance, George Godwin, who as editor of *The Builder* was an influential voice in Victorian architecture and in the design of working-class housing, was reported as saying, appropos tenement blocks: 'As to ornament, he would sacrifice every vestige, if necessary, to increase the size of the rooms, as breathing space was

essential to health'.[50] In contrast, Octavia Hill, reacting against her earlier social realism, made the plea:

> Let us hope that when we have secured our drainage, our cubic space of air, our water on every floor, we may have time to live in our homes, to think how to make them pretty, each in our own way, and to let the individual characteristics they take from our life in them be all good as well as healthy and beautiful, because all human work and life were surely meant to be like all Divine creations, lovely as well as good.[51]

What the LCC did in housing estates such as Boundary Street, Bethnal Green, begun in 1893, was to make working-class homes 'lovely as well as good', pretty as well as healthy; to build blocks with façades which were inventive in design and pleasing on the eye; which were no longer monolithic in appearance, but were broken up and given variety by different architectural features and details, or by the use of a mixture of materials (Pl 8). Above all, the LCC blocks, although still quite large, were recognisably domestic in appearance, and, in this respect at least, stood comparison with middle-class apartment blocks of the period. And in using an Arts and Crafts style the LCC's architects brought working-class dwellings into the mainstream of architectural design and fashion.[52]

The Boundary Street Estate is quite rightly seen as an aesthetic revolution in working-class block dwellings, and its influence was immediately seen in the contemporary work in London of the philanthropic housing agencies and, soon afterwards, of other local authorities. One can see this influence, for example, at Dunstan Houses, Stepney Green, built in 1899 by the East End Dwellings Company, or at Flaxman Terrace, just south of Euston Road, not far from St Pancras Station, begun by St Pancras Metropolitan Borough Council in 1907 (Pl 9). Or, again, in the first blocks erected by the Samuel Lewis Housing Trust in Liverpool Road, Islington, in 1909–10.

But aesthetics are not the whole story, and Charles Booth complained that the Boundary Street scheme was too costly, and that rents were therefore too high. 'The result', he said, 'is that the new buildings are occupied by a different class, largely Jews, and that the inhabitants of the demolished dwellings have overrun the neighbouring streets, or have sought new homes further and further afield'. While he accepted that the cost of clearing the area had been enormous, he added that 'it may be that too much was yielded to the desire to build dwellings that should at once be a credit to the London County Council and an example to others'. It was Booth's opinion that it was 'probable that an aim less exalted and more practical would have been of greater advantage to the neighbourhood'.[53] It has been calculated that probably only about 25% of the existing tenants in the Boundary Street area could have afforded the new LCC accommodation.[54]

The LCC, then, also inherited from the philanthropic societies the idea that the main purpose of its buildings should be models of what good working-class houses ought to be, rather than necessarily catering for the more immediate needs of those displaced by slum clearance. The LCC were particularly keen to halt the decline in the quality of the environment caused by the need to rehouse as many people as possible on restricted sites, and were equally keen to halt the decline, which has already been noted, in standards of accommodation evident in much philanthropic housing of the 1880s and 1890s. Reacting against this, the LCC wished its tenement blocks to be of the 'best description'.[55] But the Council's aim was also, again like the philanthropic societies, to erect housing which would last a long time, at least 60 to a 100 years. In other words, they were as concerned to look forward and build for the future, as to solve the immediate housing problems of their own day.[56]

Charles Booth also noted that at the Boundary Street Estate the LCC inherited another trait of the philanthropic housing societies, and thereby deterred many slum dwellers from moving into the new blocks: 'the regulations to be observed under the new conditions demanded more orderliness of behaviour than suited the old residents'.[57]

Boundary Street was followed by the Millbank Estate, Westminster, built by the LCC between 1897 and 1902. Millbank was the first Estate built by the Council under Part III of the 1890 Housing Act. Part III of the Act established another important principle: it allowed a local authority to build additional housing intended to meet a general need for working-class housing in its area. While this measure could be employed to provide a genuine increase in working-class housing, it also offered local authorities a way of building new housing without the obligation to rehouse a specified number of people, as happened with slum clearance schemes. In other words, it allowed a local authority to undertake

Plate 8. The Boundary Street Estate, Bethnal Green, built by the London County Council, 1893–1900. View taken in 1903, looking east across Arnold Circus with Chertsey Buildings (left) and Hurley Buildings (centre), both designed by Reginald Minton Taylor (Greater London Record Office copyright, neg no. 71/6819)

a housing programme without having to undertake any sort of accompanying slum clearance programme. To some extent, this is what happened in the case of the LCC.

COTTAGE ESTATES

In 1898 the controlling Progressives on the Council decided to undertake a series of major cottage estates on what were then virgin suburban sites, where land was plentiful and cheap, and from which the working classes could commute not only by cheap, subsidised workmen's trains, but also, by now, by municipally owned trams. The Council's first cottage estate was Totterdown Fields, Tooting (1903–11). The LCC quickly found that suitable sites were more likely to lie outside the administrative boundaries of the County of London, and in another significant development the Council successfully lobbied to get provision in the Housing of the Working Classes Act of 1900 for local authorities to purchase and develop land outside their areas. This allowed the White Hart Lane Estate, Tottenham to be developed (1904–15) partly over the County of London border, while the Norbury Estate, near Croydon (1906–10) was the first LCC estate to be built wholly outside the county. When the Moderates (that is to say the Conservatives) won power on the LCC in 1907, they quickly stopped LCC inner-city housing for replacing slums, and concentrated entirely on suburban cottage estates, the other major one being Old Oak at Acton (1912–13).[58] Indeed, from 1907 until after the First World War the LCC built no block dwellings anywhere in London.

Plate 9. Nos 1–84 Flaxman Terrace and lodge (in foreground), designed by Joseph and Smithem for St Pancras Metropolitan Borough Council, 1907–8 (photo by Sid Barker, RCHME copyright, neg no. BB96/728)

Undoubtedly the construction of these cottage estates was in many ways an enlightened policy and enjoyed considerable popular support. Nevertheless, it ignored the necessity for many of the working classes to remain domiciled in the central parts of London. Indeed, this necessity very largely explains why the other philanthropic housing agencies had not, in the later 19th century, followed the example of the Metropolitan Association for Improving the Dwellings of the Industrious Classes, and the Artizans', Labourers', and General Dwellings Company, in building suburban cottage estates. The estates of the latter have already been mentioned, while the former, after building two groups of cottage-flats in Mile End New Town (Albert Cottages, Albert Street, completed 1858, and Victoria Cottages, Spicer Street, completed 1864), then erected Alexandra Cottages (genuine semi-detached dwellings) at Beckenham, Kent, in the later 1860s.[59] Interestingly, the Peabody Trust, no doubt influenced by the LCC, began to build some suburban cottages. At Rosendale Road, Norwood, in south London, the Trust, having erected blocks of flats in 1901, then added 82 cottages in 1905 and a further 64 in 1907–8.[60] Following even more closely in the LCC's footsteps, the Peabody Trust also built cottages in Lordship Lane, Tottenham, in 1907, immediately adjacent to the White Hart Lane Estate (Pl 10).[61] However, the Trust, like the LCC, at first found it difficult to attract tenants to these suburban sites.[62]

The reasons why so many working-class families were tied to living in the central areas were highlighted in the 1885 report of the Royal Commission investigating the housing of the working classes.[63] Dock labourers, for instance,

Plate 10. Peabody Cottages, Lordship Lane, Tottenham, built 1907 (Greater London Record Office copyright, neg no. 76/6083)

always needed to be on hand at the docks since work was largely casual and given on a first come first employed basis. Similarly, costermongers and others were tied to established markets. Even many skilled craftsmen needed to live in particular areas, jewellers, for example, in the Hatton Garden locality, and so on. Women and children too also needed to be near suitable employment in order that their families could subsist, and many got work as charwomen or seamstresses, and certainly in the 1880s this sort of work could not be found in the suburbs. Conversely, while the upper classes remained in the central areas it was, as has been made clear, in their own interests to have a ready supply of servants of various types to hand.

Finally, the 1885 report pointed out the precarious and uncertain nature of the work and wages of the poorest classes, and concluded: 'Deeply involved in debt, they cannot move to a strange district where they are unknown and where they could not obtain credit'.[64]

Most of these arguments against suburban estates were equally valid up to 1914 and in some cases well beyond that time. For example, in Lambeth around 1910, it was found that working-class families stayed in squalid, overpriced premises rather than move out to the suburbs. The reason was that:

> They are in surroundings they know, and among people who know and respect them. Probably they have relatives near by who would not see them come to grief without making great efforts to help them. Should the man go into hospital or into the workhouse infirmary, extraordinary kindness to the wife and children will be shown by the most stand-off neighbours, in order to keep the little household together until he is well again. A family who have lived for years in one street are recognised up and down the length of that street as people to be helped in time of trouble.[65]

This, of course, undermines the LCC's contention that the problems of the poorest were not

financial, but moral, and strongly suggests the exact opposite – that their main problem was financial.

We also have to remember that the rents on the LCC's cottage estates were often more expensive than many working-class people were used to paying, on top of which, fares, however subsidised they might be, had to be added. Even in central areas, despite the Council's somewhat vague criterion that rents should not exceed 'those ruling in the neighbourhood', the Council's desire to build good quality housing while trying to obtain a profitable return, meant inevitably that LCC rents were higher than those previously obtaining.[66] Thus, in inner London, in the early 20th century, the Guinness Trust charged less for its flats than the LCC, although admittedly, as already noted, the Trust's accommodation was of a lower standard.[67]

TOWARDS SUBSIDISED COUNCIL HOUSING

In the early part of this century, land prices and building costs were rising, and borrowing rates were increasing, eroding any slender profits to be had from building working-class housing, by whatever agency. Well before the outbreak of the First World War, therefore, the rate of housebuilding had begun to decline, and the decline in new cheap homes was particularly drastic. To such an alarming extent that the Local Government Board began urging local authorities to build cheap dwellings, and by 1914, just before the outbreak of war, the Government was looking to local authorities to undertake a crash programme to produce 120,000 additional houses. Even the Conservative Party was now willing to contemplate the introduction of state housing subsidies. Politically, then, the LCC's housing policies were justified. By 1914 the Council, and a few other enlightened local authorities, had proved that they could provide better quality accommodation than the voluntary and philanthropic organisations; they could also provide a more comprehensive and cohesive programme than the various philanthropic groups; and they had teams of experienced architectural, technical, legal, and administrative staff.[68]

Yet only when state subsidies became available, and the principle of making some charge on the rates was established after the First World War, could the poorer local authorities in London at last build their own housing. That they were given the opportunity to do so was largely due to the shining example of the LCC and certain other like-minded authorities, such as Liverpool, who built upon, and to some extent reacted against the experience of the philanthropic housing agencies.

NOTES

[1] George Rosen 'Diseases, debility and death' in H J Dyos & M Wolff (eds) *The Victorian City, Images and Realities* 1973, vol 2, pp 626–8.

[2] For details of the Society and of Henry Roberts see James Stevens Curl *The Life and Work of Henry Roberts 1803–1876, Architect* 1983, and John Nelson Tarn *Five Per Cent Philanthropy: an account of housing in urban areas between 1840 and 1914* 1973.

[3] John Nelson Tarn *op cit* p 18.

[4] Octavia Hill *Homes of the London Poor* 1875, p 193.

[5] See John Nelson Tarn 'The Peabody Donation Trust: the role of a housing society in the nineteenth century' in *Victorian Studies* Sept 1966, pp 7–38; also John Nelson Tarn *Five Per Cent Philanthropy: An account of housing in urban areas between 1840 and 1914*, 1973, p 7–38. The Peabody archives are now in the Greater London Record Office, Acc 3445 (uncat), and include material on other philanthropic housing groups which the Peabody has assumed responsibility for, such as the Society for Improving the Condition of the Labouring Classes.

[6] Tarn *op cit* p 84; *Parliamentary Papers* 1884–5 XXX Minutes of Evidence pp 414–5.

[7] *Building News* 20 Nov 1863, pp 866–7; 27 Nov 1863, p 884.

[8] J E Connor & B J Critchley *Red Cliffs of Stepney* 1986, pp 24, 26, 30, 31, 32; The Artizans' & General Properties Company Ltd *Artizans Centenary 1867–1967* 1967, p 19; Noel Barwick 'The Guinness Trust' in *Housing Monthly* July 1977, p16; Tarn *op cit* pp 104–6.

[9] For Waterlow, the Mark Street scheme and the Improved Industrial Dwelllings Company see Tarn *op cit* pp 50–56: John Nelson Tarn 'The Improved Industrial Dwellings Company' in *Trans London Middlesex Archaeol Soc* 22 pt 1, 1968, pp 43–59.

[10] *Parliamentary Papers* 1884–5 XXX Minutes of Evidence p 425.

[11] John Nelson Tarn 'The Peabody Donation Trust: the Role of a Housing Society in the Nineteenth Century' in *Victorian Studies* Sept 1966, pp 19–20.

[12] John Nelson Tarn *Five Per Cent Philanthropy: An account of housing in urban areas between 1840 and 1914* 1973, p 93.

[13] The Artizans' & General Properties Company Ltd *Artizans Centenary 1867–1967* 1967 pp 9–17, 19–21; Tarn *op cit* pp 56–58; Erica McDonald & David J Smith *Artizans and Avenues: a history of the Queen's Park Estate* 1990 p 17.

[14] Stephen Porter (ed) *Survey of London, Vol XLIII: Poplar,*

Blackwall and the Isle of Dogs: The Parish of All Saints 1994 p 22.
[15] Richard Dennis 'The geography of Victorian values: philanthropic housing in London, 1840–1900' in *Journal of Historical Geography* 15 (1) 1989, pp 46–7
[16] Charles Booth (ed) *Labour and Life of the People* 2 1891, pp 242–4.
[17] Stephen Porter (ed) *Survey of London, Vol XLIII: Poplar, Blackwall and the Isle of Dogs: The Parish of All Saints* 1994, pp 22, 36.
[18] Dennis *op cit* p 46.
[19] *Parliamentary Papers* 1884–5 XXX Minutes of Evidence p 426.
[20] Dennis *op cit* p 51.
[21] F H W Sheppard (ed) *Survey of London: The Grosvenor Estate in Mayfair* Pt 1 (vol 39) 1977, pp 61, 100, 138–9, 142, pls 30c, 31a and b; Pt 2 (vol 40) 1980, pp 93–98.
[22] *Westminster Review* new series 65 (1) January 1884, p 150
[23] John Law (pseudonym of Margaret Harkness) *A City Girl* 1887, p 10.
[24] Maud Pember Reeves *Round About A Pound A Week* 1913, reprinted 1994, p 34.
[25] Beatrice Webb *The Diary of Beatrice Webb, Vol 1, 1873–1892* 1982, p 134.
[26] *Parliamentary Papers* 1884–5 XXX Report p 55.
[27] Erica McDonald & David J Smith *Artizans and Avenues: a history of the Queen's Park Estate* 1990 p 10.
[28] Connor & Critchley *op cit* p 25; Tarn *op cit* p 101.
[29] F H W Sheppard (ed) *Survey of London, Vol XXXVII: Northern Kensington* 1973, p 40.
[30] Isobel Watson 'The Buildings of James Hartnoll' in *Newsletter of the Camden History Society* 58 March 1980 (unpaginated); 'Five Per Cent Philanthropy' in *Camden History Review* 9 1981, p 8.
[31] Stephen Porter (ed) *Survey of London, Vol XLIII: Poplar, Blackwall and the Isle of Dogs: The Parish of All Saints* 1994, p 192.
[32] Richard Vladimir Steffel 'Housing for the Working Classes in the East End of London 1890–1907' 1969, pp 52–3 PhD thesis (Ohio State University – copy in Tower Hamlets Local History Library); Stephen Porter (ed) *Survey of London, Vol XLIII: Poplar, Blackwall and the Isle of Dogs: The Parish of All Saints* 1994, p 398.
[33] Jane Morton 'The 1890 Act and its aftermath – the era of the "model dwellings" in Stuart Lowe and David Hughes (eds) *A Century of Social Housing* 1991, p 16; see also *Parliamentary Papers* 1884–5 XXX Report pp 5, 40, and Minutes of Evidence p 23.
[34] *The Builder* 8 July 1865, pp 484–5.
[35] Isobel Watson 'Five Per Cent Philanthropy' in *Camden History Review* 9 1981, p 7.
[36] Tarn *op cit* pp 96–7.
[37] Quoted in Isobel Watson *op cit.* p7.
[38] *Fortnightly Review* Dec 1883, pp 767–8.
[39] [Arthur Hickmott] *Fabian Society Tract 76: Houses for the People* 1897, 2nd ed 1899, p 8.
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[41] *National Review* 2 Nov 1883, p 313.
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[43] LCC *Housing of the Working Classes in London* 1913, pp 26–7.
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[45] LCC *The Housing Question in London* 1900, pp 43, 47–8.
[46] *Fabian Tract 101: The House Famine and How to Relieve it* 1900, p 18.
[47] LCC *Housing of the Working Classes* 1913, p 27.
[48] *Ibid* pp 158–9.
[49] J N Tarn *Working-class Housing in 19th-century Britain* 1971, p 21.
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[51] Charles Booth (ed) *Life and Labour of the People in London* First series Poverty vol 3 1902 ed, p 36.
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[53] Charles Booth *Life and Labour of the People in London* Third Series Religious Influences 2 1902, pp 68, 71–2
[54] J A Yelling *Slums and Slum Clearance in Victorian London* 1986, p 142.
[55] LCC *The Housing Question in London* 1900, pp 43, 47–8
[56] J N Tarn *op cit* pp 48, 50.
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[58] For an architectural assessment of the LCC's pre-1914 cottage estates, see Susan Beattie *op cit.*
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[60] F H W Sheppard (ed) *Survey of London Vol XXVI: The Parish of St Mary Lambeth* Pt 2 (Southern Area) 1956, p 185.
[61] Information from Christine Wagg of the Peabody Trust.
[62] Robert Thorne 'The White Hart Lane Estate: an LCC venture in suburban development' in *The London Journal* 12 (1) 1986, p 83; F H W Sheppard (ed) *The Survey of London Vol XXVI: The Parish of St Mary Lambeth* Pt 2 (Southern Area) 1956, p 185.
[63] *Parliamentary Papers* 1884–5 XXX Report p 18.
[64] *Ibid* p 15.
[65] Maud Pember Reeves *Round About A Pound A Week* 1913, reprinted 1994, p 39.
[66] LCC *Housing of the Working Classes* 1913, p 28.
[67] Jane Morton 'The 1890 Act and its aftermath – the era of the "model dwellings" in Stuart Lowe and

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[68] *Ibid* pp 27–30.

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BANISHING LONDON'S SLUMS: THE INTER WAR COTTAGE ESTATES

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SUMMARY

Although the cottage estates were not a direct attack on slum conditions, this article makes a case for conceding them an important role in banishing London's slums. This was not their unique purpose, and varying policies and attitudes to the estates are first considered. These are then related to their built form and social character. In particular, there is an analysis of tenant composition in the mid 1930s from LCC records.

During the whole of the inter-war period, the London County Council (LCC) divided its property into 'cottage estates' and 'block dwelling' estates. This distinction had its origins before 1914, and referred not only to the obvious difference in built form but also to the fact that the two types reflected different housing policies and programmes. Broadly speaking, the block dwelling estates were related to obligations placed on local authorities to provide dwellings in place of those demolished for slum clearance or street improvements. The cottage estates, by contrast, were intended to relieve the housing shortage and reduce rents and overcrowding. They brought municipal housing more directly into competition with ordinary private building. The distinction between the two types of estate widened, if anything, in the inter-war period because whereas the cottage estates mainly retained their original function, the block estates were increasingly used, as they had not been previously, directly to rehouse tenants displaced by slum clearance. It is a distinction peculiar to the LCC because in provincial cities displaced slum tenants were mostly rehoused not through rebuilding on site or nearby, but through cottage estates on the periphery.

This article concentrates almost exclusively on the LCC cottage estates, because they are the best researched, and because they have this general unity of character which, I hope to show, can be related to the purpose of banishing London's slums. They were, not of course the only local authority cottage estates built in London at this time. In Greater London as a whole, council housing accounted for just under 20% of all dwellings built between the wars. This proportion was lower than in other regions of the country and relatively low in relation to London's housing needs (Bowley 1945). In turn, the LCC built about half of council housing, with the remainder roughly divided between Metropolitan Boroughs (one third) and outer authorities (two thirds). By the end of March 1938 the LCC had produced 76,784 dwellings, of which 57,375 were on cottage estates.[1]

THE ORIGINS AND ROLE OF THE COTTAGE ESTATES

The cottage estates had been born around the turn of the century in great political controversy. Although the houses built then were not subsidised, they raised deep fears about how a working class electorate might use its political power. More immediately, the cottage estates had been directly associated with the division between the parties over the 'land question'. Prominent land reformers, many associated with

the Progressive Party which controlled the LCC until 1907, held that high rents and overcrowding in central London were the product of a form of 'land monopoly' which municipal building on the outskirts could help to break down. For the first time, the main political parties nationally as well as locally began to formulate distinctive programmes. The Unionist response, put forward in 1910 by Sir Arthur Griffith-Boscawen, who was also then chairman of the LCC Housing Committee, was to designate 'normal' housing as a private sector activity, while confining municipal activity to slum clearance and rebuilding, supported if necessary by limited state subsidies (Yelling 1992).

These divisions were essentially to remain intact in the 1920s, and they clearly relate to the question of how the cottage estates can be regarded as contributing to banishing London's slums. It depends evidently on how the slum problem is conceived. Arguments in favour of the cottage estates in this respect are that overcrowding and multi-occupation are equally part of the slum problem, particularly in London; that no sensible direct action can be taken in the centre unless the housing shortage is first removed; and that houses and estates needed to be designed to standards which would themselves be resistant to deterioration. It is noticeable that Addison, the former Minister of Health, writing in 1922 when 'homes for heroes' had been abandoned, called his book on the demise of his programme *The Betrayal of the Slums*. He did this despite the fact that his houses were undoubtedly lived in by the wealthier part of the working class. Between the wars the only practical alternative for municipal action was seen to be slum clearance and rebuilding. However, before 1914 few of the people displaced by such clearance had been rehoused by the Council, and reaction against the effects of clearance had formed part of the rationale for switching municipal activity to building the cottage estates. By the 1930s when larger subsidies and other factors made direct rehousing in block dwellings possible for most displaced tenants, it was less easy to reject slum clearance. Arguably, however, this development would never have occurred had the cottage estates not ratcheted up public housing to a new high level, requiring those who favoured an alternative policy to improve its results. Moreover, a strong case could still be made for the idea that dispersion to relieve pressure on the centre was still required if more successful outcomes were to be achieved through direct methods. This was, after all, the message of Forshaw and Abercrombie's *County of London Plan* (1943).

The general pattern of national policy between the wars is now well-known, and need only be briefly recalled here. The 'homes for heroes' campaign was launched in November 1918, and brought into being by the Addison programme which followed the Housing and Town Planning Act 1919. A government housing programme, effected through the local authorities, was to produce half a million houses on new improved lines suggested by the Tudor Walters Committee. This had advocated larger and better-appointed houses and drew on pre-war garden suburb models to support lower-density settings at 12 houses to the acre. The new cottage estates were meant to symbolise a national spirit of reconciliation and reconstruction, and to ward off threats of working class political action (Swenarton 1981). Instead, inflationary pressures, and subsequent deflationary policies, brought the programme to an end in 1921. It was revived in more modest form, mainly by the Wheatley Act of 1924, passed by the short-lived Labour minority government, and the subsequent period of *modus vivendi* between the parties, in which building was allowed to continue under this Act, was the most important as far as the cottage estates were concerned. They were cut back from 1928, briefly revived by the Labour Government of 1929, and then cut back more severely by the financial crisis and the National Government. With housing completions lagging one to two years these events explain the peaks of council output in Greater London in 1922, 1927–8 and 1931. From 1933 general housing subsidies were removed, and although building continued for the completion of estates, there was little new impetus from national legislation, with the partial exception of the overcrowding provisions of the 1935 Housing Act.

This chronology means that when the Labour Party took over the LCC in 1934, the bulk of the cottage estate programme was already over. They tried to continue it, initially with some success, but less so as costs rose after 1937. As a result LCC cottage estates were mainly produced by a Municipal Reform (Conservative) Council which was in principle opposed to this kind of enterprise. In more detail, however, one can recognise three distinct stages in terms of their approach to cottage estates. The first coincides

with the Addison programme. The Council had been extremely reluctant to go along with the wishes of the Coalition Government. Initially, they were only prepared, in return for government subsidies, to embark on a small seven year programme of 'spending £3.5m in clearing ... insanitary areas and erecting dwellings in place.'[2] This produced a clash with the government, which through political pressure and manipulation of the subsidy system eventually persuaded the Council into a five year scheme consisting mainly of cottage estates and costed at £30m. Even so, LCC housing under the Addison programme was slow off the mark, and it was at this stage at the start of the 1920s that the cottage estates of London boroughs and outer authorities achieved their greatest relative importance.

The main stage of the LCC cottage estate programme came in the period when Col Levita was Chairman of the Housing Committee between 1922 and 1928. In theory, Levita held to all the tenets that caused his party to be hostile to such housing. He believed that 'ultimately the economic law of supply and demand must fix rents', that 'nothing should be done to hamper the production of houses for sale by the private builder'; that council dwellings were 'a potential corruption of municipal politics' and that 'the solution would lie in the compulsory vesting of completed municipal cottages in selected trustees' (Levita 1928). He would dearly have loved to have produced a more effective slum clearance and rebuilding programme. Faced by difficulties in this direction, however, and by the opportunities opened up by the Wheatley Act, and the Conservative government's acceptance of it, he was pragmatic enough to embrace the cottage estate as the main element of the Council's housing activities. Levita, moreover, concerned himself not just with general policy but with all the stages of the production of houses. This drew him close to the LCC officials who were responsible for the programme, and there is no doubt that he took pride in the outcome of their combined efforts. He was annoyed at what he considered partisan criticism of the estates, and reposted:

> The LCC develops its estates well, whereas private enterprise in the past, and some municipalities, have given endless repitition of commonplace design. ... note the variety and charm of the layout, the preservation of natural features and country environment (Levita 1928, 20).

The subsequent Chairman of the Housing Committee, H. R. Selley, was a less patrician figure than Levita and more closely connected with property interests. He took the stance that 'municipalities should erect homes for those of low-earning capacity and many whose families had to be assisted by the poor law.'[3] While houses in the Wheatley programme were already smaller in size than the Addison houses, cost cutting now began to bite more severely. Various types of cheaper dwellings were introduced, on the cottage estates 'simplified types' with passages ommited, the bath in the scullery and toilets downstairs. In 1932 there was even some mention of reverting to outside toilets. It is true that these developments followed national trends, but the LCC seemed particularly keen on the reductions. Possibly this more definite movement away from the concept of 'homes for heroes' may have helped the Labour Party to gain control of the Council in 1934, although the main Labour emphasis was on a more vigorous slum clearance drive. This emphasis, however, was not to preclude the building of cottage estates, and in 1935 a new round of land purchases for cottage estates began and output briefly revived in 1937, but it could not be sustained. Nonetheless, a cottage estate tradition was maintained, and land bought at this time also contributed to early development after the Second World War. The various inter-war cottage estates are set out in Table 1 and Fig 1.

LOCATION, SCALE AND BUILT FORM

One of the notable features of the LCC cottage estates is their very large scale, and the degree of concentration of the stock into a few estates. Economies of scale in building and management were required to keep costs down. However, such a pattern was also an easy way for a council to discharge its housing function, particularly a council operating at a distance. As this form of housing was never established in policy with any permanency, programmes were suddenly announced and valuers had rapidly to purchase land to meet them. Patricia Garside thought that political opposition to LCC estates from local sources caused the Council to concentrate on a limited number of sites, and this oposition was then reinforced by the knowledge that any LCC development was likely to be on a massive scale (Young & Garside 1981, 173–218).

Table 1. LCC Cottage Estates 1918–1939

Estate Name	Area (acres)	No. of dwellings[1]	Population 1938[2]
Pre 1914 Estates[3]			
Norbury	11	218	867
Old Oak	32	736	3519
Totterdown Fields	39	1262	—
White Hart Lane	98	783	5936
Estates 1919–1923			
Becontree	2770	2589	115652
Bellingham	252	2673	12004
Castelnau	51	644	2851
Roehampton	147	1212	5383
Estates 1924–1933			
Downham	600	7096	30032
Mottingham	202	2337	9009
St. Helier	825	9068	39877
Watling	386	4034	19110
Wormholt	68	783	4078
Estates 1934–1939			
Chingford	217	1540	—
Hanwell	140	1587	6732
Headstone Lane	142	n.a.	—
Kenmore Park	58	654	2078
Thornhill	21	380	1598
Whitefoot Lane	49	n.a.	—

NOTES: 1. Estimated number on completion, including extensions before 1939; 2. Estimated numbers on inter-war development only; 3. Estate dates are those when land was purchased, and normally when building began. Mottingham was not begun until 1935.

In any event, the immediate consideration of making housing land available was paramount. There was little detailed consideration of how development should be related to other property. The best that could be done was to pay some attention to public transport possibilities and to general location in the various sectors of London, so as not to exhaust the market. Much of the land on which the cottage estates were built was purchased in a few short bursts, notably in 1919–1920 and in 1924–5. In the former period the LCC bought land at Bellingham (Lewisham), Roehampton (Wandsworth) and above all 2,770 acres at Becontree in Essex (Fig 2). Even by 1938, when other estates had been completed, Becontree's population of over 115,000 made up 44% of those housed on the cottage estates. In 1924–5 land was purchased for three other large estates — St Helier (Morden), Downham (Lewisham) and Watling (Hendon), which when completed provided jointly for some 89,000 people or another 34% of the cottage estate population.

In their housing composition and built form, individual estates naturally reflect the conditions of their particular period of development, and in the case of the largest estates, different phases of development. The earliest developments contain the larger houses, while later there are more smaller houses and cottage flats. At St Helier 31% of the houses were of the simplified type mentioned earlier. This naturally has some effect on built form, often producing longer terraced blocks, but nonetheless it is I think right to stress the overall similarity of design and layout on these estates. The provision of much open space, often in small patches, is a feature of their planned design, but also in some cases owes a little to economics. In practice, many houses were built at Downham, St Helier and elsewhere at 15 to the acre, and the overall average brought down to 12 by leaving patches of open space. This economised on site infrastructure costs. General reaction to the style of the estates still tends to depend a good deal on the resonances of 'private' and 'council' housing. Oliver and others in their book *Dunroamin* (1981) have gone out of their way to contrast the style of these estates with those of contemporary private development, arguing in effect that the one is imposed by experts, and the other the natural choice of the people. This, however, seems to me to ignore the way in which such opinions are shaped by culture and politics, not least in the 1980s when this book was written.

THE TENANTS

Information on the population of these estates is not as complete as one would like. However, some data on a sample of cottage estate tenants was collected by Llewellyn-Smith as part of the *New Survey of London* (1929–31) and results from this were also used in Terence Young's study of *Becontree* (1934). Some of these figures may be compared with those available in LCC records of the period 1935–8 which provide data on about 4–5,000 'ordinary tenants', the great bulk of which were moved to vacant lettings on cottage estates.[4]

The *New Survey* found that at the end of the 1920s the 'chief earner' on a cottage estate had a median wage of £3 15*s*. At Becontree, 9% earned over £5, and thus would be placed in the

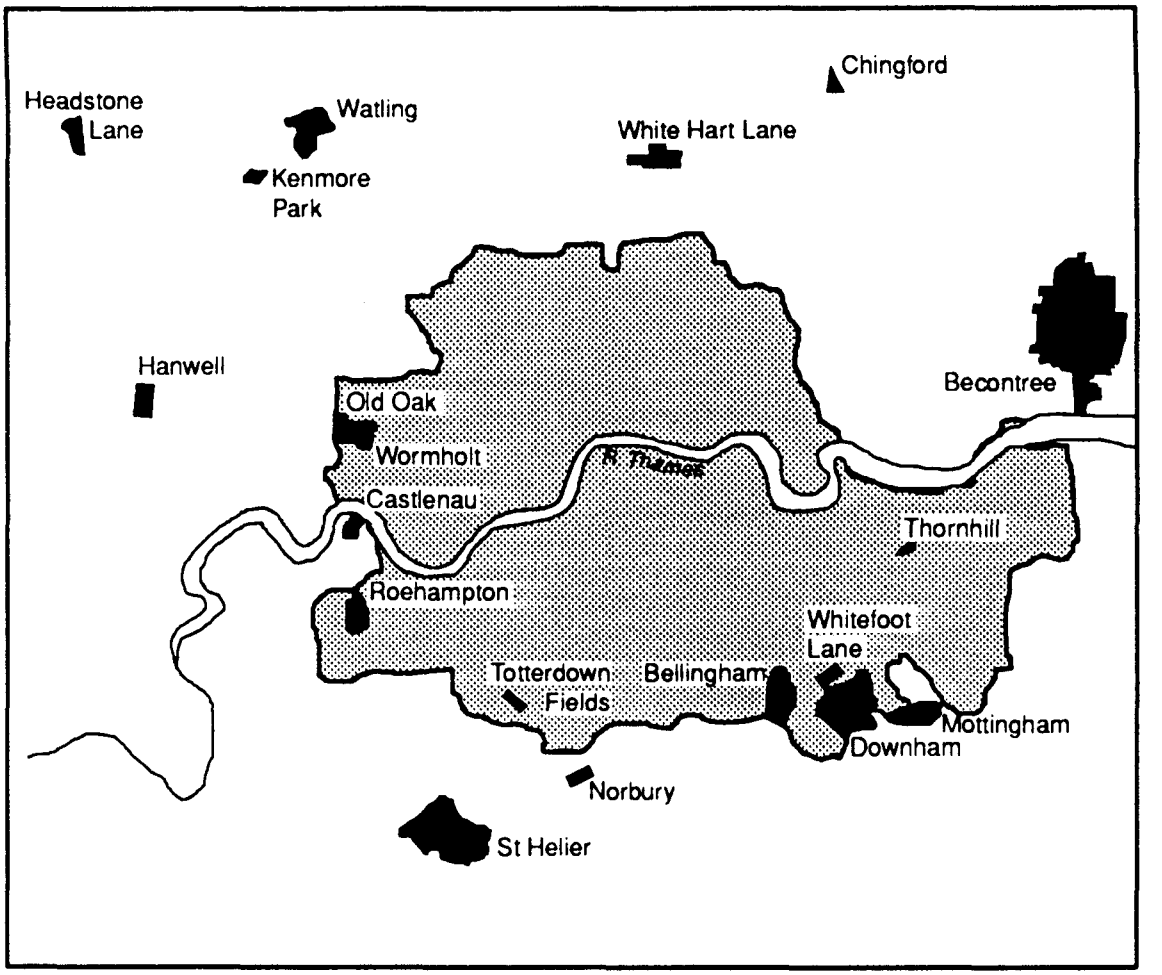

Fig 1. LCC Cottage Estates 1918–1939 (based on figures in Young & Garside, 1982)

'middle class' category of the Survey; 31% earned over £4 and under £5, and 50% between £3 and £4. Together at 81% these groups fell into the 'skilled' category of the Survey, in which 43% of the County population was placed. The other categories were 'unskilled' (£3–4) in which 9% at Becontree and 28% in the County were placed, and 'poor', below £2, with respectively 1% and 10%. This was therefore a skilled population, but with half falling into the lower part of that category. Young decribes them as 'manual workers possessing some element of skill in a trade and ... a small but substantial minority with skilled jobs' (Young 1934, 120). At this time the median wage of the chief earner on block estates was just over £3. The cottage estate population had fewer earners per family, consisting mainly of younger families with children.

However, the *New Survey* also revealed two other features. First, there was the surprise that prior to moving the cottage estate families had lived at a higher number of persons per room (1.92) than those moving to block estates. Young reports that 58% of Becontree families in the sample had been overcrowded according to the standard of Charles Booth in the 1890s (two or more persons per room). Sixty per cent of families had lived, prior to moving, in one or two rooms. Their overcrowding was related to the number of children, but also to the fact that in this period of housing shortage poorer (and particularly older familes) were protected by rent control. Even comparatively high earners among

Fig 2. Becontree: Junction of Porters Avenue and Markgate Road, June 1933 (Greater London Record Office photo collection)

new families therefore had to seek their accommodation elsewhere. The other feature was that the inhabitants of cottage estates were drawn from much the same parts of London as the block estate dwellers. Inner London was far more heavily represented than might have been expected. Reviewing these matters, Llewellyn-Smith concluded:

> The cottage estates appear to be vindicated as an essential element in the solution of the housing problem. They have provided an outlet for numerous families who, while ready and able to afford better homes at a distance, had hitherto been condemned by the shortage to live under conditions of serious congestion (Llewellyn-Smith 1931–5, 215).

Analysis of the 'ordinary tenant' data from the 1930s reveals one important change in the pattern. The mean wage of the chief earner in 1938 was £3 5*s*. While this cannot be directly compared with the median wage of £3 15*s* reported by Smith, there can be little doubt that over the period the new clientele on the estates had been pushed down the income scale. This was an expected development, as the housing shortage eased, but also a product of the policy of concentrating on cheaper houses, and one of the advantages of lower rents. The cost of making the jump to suburban housing had been relatively reduced. At about 20% of the chief wage earner's income, rents in the new dwellings were now a smaller advance on the rents in the old. This reflected also a reduction in overcrowding in the old dwellings so that fewer extra rooms had to be purchased. Even so, tenants in 1935 had previously lived at 1.47 persons per room and 1.34 in 1938, and, even in the new dwellings, lived at 1.13. Between 35 and 39% were drawn from the East End [5] and the LCC attempted to persuade tenants in block estates to move out in order to free accommodation in the centre for slum clearance tenants. Another factor was the lowering of costs of private housing in the 1930s, when the owner-occupied market undertook part

of the clientele from cottage estates. Also an unknown portion of new tenants came from the special provisions for relief of overcrowding, and there was always a small number from clearance schemes. Ruth Durant (Glass) in her study of *Watling* (1939) found that the comparative air of prosperity was due to the 44% of families that were still relatively small. As these families grew in size they became less prosperous, and she concluded that 'the standard of living of at least half of the Watling population, though not extremely poor, is rather precarious' (Durant 1939, 7).

Both Durant and Young draw attention to unemployment on the estates, which in view of the prevailing economic conditions of the time, could hardly be avoided. Young also discusses the way in which families, in order to afford the new accommodation and associated extra expenses, were forced to cut back on their food. Although families moved voluntarily to these estates, they did so within constraints of housing shortage and social expectations. Reactions to the new conditions were mixed, and sometimes a cause of dissent within families. So much is clear from the memoirs which Age Exchange produced in their publication *Just Like the Country* (1991). Not everyone liked the low densities, or the comparative lack of services. There was an element of choice involved when some returned to the city, but nonetheless these returnees were drawn predominantly from the lower paid. Yet, the alternative method of housing improvement through slum clearance involved a more definite compulsion, affected old people as well as young, and involved equal problems with rents among a poorer population.

Initially, these estates were conceived as dormitory areas, and a high proportion of tenants worked in central London. They varied considerably in respect of the provision of adequate transport. Tube extensions to Hendon and Morden were directly related to the location of the Watling and St Helier estates. Parts of Becontree, however, were according to Young relatively poorly served by public transport in the 1920s, although the situation was later eased by the extension of the District Line. Nonetheless, even from the beginning there was some local employment in building itself and transport. Later several estates, including Watling, found themselves in districts where there was a considerable growth of suburban factories. The availability of local industry had an important effect on who could afford to live on the estates, because larger and poorer families generally depended on more than one income.

Cottage estates commonly lay on the edge of existing centres, and many of the largest were divided between different local authorities. This was notoriously the case at Becontree, which lay in Ilford and Barking, and eventually Dagenham UDC, created in 1926. It began from several different points, and only became joined together as building developed. Considered as units on their own, these estates may be regarded as over-uniform, both in physical appearance and in class structure, and as lacking in amenities. Becontree is as large as a post-war new town, and in that sense it lacks both the physical grouping around a centre and the rather wider social composition of these later creations. Viewed as part of wider communities, however, the cottage estates add to the physical and social diversity of the districts in which they are situated, and their reliance on neighbouring centres for higher order services is no different from that of other estates. That we do tend to think of them as something self-contained is partly due to the way in which, during the Second World War, all suburban areas were compared unfavourably with the ideal of new towns. But it is also because municipal housing has never become accepted as a normal feature. Both nationally and locally the cottage estates were subject to a good deal of resentment. In another way, however, that was an indication of their success.

NOTES

[1] Statistics here and later in the article are drawn from LCC *London Housing Statistics.*

[2] LCC Housing Committee Presented Papers 10 July (8) 1918

[3] Quoted in *Estates Gazette* 109, 1927, 331

[4] LCC Housing Committee Presented Papers Quaterly Lettings Returns 1935–1938

[5] The former metropolitan boroughs of Bethnal Green, Bermondsey, Finsbury, Poplar, Shoreditch, Stepney and Southwark

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