ERMINE STREET AND ST ETHELBURGA: OBSERVATIONS AT BISHOPSGATE IN THE CITY OF LONDON

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SUMMARY

Following the detonation, in April 1993, of an explosive device in Bishopsgate in the City of London, Roman stratigraphy was recorded in the resultant crater in the road. Subsequently, two nearby test-pits produced archaeological material. Natural brickearth at 12.5m OD was cut by a north-south orientated ditch, probably with a drainage or boundary function. On its west side were three clusters of large stake-holes which may represent a make-shift bridge crossing the ditch, which was backfilled in the Flavian period.

Some time after AD *70 a wall was constructed on the eastern side of a substantial gravel surface which is interpreted as the main road to Lincoln and the north, later known as Ermine Street. This wall was seen only in the bomb crater, but a sequence of* opus signinum *floors seen in a test-pit to the south may be associated with it. After* AD *120 a massive ragstone foundation was constructed on the same alignment, supporting the frontage of a substantial building set back from the road; this probably replaced the earlier building, although the road did not widen correspondingly, and the foundation of the post-Flavian wall may have been retained for a colonnade.*

A sequence of poor-quality mortar surfaces on both sides of the post-Hadrianic wall was sealed by a 'dark-earth' deposit, which was in turn sealed by a roughly metalled road. This was laid against the west face of the surviving Roman wall, probably in the post-Alfredian period; the wall was comprehensively robbed out some time after AD *1150. To the east of the wall the 'dark-earth' deposit was sealed by graveyard soils which had been deposited prior to the re-building of St Ethelburga's Church in the last decade of the 14th century. The west wall of the church, constructed from a ground level 1.3m below the present-day level, was observed in a header trench at the north end of the larger test pit. The upper horizon of graveyard soil, post-dating the church re-build, contained two heavily truncated inhumations located between the church and the Bishopsgate street; these must pre-date the early 16th-century when shops were built against the church wall.*

INTRODUCTION

The observations recorded in this article followed directly and indirectly from the detonation, on the morning of 24th April 1993, of a massive explosive device in a lorry parked outside St Ethelburga's church, on the east side of Bishopsgate in the City of London.

Archaeological recording subsequently took place on three separate occasions. Soon after the blast, archaeologists from the Museum of London Archaeology Service (MoLAS) were permitted access to the crater in the road which it had caused. In the circumstances there was no opportunity for excavation of the archaeological deposits, and it was merely a question of recording what had been so unexpectedly exposed.

The next opportunity for archaeological recording came with the digging of test pits (Fig 1) against the foundations of the buildings which had caught the main force of the explosion, principally Hasilwood House, directly south of

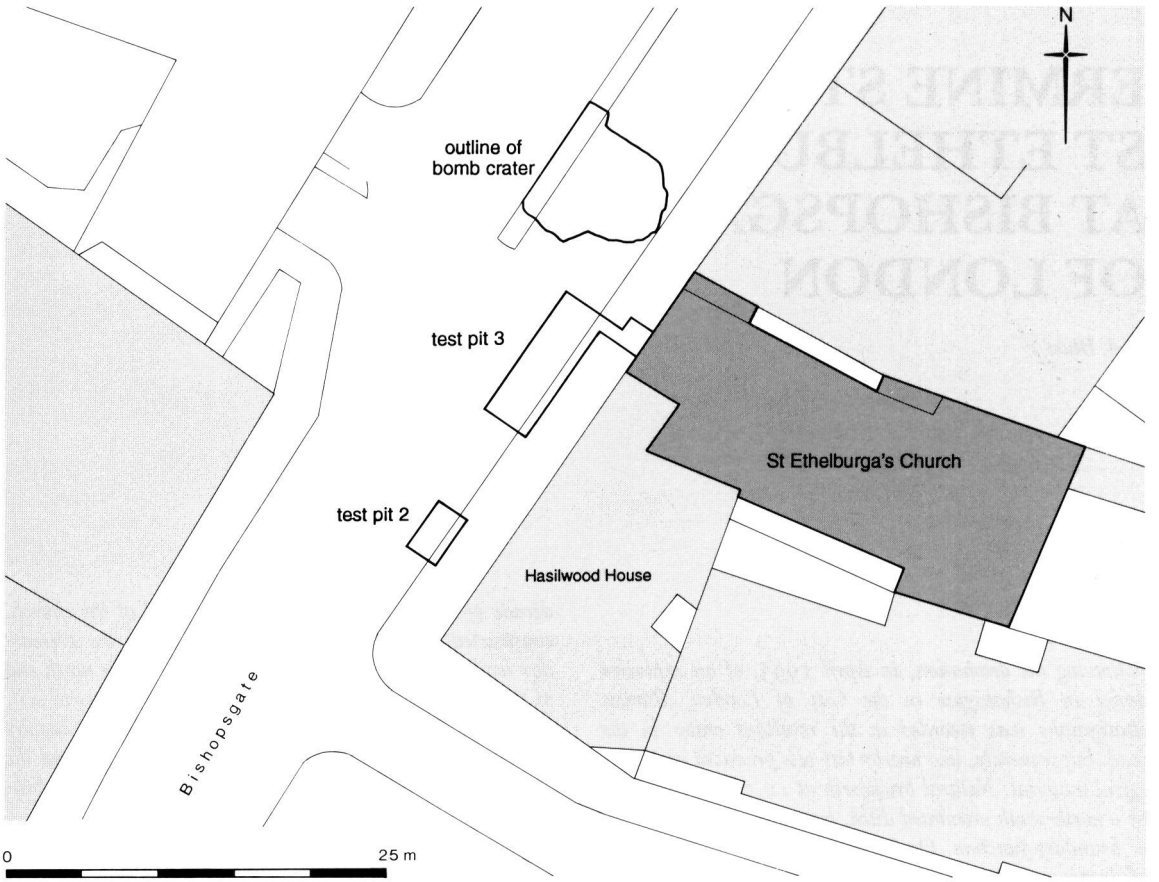

Fig 1. Location of bomb crater and Test Pits 2 and 3

St Ethelburga's Church. These test pits were dug at the behest of the insurance loss assessors in order to determine whether the foundations had been damaged by the blast, and whether the building could be refurbished or would have to be demolished.

Two of these test pits (TP2 and TP3) produced archaeological data. TP2 measured 3.5m × 2m, and was excavated by contractors in April 1994. Archaeological input was on a watching-brief basis, and recording was confined to drawing the north- and south-facing sections.

The southern end of TP3 was located 6.6m north of the northern end of TP2. It measured 9m north-south by 3m east-west and straddled the boundary between St Ethelburga's church and Hasilwood House, the deep basement walls of which formed the eastern limit of the trench. Modern overburden, including backfilled 19th-century cellars on the eastern side of the trench, was removed by contractors.

At the end of September 1994 MoLAS archaeologists were given access to the trench, and controlled excavation by hand proceeded until the beginning of November, when natural deposits were reached. Then, at the northern end of the test pit, a trench was excavated returning to the east, under the pavement, until the foundations of St Ethelburga's church were reached. This so-called 'header' trench, which reached a maximum width of 1.5m, was excavated by the contractors, so once more archaeological recording was on a watching-brief basis only. It was originally intended to go to the full depth of the Hasilwood House foundations, but in the event excavation of this header trench ceased at 13.45m OD, 2.3m below the present-day road surface.

The archaeological records derived from the above projects have been reported in two unpublished MoLAS reports (Lakin 1994 and Bluer 1995). The first of these dealt with

observations in the bomb crater (hereafter known as the Crater) and TP2, and the second with TP3. In the first report interpretation was presented in terms of context numbers only (given here in square brackets *eg* [36]), whereas in the second the context sequence from TP3 was analysed into Groups (*eg* G2) and sub-groups (*eg* 2.1). In order to maintain consistency with these earlier reports, this disparity of presentation will be followed here. It should also be noted that compass points in this article refer to the trenches – trench north is very slightly north of Ordnance Survey north-east.

OBSERVATIONS IN THE CRATER

The earliest deposit observed in the Crater, seen as low as 13.05m OD, was a make-up dump of re-deposited brickearth [1]. In the north-facing section (Fig 2) this was sealed at 13.4m OD by 0.65m depth of compacted orange-brown gravels [2], [3], [4]. In the south-facing section the same horizon was represented by similar gravel deposits (though with a higher proportion of clay and brickearth), observed as high as 14.65m OD, where they were truncated by modern service trenches.

There can be little doubt that these compacted gravel deposits represent the main road northwards from the eastern hill of the Roman settlement. This road was one of the main communication arteries of the Roman province, connecting *Londinium* to *Lindum* (Lincoln) and *Eboracum* (York). In the post-Roman period it became known as Ermine Street, after the Earningas, a small tribe of Anglo-Saxons who settled beside the road in what is now southern Cambridgeshire (Blair 1969, 50). Alternatively, the name may be derived from the Saxon hero Arminus.

Since opportunities to excavate below the road system of modern London are quite rare, the exact course of the Roman road is not well known, and this observation provides an invaluable contribution to fixing its course. Evidence from recent observations at 28–32 Bishopsgate and at the junction of Bishopsgate and Camomile Street suggest that the intra-mural road aligns to the centre of both the first and second basilica/forum complex, both of late 1st-century date. When the City wall was built in about AD 200, the position at which the Ermine Street road pierced the wall was fixed by the gate through which it passed. This gate became known as Bishopsgate, since its upkeep was the

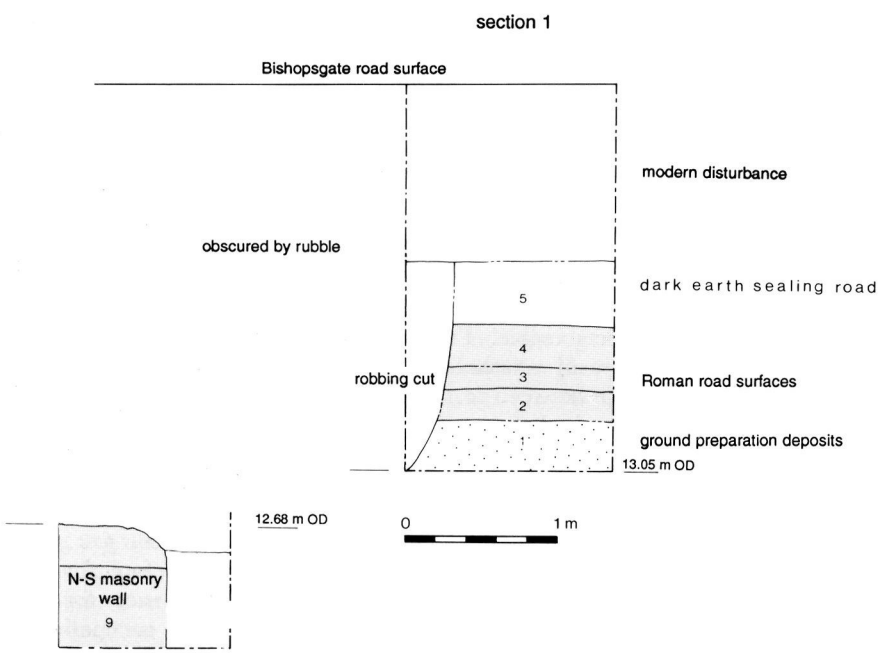

Fig 2. Composite north-facing cross-section across the crater

responsibility of the Bishops of London; this practice is believed to date back to the saintly bishop Erkenwald in the late 7th century. It may be assumed that as long as this gate provided a convenient passage through the standing City wall, it would have determined the course of the intra-mural thoroughfare.

Running along the eastern side of the Crater, on a north-south alignment, was a wall [9], *c.*0.7m wide and constructed of roughly coursed ragstone rubble and ceramic building material, bonded in a coarse light pink/orange mortar. It was truncated to the north but continued beyond the Crater to the south; only 1.95m length was observed. The wall was located on the eastern side of the road gravels noted above, and may be assumed to be the western wall of a building fronting onto the road, although no stratigraphic relationship between wall and road was observed.

The bottom of the road gravels was significantly higher than the top of the wall at 12.68m OD, implying that the latter was a foundation. Given the step-in at ground level which was the norm in Roman masonry architecture (Tony Thomas pers comm), the superstructure is unlikely to have exceeded 0.5m in width, which seems insufficient to support a very considerable load. It may be that the superstructure was timber-framed at ground or first-floor level. Ceramic building material recovered from the wall gave a date of AD 50–80, but this may of course have been residual. Indirect evidence (see below) suggests that this wall must post-date AD 70.

OBSERVATIONS IN THE TEST PITS

The orange-brown Pleistocene gravel was observed at the southern end of TP3, at 10.45m OD. It was capped by 2.05m depth of clean, light orange-brown brickearth (G1), with no inclusions, iron-panning or rootlets visible. This was sealed by two further layers of weathered brickearth with a single stake-hole between (2.1), sealed by deposits (2.2) with inclusions of occupational material such as charcoal and oyster shells.

There was also ceramic building material, mostly in the form of flanged *tegulae* made from fabric 2815, attributable to one of the numerous kilns which straddled Watling Street between London and *Verulamium* (Betts 1987, 26–8). The absence of *imbrex* (the other component of a tiled roof) from these deposits suggests that at this early stage the *tegula* was being used for purposes other than roofing, such as hearths or paving.

In TP2 these brickearth deposits were observed at a rather higher level, with the top of the natural material at 11.42m OD. It was sealed by weathered brickearths which had inclusions of charcoal flecks and evidence of root action. The top of this weathered horizon, at *c.*12.0m OD, was still substantially below the top of what was taken to be natural brickearth in TP3.

The obvious implication is a substantial upward slope of the terrain to the north, but this contradicts the flat surface of the G1 brickearth in TP3, as well as the present-day topography (which actually slopes slightly in the opposite direction). The possibility must be entertained that brickearths in TP2 were identified as cultural deposits when they were in fact natural, or vice-versa in TP3. Otherwise the levels of features in the two test-pits correspond well, so that it seems unlikely that a recording error was responsible for the difference in levels of the observations of the brickearth.

Early structural activity

Cutting the 2.2 deposits in TP3 were a pair of post-holes (2.3) on a north-south alignment, and a pair of slots (2.4) with an east-west long axis (Fig 3). These cut features established what was to become a remarkably persistent building line, and their alignment, as well as their symmetrical arrangement, suggests that they were part of a timber structure of some sort.

Post-dating the disuse of this ephemeral structure, and on the same alignment, was a row of 34 circular stakeholes at 200mm intervals (2.5). This clearly represented a fence, which ran the full length of the trench and was perhaps associated in some way with the gravel road seen in the Crater to the north-west. This fence rotted *in situ* and was replaced by a heavily compacted gravel surface (2.6) at *c.*12.9m OD. This might represent a localised widening of the road, although it was not very substantial (maximum depth 50mm).

A sherd of stamped samian ware from the 2.2 deposits gave a *terminus post quem* (*TPQ*) of AD 70. It may be said, therefore, that these investigations produced no evidence for pre-Boudiccan, or indeed pre-Flavian, occupation in this part of the City. The likelihood is that the area was not developed until the construction in AD 71

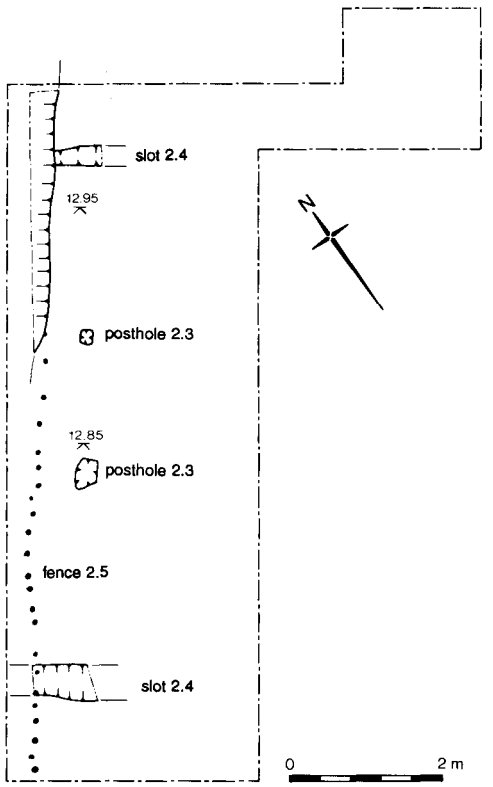

Fig 3. The G2 fence and cut features

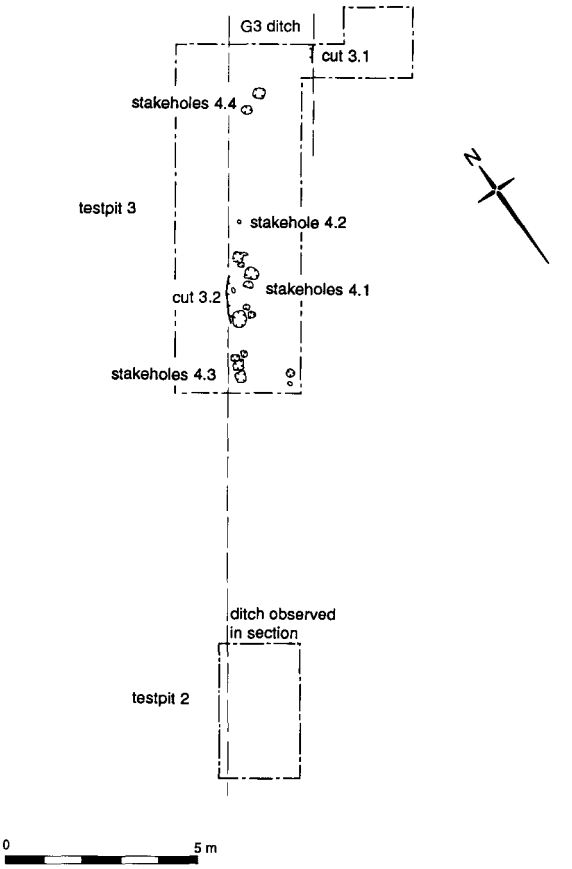

Fig 4. G3 ditch and G4 stake-holes

(Marsden, 1987, 4) of the first forum/basilica/temple complex. This is consistent with a 1932 observation of the road where it sealed occupation debris of the Flavian period (Merrifield, 1969, 44).

Ditch

Just to the east of, and parallel to, the G2 fence line, a heavily truncated linear cut feature (G3) was observed, again running the full length of TP3 (Fig 4). It was 2–2.5m wide and 1.4m deep, the gradient of the sides being vertical near the top and rounding out gradually to a flat base. This is not the profile of a typical Roman military ditch, and it is probable that the ditch was a more substantial replacement for the fence 2.5, with the function of delineating the eastern edge of the road.

The ditch was backfilled by a greenish-grey sandy silt with inclusions of occupational material and pottery, including an unusual sherd of Pompeian-redware plate, made in *Verulamium* between AD 70 and 100 and giving a post-Flavian date for the disuse of this feature. There was also a sherd of a bowl or plate, which had been made into a counter, in Fine Micaceous Grey ware (FMIC) with a complete stamp.

Thirty litres of the ditch fill were sampled and subjected to environmental analysis. The dominant component of the assemblage consisted of plants that grow in damp or marshy ground, including sedges (*Carex* spp.), spike-rush (*Eleocharis palustris/uniglumis*) and large numbers of seeds of rushes (*Juncus* spp.). Other taxa included arable weeds, for example, corn gromwell (*Lithospermum arvense*); weeds of arable, waste places and disturbed ground, *eg* wild mignonette (*Reseda lutea*); and plants of woods, scrub and hedgerows, which included elder (*Sambucus nigra*) and hemlock (*Conium maculatum*).

This small assemblage suggests that the ditch and perhaps the immediate environment may have been marshy (possibly due to the proximity of the easternmost feeder channel of the

Walbrook), while human activities are indicated by the plants of disturbed ground and the charred material, presumably blown, washed or deliberately deposited into the ditch.

Animal bones from the ditch fill were dominated by cattle (*Bos taurus*), sheep (*Ovis aries*), goat and pig (*Sus scrofa*), which contributed 26%, 40% and 23% respectively of the total weight. The sheep/goat bones showed butchery marks probably derived from splitting of the carcass and removal of the brain. All the bones were derived from adult animals; there were no indications of newborn, infant or juvenile individuals. The recovery of a wide spread of anatomical elements implies consumption of meat of a range of qualities plus, probably, disposal of primary butchery waste.

There was also a significant component of domestic poultry such as chicken (*Gallus gallus*) and wild game. The wild species: woodpigeon *(Columba palumbus)*, mallard (*Anas platyrhynchos*), teal (*Anas crecca*) and brown hare (*Lepus europaeus*) were all highly esteemed as food and could have been trapped or hunted for sale in London markets as indeed they all are today. It is likely that they would have been abundant on nearby agricultural land (woodpigeon, brown hare) and marshland (teal, mallard) close to the City. Woodpigeon and mallard are very capable of thriving in true urban conditions and could even be present as disposal of chance carcasses.

The sample also contained a vertebra of sole (*Solea solea*). This fish is widespread in north European waters and is very abundant in the outer Thames estuary (Wheeler 1979) where it represents an important and valuable food species usually taken by trawling. There is no reason to doubt that the bone represents post-consumption waste.

In TP2, both north- and south-facing sections showed a steep-sided cut feature [75] truncating the natural brickearths. The corresponding positions in the sequence, and the similarity of fill [74], permit a secure identification of this feature with the G3 ditch in TP3, giving it a length of at least 19 metres. Pottery was recovered with the same *tpq* as the TP3 observation, *ie* AD 70.

A possible bridge spanning the ditch

On the same north-south alignment as the G3 ditch was an assemblage of stakeholes (G4), 15 (4.1, 4.2, 4.3) in the southern half of the trench and a pair (4.4) near the northern end. They were very variable in character, some being square in plan, others circular or sub-circular; the side/diameter varied from 60 to 320mm, the depth from 90mm to 1.05m. The long axes were all vertical, and most of them had sides tapering to a sharp point. The loose compaction of the fills (which provided no useful dating evidence), and the absence of decayed wood, suggests that the stakes had been withdrawn rather than allowed to rot *in situ*.

These stakeholes were identified in natural brickearth at the bottom of a deep later intrusion, so the level from which the stakes were driven could not be directly inferred. It seems unlikely, however, that they were driven through up to 2 metres depth of heavily compacted brickearth, and they were almost certainly driven from the bottom of the G3 ditch.

These stakeholes were not in a linear arrangement, and are unlikely to have formed a fence or palisade; rather they were in three clusters, suggesting three stake positions which were replaced several times. Perhaps these stakeholes represent a make-shift bridge across the ditch, which required several phases of repair.

Demolition debris

Post-dating the early G2 activity was a small pit (5.1) whose fill included occupational material, and a (probable) beam-slot (5.2). These were sealed by dumps of brickearth and sandy silt (5.4), which provided a diverse and interesting range of finds, including iron nails and slag, stone and ceramic building material, painted wall-plaster (see Fig 5), and daub.

Most of the pottery from these dumps fell into the date-range AD 60–100, although the *TPQ* was AD 70. It included a burnt sherd of Local Mica-dusted ware (LOMI) with a worn but complete stamp on the underside of the base. The presence of two coarseware stamps in what is otherwise a small and generally unremarkable assemblage of Roman pottery from this site is unexpected.

There were also two colours of stone *tessera*, a white one made from clunch (a variety of chalk hard enough to be used as a building material) and a dark grey one of Wealden shale, as well as a cream/yellow-coloured ceramic *tessera* (fabric type 2454). *Tesserae* made from these two stone

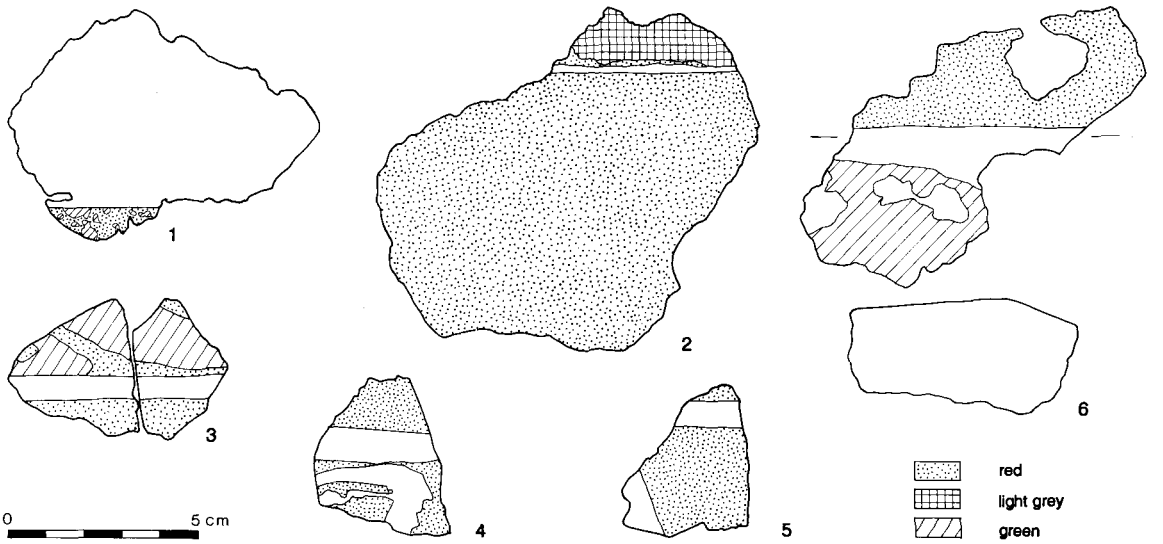

Fig 5. Fragments of painted wall-plaster from demolition dump 5.4 (Nos 1–5) and robbing backfill 9.1 (No.6)

types made up the majority of several fragments of mosaic pavement at Watling Court in the western part of the City (Perring & Roskams 1991, 88–94), which dated to AD 70–100.

The 5.4 dumps also contained a fragment of Purbeck marble with a smooth upper surface and a rough underside, its thickness of 24–26mm suggesting that it had been used as paving. This shelly limestone was imported to *Londinium* from the Upper Purbeck beds in Dorset before AD 70 (Pritchard 1986, 185), so this fragment in a late 1st-century dump must have derived from one of the earliest buildings in the City to employ this material.

A total of 21 fragments of wall plaster were also found in these dumps. The wall plaster appears to have come from different parts of the wall, perhaps even different rooms, but too little survived to reconstruct any decorative schemes. The plaster backing is white in colour and between 18–22mm in thickness. Much of the wall plaster surface is in poor condition but can be split into a number of groups.

i) plain red, probably part of a plain panel area.

ii) red dado (the lowest zone in a wall decoration) with green splashes (imitating marble wall veneer) bordering a white band (Fig 5, No.1).

iii) light grey bordering dark red (or what may have been originally black), possibly separated by the white band (Fig 5, No.2).

iv) greenish-blue bordering red separated by a white band (7mm). The dark red may have pink splashes which would indicate that it was part of a dado (Fig 5, No.3).

v) decorative fragment with white bands (7mm) on dark red. This too seems to have pink splashes and is presumably from the same wall as iv (Fig 5, No.4).

vi) decorative white lines on dark red (Fig 5, No.5).

vii) green bordering dark red (Fig 5, No.6).

The richness of this finds assemblage from these G5 dumps strongly indicates that they represent demolition debris from a high-status building in the vicinity. They collectively raised the ground level some 0.7m in preparation for the construction of the massive foundation of G6. In TP2 the equivalent deposits were a 220mm-deep dump of charcoal-flecked brickearth which sealed the G3 ditch, and acted as make-up for a beaten-earth surface [69].

A deep masonry foundation

A spread of heavily compacted off-white mortar (6.2) formed a construction spread on the western side of TP3. Its surface at 13.55m OD was the ground level at the time of the construction of a massive north-south orientated wall (6.3). This ran the full length of the trench on the same alignment as the fence 2.5 and the G3 ditch, heavily truncating the latter. The upper part of the cut was truncated on the eastern side by

modern cellars; on the western side it was vertical for a depth of 1.6m before stepping in 0.5m at a shallow gradient and then dropping vertically for another 0.75m. There was then a sharp break with a flat base, whose width ranged from 1m to 1.4m. The base rose slightly from south (10.9m OD) to north (11.2m OD), giving a maximum depth of 2.65m at the northern end of the trench.

It is quite feasible, incidentally, that the timber structure represented by the G4 stake-holes was in place right up to the excavation of this cut, and that some of the timbers may have been retained to act as shoring for this very deep cut.

The bottom of the cut was lined (Fig 6) with a thin layer of light yellowish-beige sandy mortar, over which was a loose layer of random uncoursed fragments of unworked Kentish rag, including some very large ones up to 600mm long. These had apparently been thrown unmortared into the trench to a depth of 0.6m. Kentish rag was the most common building stone used in Roman London, particularly for the construction of masonry buildings. It is a very hard grey coloured limestone quarried from Cretaceous Lower Greensand beds around Maidstone in Kent. These quarries were situated not far from the Eccles area of north-western Kent which supplied yellow and white tiles (fabric 2454) to London from AD 50–75/80; these tiles were also found on this site. Kentish rag is found interbedded with beds of a softer sandstone known as hassock, which was also brought into London. Both hassock and Kentish rag were used in the foundations of the G6 wall, as were chalk, brick and *tegula*.

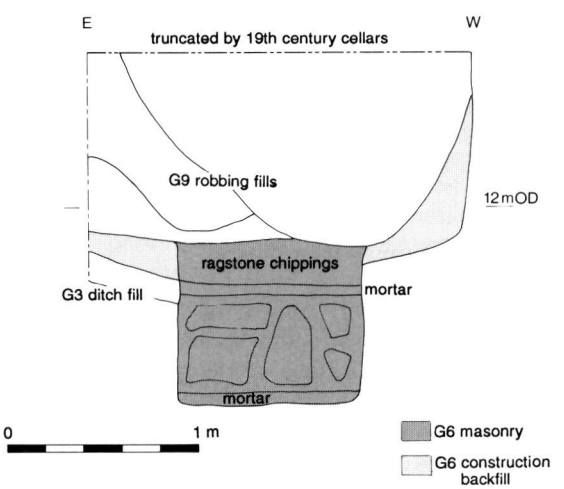

Fig 6. Cross-section of G6 foundations and construction backfill, showing different components

The lowest level of large undressed stones was sealed by a 50–70mm deep layer of light-beige sandy mortar, giving a flat surface at *c.*11.5m OD. Sealing this bedding layer in the central part of the trench was a layer of black silt, whose homogeneous and inclusion-free composition suggests that it was silting-up rather than trample, with the implication that the trench was open for a period at this stage.

Over this more unworked ragstone fragments had again been thrown into the trench to a maximum depth of 350mm. As well as three discrete areas of large stones, there were many smaller ones with sharp corners and resembling chippings from stone-dressing works. This might mean that the silting accumulated while the stone was being worked at ground level, with the waste material used as footings. To the north, where it had escaped truncation, this material stepped out to the east by at least 0.45m.

It was sealed with another 100mm depth of compacted mortar to bring the level up to a maximum of 11.8m OD; above this point there was a fill of silty yellowish mortar against the west side of the cut, which was interpreted as construction backfill. Its presence implies that the uppermost 1.8m of the foundation were of free-standing mortared masonry rather than dumped loose stones; certainly they were considered worthy of re-use as they had been comprehensively robbed (see G9 below).

In TP2, this substantial foundation was also observed to run the full length of the trench, although at the northern end all but 50mm depth had been robbed. To the south the construction of the foundation (Fig 8) was similar to that observed in TP3. The base was formed by 0.4m depth of unworked, unmortared stone rubble sealed by 0.13m depth of pale buff mortar [80]. This was sealed by 0.24m depth of what is described in the primary record as 'mixed cess and domestic refuse' [79], which is here interpreted as being equivalent to the silting observed at the same constructional stage in TP3. It is difficult to imagine the fastidious Roman civil engineer permitting the disposal of domestic rubbish in his wall foundations.

Whatever the source of the material, it was sealed by 0.12m of ragstone 'chippings' [78], in turn sealed by 0.13m depth of hard pale buff mortar with chalk flecks [76]. This may have been sealed by up to 0.55m of 'loose rubble' but

it was seen only under very poor conditions. With the exception of this latter, the construction sequence of the foundation was identical in both TP2 and TP3, although the depths of the components differed. It is suggested therefore that this massive masonry foundation ran the full 19 metres between the southern end of TP2 and the northern limit of TP3 (Fig 7).

Surfaces associated with the wall

Sealing the G5 dumps to the west of the foundation in TP3 was a sequence of surfaces – 6.4 was of soft off-white mortar cut by a post-hole 6.5 which was close to the foundation and was probably associated with work on the superstructure. This surface was superseded by a well-compacted gravel/sandy silt example 6.6, followed by a laminated layer of well-compacted yellow-brown mortar 6.7 (Fig 7); the presence of a small quantity of plain white and plain red wall plaster (not illustrated) in this suggests that some redecorating was in progress. One of the plain white fragments is 33–36mm thick, significantly thicker than the plaster from the 5.4 dump. The plaster seems to have been brought in from elsewhere and reused, as mortar is attached to the upper surface. Alternatively, it may be the backing layer for a second painted surface which had become detached.

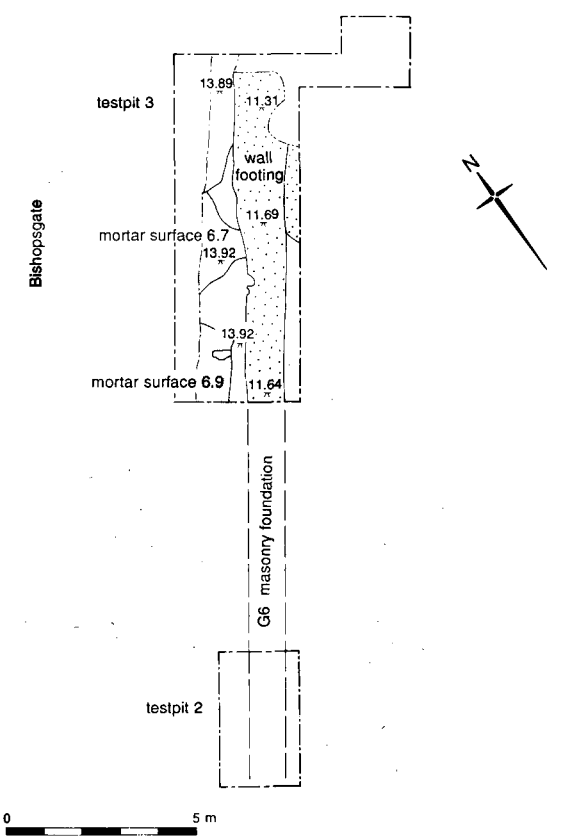

Fig 7. Plan of G6 wall foundation in TP2 and TP3

A localised mortar surface 6.9 at the southern end of the trench was sealed by a small area of maroon-red burnt brickearth 6.10 which probably represented a small-scale temporary hearth. These surfaces raised the level to 14m OD.

To the east of the foundation was an analogous sequence of surfaces (6.11, 6.12, 6.13, 6.14, 6.17, 6.18, 6.19). These were of more variegated character, with crushed sandstone and brickearth being used as well as mortar. The general level was rather lower on this side of the wall, with the possible construction spread of 6.12 at 13.15m OD, and the latest surfaces of 6.19 at 13.8m OD.

The comprehensive robbing of the G6 foundation left little direct evidence of the form and function of the building to which the wall belonged. Pottery from a construction backfill, and from the make-up for the primary surface 6.4, both had a *TPQ* of AD 120, implying a post-Hadrianic date for the construction of the wall. A small cut feature 6.15 cut into the sequence of surfaces to the east of the wall produced pottery with a *TPQ* of AD 170, showing that the building was still in use at this time.

The further question arises as to which of the G6 surfaces were internal, and which external. Few of them showed the kind of compaction which might be expected from heavily used surfaces, and it is possible that the mortar examples, at least, were originally bedding for planking, tiled or tessellated floors which were removed when the floor went out of use.

The surfaces to the east of the wall were replaced more often and occupied a greater physical depth than those to the west (0.65m compared to 0.45m), so they seem better qualified to be the internal sequence. Although they were slightly lower than the western surfaces, there is no evidence for their having belonged to a cellar or hypocausted room.

None of the surfaces to the west of the wall were very robust, and it is possible that they were also internal (see below). Certainly there is no question of their being part of the Ermine

Street road, from which this wall must have been set back.

Opus signinum floors

In TP2 the material to the west of the G6 wall at the level of these mortar surfaces was destroyed by modern service trenches. However, sealing the beaten-earth floor [69] was a brickearth dump acting as make-up for a 150mm-thick *opus signinum* floor [67], its surface at 12.82m OD (Fig 8). This floor surface also appeared on the eastern side of the (robbed) G6 wall and may be assumed to pre-date it.

This was sealed by a deposit of mixed brickearth and mortar which was probably demolition rubble. It was sealed in turn by a second *opus signinum* floor [65] at 13.22m OD. This 120mm-thick floor was sealed by a demolition dump of gritty silt.

The Roman buildings

It may be noted that both these *opus signinum* floors were significantly lower than the construction level of 13.55m OD for the G6 wall, suggesting that they both belonged to an earlier building. The obvious candidate here is the wall observed in the Crater, although no stratigraphic link could be observed between wall and surfaces, and the 21m separating observations of the two emphasises the need for caution. Nevertheless, given the large scale of the G3 ditch and G6 wall, which were both more than 19m long, it may be that the Crater wall did indeed continue as far south as the *opus signinum* floors in TP2.

One possible explanation, therefore, is that the Crater wall formed the façade of a building giving directly onto the road, perhaps when the latter was first laid out, although this could not be verified stratigraphically. The G2 fence, G3 ditch and G4 stake-holes were all external and must pre-date the Crater wall, presuming that this latter delineated a building. The pottery

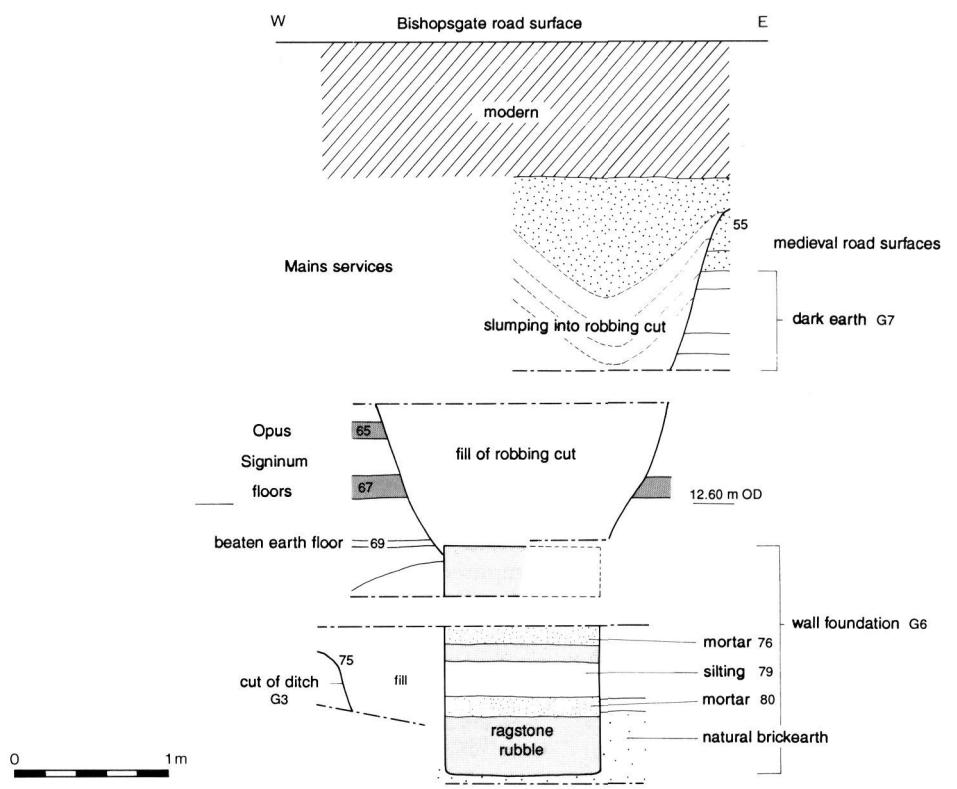

Fig 8. Composite section of complete sequence in TP2

spot-dates from the G2 dumps and G3 ditch backfill mean that the Crater wall (and possibly the first road) must post-date AD 70.

The *opus signinum* floors observed in TP2 must have derived from a high-status building, compatible with the presence of the painted plaster, *tesserae*, Purbeck slabs *etc* present in the G5 demolition dumps, which latter, in this reconstruction, would have derived from the destruction of this early building. Sometime after AD 120 the Crater wall was replaced with the G6 wall set some 2.2m further back from the road.

If, however, this hypothesis were correct, one might expect the road to have been widened to go up to the new wall, and it clearly did not do so. This raises the possibility that at least the foundations of the Crater wall remained in use, perhaps supporting a colonnade or portico. In this case the surfaces to the west of the G6 wall in TP3 may have been within an atrium or narthex. Certainly none of these surfaces were very robust, and they all looked internal.

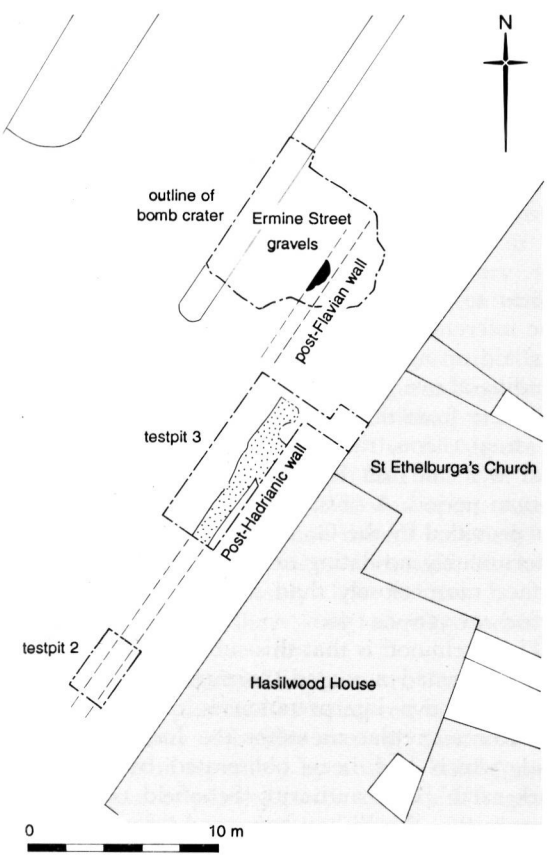

Fig 9. Roman walls and Ermine Street gravels

It is perfectly possible that a major route out of *Londinium* should be flanked by a stretch of colonnaded buildings. The plan of Pompeii (reproduced in Ward-Perkins & Claridge, 1976, 43) shows all the intra-mural arterial roads as colonnaded for most or all of their length. A mosaic in the 4th-century church of Santa Pudenziana in Rome, and repeated in the 6th-century church of Madaba in Jordan, shows a plan of the city of Jerusalem as re-planned by Hadrian. Although obviously stylised, these representations clearly show the main north-south street as colonnaded for its full length. Again, the Roman city of Serdica (the modern Sofia) had colonnaded pavements about 5 feet wide along its *via principalis*.

'Dark earth' deposit

Sealing the G6 surfaces was an accumulation, up to 250mm deep, of a dark grey (almost black) slightly gritty sandy silt (7.3), which filled the entire trench on the western side of the foundation, bringing the level up to a maximum of 13.95m OD. This material was very similar to the dark earth deposit found at post-Roman levels throughout the City and Southwark, and generally considered to represent the re-working by natural agencies of earlier stratigraphy during times of non-occupation of urban areas – typically the period between the abandonment of the City in the 5th century, and the Alfredian regeneration of the late 9th/early 10th.

Probably cut into the 7.3 material (though not recognised until the 6.7 surface was exposed) was an assemblage of 28 small stake-holes (7.1), occupying an area 3m × 0.4m. They are in a generally north-south alignment, but with a lot of variation, and certainly not in a neat straight line like the 2.5 fence. Their diameter was not large, averaging 40mm, the depth being in the range 40–200mm. There is little likelihood of these stake-holes having formed a fence. Their very close spacing suggests that stakes were frequently replaced, with perhaps less than half-a-dozen standing at any one time.

On the east side of the G6 wall, a deposit (7.4) of identical material, up to 500mm deep, was seen in both north- and south-facing sections of the header trench; in the main trench it had been removed by the construction of the 19th-century cellars.

In TP2, this 'dark earth' horizon was deeper still at *c.*700mm, occurring as high as 14.22m OD. It was also seen (as [5]) in the Crater, where it sealed the Roman road gravels to a depth of *c.*400mm, being truncated by modern service trenches at 14.50m OD.

Pottery from the 7.3 deposit gave a date-range of AD 350–400, although if this 'dark earth' accumulated over a period of time, it may have started to do so before the mid 4th century. On the other hand it also contained residual 1st-century pottery and a late 1st/mid 2nd-century combed box-flue tile fragment, so the *TPQ* of AD 350 may be unrealistically early if the late Roman pottery is also residual. Also included in this deposit was a tile in a yellow fabric with numerous black iron oxide inclusions. This is the first tile in this fabric (3239) to be found in London.

The presence of this material on both sides of the G6 wall indicates that the wall no longer served to differentiate an external from an internal area; most probably the building of which it was part had gone out of use by this time.

Metalled road

Cutting into the G7 'dark earth' in the south-west corner of the trench, and continuing beyond it to the south and west, was a substantial cut feature (8.1) up to 0.95m deep, with a pair of stake-holes (8.2) near the north-east corner. It may have been a very large pit, or it may represent the robbing of some structure to clear the way for the metalled surface (8.3) which was lain directly (Fig 10) over the backfill.

This surface occurred in two long strips, separated by disturbance associated with modern services; prior to this intrusion it would have filled the entirety of TP3 to the west of the G6 wall. It consisted of *c.*200mm depth of masonry rubble set closely together in a matrix of mid grey-brown slightly clayey silt. The rubble was composed of equal proportions of undressed fragments of ragstone, flint nodules, and fragments of re-used ceramic building material, mostly *tegula.* The top level undulated between 14.05m and 14.2m OD, with a very slight slope up to the north. A small raised (by up to 150mm) area of ragstone, tile and flint (8.4) may represent a localised re-metalling.

The western edge of this surface had been cut by the G9 robbing of the G6 wall, but did not

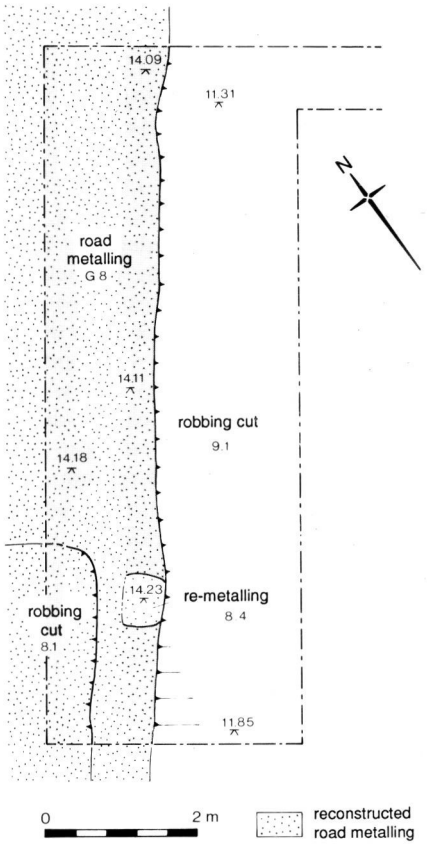

Fig 10. G8 metalled surface and G9 robbing cut

appear to have been disturbed by that robbing. The inference must be drawn that the metalling was laid up against the G6 wall, which was still standing above ground at that time.

Pottery from this metalling had the date-range of AD 350–400, raising the possibility that the road was laid out in the late Roman or sub-Roman period. A *terminus ante quem* of *c.* AD 1150 was provided by the G9 robbing (see below), but unfortunately no dating evidence could date this surface more closely than sometime within the period AD 350–*c.*1150.

The likelihood is that this substantial metalled surface formed a major thoroughfare, and the most attractive interpretation is that it was a post-Roman replacement for the Ermine Street road, which had been obliterated by the G7 'dark earth'. One authority (Schofield 1984, 25) suggests that the Bishopsgate road was probably re-established soon after the Alfredian rehabitation of the City, in the late 9th century.

In TP2, the material to the west of the G6 wall at this level had been completely destroyed by modern service trenches, so the G8 metalling cannot be extrapolated beyond TP3. However, in the north-eastern corner of TP2 the dark earth deposits were sealed by a layer of pebbly silt acting as a make-up for a well-compacted grey silty gravel [55] which was interpreted as a surface. Inasmuch as this too was cut by the G9 robber trench (see below), it is at an analogous stratigraphic position to the G8 metalling in TP3, but it could not be the same surface as it was on the other side of the still standing G6 wall. Perhaps the surface [55] represents a re-use of the building to which that wall belonged.

Robbing of the G6 wall

Cutting through the G7 metalling was a very large-scale cut feature 9.1, running the whole length of TP3 (Fig 10). It was truncated by modern service trenches at 14.24m OD (but more deeply by cellars to the east). At the northern end of the trench the full width of 2.4m survived; the depth here was 2.95m, with a flat base 0.95m wide.

This base was formed by the top of the surviving foundations of the G6 wall, and there can be no doubt that this massive cut feature was a robber trench which comprehensively robbed out the foundations of that wall. At the north end of the trench the masonry was completely robbed, but at the southern end it survived to a depth of 0.85m.

The primary fill was a loose, moist mid/dark-grey clayey silt. As well as the usual inclusions (charcoal, mollusc, ceramic building material) there were, at the edge of the fill, lenses of mortar and brickearth which had fallen in from the edge of the cut while it was open. At the southern end of the trench the fill included four very large (up to 500mm) undressed blocks of ragstone – presumably left behind by the 'robbers' when they had acquired enough masonry.

The fill contained three more fragments of painted wall plaster, two being red in colour, the other showing a border area of dark red and greenish-blue separated by a white band (9mm). The latter is painted on a moulded fragment which probably came from round a window or doorway (Fig 5, No.6). The top surface of the moulded wall plaster is slightly irregular, which suggests it came from a painting scheme of fairly poor quality.

The fill was fairly homogeneous throughout the cut, except for an area at the northern end where there seemed to be a higher organic content. A sample taken from this part of the fill produced plant remains and animal bones.

The plant remains were characterised by a small assemblage of charred grain, with oat (*Avena* sp.) being the most common cereal while free-threshing bread wheat (*Triticum aestivum*) and barley were also represented by several grains. Several charred weed seeds were also recovered; goosefoot (*Chenopodium* sp.) and bedstraw (*Galium* sp.), an arable weed which is associated with the autumn sowing of cereals, and is often found in stored grain deposits as the similar size of the seed makes it difficult to sieve out. Large quantities of charcoal were also noted in this sample.

In southern England, oats were often used as animal fodder in the medieval period although it may have also been used (together with other cereals) in bread and biscuit making, and in pottages. Bread wheat on the other hand would have probably been exclusively used for bread, while barley may have been grown for both human (food and beer) and animal consumption. This range of cereals, usually in low quantities, are frequently found on medieval sites in the City *eg* 9th to 12th century-deposits at Milk Street, Watling Court, Well Court, Peninsular House and Ironmonger Lane (Jones *et al* 1991).

The waterlogged plant remains from this sample are dominated by 71 elder seeds. Elder produces robust seeds which may account for their survival in the sample, to the virtual exclusion of other waterlogged seeds, a pattern frequently repeated on other medieval sites in the City. Elder is indicative of scrub and waste ground, but also had a number of possible uses as food (*eg* syrup, jam), drink (wines) and dye. Rushes are well represented, probably because they are exceptionally high seed-producing plants; sedges and rushes may sometimes have been used as building materials (flooring/thatching) which were later deposited into pits to dampen or keep down the smell.

The sample also produced 178.7 grams of animal bone, including cattle, sheep/goat and cod-family, with a few unidentified fish and mammal fragments. No wild species were definitely identified. Cattle and sheep/goat were the major components and represented

80% of the sample weight. The cattle remains showed evidence of division of the carcass into sides and splitting of major limb-bones, presumably for marrow extraction. The identifiable remains from this G9 robbing backfill thus consisted virtually exclusively of the residues of foodstuffs, including the remnants of cereal processing and the butchered bones of the large domesticates.

The robber trench was also observed at both ends of TP2, where the fill had lenses of clay and cess within it, and was interpreted by the excavator as domestic refuse. Here it survived as high as 14.62m OD, and was seen to be cut from the top of the silty gravel surface [55].

As regards the date of this robbing; although there was no shortage of residual Roman pottery, there was also green-glazed pottery with a date-range of AD 1150–1200, giving a mid 12th century *tpq* for the G9 robbing. While most of the pottery groups on this site were small, the group of medieval pot from this robbing backfill was medium-sized, with the implication that the 1150–1200 date is likely to represent the actual period of deposition (rather than just a *tpq*).

Also cut through the 'dark earth' horizon in the Crater, and observed in both north- and south-facing sections was a linear cut feature filled with dark silty material. Although no relationship could be observed between this feature and the ragstone wall in the Crater, it seems probable that this was a robbing cut analogous and broadly contemporary with the G9 robbing of the G6 wall.

The thoroughness of the robbing implies a major construction project in the vicinity, presumably initiated by an ecclesiastical or high-status secular client; this is not surprising given the intensity of building throughout London in this period. Nevertheless it is tempting to speculate that a building or re-building of St Ethelburga's Church in stone was the stimulus for the 12th-century robbing of the Roman walls.

The west wall of St Ethelburga's church and associated burials

Sealing the dark earth deposit 7.4 in the header trench was a mid grey sandy loam 10.1. This was cut by a substantial foundation, 10.2, of which only the western face was seen (Fig 11), and which formed the end of the header trench. The top of this foundation consisted of an uneven

Fig 11. West face of west wall of St Ethelburga's Church, seen at the end of the header trench

band, averaging 50mm thick, of loose, dry, dark-grey sandy silt with small rounded pebbles. This was probably construction trample marking the passage from foundation to superstructure. Below the sandy silt layer was an 0.4m-deep layer of chalk blocks up to 250mm across, apparently thrown into a foundation trench uncoursed and unmortared, then (none too thoroughly) rammed.

Below this was a layer, 50–80mm deep, of mid brownish-grey sandy silt and small rounded pebbles. Below this were five more bands, narrower than the upper ones, of alternating chalk fragments and the sandy silt/pebbles. Apparently this latter was acting as a bedding/levelling layer for the chalk layers which provided the stability. The depth of footings observed was 1.1m, but they continued below the limit of the header trench at 13.4m OD.

Above these foundations was a superstructure, 1.25m high, composed of ragstone fragments, with a few pieces of sandstone (apparently the same as that used in the 6.11/6.12 surfaces and occasionally in the 6.3 wall footings), two pieces of greensand (one chamfered and re-used), a few pieces of Roman ceramic building material and medieval roof-tile, and a fragment of chalk.

They were bonded in a soft, sandy light beige mortar with frequent fragments of chalk. On the face the mortar spilled significantly over the stones and the general effect was roughly flat but could not really be called a fair face. The lowest

stones were roughly divided into three courses, but otherwise there was no coursing, and no ashlar blocks. Nevertheless this part of the elevation was above ground when built.

The superstructure was the west wall of St Ethelburga's church, constructed in 1390–1400 (Schofield 1984, 112). This represents a re-build, however, as a church is mentioned on this site as early as 1250. The dedication, unique in this country, points to a much earlier date for the original foundation, as St Ethelburga was the sister of the sainted Erkenwald, who was made Bishop of London in AD 675, and from whom the name of Bishopsgate is popularly held to derive (see above).

Above the ragstone facing of the 10.2 wall was a further 0.7m height of masonry, its top at 16.55m OD, being that minute proportion of the contemporary church wall which survived the bomb blast. It consisted of one course of three ashlar blocks, of which only one survived complete, measuring 400 × 510mm. They all had a chamfered top edge, above which a small area of rubble core survived.

These ashlar blocks did not fit in stylistically with the remainder of the superstructure, and were clearly a recent addition. They almost certainly date to 1932, when the Corporation of London spent £400 on the much-delayed demolition of a pair of minuscule shops (Fig 13) which had been built onto the front of the church in 1577 and 1615 (according to the parish books).

Sealing the loamy soil of 10.1 was a 200mm-thick layer of mixed light-beige mortar and grey silt (included in sub-group 10.2). This sloped downwards slightly (gradient *c.*1 : 20) to the south,

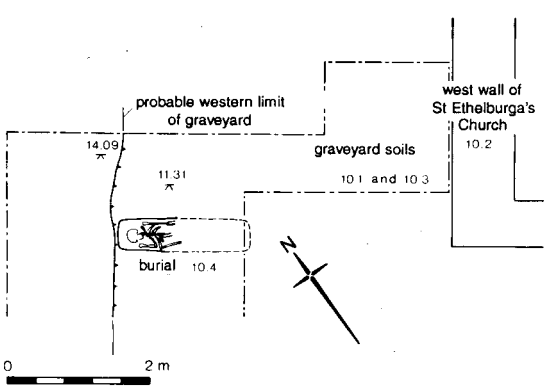

Fig 12. West wall of St Ethelburga's Church and associated graveyard soils

and since 10.1 may be assumed to be external, this slope probably represents the natural topography of the time. In that a) the mortar is the same as that used in the church wall, b) this deposit is confined to the area near the wall, and c) it occurs at the same level as the change from chalk foundation to ragstone superstructure in the wall, it may be asserted with a fair degree of confidence that this is a construction spread from the building of the wall. It defined the ground level at this time as 14.45m OD.

Sealing this proposed construction spread was a substantial horizon of moist, gritty mid-grey sandy loam, 10.3, identical in composition to the 10.1 deposit. During the excavation of this material, several human bones were collected, although recovery was not under controlled conditions as both the 10.1 and the 10.3 deposits only occurred in the header trench and were excavated by contractors.

At a distance of 0.9m from the wall, at a level just above its construction spread, were human bones *in situ*, from a burial which had been truncated at the knee by an unidentified agency.

The feet of the skeleton were to the east. The bone was in generally good condition with some damage to the long bone ends. The bones present were; the diaphyses of both tibiae; the right fibula diaphysis with the proximal end missing; a fragment of the left fibula midshaft. No epiphyses were present and all long bone ends present were unfused. The length of the right tibia diaphysis (the only undamaged bone) suggested that the individual was 6.5–7.5 years of age (Ubelaker 1978, 48–49). It is not possible to reliably sex a single individual of this age, nor to calculate the stature of such an immature individual or to comment on the physique. There was no indication of any pathology.

Recovered by the contractors and therefore not securely provenanced was a human skull and corresponding mandible, apparently disarticulated. The skull was complete but the surface was eroded in parts, and the mandible was missing the right ramus. It was probably that of a male. Tooth wear and fusion of the cranial sutures suggested that the individual was an older, mature adult but not elderly.

The skull was of average length and height; the frontal bone was narrow compared to the maximum breadth, that is the skull was pear shaped, and the maxilla broad. The subjective assessment of the MoLAS human osteologist was that the face was broad, the forehead low and

Fig 13. Engraving of 1907 showing 16th-century shops added to the west front of the Church

receding, the chin square and the nasal aperture narrow, with a low bridge and narrow root.

The individual had slight enamel hypoplasia on the tip of the cusp of the right maxillary first premolar and mid-cusp on the right mandibular canine. This suggests that a stress episode occurred when the individual was around three years +/−12 months of age, but the dentition was too incomplete to be precise. All teeth were affected by slight to moderate calculus and all but one by slight to moderate periodontal disease, unsurprising given the older age of this individual, as both these conditions tend to worsen with age due to their cumulative effect.

The only articulated skeleton (10.4) from the graveyard was actually cut into the G9 robbing backfill, and was excavated under controlled conditions.

The grave cut was rectangular, and contained vestigial remains of a flat-sided wooden coffin. Inside the coffin was an extended supine burial, truncated below the pelvis. It was east-west orientated, with head to the west.

The bone was moderately well preserved macroscopically, with some damage to long bone ends and post-mortem erosion of the cortical bone. The remains included the fragmented skull; the mandible; the complete sternum; fragments of both scapulae; both complete clavicles; ten right ribs and eleven left ribs; all seven cervical vertebrae, eleven thoracic and six lumbar; the first two segments of the sacrum, the rest was truncated; the ilium and ischium of the left innominate, the pubis was smashed off and was missing; a complete left humerus; a right humerus with the distal end missing; a left radius with the distal end missing; both ulnae, both with distal ends missing; part of the hyoid. There were no hand bones and both lower limbs were missing.

The individual was a mature adult, probably female. The sexing characteristics of the skull

and pelvis suggested a fairly robust individual. Tooth wear indicated that the individual was between 33–45 years (Brothwell 1972), but the cranial sutures, the healthy appearance of the vertebral column and the sternal ends of the ribs suggested a younger, mature adult. The medial clavicles, one of the last epiphyses in the body to fuse, were fully fused indicating an age over 25 years. However, the right clavicle fusion line was just visible in one area which also suggested that, although fully mature, the individual was not aged. The most likely explanation for the discrepancy of the tooth wear age is that the individual experienced heavier tooth wear in life than normal due to a very coarse diet or because she had weak tooth enamel.

The stature, calculated from the left humerus, was 1.65m (+/−4.45cm). This is similar to the modern average height for British females of 1.66m (Waldron forthcoming). A subjective assessment of the physique of the individual is that the long bones were quite slight for their length and bore no marks of hard physical labour. The skull was too fragmented to allow an assessment of the overall shape, but the chin was pointed, the upper palate was of moderate width and quite low in height and the forehead was high and quite convex in shape.

The individual had two congenital defects, but neither would have caused any problems in life. Firstly, eleven thoracic and six lumbar vertebrae were present, rather than the usual twelve and five respectively. Secondly, the left clavicle and left first rib had articulation surfaces at their sternal end where they had abnormally articulated with each other.

Seven teeth showed dental caries; three of these were very severe and the remaining tooth was no more than a stub. Caries, to the extent observed here, would indicate a sugar component to the diet. However, as previously noted from the anomalous severe wear, this individual may have had weak enamel. Two teeth had been lost *ante mortem*. Given their adjacent location to the caried teeth, they were probably lost due to caries.

Six teeth had slight hypoplasia at mid cusp. This is an interruption in the laying down of enamel when the tooth is forming in the alveolar and is generally associated with severe stress such as illness or emotional trauma (Hillson 1986, 130). The position of the lesions here suggest that whatever the type of episode, it occurred when the individual was about two years +/− eight months of age.

All teeth present were affected by slight to moderate calculus, which suggests a lack of dental hygiene. The individual suffered from slight to moderate periodontal disease around the majority of the teeth which was in keeping with the level of calculus as this is thought to be an irritant contributing to the onset of periodontal disease.

In summary, the burial 10.4 was the remains of a young but fully mature adult, probably female, of average height. In life, she was in generally good health except for moderately poor dental health.

The presence of these articulated and disarticulated human bones in the 10.1 and 10.3 deposits leaves little room for doubt that they were graveyard soils associated with St Ethelburga's church, the position of the articulated burial 10.4 showing that the graveyard projected out to the west by at least 4.8m beyond the church.

Other than some residual pottery in the 10.4 grave backfill, no artefactual dating evidence was recovered from the G10 deposits, so no date could be independently established for the foundation of the graveyard. However, the 10.1 deposit pre-dated the wall 10.2 and must date from a pre-1390 graveyard. The shops mentioned above appear to have spanned the full width of the church façade; their construction in the late 16th century would necessitate the disuse of this part of the graveyard.

Comparison of the 0.7m depth of the 10.3 soil accumulated in the years between AD 1400 and the presumed 16th-century disuse of the graveyard, with the 0.2m depth of the early 10.1 graveyard, suggests that the latter could not have been in existence for long before the late 14th-century rebuild.

In TP2, there was no sign of any graveyard soils; instead the G9 robbing backfill was sealed by a layer of well-compacted orange-brown sandy gravel. This was up to 0.8m deep where it had slumped into the settled G9 backfill, and was interpreted by the excavator as a metalled surface. Its presence shows that the projecting graveyard did not extend as far south as TP2 – either the main road widened out here or this metalling was a side road leading off it to the east. No dating evidence was recovered, but it must post-date the mid 12th century.

This completes the sequence of archaeological deposits recorded during the three observations resulting from the 1993 Bishopsgate bomb blast. No trace was observed of the 16th/17th century

shops added to the St Ethelburga's west front, but these would have had shallow foundations and, along with other post-medieval deposits, would have been destroyed by modern service trenches.

Perhaps the most striking aspect of the archaeological data is the way that the alignment of the structures and cut features remained constant, from the G2 fence in *c.* AD 70, through a massive, possibly colonnaded, masonry building of Hadrianic date, the late medieval church of St Ethelburga, right up to Hasilwood House in the 1920s.

The reason for this is, of course, the presence of the adjacent Ermine Street/Bishopsgate road, which determined the alignment of the buildings fronting onto it. As noted above, the gate in the City wall fixed the alignment of the road from its construction in *c.*AD 200 to its demolition in the 18th century, but the observations described above indicate that the early Roman road was on the same alignment. The eastern edge migrated some 2.2m to the east when the pre-1150 G8 metalled road was established, although this edge was determined by the still-upstanding G6 Roman wall. The presence of the graveyard in front of St Ethelburga suggests that the G8 road remained on the same line during use of the graveyard, and it was only on the demolition in 1932 of the post-Reformation shops in front of the church that the street frontage moved back to its present-day line.

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