# THE EXCAVATION OF AN AREA WITHIN A ROMAN CEMETERY AT WEST TENTER STREET, LONDON E1

ROBERT WHYTEHEAD

*SUMMARY*

*Excavation of part of a, probably roadside, Roman cemetery uncovered at least 120 inhumation graves, 14 cremation burials apparently in situ, and at least 7 redeposited cremation urns. The earliest activity on the site appears to have been the excavation of two gravel pits in the late 1st and early 2nd centuries and the digging of a ditch. The earliest burials, both cremation and inhumation, may have been made in the early 2nd century, cremation was practiced into the early 3rd century and inhumation burials continued into the mid 4th century and perhaps later. Traces of what were probably two roadside tombs or monuments were identified. Seventeen inhumation and two cremation burials were accompanied by grave goods, many of the inhumation burials lay in wooden coffins, two reinforced with lead strips. The 'plaster burial' rite was adopted in eight probably 4th-century graves. A deep pit, possibly a tank or well, dated to the third quarter of the 4th century, may have been associated with the 'plaster burial' rite.*

## I. THE EXCAVATION ORGANISATION OF THE EXCAVATION REPORT

The excavation report commences with a description of the location of the site, the geology, and the topography in the Roman period. The excavated features are described in chronological order, two early gravel pits are described first, followed by the burials, a mid-4th century 'ritual' pit, and the post-medieval disturbance.

The burials are individually listed in a summary catalogue (Figs 5, 6), presented in tabular form, of all the burials from the site, full details of which lie in the archive report. The cremation and inhumation burials are listed separately in numerical order by the original context numbers ascribed to their graves during the excavation. This is to facilitate reference to the site archive. In addition the inhumation burials have separate numbers for the skeletons which are referred to in the human bone report and archive. The grave goods are cross-referenced to their illustrations in the pottery and small finds reports.

In the catalogue the dates ascribed to the grave goods and coins are shown as an indication of the dating of the individual graves. The figure numbers of the phase plans indicate to which phase the burial has been ascribed and on which its position has been illustrated (Figs 9, 12, 13, 15, 16). The broad area of the site in which the burial lies is indicated to facilitate its location on the phase plans.

The phase plans illustrate some of the details from the burial catalogue including the position of each inhumation grave or *in situ* cremation urn, the orientation of the skeleton within the grave, the sex of the skeleton, the certainty with which the grave has been phased, and the position of any ceramic and glass vessels within the grave. All the excavated features are illustrated on one site plan.

The discussion of the burials is introduced by an assessment of the evidence from which they have been dated and tentatively phased. There follows a detailed discussion of the cemetery layout and the burials with particular reference made to the following three major urban Roman inhumation cemetery reports: Trentholme Drive, York [Wenham, 1968], Lankhills, Winchester [Clarke, 1979], and Cirencester [McWhirr *et al.* 1982]. All three produced significantly more inhumation burials than at West Tenter Street as the comparative table (Fig. 1) shows:

| Site | No. of Cremations | Date Range | No. of Inhumations | Date Range |
|---|---|---|---|---|
| Trentholme Drive | 50 | C2 – mid C3 | 350 | C2 – ?late C4 |
| Lankhills | 7 | 310 – 370+ | 451 | ?310 – ?410 |
| Cirencester | 3 | ? – C4 | 450 | ? – 395+ |
| West Tenter | 14 | C2 – mid C3 | 120 | C2 – 340+ |

Fig. 1 West Tenter Street: Comparative table of Romano-British urban cemeteries.

Reference is also made to the major cemetery at Poundbury, Dorchester, Dorset, summarised in articles by C. Sparey Green [see Green 1977, Green 1982], where 1,118 inhumation burials of the 1st and 3rd–4th centuries were excavated; and to the cemetery area at Kelvedon, Essex, which contained 35 cremations of the late 1st–4th centuries, and 60 inhumation graves dated to the 2nd–4th century [Rodwell 1988]. The only recent excavation in a London cemetery is that of 20 inhumation burials from St. Bartholomew's Hospital, dated to the 3rd–4th centuries [Bentley and Pritchard 1982], that report also contained a discussion of the evidence for the cemetery to the west of the city walls.

The excavation report concludes with a description of a deep pit which appears to have been the latest dateable Roman feature on the site, and the extent and nature of the post-medieval activity which disturbed the Roman levels.

## CIRCUMSTANCES OF EXCAVATION

Excavation of the block bordered by West Tenter Street, Scarborough Street, St. Mark Street and South Tenter Street, London E1 (TQ 3390 8101) was undertaken by the Department of Greater London Archaeology (DGLA) of the Museum of London between March and June 1984. The site was owned by the Greater London Council who generously funded the excavation. The archaeological work was carried out in conjunction with the building contractors Llewellyns (Eastbourne) who undertook the machine stripping of the overburden.

## ROMAN SITE LOCATION

The site lies approximately 330m east of the Roman city wall (Fig. 3). The burials and a ditch subdividing the cemetery appear to be aligned on a Roman road first discovered at 9 St. Clare Street, 137m from the Roman city wall [Ellis 1985, 117]. Its course has been confirmed at 63–72, Mansell Street (*pers comm.* S. Haynes).

Roman burials have been uncovered from the area east of the City wall over many years. The RCHM survey of 1928 quotes Strype in his edition of Stow's Survey of London II where he states that building around Goodman's Fields (marked on William Morgan's map, publ. 1682, and defined by the present-day streets Mansell Street, Alie Street, Gowers Walk, and Chamber Street, E1) in about 1678 uncovered 'vast quantities of urns and other Roman utensils' [RCHM 1928, 157]. A

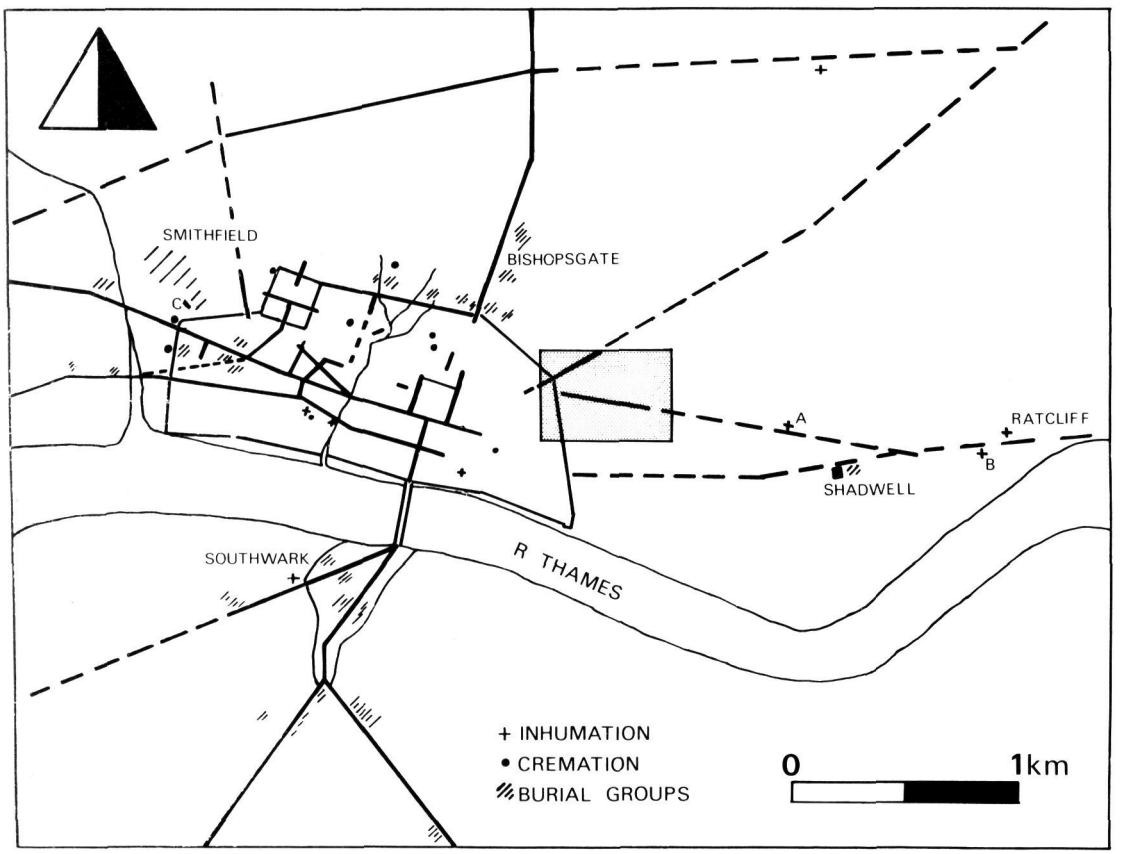


Fig. 2. West Tenter Street: Roman London: Roads and Cemetery Areas.

tombstone to Flavius Agricola, a legionary in the 6th Legion, was found at a depth of 7 feet beneath Goodman's Fields in 1787 [*ibid* 171].

The 1928 RCHM volume contained a complete inventory of the known Roman burials from east of the City but more recent discoveries can be added to that list, at 9 St. Clare Street [Ellis 1985], on the adjoining site 14–18 St. Clare Street (Mowbray House) (Fig. 3, A) [VCH 1969, 74], 28–35 The Minories (St. Clare House) (Fig. 3, B) [Marsden 1968, 39], 13 Haydon Street (Fig. 3, F) [DGLA Excavation 1986], Goodman's Yard (Fig. 3, G) [Whytehead 1980, 31], 37–43 Mansell Street (Fig. 3, H) [DGLA Excavation 1987], 46 Mansell Street (Fig. 3, C) [Collingwood and Taylor 1932, 213], 49–55 Mansell Street (DGLA 1988) and others from Mansell Street [Wheeler 1930, 41–2], between Prescot Street and South Tenter Street [Museum of London Accession No. LM 37 167/1–2], Hooper Street (DGLA Excavation 1988) and from the Co-Operative Society site at the Leman Street junction with Prescot Street (Fig. 3, D) [Collingwood and Taylor 1932, 213].

The gravel surface and ditch discovered at St. Clare Street has been interpreted as a previously unknown Roman road (Fig. 3) [Ellis 1985], this interpretation is accepted for the purpose of this report. The road can be seen to have provided a focus for the seemingly random distribution of burials in this area. Late 1st-century and 2nd-century roadside burials and tomb foundations were found aligned with the road at St. Clare Street. Two plaster burials, one on the St. Clare Street site and one from nearby at 27 Minories

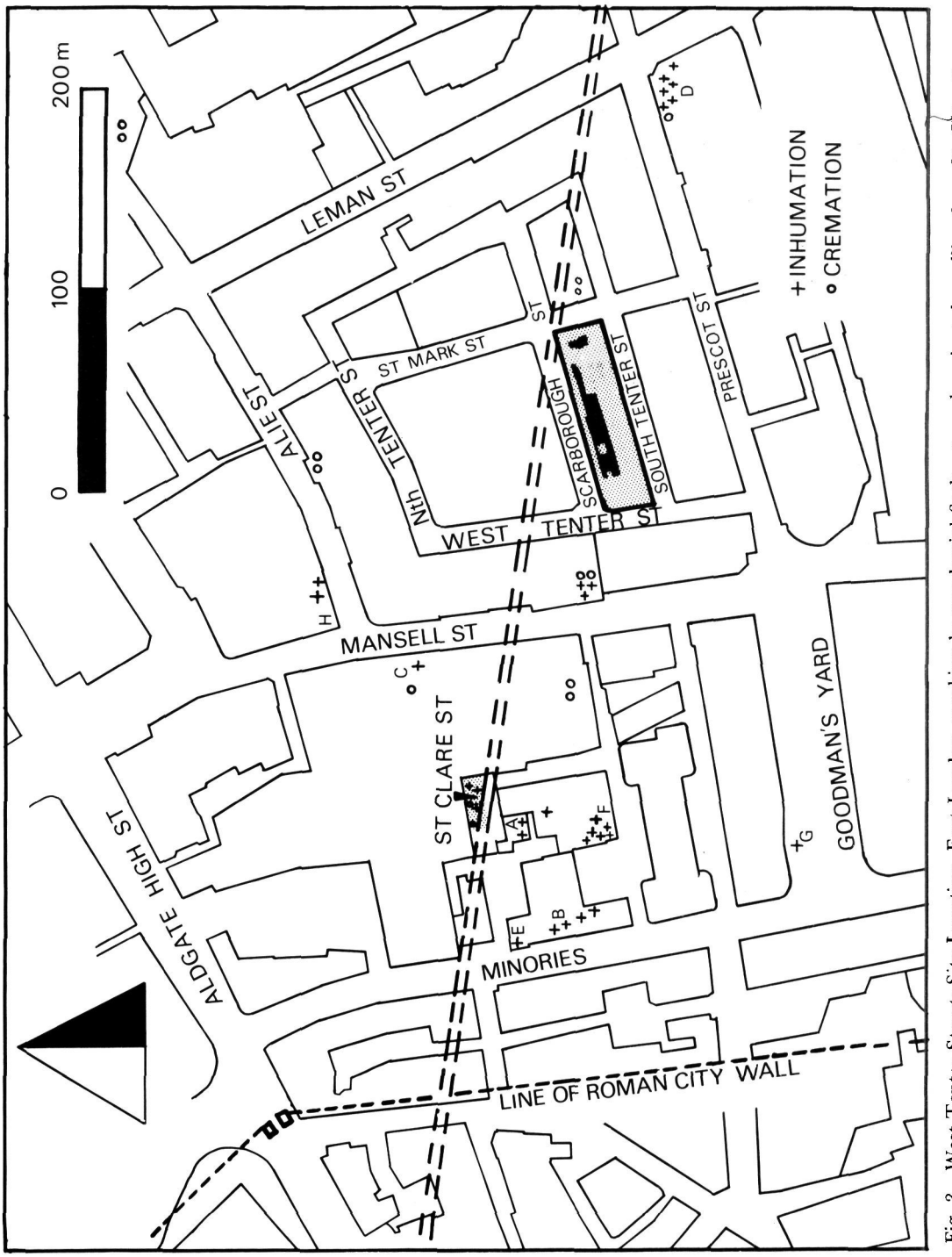


Fig. 3 West Tenter Street: Site Location, East London, marking known burial findspots and projected roadline from St. Clare Street.

(Fig. 3, E), point to burial continuing into the 4th century there as at West Tenter Street.

The ultimate destination of the St. Clare Street road is uncertain. Burials recorded from the junction of Love Lane and Cable Street (Fig. 2, B) [RCHM 1928, 163], and 41 Cannon Street Road (Yeatman's Factory), E1 (Fig. 2, A) ['The Star' (London) 18/12/1919, 12], show that the road and its attendant cemetery may have stretched at least half a mile (0.8km) from the Roman city perimeter, in the direction of Ratcliff. The St. Clare Street road may have been simply a cemetery service road, or in the light of the early gravel and brick-earth pits at West Tenter Street originally have been constructed to supply the raw materials for the construction of Londinium. Another road may have run due east from the Roman city on the line of the Highway, E1, to serve the signal tower at Shadwell (Fig. 2) [Johnson 1975, 278–80, discussed by Merrifield 1983, 191–4] a group of five late 1st or early 2nd-century cremation urns found to the east of the signal tower [D. Whipp *pers. comm.*] suggest use of the area predating the erection of the tower.

## THE EXCAVATION

Work was limited to the area that was to have a long terrace of houses built upon it. The consequent excavation area was an eight metre wide strip sixty nine metres long bordering the northern edge of the site, starting *c.* 28m from the western perimeter, avoiding an area in which trial-trenching had shown that the Roman deposits were removed by medieval gravel workings. Overburden approximately 2m deep overlying the entire excavation area was removed by machine.

The excavation progressed from west to east across the site. The most complex stratigraphy and densest concentration of burials were encountered at the western end, as a consequence inadequate time was available for a total excavation of the features to the east, particularly in the area of the central Roman gravel pit. However all the burials made there were recovered by excavation.

## GEOLOGY

The geology of the site comprised London Clay overlain by Post-Pliocene gravels, a mixture of sand

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The catalogue is a summary of the archive catalogue. It can be compared to that for the Roman cemetery at St. Bartholomew's Hospital [Bentley and Pritchard 1982, 157]. The following sections and abbreviations have been used.
*Burial No.* number ascribed to cremation burial.
*Grave No.* inhumation catalogue arranged in numerical order by grave number.
*Skele. No.* the skeletons each received a separate number to that of the grave. These are used in the human bone report.
*Level m OD* the average level of the base of the grave or cremation urn expressed in metres above Ordnance Survey Datum.
*Sex* sex of adults if known.
*Age* estimated age in years, otherwise A = adult, D = adolescent, J = juvenile, I = infant.
*Urn* fabric type of cremation urn.
*Orientation* orientation of skeletons by points of the compass, expressed as direction from head to foot.
*Hand Positions* probable position of left and right hands on which the position of the arms is dependent: a = arm and hand straight by side, b = hand on left side of pelvis, c = hand on centre of pelvis (pubis), d = hand on right side of pelvis, e = hand on stomach, f = forearm flexed at right angles to upper arm, hand rests on opposing ribs or elbow, g = hand on opposing upper chest, h = hand on left shoulder, i = hand on right shoulder, j = hand on face.
*Coffin* Yes = coffin present, pos = possible evidence for coffin, − = no evidence to preclude an all-wood coffin, No = definitely no coffin, Ld = Lead strip reinforced coffin.
*Grave Goods* objects accompanying burials: B = birdbones, C = coin redeposited in grave fill, L = burial packed with lime, Charc = charcoal, G = glass vessel, H = hobnailed shoes, J = jewelry, P = pottery vessel.
*Fig. No.* illustration of cremation urn or grave good, SF = small find number reference in coin catalogue.
*Date* date ascribed to cremation urn or pottery and glass grave goods or date range of redeposited coins.
*Dating* other evidence on which dating of grave is based: S = stratigraphy, R = residual pottery or glass, − = no residual pottery in grave fill.
*Phase Plan* phase to which burial has been ascribed and the figure number on which it is illustrated: Fig. 9 to AD 150, Fig. 12 = 120–180, Fig. 13 = 180–225, Fig. 15 = 225–300, Fig. 16 = 300–400 or later. ? = not confidently phased and could be much later.
*Area* broad area of site in which burial lay: A = west of ditch 206; B = east of ditch 206, west of central gravel pit; C = area of central gravel pit; D = east of central gravel pit.
The north points are orientated to Ordnance Survey Grid North.

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Fig. 4 West Tenter Street: Key to summary catalogue Figs. 5 and 6.

and gravel including bands of pure sand, capped by a layer of brickearth surviving to 0.20–0.30m in depth being truncated by post-medieval ploughing at approximately 11.0–11.10m OD.

## THE EARLY TOPOGRAPHY OF THE SITE

The brickearth lying immediately above the sands and gravels appeared to be relatively clean and undisturbed, but its upper levels, which predated the cemetery activity, were stained and may have been disturbed by pre-Roman as well as Roman occupation. Although no pre-Roman artefacts were found a possible watercourse and group of stones resembling post packing apparently set within the upper brickearth may be evidence of prehistoric activity.

The Roman ground surface probably lay at *c.* 11.15–11.25m OD, this is deduced both from the staining of the natural brickearth (*pers. comm.* R. Mcphail) and the evidence of the more shallow cremation urns which might have had their necks set close to ground level. The surface itself had been ploughed away by the 17th century but may well have risen during the Roman period with the accumulation of soil upcast from the excavation of the graves.

In the area of the central gravel pit (see below) the ground level must have been reduced as the graves were dug to a lower level, on average 0.50m deeper, than elsewhere on the site. A distinctive ground surface might therefore have been expected to survive there unaffected by later ploughing. Despite the presence of a layer of dumping (633) which sealed the graves and must presumably have been dumped on the surface of the graveyard no distinctive occupation horizon or surfaces were observed.

## THE GRAVEL PITS

The even ground surface of the cemetery was interrupted by the digging of two gravel pits (Fig. 9). The earlier, 'eastern' gravel pit (see below) lying closest to the line of the road from St. Clare Street may have been dug before burials had commenced in this part of the cemetery. The excavation of this gravel pit may therefore be the earliest Roman activity on the site.

The 'central' gravel pit (see below), dated by finds from its backfill to some 20–30 years after the

| Burial No. | Level m OD | Sex | Age | Urn | Fig. No. | Date | Grave Goods Fig. No. | Date | Phase Plan Fig. | Area |
|---|---|---|---|---|---|---|---|---|---|---|
| Cremations found *in situ:* | | | | | | | | | | |
| 69 | 10.73 | — | — | TSK | 27.4 | 150–200 | — | — | 13 | B |
| 224 | 11.04 | — | A | BB2 | 26.6 | 150–200 | — | — | 12 | A |
| 255 | 11.13 | — | 35+ | VRW | 24.3 | 150–200 | 24.1–2 Pl.2 | 180–? | 13 | A |
| 442 | 10.85 | — | A | BB2 | 27.1 | 150–200 | Tile Pl.3 | — | 13 | A |
| 497 | 10.75 | — | A | — | — | — | — | — | 13? | A |
| 675 | 10.61 | — | A | VRW | 25.2 | 120–160 | 25.1 Pl.4 | ? | 9 | A |
| 696 | 10.66 | — | A | TSK | 26.4 | 180–225 | 26.3 | ? | 13 | A |
| 979 | 9.94 | — | A | HWC | 25.5 | 100–140 | — | — | 9 | C |
| 988 | 9.85 | — | — | VRW | 26.1 | 100–200 | — | — | 12 | C |
| 1002 | 10.28 | — | <16 | VRW | 24.7 | 150–200 | 24.6 | ? | 12 | C |
| 1092 | 10.00 | — | A | VRW | 24.5 | 120–180 | 24.4, 38.1–5 | 64–2ndC | 9 | C |
| 1121 | 10.04 | — | — | TSK | 27.2 | 180–250 | — | — | 13 | C |
| 1145 | 9.91 | — | — | AH/SU | 27.5 | 100–150 | — | — | 9 | C |
| 736 | 10.74 | — | — | Pit | — | — | — | — | 13? | A |
| Redeposited Cremation Urns: | | | | | | | | | | |
| 610 | — | — | — | VRW | 27.6 | 100–200 | — | — | — | — |
| 735 | — | — | — | HWC | 26.2 | 100–150 | — | — | — | — |
| 834 | — | — | A | BB2 | 26.5 | 150–200 | — | — | — | — |
| 1088 | — | F? | A | VRW | 25.3 | 120–180? | — | — | — | — |
| 1095 | — | — | — | HWC | 25.6 | 120–180? | — | — | — | — |
| 1123 | — | — | — | VRW | 25.4 | 100–200 | — | — | — | — |
| 1131 | — | — | — | BB1 | 27.3 | 120–250 | — | — | | |
| 1157 | — | — | — | BB2 | 26.7 | 170–220 | — | — | — | — |

Fig. 5 West Tenter Street: Key to catalogue of burials.

| Grave No. | Skele No. | Level m OD | Sex | Age yrs | Orient-ation | Hand L | Hand R | Coffin | Grave Goods | Fig. No. | Date | Dating | Phase Plan Fig. | Area |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 66 | 644 | 10.69 | — | J | S–N | a | — | Yes | — | — | — | S — | 9? | B |
| 68 | 629 | 10.23 | M | 35–39 | N–S | a | a | Yes | — | — | — | S R | 12 | B |
| 75 | 659 | 10.35 | F? | A | N–S | — | — | — | — | — | — | S | 12 | B |
| 141 | 484 | 10.62 | F | 45+ | N–S | — | — | Yes | C | SF419 | 340–7 | | 16 | A |
| 143 | — | 10.57 | — | — | — | — | — | pos | — | — | — | S R | 12? | A |
| 261 | 263 | 10.37 | — | A | W–E | — | — | Yes | H | — | — | R | 12? | A |
| 270 | — | 10.98 | — | — | — | — | — | Yes | P,G | 29.8,40.11 | 325+ | | 16 | A |
| 273 | 536 | 10.60 | F | 25–30 | E–W | c | d | pos | — | — | — | S R | 15? | A |
| 282 | 281 | 10.45 | M | A | W–E | b | d | pos | — | — | — | S | 16 | A |
| 285 | 289 | 10.60 | — | A | N–S | — | — | pos | — | — | — | S | 13? | A |
| 290 | 291 | 10.39 | M | 25–35 | S–N | — | — | Yes | — | — | — | S | 13 | B |
| 307 | 308 | 10.90 | A | — | N–S | — | — | — | — | — | — | — | 12? | A |
| 311 | 345 | 10.71 | M? | 25–35 | N–S | h | f | Yes | H | — | — | R | 13? | B |
| 313 | 304 | 10.04 | — | J | S–N | — | — | Yes | C | SF95 | 81–96 | — | 9? | B |
| 321 | 319 | 10.42 | M? | 45+ | W–E | d | d | Yes | — | — | — | S — | 15? | A |
| 326 | 325 | 11.01 | — | A | S–N | — | — | — | — | — | — | S | 9? | A |
| 328 | 415 | 10.97 | — | J | E–W | — | — | Yes | J,J | 39.4,40.4 | — | R | 9? | A |
| 333 | — | 10.72 | — | — | — | — | — | Yes | — | — | — | R | 13? | A |
| 346 | 348 | 10.83 | F? | 25–35 | N–S | b | — | — | — | — | — | S | 12? | A |
| 349 | 350 | 10.70 | — | J | N–S | — | — | pos | — | — | — | S | 9? | A |
| 355 | 354 | 10.52 | F? | 25–35 | N–S | — | — | Yes | — | — | — | S | 15? | A |
| 358 | 360 | 10.94 | F | 45+ | W–E | e | e | — | — | — | — | S | 16 | A |
| ?549 | 363 | 11.01 | — | I | — | — | — | — | C | SF515 | — | — | 16 | A |
| 373 | 375 | 10.97 | — | I | W–E | — | — | Yes | — | — | — | S | 13 | A |
| 376 | 406 | 10.39 | F | D | N–S | b | b | Yes | — | — | — | S R | 13 | A |
| 380 | 381 | 10.95 | M? | A | N–S | f | — | Yes | — | — | — | S | 13? | A |
| 383 | 408 | 10.73 | F? | A | N–S | — | — | Yes | — | — | — | S R | 15? | A |
| 387 | 481 | 10.77 | — | ?J | ?W–E | — | — | pos | J,J,J,J | 39.2/5,40.10 | — | R | 13? | A |
| 396 | 467 | 10.0 | M | 45–50 | S–N | c | c | Yes | H,F | 29.4 | 150–200 | | 12 | B |
| 398 | 400 | 10.71 | — | A | N–S | — | — | — | — | — | — | S — | 15? | B |
| 428 | 477 | 9.94 | — | 8–13 | N–S | b | d | Yes | — | — | — | S | 16 | A |
| 431 | 432 | 10.50 | F | 35–45 | N–S | d | b | Yes | — | — | — | S R | 15 | B |
| 435 | 483 | 10.38 | — | 8–10 | S–N | c | c | Yes | J,L | 39.7 (Pl.14) | — | | 16 | A |
| 447 | 446 | 9.95 | — | J | N–S | — | — | — | — | — | — | S | 13? | A |
| 458 | 503 | 10.05 | F | 25+ | N–S | b | a | Yes | C | SF399 | 64–8 | S | 12 | A |
| 459 | 502 | 10.45 | M | 30–35 | S–N | d | b | Yes | H,L | — (Pl.11) | — | — | 16 | A |
| ?459 | 443 | 11.04 | — | I | S–N | a | a | — | — | — | — | | 16 | A |
| 487 | 541 | 10.66 | M | 25–35 | W–E | i | c | Yes | — | — | — | S R | 12 | A |
| 489 | 474 | 10.58 | — | 8–10 | N–S | a | a | Yes | L | — (Pl.10) | — | R | 16 | A |
| (493) | 478 | 10.99 | — | I | E–W | — | — | — | C | SF407 | 287–90 | | 16 | A |
| 506 | — | 10.76 | — | — | — | — | — | Yes | P,J | 29.10,40.5 | 240–280 | — | 15 | A |
| 516 | 534 | 10.73 | — | 4–6 | N–S | c | c | Yes | — | — | — | | 16 | A |
| 518 | 520 | 10.69 | F? | A | SW–NE | — | — | pos | lamp | 37.2 | L2nd | — | 13 | A |
| 523 | 525 | 10.50 | — | J | W–E | a | a | Yes | P,Charc | 29.9 | 150–250 | — | 13 | A |
| 528 | 589 | 10.20 | M | A | W–E | b | f | Yes | C,C | — (Pl.7) | 268–280 | — | 15? | A |
| 535 | — | 10.82 | — | — | — | — | — | pos | — | — | — | R | 16 | A |
| 538 | 569 | 10.68 | M | 25–35 | N–S | h | i | — | — | — (Pl.5) | — | S | 12 | A |
| 548 | 547 | 9.96 | M | 45+ | N–S | — | — | Yes | — | — | — | S | 9? | A |
| 549 | 596 | 10.40 | F | 30–40 | W–E | a | a | Yes | J | 39.1 | — | | 16 | A |
| ?549 | 444 | 10.87 | — | I | S–N | — | — | — | — | — | | S | 16 | A |
| 551 | 532 | 10.15 | M | 25–35 | W–E | b | e | Yes | — | — | — | R | 16 | A |
| 553 | 555 | 10.71 | — | 4–6 | N–S | a | a | Yes | L | — | — | — | 16 | A |
| 558 | 608 | 10.30 | M | 15–19 | N–S | c | c | pos | — | — | — | R | 16 | A |
| 570 | 707 | 10.00 | F | 20–25 | S–N | — | — | pos | C,C,C, | SF527,530,531 | 270–300 | S R | 16 | A |
| 593 | 609 | 10.21 | F | 14–19 | N–S | f | a | pos | H,H | — | — | | 15 | A |

Fig. 6 West Tenter Street: Catalogue of cremation burials.

| Grave No. | Skele No. | Level m OD | Sex | Age yrs | Orient-ation | Hand L | Hand R | Coffin | Grave Goods | Fig. No. | Date | Dating | Phase Plan Fig. | Area |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 601 | 602 | 10.97 | — | I | E–W | a | a | — | — | — | — | S — | 15? | A |
| 605 | 604 | 10.00 | M | 35–45 | W–E | b | d | Yes | — | — | — | R | 16 | A |
| 621 | 635 | 10.05 | F | 40+ | E–W | f | b | Yes | P | 29.3 | 120–180 | | 12 | C |
| 626 | 628 | 9.90 | M | 30–35 | E–W | a | a | Yes,Ld | — | — (Pl.12) | — | S R | 12 | A |
| 637 | 624 | 10.35 | — | 10–12 | W–E | f | b | Yes | — | — | — | S | 15? | A |
| 647 | 667 | 10.56 | — | <14 | N–S | f | h | Yes | — | — | — | S R | 9 | A |
| 654 | 652 | 10.40 | F? | A | W–E | — | — | — | P,H | 29.5 | 150–220 | | 13 | B |
| 664 | 663 | 10.45 | — | <12 | W–E | — | — | Yes | — | — | — | R | 12? | A |
| 678 | 676 | 9.99 | F | A | N–S | a | — | — | — | — | — | S — | 9 | B |
| 689 | 688 | 9.91 | M | 40–45 | N–S | b | c | Yes | P,P | 29.1–2 | 140–180 | | 12 | A |
| 694 | 701 | 10.32 | M | 25–35 | N–S | a | a | Yes | L | — | — | | 16 | A |
| 710 | — | 10.73 | — | — | — | — | — | Yes | P,J,G | 29.6,40.5/11 | 300–400 | | 16 | A |
| 720 | 719 | 9.46 | M | 30–35 | S–N | f | c | Yes | — | — | — | R | 12? | C |
| 723 | 725 | 10.70 | — | A? | S–N | — | — | — | — | — | — | S | 9 | A |
| 726 | 728 | 10.43 | — | A? | S–N | — | — | — | — | — | — | S — | 9? | A |
| 733 | 732 | 10.04 | F? | 45+ | N–S | — | — | Yes | P | 28.1 | 180–225 | | 13 | A |
| 741 | 742 | 10.01 | M | 40–45 | N–S | — | — | Yes | C,P,J | 28.4,40.1–2 | 190s,C3 | | 15 | A |
| 744 | 748 | 9.98 | M | 40–45 | N–S | b | d | Yes | L | — | — | | 16 | A |
| 768 | 767 | 9.66 | M | 40–45 | S–N | g | g | pos | C | SF849 | 85–96 | R | 13? | C |
| 774 | 773 | 9.88 | M | 15–18 | N–S | b | d | Yes | — | — | — | S — | 9 | A |
| 792 | 791 | 10.25 | — | J | W–E | a | a | Yes | — | — | — | S | 12 | A |
| 804 | 918 | 9.65 | M | 25–30 | E–W | g | g | Yes | — | — | — | R | 12 | C |
| 837 | 860 | 9.30 | M | 45–50 | N–S | b | d | Yes | — | — | — | R | 13? | C |
| 863 | ? | 10.19 | ?F | ?18–20 | — | — | — | pos | — | — | — | S — | 15? | A |
| 864 | 865 | 9.28 | M | A | N–S | f | f | — | — | — | — | R | 13 | C |
| 900 | 927 | 10.46 | F | 25–30 | N–S | c | c | Yes | — | — | — | R | 12 | D |
| 904 | 906 | 10.70 | — | 15–18 | W–E | — | — | pos | ?C | — | — | S | 16 | A |
| 907 | 806 | 10.08 | M | 35–40 | W–E | — | — | Yes | — | — | — | S R | 13? | C |
| 919 | 921 | 9.60 | M | 40–45 | S–N | f | a | Yes | P,P | 29.11–12 | 200–275 | | 15 | C |
| 926 | 925 | 9.60 | F | 25–35 | N–S | f | f | Yes | P | 28.7 | 180–220 | | 13 | C |
| 932 | 931 | 9.85 | M | 20–25 | W–E | j | b | pos | — | — | — | R | 12 | C |
| 935 | 937 | 9.43 | M | 19–20 | N–S | d | b | Yes | — | — | — | S | 13 | C |
| 939 | 938 | 9.60 | F | 35–40 | S–N | c | c | pos | — | — | — | R | 13? | C |
| 943 | 947 | 9.39 | M | 45+ | S–N? | g | — | No | J | 39.6 (Pl.8) | — | S R | 12 | C |
| 955 | 972 | 10.20 | M | 35–45 | S–N | f | d | Yes | — | — | — | R | 13? | D |
| 964 | 967 | 9.53 | M | 25–35 | W–E | a | — | Yes,Ld | — | — | — | R | 12? | D |
| 968 | 1000 | 9.75 | M | 25–30 | W–E | h | i | Yes | — | — | — | R | 15 | D |
| 975 | 974 | 9.48 | M | 35–40 | E–W | — | — | No | — | — (Pl.9) | — | R | 12? | C |
| 993 | 992 | 9.13 | M | 45–50 | N–S | c | c | No | — | — | — | S R | 12 | C |
| 1019 | 1018 | 9.90 | F | 40–45 | N–S | c | — | Yes | — | — | — | R | 13? | C |
| 1029 | 1031 | 10.10 | M | A | E–W | d | b | pos | — | — | — | S | 13? | D |
| 1042 | 1041 | 9.80 | M | 30–35 | S–N | g | d | — | — | — | — | R | 15 | C |
| 1047 | 1052 | 9.80 | M | 30–35 | N–S | b | d | Yes | — | — | — | S | 15 | C |
| 1050 | — | 10.52 | — | — | — | — | — | Yes | B,P,P,P,P | 28.8–11 | 180–220 | | 13 | D |
| 1062 | 1061 | 10.10 | M | 18–19 | W–E | d | a | Yes | — | — | — | R | 12 | D |
| 1071 | 1053 | 9.93 | M | 45+ | N–S | b | d | Yes | — | — | — | R | 13 | C |
| 1079 | 1078 | 10.31 | — | 3–4 | N–S | — | — | Yes | — | — | — | S | 15? | B |
| 1085 | 1087 | 9.22 | F | 35–45 | S–N | b | j | No | — | — | — | R | 13 | C |
| (1093) | 1110 | 10.09 | M | 35–45 | NE–SW | b | d | No | P | 29.7 (Pl.6) | 150–250 | | 13 | C |
| 1096 | 1098 | 9.99 | M | 19–23 | E–W | a | b | Yes | — | — | — | R | 13? | C |
| 1113 | 1112 | 9.60 | F | 25–35 | E–W | f | f | Yes | — | — | — | R | 15 | C |
| 1117 | 1116 | 9.52 | M | 25–35 | W–E | c | c | — | P | 28.2 | 240–300 | | 15 | C |
| 1126 | 1125 | 9.70 | M | 35–45 | N–S | c | b | pos | — | — | — | S | 15 | C |
| 1135 | 1134 | 9.46 | F | 25–35 | W–E | — | — | — | — | — | — | S — | 12? | C |
| 1137 | 1136 | 9.80 | — | 10–12 | W–E | f | a | pos | — | — | — | R | 13? | C |

Fig. 6 continued

| Grave No. | Skele No. | Level m OD | Sex | Age yrs | Orient-ation | Hand L | Hand R | Coffin | Grave Goods | Fig. No. | Date | Dating | Phase Plan Fig. | Area |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1138 | 1141 | 9.25 | F | 40–45 | S–N | e | a | pos | B | — | — | R | 12 | C |
| 1148 | 1147 | 9.55 | — | 4–6 | S–N | c | d | No | — | — | — | R | 15? | C |
| 1151 | 1150 | 9.64 | M | 25–35 | S–N | c | c | No | — | — | — | R | 13? | C |
| 1154 | 1156 | 10.46 | M? | A | E–W | — | — | pos | — | — | — | R | 12 | D |
| 1161 | 1163 | 9.80 | M | 45–55 | W–E | c | c | Yes | — | — | — | R | 13 | C |
| 1167 | 1166 | 9.67 | M | 25–35 | E–W | — | — | — | — | — | — | S | 13 | C |
| 1169 | 1171 | 9.54 | M | 25–35 | E–W | a | d | pos | — | — | — | S | 15 | C |
| 1173 | 1160 | 10.21 | M? | A | W–E | — | — | — | — | — | — | S — | 12 | D |
| 1193 | 1059 | 10.10 | M? | A | W–E | — | — | pos | — | — | — | S | 13? | D |
| 1201 | 1200 | 9.05 | M | A | SE–NW | a | a | — | P,P | 28.5–6 | ?180–225 | | 13 | C |

Fig. 6 continued

backfilling of the eastern gravel pit, had, however, apparently cut through an inhumation burial (678) and must have been dug once the cemetery had started in use.

## EASTERN GRAVEL PIT

A pit, presumed to have been dug to extract gravel, lay at the easternmost limit of the site (Fig. 9). Its full extent was not determined, it had been cut on the western and southern sides by post-medieval pits, and it extended beyond the limits of the site to north and east. The pit was not excavated to its full depth. It had been backfilled with sandy clay brickearth containing Trajanic pottery (layers 1128/9, Figs 30, 31 pottery report below). Graves and a possible tomb structure (Fig. 17) were subsequently dug into its fill.

## CENTRAL GRAVEL PIT

A large gravel pit was dug in roughly the centre of the excavation area, probably in the early 2nd century (Figs 9, 14). It extended beyond the northern and southern limits of the site and the western and eastern sides of the gravel pit were partially removed by 17th-century gravel pits. It appeared to have had irregular edges but measured at least twenty metres east to west.

The gravel pit was entirely excavated along the southern edge of the excavation where it was shown to have been dug out in a series of irregular pits to between 9.00 and 9.50m OD. Some one and a half to two metres depth of sand and gravel had been extracted over all the area.

The sequence of backfilling seems to have taken place by AD 130 although there was much 1st-century material incorporated into the fill (Figs 30, 32, pottery report below). Burials, both cremation and inhumation, commenced in this area when the backfilling was near completion. In particular a mature horse, 1044 (Fig. 9, Plate 1) was buried in a cut in the lower gravel pit fill, perhaps before the initial filling was completed (its skull had been removed by the cutting of a later grave). There was no evidence to suggest that the horse was a ritual deposit, the gravel pit may have simply been considered a convenient hole in which to inter the carcass. However horse skeletons have also been recorded in close association with human burials in the South West Region Cemetery at York [RCHM 1962, 79] and F. Cumont mentions an ancient Roman tradition in which the sacrifice of a horse as a part of the funeral ceremony might take place to soak the grave soil in blood [Cumont 1922, 51].

The uppermost layers of backfill, which immediately sealed some of the graves, contained five redeposited cremation urns (610 section E–F, Fig. 14, 735, 1088, 1123, 1131) dated to the 2nd century. The presence of these urns might suggest that nearby cemetery topsoil was used to raise the ground level in this area. A late 2nd or early 3rd-century pit, 1093, into which an inhumation burial (1110) had been placed, also had two cremation urns (1095, 1157) amongst a large amount of pottery and some glass redeposited in its fill.

The ground level in the area of the gravel pit remained approximately half a metre lower than the surrounding cemetery into the late 3rd century when burial here, and possibly everywhere east of the graveyard ditch, 206, ceased.

In the late 3rd or perhaps early 4th century, the ground level was finally raised by the dumping of a layer of soil, 633 (Fig. 14), which incorporated two concentrated dumps of burnt daub, 562, fragments of which were spread throughout the layer. This sealed all the graves cut into the backfill of the central gravel pit, but was in turn cut by a deep pit (169) which is described below.

Plate 1 West Tenter Street: Horse 1044 in central gravel pit (scale 0.5m).

## DATING

The evidence from which the burials can be dated and its reliability is discussed below.

### BURIAL GOODS

'Burial Goods' as primary evidence for the dating of the burials are here taken to include both cremation urns containing cremated bone and any vessels used to contain or act as lids to those urns, and the objects placed inside the cremation urns; and ceramic and glass accessory vessels, jewelry and other objects clearly deliberately placed with inhumation burials whether inside or outside the coffin.

Of these the ceramic vessels (see S. Pierpoint: 'The Romano-British pottery', below) are the most closely dateable, although it must be accepted that the dating of any particular type may change. The dates of the ceramic grave goods are indicated in the catalogue (Figs 5 and 6) and these have been used as a basis for the phasing below.

The possibility should be considered that some of the vessels, particularly the cremation urns, might have been redeposited and thus do not lie in a primary position. Cremation urns could have been recognised and formally reburied by later grave diggers. Thus the dating of some features in relation solely to cremation urns may be unreliable. The two accessory vessels lying above the coffin in grave 919 may well have been inserted into the grave fill some time after the burial was made.

Twelve deliberately buried cremation urns were contained in identifiable ceramic vessels (Fig. 5), these had a total possible date range of 100–250, the earliest (979) being 100–140, the latest (1121) 180–250. The eight clearly redeposited cremation urns (Fig. 5) belonged to a similar range of dates.

The amphora which contained the Verulamium White Ware cremation urn (255) suggested that the cremation could not have been interred before *c.* 180, the urn itself is unlikely to have been in use much after *c.* 200.

The jewelry from two cremation urns is of an earlier date than the urns as might be expected of precious personal objects which may well have been lifelong possessions. The iron intaglio ring (903, Fig. 41) from cremation burial 675 is dated to the 1st century or early 2nd century and lies in a Verulamium White Ware urn dated *c.* 120–160. The personal objects (Fig. 38, 1–5) placed in the urn with cremation burial 1092 include Neronian items which are unlikely to have been deposited before *c.* 120.

The earliest ceramic grave goods accompanying inhumation burials were probably interred *c.* 150–

180 (Graves 621 and 689). A further seven graves (518, 654, 733, 926, 1050, 1110, 1201) contained vessels dated between *c.* 180 and *c.* 225, and three graves (506, 741, 919) were probably so furnished between *c.* 200 and *c.* 280. Two graves (270 and 710) had paired ceramic and glass vessels, dated to the 4th century by the glass. None of the jewelry from the inhumation burials could be closely dated. These ceramic vessels provide the basic dating framework on which the dating and phasing of the site has had to be based.

## THE COINS

(SF references in brackets are to small-finds numbers in the coin catalogue)

No surviving coins from the inhumation burials could be confidently shown to be in a primary position and thus a precise guide to dating. Eight graves contained coins in their fills, and fragments of two infants lay in two pits both of which produced coins from the backfill. One grave (570), only a small proportion of which was excavated at the head end, produced three coins all apparently redeposited. Two were minted in the later 2nd century (SF 527,530) but the third was minted in the late 3rd century (SF531). The pottery sherds from the same fill were dated to between the mid 3rd and mid 4th centuries.

Two graves contained coins clearly deposited some time after they were in circulation. Grave 458 contained a coin of Nero (SF399) but pottery sherds no earlier than the mid 2nd century in date, and in grave 741 a coin of Septimus Severus (SF767) lay under the left arm of the skeleton which had been furnished with a BB1 beaker dated 250–300. The worn coin of Domitian (SF849) lying in grave 768 could have been in circulation when the burials in the central Roman gravel pit area were first made, probably after 120, but may have been derived from the gravel pit fill.

The partial infant skeleton which lay, perhaps redeposited, in pit 493 was in backfill containing a coin of Carausius (SF407) as well as pottery dated to the second half of the 3rd century. As the coin is less worn than others from the site the dating of this feature can perhaps be ascribed with greater confidence than most.

The five other inhumation burials associated with coins had no pottery evidence whatsoever to aid in their interpretation. Thus the coin of Domitian (SF95) lying close to the skeleton in grave 313 might indicate an early 2nd-century date for the burial but as the grave is not in a stratigraphic relationship to other Roman features and contained no pottery sherds in its fill the evidence of the coin must be treated with caution. The two coins from grave 528, Victorinus or Tetricus I 268–273 (SF474) and a Victorinus copy 270–300? (SF478) would appear to offer a confident basis for dating this feature. It is, however, the latest in a sequence of three graves and the coins could have been derived from the fills of either of the two earlier graves. The proximity of grave 528 to grave 570 in which two 2nd-century coins were redeposited over 100 years after their manufacture should be noted.

It is assumed that the plaster burial rite is a 4th century one from parallels with similar burials in cemetery 3 at Poundbury [Green 1982, 64]. At West Tenter Street the coin evidence is particularly important in helping to date the plaster burials, none of which have closely dateable grave goods. Grave 459 is the only plaster burial to have a coin in its backfill, a copy of a coin of Constans (AD 340–7) with "average" wear (SF296). It lies close to a heavily truncated grave (141) which, although it cannot be shown to have been a plaster burial, certainly overlay a sequence of three others. It too contains a mid-4th century coin (SF419).

The partial remains of two infants were placed in the upper grave fill above the head and feet of the skeleton in grave 549. The one over the feet appeared to be simply laid in the grave fill, but the one over the head may have been inserted at a later date, the layer in which it lay contained a coin of Gratian (AD 367–375, SF155) only slightly worn and the latest to be associated with a burial from the site. Whether this coin is lying in the initial fill of the main grave, or is possibly derived from it, is uncertain.

A worn coin of Carausius found inserted in calcium carbonate packed around a skeleton at Spital Square, E1 [*pers. comm.* G. Evans] indicates the possibility that the rite emerged at the end of the 3rd century, and an argument for such a date at West Tenter Street could be made from the stratigraphy.

Indirect evidence for a date of not earlier than the mid 4th century, however, could be made from one interpretation of the function of the 'deep pit', 169, cut in the area of the central Roman gravel pit. The dating for the 'deep pit' is discussed below, its construction being later than AD 340 and backfill probably by AD 375. Traces of calcium carbonate on the gravel at the base of this pit could be waste from the enactment of the plaster rite, although the burials themselves are found well to the west of this feature. The period in which the 'deep pit' appears to have been in use fits precisely with the three coins found in association, albeit in stratigraphically late contexts, with the plaster burials.

The copper stain of a coin was found in the mouth of the skeleton in grave 904. The coin itself did not survive. This grave cut a chalk burial and is assumed to be at least 4th century in date.

## REDEPOSITED POTTERY

The great majority of the graves are not directly dated by grave goods or coins. Some lie in clear stratigraphic relationship to ones that are so dated, but for many graves the only dating evidence is redeposited sherds in the fill, if any were recovered.

There is a predominance of 2nd-century pottery sherds throughout the site, although there are rarely very many in any one grave. Taken with the incidence of redeposited human bone the stratigraphic evidence suggests activity which must have taken place over a longer period than one century. It does however mean that for many graves it is not possible to phase them any more accurately than to the second century at the earliest—in the case of those cutting the backfill of the Roman gravel pit after *c.* AD 120.

## STRATIGRAPHIC EVIDENCE

A number of graves can be roughly dated by their stratigraphic relationship to those furnished with dateable grave goods. The relative dating of intercutting graves at Lankhills has been discussed by G. Clarke [Clarke 1979, 119]. There a 'rule of thumb' was suggested of 20 years before the site of a grave was re-used or even where graves were dug side by side. Where no other evidence is available this has been tentatively used as an aid to dating and phasing the burials (see below).

A grave may have been re-used, however, for a particular reason, within 20 years. At West Tenter Street two graves overlying one another had collapsed into a third beneath (516, 694 into 744). Here both the two later burials must have been inserted before the lower coffin collapsed, and as they themselves were encased in coffins, must have lain in the ground long enough for their own coffins to have rotted through and the weight of the superincumbent soil to have brought them down with it as it filled the void beneath (for another example of a partially collapsed grave see Ellis 1985, 118). All three graves contained chalk burials, which faced south and apparently respected one another. The second burial, 694, was offset to the side of the first but partially overlapped the earlier grave cut, 744. The third burial, a juvenile, 516, lay well above and partially overlapping the head of the earliest grave. The proximity of the graves and similarity of burial rite might suggest a family relationship although no common genetic traits were identified on the skeletons. It seems unlikely that this group was interred over much more than twenty years, and possibly less, thus closely grouped burials were made within quite short intervals of each other.

Burials significantly dated by their stratigraphic relationship to burials with grave goods include those which predated two cremation urns. The cut for cremation 442 (Fig. 12) cut the fill of inhumation grave 647 which in turn cut a probable grave 723 (Fig. 9). Cremation 69 (Fig. 13) was set in a shallow pit which cut through the fills of graves 68 and 75 (Fig. 12 and section C–D Fig. 11), grave 68 cut the fill of an earlier inhumation burial (66, Fig. 9). The suggested dating sequence here, working backwards from the dateable cremation urn, is that the urn is dated 150–200, but the 11 sherds of pottery in grave 68 are likely to have been deposited after 150, therefore if 20 years are allowed between burials the cremation urn may have been interred in the latter quarter of the century, grave 68 dug in the third quarter, and grave 66 *c.* 150. It is, of course, quite possible that all three burials could have been made over a much shorter time if deliberate re-use was made of the burial plot.

The most complex sequence of intercutting inhumation burials lay in the north west area of the site. Within this sequence three graves, each furnished with a ceramic vessel, were directly related to one another. The earliest, 689 (Fig. 12), dated 140–180, was cut on one side by grave 733 (Fig. 13) dated 200–250, which in turn was cut at its foot by grave 506 (Fig. 15) dated 240–280. This sequence of relatively well dated graves would suggest that a gap of as much as 20–40 years might be allowed between burials in the life of a cemetery in use as long as that at West Tenter Street.

Inhumation burial 278 (Fig. 9) may be the earliest burial on the site on the basis of its stratigraphic relationship to the central gravel pit which apparently cut it. The grave contained no dating evidence but the initial backfilling of the gravel pit is suggested to have taken place by *c.* 130.

## PHASING

Burial can be shown to have taken place on the Tenter Street site from either very late in the 1st century or early in the 2nd century AD continuously through into the mid 4th century and perhaps later.

The frequency of burial at different periods is less certain but a phasing is suggested and illustrated on Figs 9, 12, 13, 15, 16. The greatest reliance has been

placed on burial goods, the most closely dateable being ceramic vessels which as complete grave goods or complete cremation urns are assumed not to have been deposited outside their conventional date range. No identifiable coin was found in a position which could be described as that of a 'primary' grave good. The phasing periods are consequently tied to date ranges commonly accepted for pottery types.

Seventeen inhumation graves (14%) contained ceramic vessels as grave goods, in addition 12 of the *in situ* cremation burials were in dateable urns, four with dateable lids, and one encased in the base of an amphora. These provide the basis of the phasing sequence and to them can be added the 8 graves containing coins in their fill. The only distinctive burial rite, that of plaster burial, can be dated (by analogy) to the 4th century; evidence from the site (see below, the deep pit) could suggest a date in the third quarter of the 4th century for this ritual.

The remaining graves can only be dated by their stratigraphic relationship to those more precisely dateable and to one another. Little or no residual pottery was encountered in many graves and where they were not lying in stratigraphic relationship to more securely dated features they cannot be dated with any confidence. The phasing plans therefore show many graves at the earliest date at which they are likely to have been dug.

## PHASING SUMMARY (Figs 9, 12, 13, 15, 16)

The site probably came into use after the construction of a road running in an easterly direction from the Roman town in the latter half of the 1st century AD. A gravel pit was dug and backfilled by *c.* 100 by the roadside at about the time that the first inhumation burials might have been made. A larger gravel pit was dug slightly away from the road, cutting an inhumation, and largely backfilled by *c.* 130. Cremation and inhumation burial practices continued simultaneously across the whole site with tombs marking inhumations constructed along the road side.

The precise number of burials made during the 2nd century is uncertain but the bulk of the cremations and possibly a majority of inhumations were made during this time. Cremation may have continued into the early 3rd century but not thereafter. Inhumation burial continued to be practiced, apparently without interruption, into the second half of the 4th century and perhaps later.

In the late 3rd or early 4th centuries a major landscaping took place. The ditch (206) was filled in, the ground level in the area of the central gravel pit raised by dumping, and a deep pit, perhaps associated with the rite of plaster burial, dug in mid 4th century only to be destroyed and filled up by *c.* AD 375. At least one tomb was robbed of its stone in the 4th century.

## TOMBS AND MARKED GRAVES

Traces of stone foundations respecting graves were found at the eastern end of the site (Fig. 12). They followed the general alignment of the cemetery (as described below) and are interpreted as lying beside a Roman road. Disturbance in this area was extensive and none of these features were completely recovered in plan.

The easternmost tomb cut a gravel pit (1128) which had been backfilled by *c.* AD 100. A length of one east-west masonry wall, 1014 (Fig. 17), which extended beyond the eastern limit of the excavation, survived. It was cut at its western end by a post medieval pit. A *c.* 3.0m length of foundation trench was exposed in the excavation. It had straight vertical sides and a slightly curved bottom, measured 0.70–0.75m wide and bottomed at *c.* 10.10m OD. The trench was filled with ragstone rubble laid roughly in courses and packed

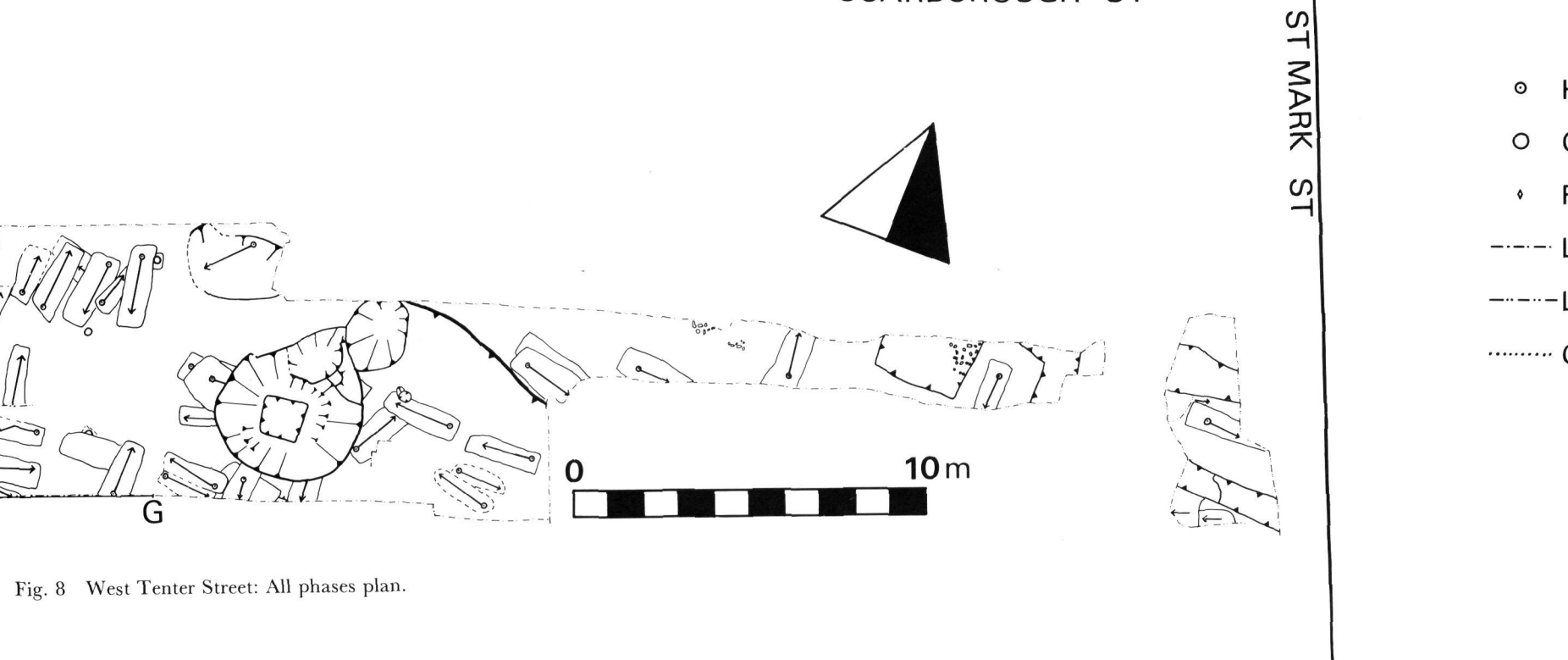
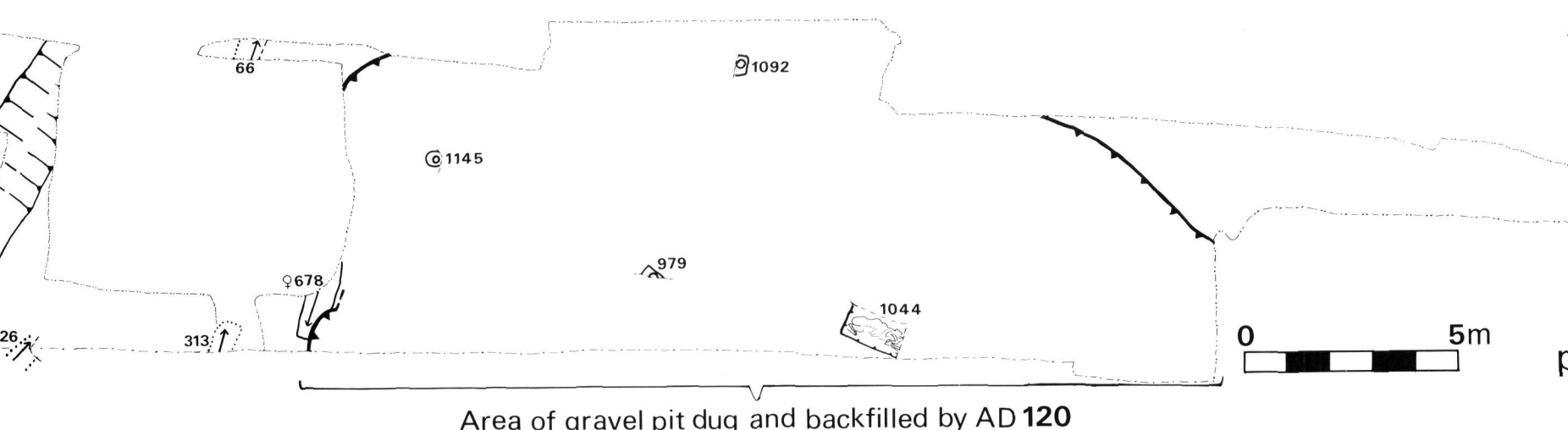



Fig. 8 West Tenter Street: All phases plan.



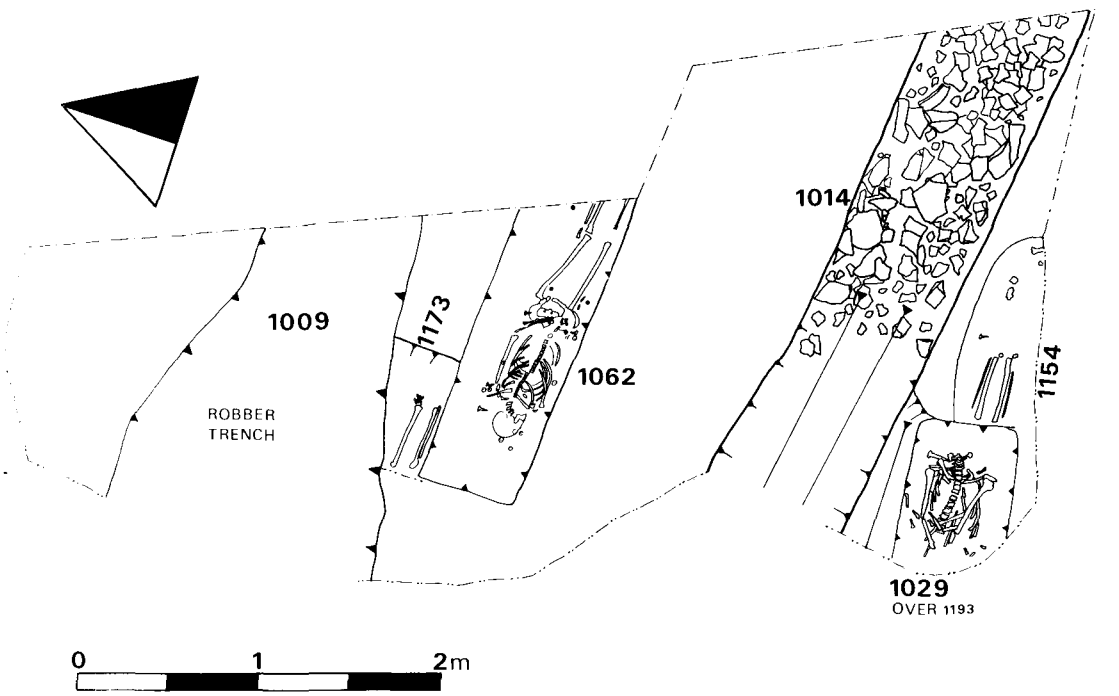



Fig. 17 West Tenter Street: Plan of tomb 1014 at eastern end of site.

with coarse grey mortar, surviving to *c.* 0.50m in depth.

Two burials were recovered from north of the wall foundation. The earlier one, grave 1173, dug to 10.20m OD, had been severely disturbed by post-medieval intrusions and only the two lower legs of an adult, probably male, survived. It had been cut by a gravecut, 1062 at 10.10m OD, for an eighteen to nineteen year old male interred in a coffin and orientated west to east although the skull lay on its right side and the body was slightly twisted so that it appeared to be arranged to face south.

A spread of ragstone rubble and cream mortar, 1074, sealed grave 1062 and spread south to the edge of wall trench 1014. It appeared to have either filled a shallow scoop or been compressed into the soil beneath. It contained pottery sherds dated to the late 2nd to mid 3rd centuries and a votive painted ceramic eye (Fig. 37.3).

An irregular trench, 1009, 1.5m wide at its western end and tapering to 0.85m wide at its eastern end led eastwards from the post medieval intrusion immediately to the north of and cutting the edge of the earlier grave, 1173.

A small island of stratigraphy lay on the south side of the wall foundation trench, 1014. It was cut on its west and south by post medieval pits. Three inter-cutting graves, none complete, survived here. The earliest, 1154, dug to 10.46m OD, lay to the east of the other two and only the lower legs of an adult, possibly male, orientated east to west were recovered.

Grave 1154 was probably cut at its foot by a west-east burial, 1193 at *c.* 10.10m OD. It too contained an adult, probably male, of which only the feet were found. That burial was immediately overlain by another adult male in grave 1029, oriented east-west with the torso preserved. The skull was, however, missing, the neck vertebrae were pushed upwards slightly against what appeared to be coffin nails. Parts of a mandible were recovered from the grave and it is possible that the skull had been propped up in the coffin, only to be subsequently sliced off by the cutting of the post-medieval gravel pit. An alternative suggestion is that it was a decapitation burial, examples of which were found at Lankhills [Clarke 1979, 342–4].

The only dating evidence is a few 2nd century

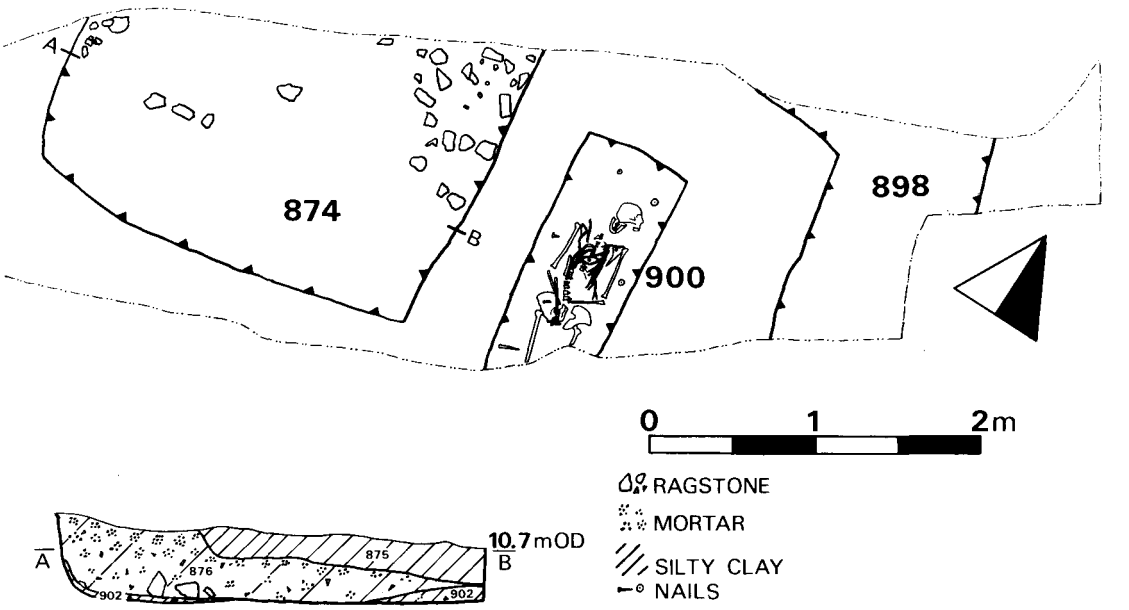



Fig. 18 West Tenter Street: Plan of tomb structures 898 and 874, section through robbing debris of 874.

sherds from the graves both north and south of the wall. The ragstone rubble (1074) may be interpreted as demolition rubble, but the pottery from it and the votive pottery 'eye' might only indicate the period of active use of the structure rather than the date of its destruction, which must remain open to conjecture.

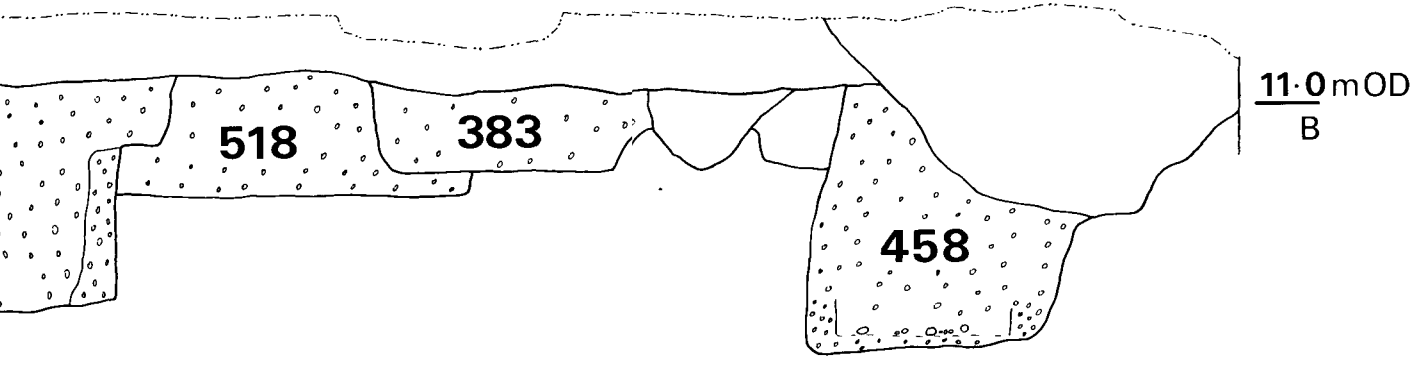
The features are interpreted as the remains of a tomb. The irregular trench, 1009, to the north appears to be a medieval or post-medieval robber trench which may well have robbed a stone wall parallel to 1014 to the south. If so, grave 1062 would be a roughly central burial, the tomb probably being constructed after grave 1173 had been dug and possibly forgotten. The three burials on the south side of the wall would therefore have been made as closely as possible to the standing wall.

It is equally likely that wall 1014 was the northern wall of an enclosure for which we have no other evidence. If so the three tightly packed burials would suggest the intensive use of the enclosure's interior.

To the west of the most easterly tomb but also close to the roadline, structural remains lay around a grave, 900. They are two distinct cut features which did not entirely surround the burial. (Fig. 18). The grave was enclosed on its east and north by a right-angled, square profiled trench, 898, measuring 0.90m wide and cut to a depth of 10.24m OD. It was filled with a lower layer of sandy clay with few inclusions, which contrasted with the bulk of the fill containing mortar and building debris fragments. The grave was dug to 10.46m OD and contained an adult female orientated north to south, the grave fill contained 2nd-century pottery sherds.

On the west side of the grave a broad flat bottomed trench, 874, measuring 2.5m wide and dug to *c.* 10.43m OD, was cut on its north side by a post-medieval intrusion. It was filled with a sandy silt which contained some gravel, small chips of ragstone, and mortar, a layer of ragstone debris had accumulated along the eastern edge. The lumps of mortar were particularly large in its surface, where post-medieval disturbance had truncated it. Fourth-century pottery was recovered from it.

Although cut to north and south by gravel pits grave 900 was apparently not entirely enclosed at least by features dug well into the brickearth. The right-angled trench may have been a wall foundation trench, but if it contained a stone wall no trace survived unless the mortar in the backfill is robbing debris. The trench might have contained a substantial wooden sill beam for a timber construction. It appears too regularly cut to be a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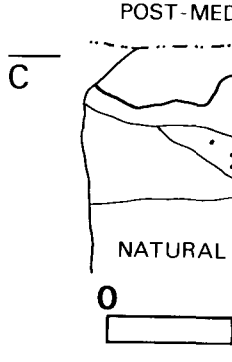
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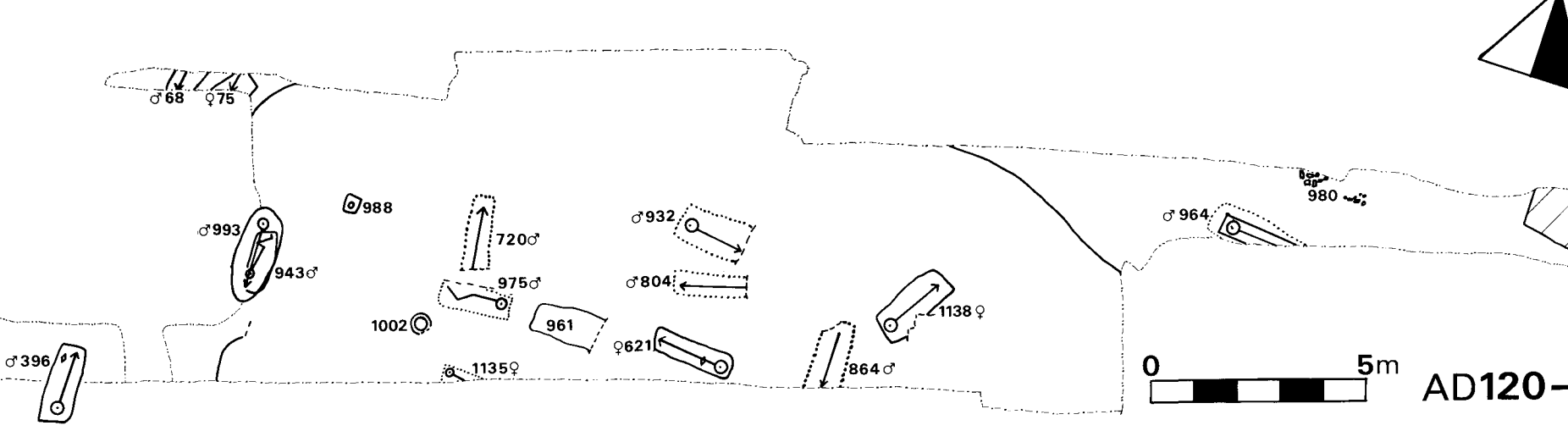
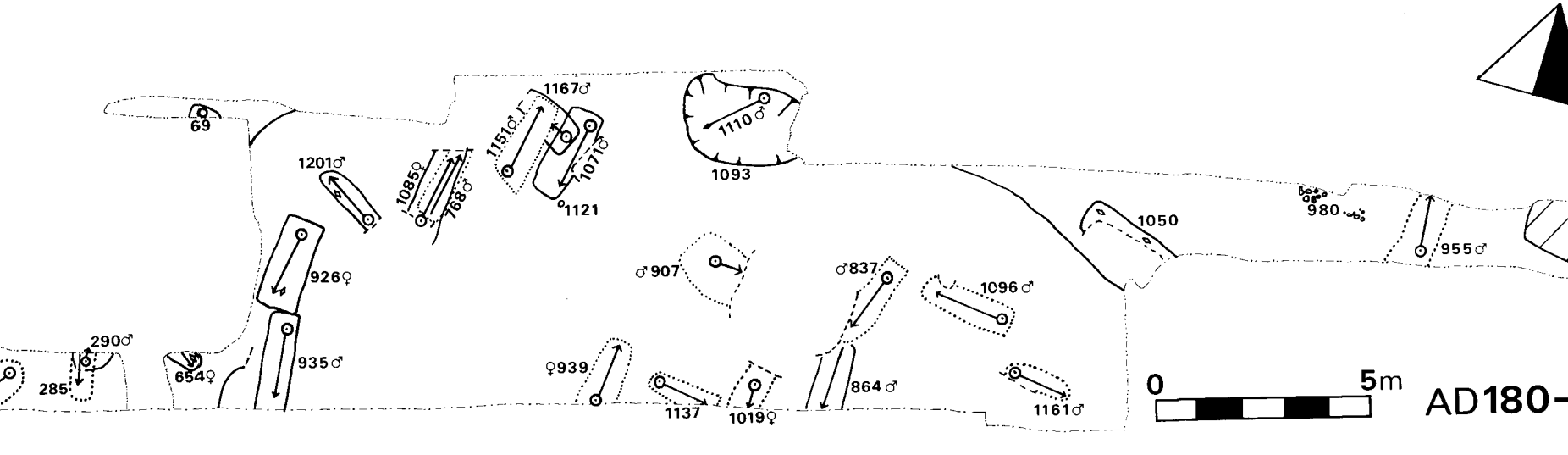



Fig. 12 West Tent



hedge ditch, an interpretation proferred for ditches around graves at Lankhills cemetery [Clarke 1979, 98 and 106].

The building rubble debris in feature 874 to the west of grave 900 bears the hallmarks of robbing trench backfill. If this is a foundation trench it could be interpreted as the base of a monument of one of the types known from the roadsides of Roman towns in Italy and elsewhere in the Empire [Toynbee 1971]. It could have been the base for a tower tomb [*ibid* 164–72] or a raised altar surrounded by an enclosure wall [*ibid* 123–5] which could have cremation urns or inhumation burials placed in or near them. If this monument was destroyed in the 4th century it may have been at the time of the construction of the bastions on the east side of the Roman city wall, dated to between 341 and 375 [Maloney 1983, 108], when several funerary monuments were incorporated in the foundations [Merrifield 1983, 228–235].

A grave, 955, lay *c.* 1.80m to the west of foundation 874 and contained an adult male buried in a coffin, orientated south to north with skull facing east (Fig. 13). The backfill of the grave contained frequent small fragments of pink, yellow and grey mortar in the fills over the coffin and had the appearance of more robber trench backfill. Assuming that this is not a re-used robbed foundation trench, the mortar may be derived from the construction or destruction of a nearby tomb. The grave is dated to the late 2nd century or later from pottery sherds in the fill.

To the west of grave 955 a loose linear spread of ragstone rubble, 980 (Fig. 12), incorporating one tegula fragment, lay at the base of the ploughsoil no deeper than *c.* 11.0m OD. The rubble was in two patches 0.5m apart and not mortared, although two course of smaller stones survived at its western end, suggesting that it was the base of a drystone foundation rather than demolition rubble. No dating evidence accompanied the rubble.

## WOODEN GRAVE MARKERS

The most substantial traces of a grave with wooden superstructure were found around grave 428 which belongs to the latest phase of cemetery use (Fig. 16). It was not completely excavated because of its depth and because it extended beyond the southern edge of the excavation, the half excavated being the head end of the grave.

The grave (Fig. 19) was dug to 9.95 OD and a 50mm deep layer of gravel laid over the floor. The coffin, containing an 8–13 year old, was placed with the head at the north, on the grave floor. The sides of the grave were lined with gravel mixed with some silty sand. This was held in place along the inside by wooden shuttering, slight traces of which survived as a dark grey clay stain. The shuttering appeared to rest on the coffin lid on the east side of the grave and retained the lining against the vertical side of the grave. The west side of the grave had been cut away to about the depth of the coffin lid to form a ledge on which the lining rested. The lining was apparently constructed after the coffin had been placed in the grave. The gravel extended along the full excavated length of the grave's east edge where it was 120mm thick, but apparently ran out at *c.* 1.5m from the head end along the west edge which was *c.* 60mm thick. This lining was carried up to a depth of *c.* 10.85m OD at which an irregular lip *c.* 100mm wide was cut out around the edge of the grave, forming square corners, and packed with the gravel. Two projections a further *c.* 100mm at their widest were dug roughly opposed to one another on the west and east sides *c.* 0.90m from the head end of the grave, these were also filled with the gravel. The grave cuts a chalk burial and contains a few late 3rd-century sherds in its fill, it is dated to the 4th century or later.

The gravel is interpreted as forming a foundation for a wooden superstructure with post pads for two projecting upright timbers. The resulting construction could have imitated more substantial, and presumably more expensive, masonry ones, the external uprights perhaps imitating stone pilasters. At a time when stone monuments were being robbed for their construction material it might have seemed that a timber structure would have a better chance of survival.

Three other graves, all in the south west corner of the excavation, had postholes associated with them which are interpreted as grave markers:

Grave 548 (Fig 9) extended beyond the southern site edge and was excavated at the head end only. The grave appeared to have been dug to a depth of 10.44m OD, at which level a *c.* 0.5m long shelf was left at the head end and the cut for the coffin dug 0.5m deeper. The coffin contained a 45 years or older male facing south, the burial being made possibly as early as the mid 2nd century on stratigraphic grounds. A posthole, 574, was cut into the grave fill, its rectangular cut tapered to a 120mm square flat bottom at the base. The posthole was subsequently truncated by a chalk burial, grave 553. Lying immediately to the north of grave 548 was an east-west grave, 626, with a posthole, 337, at its western end (Fig. 12). The grave contained a thirty to thirty five year old male, lying in a wooden coffin reinforced around its inside edges with angle-strips of lead (Fig. 20), and was dated to the late 2nd century. The sides tapered in slightly

to the base of the grave, over a distance of *c.* 0.40m at the foot end which was cut by a posthole, 337, in its north west corner. The posthole measured 0.10 × 0.15m, and had vertical sides and a flat bottom, it was dug down to 10.55m OD, *c.* 0.65m higher than the grave floor. The ground above the posthole was cut way by a post-medieval pit and it was not possible to be certain that the posthole had been dug through the grave fill and was not cut by the grave.

A later grave 376 (Fig. 13), which cut grave 626, had two small postholes set in a shallow scoop cut out of its eastern edge. The grave contained a female adolescent facing south and dates to perhaps the early 3rd century. The posthole feature appeared to be integrated with the edge of the grave, although the southern part was cut by grave 321. The scoop, *c.* 0.80m long and up to 0.25m wide, was cut to 10.88m OD and it incorporated one posthole at its northern end. The posthole measured *c.* 0.10m square and was flat bottomed, dug to 10.83m OD. The other posthole lay at a different angle to the first and may have cut through the southern end of the scoop. It measured 0.20m north-south and was cut by a later grave on its western side, it was flat bottomed and dug to 10.81m OD. It is assumed that these postholes are part of some sort of grave marker. There might have been others around the grave, particularly on its western side which had been recut for the insertion of a juvenile's burial. It is however possible that the postholes belonged to an earlier feature removed by the digging of grave 376.

## CEMETERY ORGANISATION

Some ordering of the overall layout of the cemetery and a general respect for other graves is evident at the West Tenter Street cemetery. Although there are many cases of cremation and inhumation burials being cut by later burials they can be partly explained by the long period over which the cemetery was in use and the inevitable loss of grave markers over such a period.

D. Bentley has identified apparently deliberate clustering of the Roman burials at St. Bartholomew's Hospital [Bentley and Pritchard 1982, 157–8]. The clearest example of such a practice at West Tenter Street is in the grouping of the plaster burials, all perhaps dated to the 4th century (Fig. 16). The densely packed burials in the north west corner of the site appear to have been made over a long period and their concentration may not be deliberate.

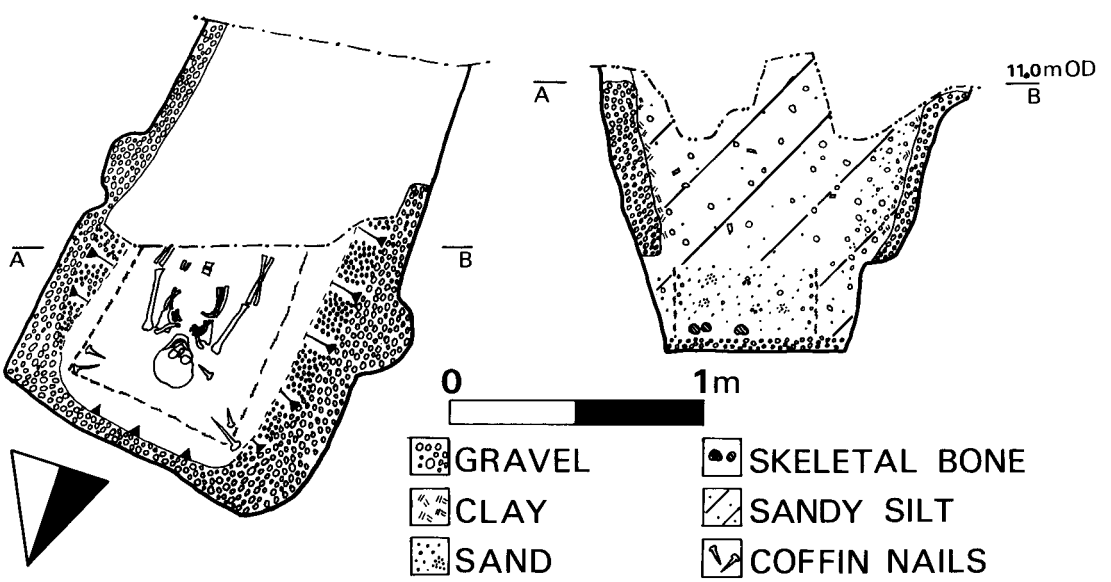



Fig. 19 West Tenter Street: Plan and section of grave 428.

There was no distinctive pathological evidence to suggest clustering by family groups.

Some graves cut the ends or sides of earlier graves, as if later burials were being squeezed in between known grave plots. In one instance, grave 447 cutting grave 376 (Fig. 13), it appears that the later burial, a juvenile, was deliberately inserted alongside and on the same orientation as a female adolescent. Although the right side of the earlier burial was disturbed, the bones were redeposited over its skull, showing that it had been deliberately uncovered before the second burial was made. The earlier grave was also associated with traces of what may have been a structure to mark it (see 'Tombs and Marked Graves').

A probably 4th-century grave, 744 (Fig. 16), containing an adult male, had apparently exactly re-cut an earlier burial as numerous bones of an 18–20 year old female were found packed outside the head and foot of the coffin. Dark staining presumed to come from an earlier coffin was found on the edge of the grave cut.

Three cremation urns were cut by Roman features, but many of the others survived although a number of graves were cut close to them. As these were mostly shallow burials it is possible that they were visible protruding through the Roman ground surface. One cremation urn, 69 (Fig. 9), was positioned exactly between two graves although its cut dug through the fills of both graves.

Some graves, particularly the early ones, were badly disturbed, and redeposited human bone was found generally throughout the cemetery. This may suggest that more burials were made than have been identified. If exact re-cutting of graves took place, as in the case of grave 744, where the earlier occupant had been redeposited in the fill, then the evidence for the earlier burial could be entirely missing. Grave 968 (Fig. 15) completely removed the occupant of the much shallower grave 1050 (Fig. 13) none of whose bones had been redeposited in the later grave. It is only because the later grave was slightly offset from the earlier, which had two urns (Fig. 27, 10, 11) lying beside the coffin, that the earlier grave was noticed. Two near complete pots (Fig. 27, 8, 9) had been redeposited in the fill of the later grave suggesting that it had cut an unusually well furnished burial.

Several 'ghost graves'—deep cuts and shallow pits which contained no evidence for burials—were difficult to interpret. One large feature in the area of the central gravel pit, 961 (which cut a cremation urn) (Fig. 12) was large enough to contain an inhumation burial but contained no evidence for one. Feature 341 at the west end of the site might have been the end of a grave but was cut by a post-medieval pit (Fig. 12).

A number of shallow scoops in the surface of the cemetery may have been the remains of infants' graves from which the bone evidence has been lost. Of these only those graves with clearly laid out coffin nails or grave goods have been illustrated on the phase plans.

Two cuts containing fragmentary bones are interpreted as inhumation burials *in situ*. Feature 726 containing one fragment of a left tibia cut feature 723 in which were the fragments of a left radius and ulna and a rib (Fig. 9). Both were cut by two post-medieval trenches which removed any further evidence for these graves.

Two intercutting pits (429, 493, Fig. 16) were dug in the north west corner of the site. Pit 493 was an irregular oval shape *c.* 1.10m wide, steep sided, and was dug to expose the leg bones of the burial in grave 605. The pit fill contained the articulated bones of the spine and right ribs of an infant. A coin of Carausius

(287–90) was found in the fill together with some late 3rd century pot sherds.

Pit 493 was cut by pit 429, which had an irregular square shape measuring *c.* 1.40m square. It had steep sides, and had uncovered the legs of the burial in grave 551. The backfill contained sherds of 4th-century pottery. The dating material from the pits could have all been derived from the graves which they cut if they were backfilled with the same material.

Graves 605 and 551 were placed side by side 0.5m apart on roughly the same alignment (Fig. 16). They both contained adult males orientated west to east. The skeletons were noticeably stained a dark purplish red, the only ones from the site to be so coloured.

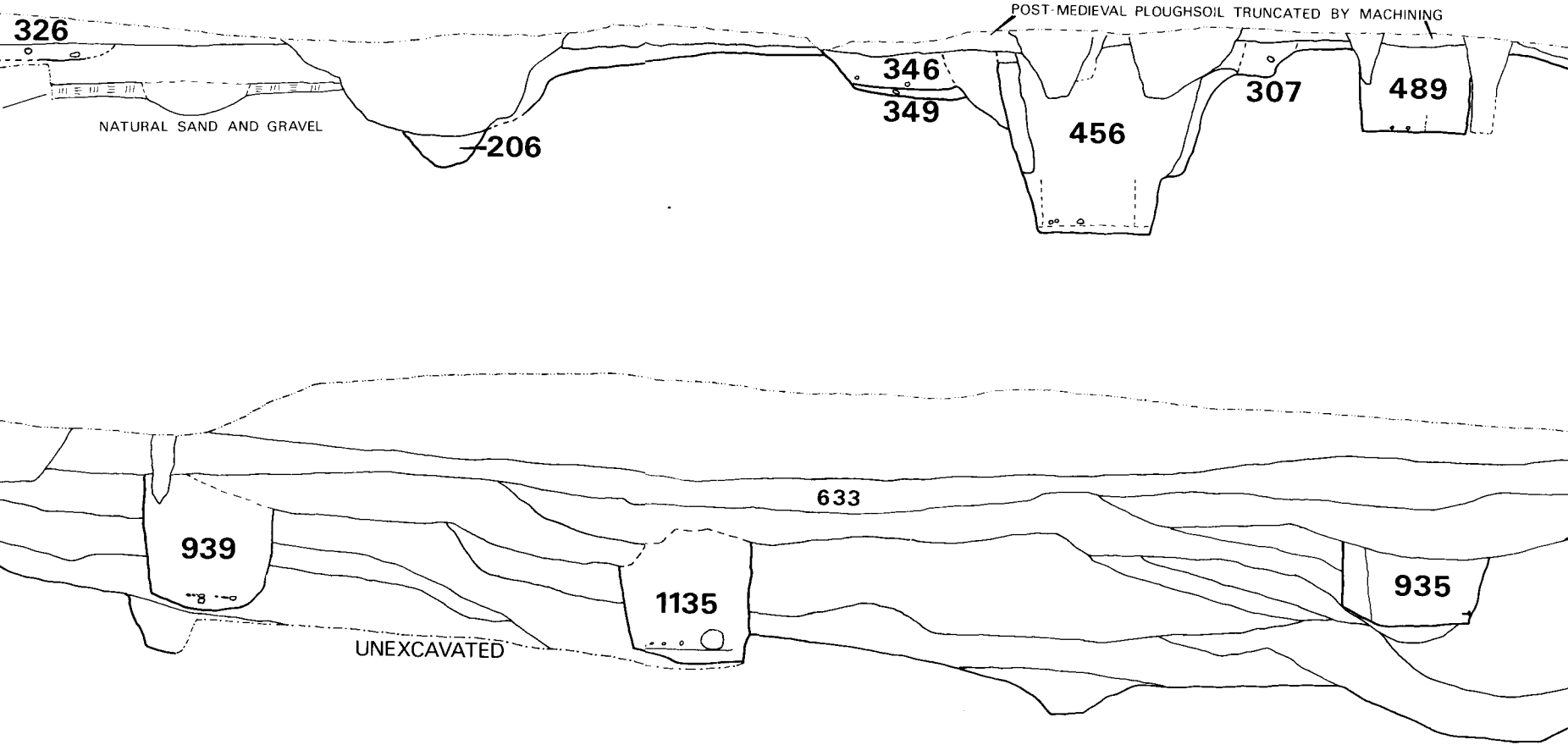
The purpose of the pits cutting these graves is uncertain. The distinctive colouring of the skeletons may be the result of an unusual burial rite, but J. Evans suggests that it might be the result of manganese salt replacement of the coffin wood affecting the bone; he detected traces of manganese salts in a sample of soil accompanying one of the skeletons as well as low levels of liquid materials tentatively identified as adipocea, no traces of dyes or other unexpected elements were detected. The pits could have been dug to re-establish the position of the two graves which might have been lost after a period of neglect, or simply dug by later grave diggers to ensure that they were not disturbing earlier graves. The latter interpretation would be further evidence of respect shown for earlier burials. The excavation of the pits may have created the right conditions to cause the manganese reaction with the human bone.

## ALIGNMENT

The graves (Fig. 8) were by and large aligned either parallel to or at right angles to a north-south ditch (206, Fig. 9). This ditch, which was possibly banked on both sides, appears to have been respected by the earliest burials, and remained in use until at least the mid 3rd century. It would have made an impressive boundary, measuring over 1.8m wide and *c* 1m deep, and must be considered an important element in the organisation of this part of the cemetery. The ditch may, however, have been secondary to the Roman road, which ran from west to east across the cemetery area, and would have been at right angles to it. The ditch sloped downwards to the north towards the presumed road, the length excavated having a fall of some 0.13m over *c.* 6.5m, and could have fed into a roadside ditch.

The only evidence for the date of the construction of the ditch is that what might be 2nd-century burials apparently respected it. It appears to have been well maintained and kept clean. No silting-up layers were observed, and it had been backfilled in one episode. Two coins certainly stratified in the fill were both slightly worn coins of Tetricus I dated to AD 270–273. The accompanying pottery sherds were also dated to the second half of the 3rd century. The latest coin from the site, one of Arcadius dated 388–402, was found in the very surface of the ditch: the distinction between the fill and the overlying ploughsoil being there hard to make, it must be assumed that this coin was derived from the ploughsoil or had become lodged in the surface of the ditch backfill. The grave, 282, which cut through the ditch backfill, contained no dating evidence. As it also cut through where the western bank would have lain it indicates that any bank may have been removed and perhaps used to backfill the ditch before the grave was dug.

The foundation trenches of what appear to be tomb structures at the east end of the excavation are on a common


326
POST-MEDIEVAL PLOUGHSOIL TRUNCATED BY MACHINING
NATURAL SAND AND GRAVEL
206
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935
UNEXCAVATED

F.

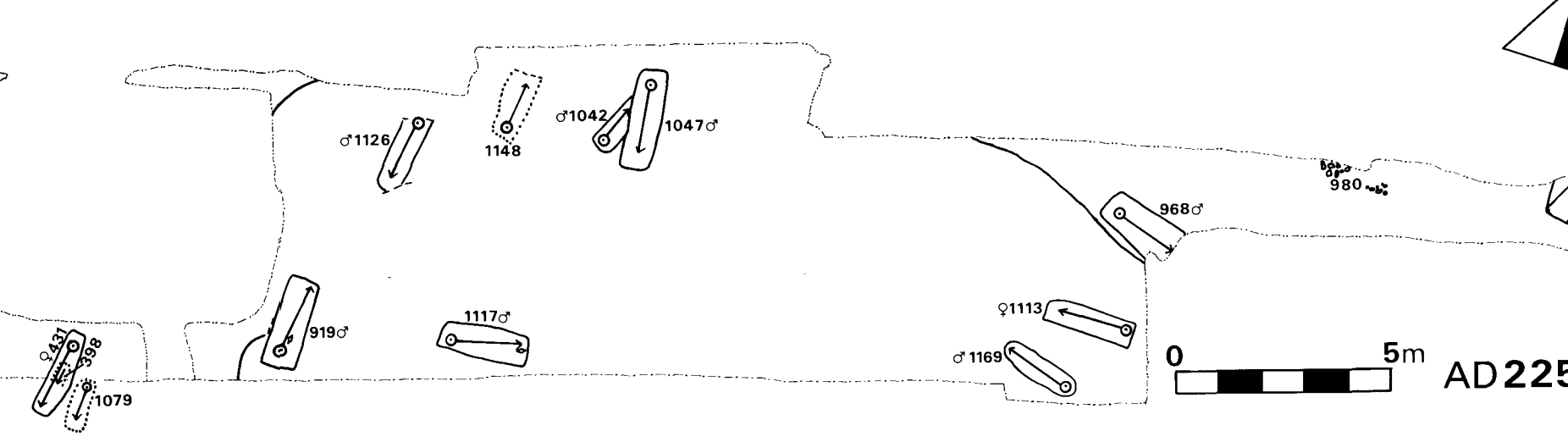
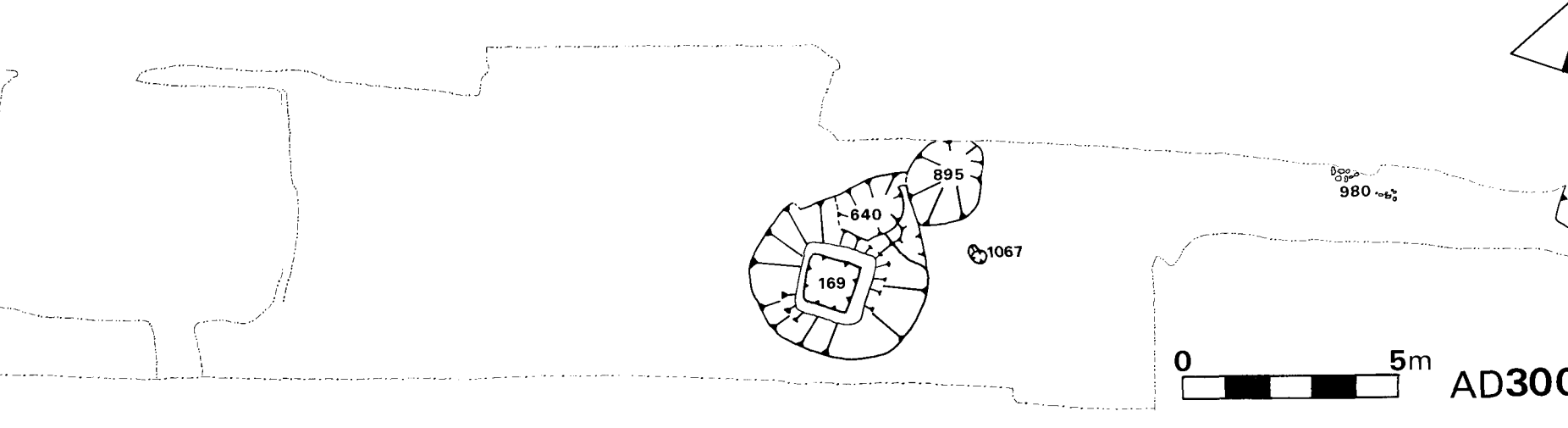

♂1126
1148
♂1042
1047♂
980
968♂
919♂
1117♂
♀1113
♂1169
♀443
398
1079
0
5m
AD225

Fig. 15


895
640
1067
169
980
0
5m
AD300

orientation to one another and to the line of the road. The placing of tombs by roadsides was common Roman practice, and can be seen for instance at Pompeii, both along the major road, the Street of Tombs [Toynbee 1971, 119–26] and the minor extramural road the Via Nuceria, the size of the tombs reflecting the status of the roads.

The axes of the ditch and road are clearly respected by most of the graves throughout the life of the cemetery. Even the grave cut through the backfill of the ditch respects the general alignment as does the skeleton (1110) laid in a circular pit (1093, Fig. 13). A few graves do appear to have departed from this alignment, in particular a number of graves in the south west corner of the excavated area appear to disregard the others. Grave 321 (Fig. 15) cuts through two earlier burials in what appears to have originally been a marked grave (376, Fig. 13). No respect is shown for the earlier grave edge or the skeletons, and it is possible that this is a late grave inserted long after the earlier ones had been forgotten and perhaps when the organisation of the cemetery had broken down, although there is no independent dating evidence to support this interpretation. Two earlier graves in the immediate vicinity of grave 321 (328, 487 Figs 9, 12) also stray slightly from the common alignment. This part of the excavation was furthest from the Roman roadline and it may be that the further from the road graves were dug the less its line influenced them.

The graves at West Tenter Street appear quite orderly in that most were dug with a concern to follow one of two alignments. This can be contrasted with the apparently random nature of the burials at Trentholme Drive [Wenham 1968, 33], made over a similar period of time. The 3rd–4th-century cemetery, 2A and 2B, at Poundbury also had graves laid out according to local boundaries [Green 1982, 63 and C. Sparey Green *pers. comm.*], but the later 4th-century cemetery, 3A, had all the burials organised to a common alignment and orientation. Similarly the 4th-century cemetery at Lankhills had most graves organised in rows, with the burials all to a common orientation [Clarke 1979, 13, Fig. 10].

## ORIENTATION

Whilst the alignment of the graves appeared influenced by the local topography, the orientation of the skeletons in the graves may have been affected by other factors. An examination of 108 burials of which the orientation is quite clear (Fig. 6) shows that twice as many (45) were buried with head at north and feet to south, apparently facing south, as those with head at south, facing north (22). 28 skeletons were interred with head at west and feet to east, facing east, slightly more than those facing north and twice as many as those with head at east, facing west (13).

No pattern could be discerned in the phases of cemetery usage, the areas of the cemetery, the age or sex of the skeletons, or even burial rite, to suggest any variations in approach or belief in the orientation of burials. The eight plaster burials faced south and north with only one facing east. This lack of common orientation is in marked contrast to the 'special burials' at Poundbury which were all on the same west-east alignment and are thought to be Christian burials [Green 1982, 64].

## THE CREMATIONS

The cremation burials were all recovered from the areas intensively used for inhumation burial and it is in some ways remarkable that they had not been disturbed. This may have been due to the shallow depth at which most of them were buried. The necks of some of the urns

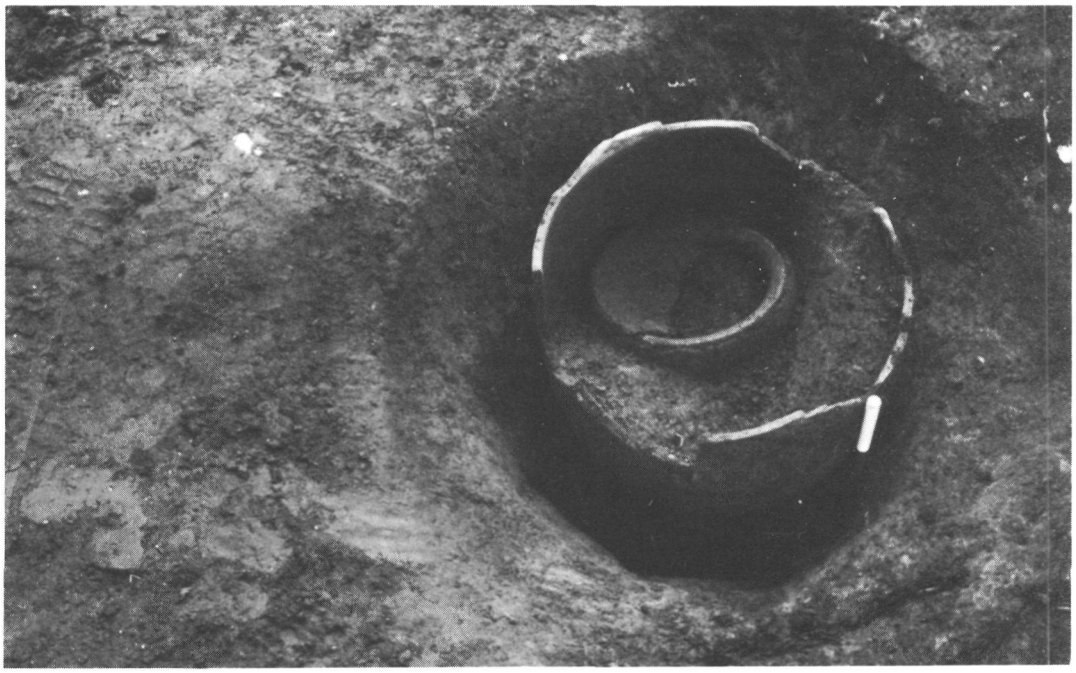


Plate 2 West Tenter Street: Cremation burial 255, VRW urn in amphorae with inverted dish lid (scale 0.2m).

Plate 3 West Tenter Street: Cremation burial 442, with tile lid (scale 100mm).

must have been close to or protruding from the ground surface so that they were recognized, and in some cases respected, by later gravediggers. It is also possible that the urns were marked by surface monuments which have left no trace below ground. Only two urns were found cut by graves, and one other by a Roman feature, as well as one by a post-medieval trench. Some of the urns were respected by later graves: three apparent grave cuts of varying dates cut the pit dug to contain the urn of burial 675 without disturbing the urn itself (Fig. 9). The post-medieval ploughing had truncated four particularly shallow burials. The shallow burial of cremation urns was particularly noticeable in a walled cemetery at Colchester [Hall 1944, 81–85].

Cremated bone was, however, found in many contexts throughout the site suggesting that a number of cremations must have been disturbed and redeposited over the life of the cemetery. Any cremated remains not contained in urns may have been particularly vulnerable to disturbance. Obviously redeposited cremation urns were found only in the upper backfill of the central Roman gravel pit and it is assumed that they were derived from nearby cemetery topsoil which had been used for one final levelling-up of this area.

Three cremation urns (988, 1121, 1145) appeared to have been deliberately buried as they lay in cut pits, and are entered as *in situ* in catalogue, however the fragmentary remains of the urns (Figs 26.1, 27.2, 27.5) might suggest that they had been disturbed and deliberately reburied. In the area of concentrated burials at the west end of the site a number of sherds of urn forms usually associated with cremation burials were found redeposited in the grave fills, but none directly associated with cremated bone. If they were cremation urns they may have been disturbed and redeposited so many times that they had become entirely divorced from their contents, however they might have been simply derived from food vessels left lying on the cemetery surface.

The limited range of urn types used for cremation containers and their similarity to those used to furnish inhumation burials is noted in the pottery report below.

The urn in burial 497 was of particularly low quality, with a very poorly fired fabric which was unidentifiable. The use of pottery seconds for cremation burials was noted at Kelvedon, Essex [K. Rodwell 1988, 47] and M. Millett found urns which were too poorly fired to be lifted at Alton, Hampshire [Millett 1986, 75, 79–80].

Five undisturbed cremation urns had lids, one using a broken dish inverted as a lid, 255 (Fig. 24.2–3, Plate 2), another a tile, 442 (Fig. 27.1, Plate 3), and two others with inverted lids. The inverted lids are thought to have been placed to collect token libations poured on the grave (see pottery report below).

A small, square-ended, pit (736, Fig. 13) measuring 0.5m wide and at least 0.25m deep, cut on its south side by grave 435, contained a significant amount of charcoal in its base and cremated human bone around the sides. This was possibly a burial in a pit of a cremation without a container, for which there are parallels from Cirencester [Reece 1962, 70], or it could have been a wooden box burial as a box constructed without nails need not have left any trace. Box containers, distinguished from caskets, have been discussed by Borrill [Borrill 1981].

Two cremation burials (979, 1145, Figs 25.5, 27.5) are contained in urns which can be dated to the first half of the second century AD, and a further two (675, Fig. 25.2, Plate 4, 1092, Fig. 24.5) fit into the second and third quarters of the second century. Five (224, 988, 442, 69, 1002,

Plate 4 West Tenter Street: Cremation burial 675, VRW jar with inverted tazza lid (scale 100mm).

Figs 26.6, 26.1, 27.1, 27.4, 24.7) are dated to the second half of the 2nd century. A further three (255, 696, 1121, Figs 24.3, 26.4, 27.2) are no earlier than the later second century, two of these (696, 1121) were in urns which were in manufacture as late as the early 3rd century. The overall date range is paralleled at Trentholme Drive, York [Wenham 1968, 27]. The pit containing cremated bone (736) also contained pottery sherds dated to later than AD 200. The redeposited cremation urns found in the upper fills of the central Roman gravel pit fall into this range of dates.

The most richly furnished burial from this site was a cremation (1092). The grave goods consisted of a yellow glass ring, squat glass jar, a rectangular bronze mirror, a circular box mirror with a head of Nero copied from a coin on the lid and figure on the base, rather worn but probably copied from a coin reverse, together with a worn coin of Nero with a hole drilled through it (Fig. 38.3). These objects were placed in a Verulamium White Ware urn with a perforated inverted lid in the same fabric (Fig. 24.4–5). The Neronian objects at least may have been in the possession of one person from youth through to later middle age or even passed down as heirlooms, presumably from mother to daughter. The burial demonstrates the care which has to be taken in assigning a date to a burial derived solely from precious objects, including coins. It is assumed that the urn, which is characteristic of the period 120–180, was used early in that date range, but only on the basis of the objects which were already long-lived by that period.

In the context of heirlooms in graves it is worth noting in relation to the intaglio ring (Fig. 41) from a cremation urn (675, Fig. 25.1–2), dated 120–160, that M.

Henig has commented on the lack of engraved gemstones found in London and other major cities, probably because they were needed to prove wills and so passed down through families [Henig, 1978, 52]. If signet rings are present the symbolism on them may be important [Henig 1984, 201].

From the limited evidence it seems that, at least in this cemetery area, the cremation rite was contemporary with that of inhumation.

## THE INHUMATION BURIALS

### The Graves

The graves were mostly rectangular with vertical sides and square or rounded corners. The graves were cut to differing depths, on average *c.* 0.5m deeper in the area of the central gravel pit, which had not been backfilled to quite the level of the surrounding cemetery. The deepest grave in the gravel pit area was cut to 9.05m OD, outside the gravel pit the deepest grave was dug to 9.53m OD. The shallowest graves lay at *c.* 11.00m OD and cannot have been much below ground surface, which it is suggested may have been at *c.* 11.20m OD. Shallow burials, 6–9in (0.15–0.23m) below Roman ground surface, were noted at Trentholme Drive [Wenham, 1969, 37].

### Bone Survival

There was a wide variety in bone survival, in some cases no bone survived at all although evidence for a coffin or grave furniture was present. However there were several well preserved skeletons with nearly all bones present. The high percentage of missing smaller bones may partly be due to poor preservation but also to inadequate excavation recovery. The need to collect the smallest hand and foot bones, by sieving if necessary, is stressed in the human bone report below. Whilst we can be fairly confident of near complete recovery of the surviving skeleton in the greater part of the excavation, the later stages were more rushed and the recovery rate consequently probably fell. This affected burials in the central gravel pit area particularly.

Preservation was not directly affected simply by the size of the bones. Some adults were very poorly preserved yet some infants survived almost in their entirety. The absolute depth of the burial did not appear significant, but skeletons lying in graves which cut into the brickearth topsoil seemed to be in poorer condition than those in graves which penetrated the better drained sand and gravel subsoils. Those graves in which no skeleton survived at all were all shallow ones cut into the surface of the brickearth. Burials at the same level in the backfill of deeply dug graves were by contrast well preserved, as were those packed with calcium carbonate, which was almost certainly packed in a wet state as lime around the body or parts of it.

A clear example of copper alloy as an inhibitor of bacteria was seen in grave 328, a shallow grave dug into the brickearth, in which the skeleton of a child of less than 8 years was poorly preserved. Although only the major limb bones and part of the skull survived, one phalange entirely stained green from a simple copper alloy ring around it was recovered. Many of the skeletons were extremely brittle and although uncovered whole the bones broke upon lifting. Post mortem damage was extensively recorded in the pathological report.

## ATTITUDE

The common position for nearly all the skeletons was supine and extended. Two exceptions were skeletons which had been deliberately laid on their left sides with their legs flexed, one, grave 975 (Plate 9),

as a result facing south and the other, grave 943 (Plate 8), west.

When considering the alignment of the graves it was pointed out that the orientation of the skeletons was significantly biased so that more faced south or east than north or west within the predominant alignments. Thirty two of these skeletons were lying with the head facing upwards. However in 31 cases the skull lay on one side or the other. No pattern could be discerned in the numbers of heads so aligned as to suggest that this was the result of deliberate arrangement of the body, and it seems that the heads may have merely fallen within the coffin space during the natural corruption of the cadaver. Some skeletons were in positions which could be interpreted as laid with the body slightly tipped to one side or the other. It is not clear how deliberate this positioning was, as the bodies could have moved during the carrying and interring of the coffin.

## ARM POSITIONS

The significance of the burial positions of arms and legs in the Roman period is not altogether clear. They have been tabulated in different ways in different excavation reports [e.g. Clarke 1979, 140 and McWhirr *et al*, 1982, 85]. It is here argued that it was the position of the hands which may have been of significance, but as the hand bones are often missing it is the resultant arm attitude which is noted. The arm positions are tabulated in the catalogue (Fig. 6) by the position of the hands, as the upper arms were invariably straight by the side (in supine burials) the amount the forearm was flexed at the elbow can be deduced from the position of the hand.

A comparison of the arm positions of all the inhumation burials showed that the West Tenter Street burials compared closely with those from Cirencester [McWhirr *et al ibid*] in that the most common arm position was with both resting on the pelvis, the hands being either on the same side as the arms, together on the pubis, or with the arms crossed and the hands on opposite sides of the pelvis. This was evident in 45 cases at Cirencester and 27 at West Tenter Street. The second most common position on both sites was with the two arms straight by the side (Cirencester 31, West Tenter St. 11). A combination of the two above positions was noted in 6 cases at West Tenter Street and in 22 at Cirencester. Cirencester also had a significant number (23) with both arms flexed at the elbow at right angles whilst there was only one such at West Tenter Street. The skeleton survival was too poor to deduce the arm position for 37 skeletons at West Tenter Street and 214 at Cirencester.

In the 4th-century cemetery at Lankhills the most clearly predominant position was with arms straight by the sides [Clarke, 1979, 140, Table 12, 353]. The number of burials with both hands on pelvis was relatively small but some had their arms in a combination of the two positions. Whilst certain variations could be detected between the sexes at Lankhills, no such could be confidently stated from the West Tenter Street sample, nor was any significant change in attitude detectable over the three centuries in which the cemetery was in use.

Unusual arm positions at West Tenter Street included two examples of arms crossed on the chest with hands resting on the breast (768, 804), these were both adult males on different orientations buried in the mid 2nd to 3rd centuries. Two further adult males had the left arm resting on the right breast and right hand on the pelvis, one (487) probably mid to late 2nd century and the other probably mid 3rd century (1042). The adult male in grave 932 (mid 2nd–3rd century) had

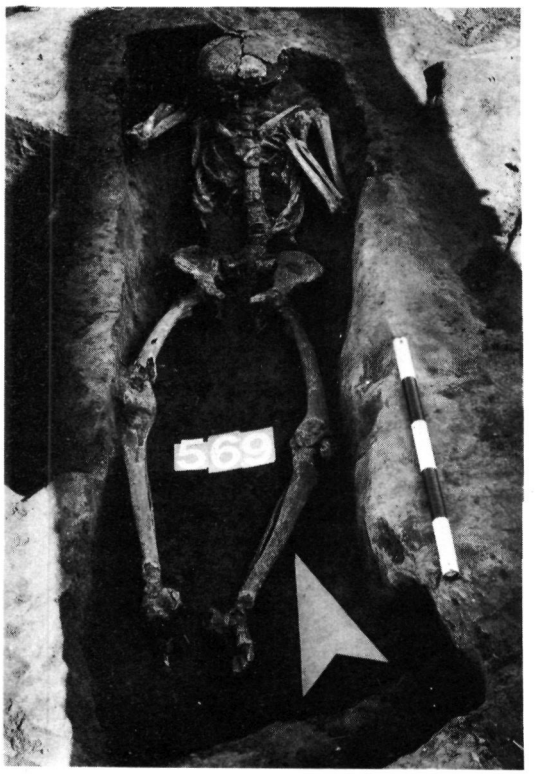


Plate 5 West Tenter Street: Inhumation burial 538 (scale 0.5m).

the right arm lying across the waist but the left was flexed across the chest so that the hand rested on the mouth. An adult female (1085) had the right arm flexed back with the hand behind the head and elbow pointing outwards although the left hand was placed conventionally on the pelvis.

The most unusual attitude was that of the adult male in grave 538 (Plate 5) which had both arms flexed backwards, the right with hand behind the head causing the elbow to be pushed upwards and outwards, the left flexed across the chest with the hand probably resting on the collarbone. The legs were extended but slightly akimbo with the knees pushed upwards. There was no clear evidence for a coffin.

## LEG POSITIONS

Almost all the skeletons had their legs fully extended, apart from that in grave 538 mentioned above and the two skeletons on their sides (see below). Of the exceptions one grave (487) had been cut across the lower leg and this action appeared to have pushed the right leg under the left at the knee. Two burials could be seen to have been deliberately arranged so that the legs were drawn together. The partially excavated and fragmentary burial in grave 313 seemed to have the lower left leg resting over the lower right leg. A pit, 1093, dug into the central gravel pit fill had a skeleton, 1110 (Plate 6), laid in it with the right knee drawn against the extended left leg so that the lower right leg lay along the lower left leg. A white slipped bowl (Fig. 29.7) lay inverted over the ankles. The burial, which was not in a coffin, is dated to the first half of the 3rd century.

Grave 1113 contained an adult female in a coffin. Although undisturbed coffin nails demarcated the ends of the coffin the lower left leg was missing. No intrusion was seen to explain this loss, but no pathological evidence for amputation (which is unlikely to have been made at the knee) was observed either.

A more bizarre case of what must have been human interference was seen in grave 528 (Plate 7), dated to the late 3rd century or later. The torso was only partially excavated as it extended beyond the limits of the site, however the right arm appeared to be laid at right angles across the stomach, and the vertebrae and ribs properly articulated. The legs, by contrast, had been completely rearranged by being turned upside down, the ball joints of the femurs pointing away from the pelvis, the right hand one resting on the pelvis, the left slightly below the pelvis. The tibias and fibias appeared to be articulated normally with the femurs

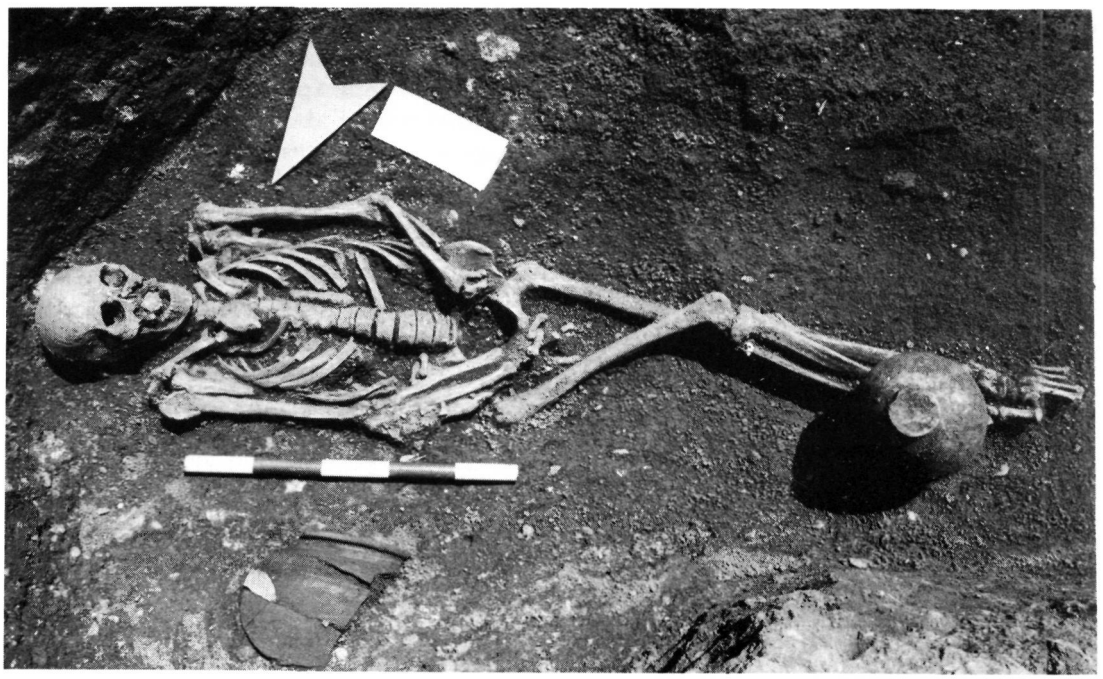


Plate 6 West Tenter Street: Inhumation burial, skeleton 1110 in pit 1093 (scale 0.5m).

but the feet and ankles were missing. The sacrum was placed in the correct anatomical position but inverted. The whole skeleton was contained in a coffin and no clear signs of later disturbance of the grave were noted. As no cut marks appeared on the bones, dismemberment must have taken place well after the body had corrupted. It would seem that the burial was arranged or rearranged in the coffin when it was in a skeletal state, by someone with slight anatomical knowledge.

## BURIALS ON THEIR SIDES

Two bodies had been laid on their left sides (943, 975). Both were adult males dated to the 2nd century. One, 943 (Plate 8) lay in an oval pit, with the knees tightly flexed so that the humerus was at right angles to the body and the feet drawn up under the pelvis. The left arm was flexed with hand on the breast, the lower right arm rested on the left shoulder with the hand projecting beyond it. The second burial was in a rectangular grave, 975 (Plate 9). The legs were only slightly bent at the knee, both arms were bent at the elbow, the right across the pelvis and the left thrust out away from the body.

A correlation was suggested between osteo-arthritis and such burials at Cirencester [McWhirr *et al* 1982, 81]. However, the two burials at West Tenter Street had only mild osteophytosis and Schmorl's nodes which would not have affected the individuals in life. Fasham has interpreted an adult female burial lying on the left side with legs drawn up as being in a sitting position [Fasham 1979, 60].

## THE PLASTER BURIALS

Eight burials (Fig. 16), all in wooden coffins, with calcium carbonate packed completely or in part around the skeleton, were recovered from the site. They are

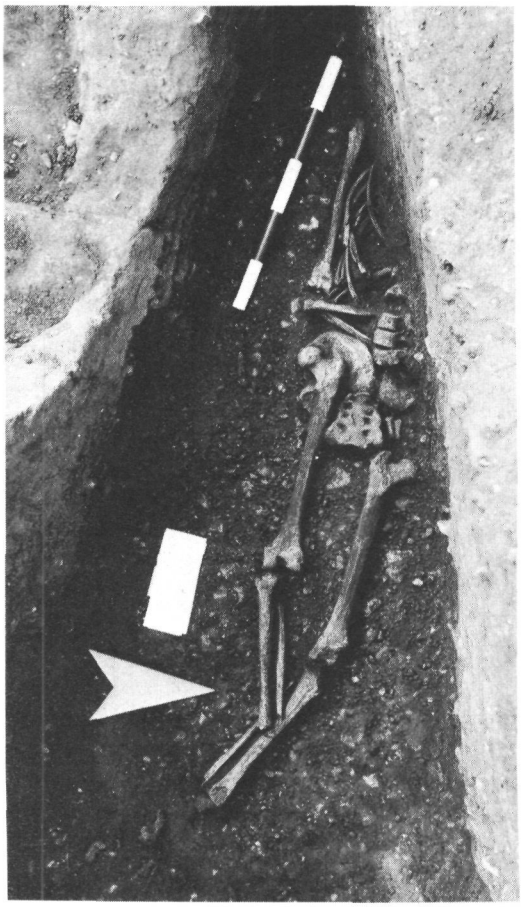


Plate 7 West Tenter Street: Inhumation burial 528 (scale 0.5m).

dated broadly to the 4th century and at least one to the later 4th century. The samples, of what was effectively recrystallised calcium carbonate from all the graves, were analysed by J. Evans who concluded that the material seemed to have been slaked or quick lime which had subsequently reacted with carbon dioxide to produce calcium carbonate. The generic term for these burials as 'plaster' burials has been adopted here.

Four plaster burials were of juveniles, two 4–6 years old (516, 553), and two 8–10 years old (435, 489), the other four were adults, three males, (459, 694, 744) and one female (549). All the skeletons were fully extended, with arms straight by sides or slightly bent with the hands resting on the pelvis. Five faced south, two north and one east. No ceramic grave goods accompanied the burials. One adult (459) had a hobnailed shoe placed near his right foot, and the female in grave 549 had a copper alloy bracelet (Fig. 39.1) placed in the lime under her left foot. The juvenile burial in grave 435 (Plate 14) had a hexagonal jet bracelet (Fig. 39.7) placed in the grave beside the coffin.

Only two skeletons were entirely encased in the lime, an adult, 549, and a juvenile, 489, (Plate 10), although the slumped skeleton of a juvenile, 516, may also have been fairly well covered when originally interred. Of the other two juveniles one, 553, had lime over the knees, lower legs and feet, a patch over the left hand, and another on the right pelvis. The second, 435, had one block of lime extending from the upper chest to the ankles but the skull, shoulders and feet uncovered.

The three adult males were only partially covered in lime, although the one in grave 694 was almost entirely encased, with the lime packed right into the head end and sides of the coffin, yet the lower half of the lower legs and feet were left exposed. In grave 459 (Plate 11) the body had been provided with a pillow of lime under the head, it was then covered over the lower arms, which were crossed on the pelvis, and down to the knees although the right leg was partially exposed. Grave 744 had lime spread in patches over the base of the grave in the area of the coffin. This grave had been re-used and it is just possible that the lime was derived from an earlier burial, the bones of which were packed at either end of the grave outside the coffin.

The purpose of the calcium carbonate

Plate 8 West Tenter Street: Inhumation burial 943, with shale ring (scale 0.5m).

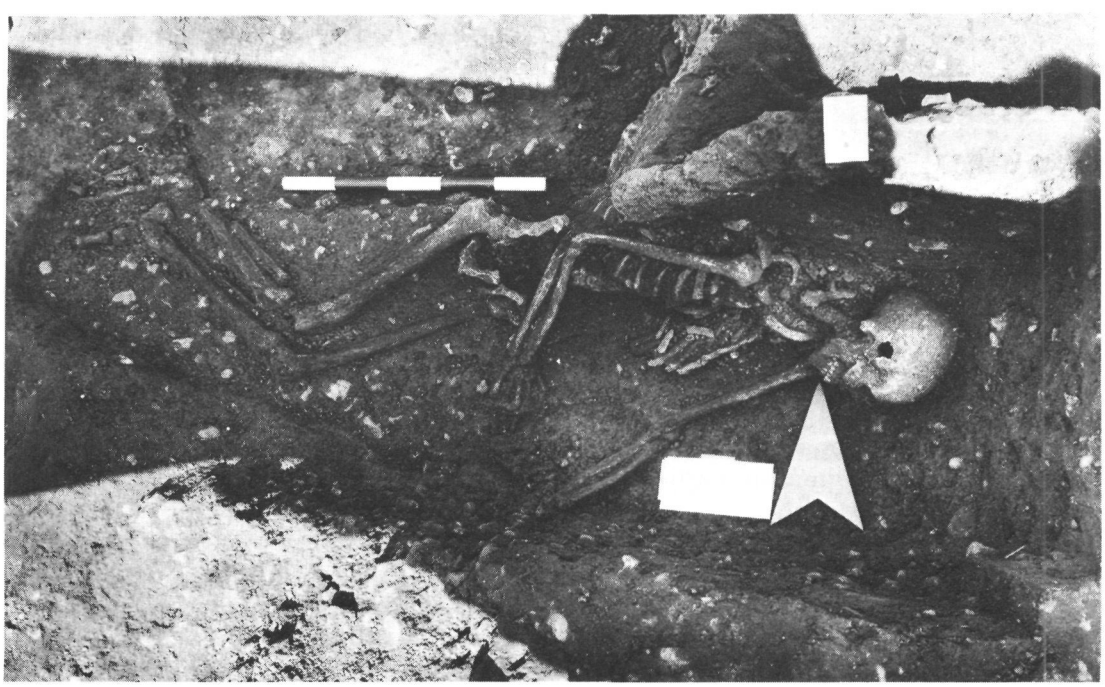


Plate 9 West Tenter Street: Inhumation burial 975 (scale 0.5m).

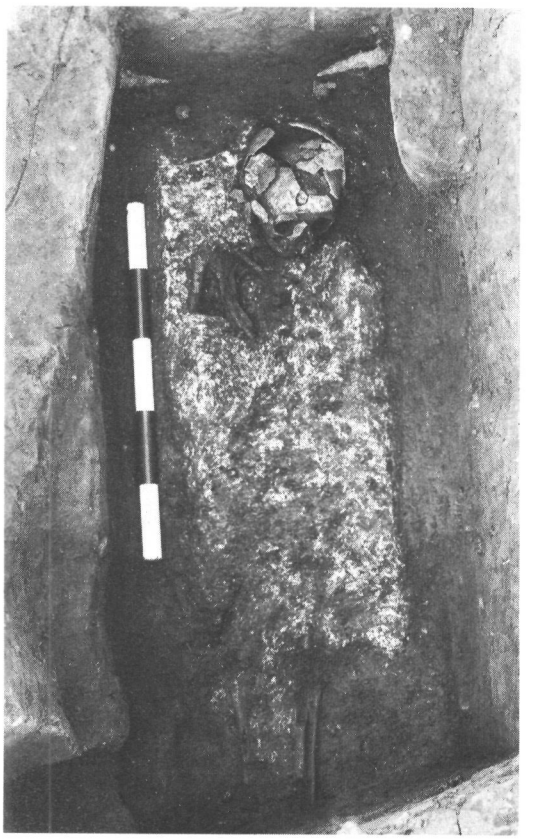


Plate 10 West Tenter Street: Plaster burial 489, note coffin nails at head (scale 0.5m).

or lime is open to conjecture, it has been suggested that calcium carbonate powder if placed in dry could have absorbed the liquids given off by the decay of the body [Green 1977, 48]. If wet lime was used at West Tenter Street it would have accelerated the breakdown of the fleshy tissues, although ultimately it inhibits the decay of the bone. This would have presumably been most effective where the body was entirely surrounded in the material and it is surprising that all the bodies had not been covered in this way. It is particularly noticeable that three burials had the lower legs uncovered whilst one had only the lower legs covered. It may be that the symbolism of the white material, perhaps as an earthen shroud, held the most significance for those carrying out the burial ritual, and not the amount used. The coverage of specific areas of the body might relate to their perceptions of which parts of the body were 'infected' or caused the death of the individual.

A convincing argument has been made by C. S. Green [Green 1977, 46–53] that the plaster burials at Poundbury are indicative of Christian burial in the 4th century. The lack of grave goods with the

Plate 11 West Tenter Street: Adult burial in plaster 459.

West Tenter Street burials might support his argument, and the lack of common orientation need not be an obstacle to this interpretation [Green 1977, 49–50].

The presence of articulated fragments of two infants in the upper fill of grave 549–one, 363, above the head and the other, 444, above the feet of the adult female burial—should be noted as should the infant, 443, in the upper fill of grave 459. Infants have only been recovered from late contexts and this may be interpreted as an indication of a later Christian concern not previously shown for them in Roman Britain.

## COFFINS

The coffins in which the inhumation burials were placed were usually identified by the presence of coffin nails. No wood survived but occasionally a stain from decayed wood was detected. Four samples of wood stains were analysed by J. Evans and found to be mainly manganese salts; he writes: 'The process, by which manganese salts replace wood, tends to cause the wood to fragment in a similar manner to that observed when wood is burnt. Such replacement is thus often mistakenly termed charred. It is probable that many of the so-called charred coffin fragments mentioned in the literature are in fact manganese salt replacements (at least in part)'.

In three graves a wood stain only was present, suggesting that the coffins were constructed solely of wood, being pegged or jointed (a dovetail jointed coffin was observed at Harlow [VCH 163, 142]). The stain could simply be residue from blocks of wood arranged like a tile cyst [Price 1866, 37], or a hollowed out tree trunk could have been used [Crummy 1980, 265]. In some cases only a few nails lay in the grave fill and it could not be determined if a coffin had been used or not, as the corpse might have been simply placed on a wooden bier. No traces of a coffin were recorded for twenty one burials, including all five infants.

Eighty one graves had some or all of their coffin nails in position and the way in which they were constructed and their dimensions could be recorded. This information was restricted by the number which had been disturbed and the way in which the coffin collapsed. The evidence of upper nails which had been dislodged by the weight of soil in the grave was particularly difficult to interpret. The cross-section of grave 774 (Fig. 10) preserved a coffin stain which showed that the coffin had collapsed along the west side although the east remained vertical. The interpretation of displaced nails must therefore be treated with some caution.

The widths of 50 adults' coffins could be calculated with confidence, showing an average of 0.45m, most falling into the range 0.37–0.48m. The lengths of only 20 adult's coffins could be measured, most falling into the range 1.70–1.75m although the longest was 2.12m. Measuring the depths of the coffins is somewhat subjective, as the distance the upper nails might have been pushed downwards by the overlying soil burden is uncertain. Most measurable coffins were in the range 0.20–0.40m deep, many within the range 0.20–0.30m. The two coffins re-inforced by lead angle-strips were 0.38m and 0.39m deep, the lid nails which accompanied the complete coffin (Fig. 20) were displaced along the long sides and would not have indicated such a deep coffin if taken on their own. The general coffin depths measured may therefore be too low.

The coffins from the excavation at Kelvedon, Essex [Rodwell 1988] were recorded in some detail. There the full size coffins averaged 2.0m long by 0.57m wide by 0.24m deep, and were considered larger than necessary [*ibid*, 37, Table 1].

Plate 12 West Tenter Street: Inhumation burial 626 in lead strip reinforced coffin (scale 0.5m).

Plate 13 West Tenter Street: Detail foot end of lead strip reinforced coffin construction, 626 (scale 100mm).

The method of construction of the coffins can be deduced from the position of the nails, the evidence for which is particularly well preserved in the case of the coffin in grave 626 which was reinforced with lead angle strips along the length and width of the base and as uprights in the corners (Fig. 20, Plates, 12, 13). The internal dimensions of the coffin were 1.88m long by 0.43m wide and 0.38m deep; the external dimensions of the wooden coffin would have been about 2.00m long by 0.50m wide by 0.45m deep. The lead strips were attached to the wooden sides by lines of iron tacks at 5–6mm intervals along the edges of the strips. A second coffin of similar construction, partially survived in grave 964. Three fragments of a similar coffin were found at 46 Mansell Street [Collingwood and Taylor 1932, 213, Museum of London Accession No. LM32.2/2] but are unpublished. The foot of another has recently been excavated in Spital Square, E1 [*pers. comm.* G. Evans].

The wooden coffin sides and ends of

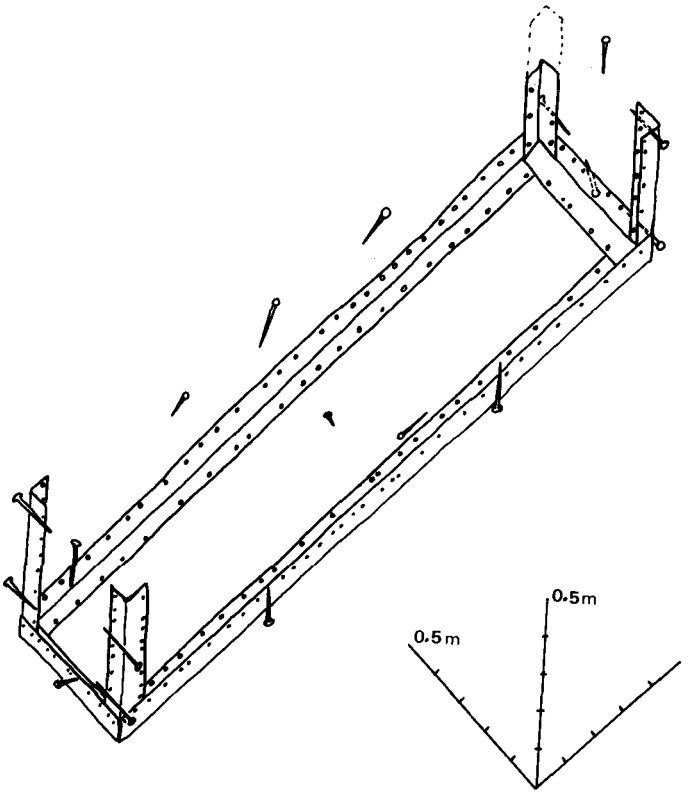



Fig. 20 West Tenter Street: Isometric drawing of lead angle strip reinforced coffin from grave 626 showing the position of the nails from which the construction of the wooden coffin has been deduced.

the lead reinforced coffin, 626 (Fig. 20), rested on the base, and a single nail was driven from the base into the centre of each end piece. Both these nails lay at angles as if they had been driven in at an angle. The side pieces rested on the base but were nailed to it on the south side only, by two nails evenly spaced driven through the base to the side piece. The side pieces were nailed to the end pieces with two nails at each corner, the nails were staggered so that they were at alternating depths on opposing sides. The upper nail and lead strip in the north east corner is missing, cut by a later grave. The lid rested over the sides and ends and was nailed onto the ends by one nail centrally placed at each end. The lid was also nailed to the sides although these nails were somewhat dislodged. Three nails appear to have been used along the centre of the north edge spaced approximately 0.35m apart, and two nails on the south side roughly opposed the spaces between the three northern nails.

This general method of construction seems to have been the one predominantly used on the site for coffins without lead strip reinforcing. In many instances nails were only found at the ends of the coffin and the long sides must have been joined by some other means such as dowelling, for which the evidence has not survived. K. Rodwell has pointed out [Rodwell

1988, 31] that the coffins would have sagged and split apart if they were left unsupported along their length. Forty three coffins were nailed with sides overlapping ends but the evidence was often ambiguous as to whether the sides rested on or against the base.

Twelve coffins were apparently nailed with sides against the base, which was the normal practice in the Kelvedon cemetery [Rodwell 1988, 31], but at least thirteen coffins seemed to have the sides laid on the base. In one instance, grave 311, one side apparently lay against the base whilst the other rested on the base. Careful attention to the way in which the nailing was carried out can be seen in the lead reinforced coffin above and in the child's coffin in grave 328 where the sides resting on the base had been attached unconventionally with pairs of nails on either side neatly opposed to one another, close to either end of the coffin and exactly half way down it. What is presumed to be the coffin of a child, although no skeleton survived, in grave 333, was nailed in the four corners with two nails in each, one driven from the base and the other from the side into the end piece so that their points touched and they had become fused together in the ground.

A lack of evidence for coffin lids was noted at Lankhills [Clarke 1979, 339–41] and only one lid was confidently claimed at Kelvedon [Rodwell 1988, 31]. Twelve Tenter Street coffins had clear evidence for lids and a further fourteen may have been so fitted. It was not always possible to tell if a lid had been attached to the coffin or not. Simple cross struts to brace the sides might have been used as at Kingsholm [Frere 1985, 301–2] and there was some ambiguous nail evidence to suggest that struts could have been used in a few graves. The number of planks used to construct a coffin is uncertain. It cannot be taken for granted that only one plank was used for the sides, base or lid; in many cases two planks could have been employed [see Rodwell 1988, 31].

The lengths of 276 coffin nails were analysed. No significant variation in their average size was noticeable over the three centuries in which they were used, although nails of various lengths were used in any one coffin. Most nail lengths fell into the range of 50–100mm, compared with 40–110mm at Lankhills [Clarke 1979, 332]. I am grateful to C. Orton who carried out statistical tests to see if there was any standardisation in the lengths of the nails. It is interesting to note that the results suggest significant lengths based on 50mm, equivalent to two *unciae* (one *uncia* is 1/12 of a *pes*, about 24.7mm), and increasing in 18mm intervals, equivalent to one *digitus* (1/16 of a *pes*, about 18.5mm). No analysis was made of the shapes of the nail heads or shanks.

## GRAVE GOODS

Grave goods comprising pottery objects, glass objects, worn and unworn shoes, worn and unworn jewelry, and metal personal objects (the individual objects are described in the finds report below), were found accompanying 2 out of 13 *in situ* cremation burials and 26 out of a total of 120 inhumation burials.

The goods from inhumation graves were found accompanying juveniles and adults, both males and females, and ranged across the cemetery, although they were absent from the tombs.

## POTTERY

The burial of ceramic vessels does not appear to have been adopted as a rite before the mid, and probably later, 2nd century, although as there are few fully intact earlier graves this evidence should

be treated with caution. This practice continued through the 3rd century, and ceramic vessels were found paired with glass vessels in two presumably juvenile 4th-century graves but were not found with the plaster burials.

Seventeen inhumation burials in all were accompanied by ceramic objects. The vessels are two sorts, smaller beakers or cups and larger cooking pots which are only found with adults. It is argued in the pottery report that the vessel types placed with inhumation burials are those also used to contain cremation burials.

They were usually placed upright in the grave, both inside and outside the coffin, at the head or foot. Exceptions to this were a few placed on their sides, one vessel was inverted over the ankle of an uncoffined male adult, 1110 in pit 1093 (Fig. 29.7, Plate 6) and an inverted pottery lamp, 476 (Fig. 37.2) was found placed between the ankles of an adult female. Unusually positioned urns included a truncated Verulamium White Ware urn (Fig. 29.3) which had apparently been placed on the breast bone of an adult female in grave 621, and two pots (Fig. 29.11–12) one inserted mouth first into the mouth of the other, seemingly placed in the grave fill above the coffin of grave 919 and perhaps inserted into the grave after it had been backfilled.

The soils found in 16 burial vessels were analysed by J. Evans in an attempt to identify what the vessels might have contained. The tests were designed to detect dried fats, oils or resins, and proteinaceous material. No biological debris (such as grain) or manganese salt replacements were observed. This negative evidence might suggest that the vessels contained some aqueous systems as such materials tend not to leave any detectable traces under these circumstances. The vessel bodies have not been submitted for analysis.

## POSITIONS OF CERAMIC GRAVE GOODS

270 Colour-coat beaker (Fig. 29.8) and glass flagon (Fig. 40.10) opposite one another outside an apparent child's coffin. Dated 4th century.

396 BB2 jar (29.4) inside coffin beside left ankle of adult male. Dated 150–200.

506 Early Oxford bowl (29.10) apparently inside one end of a child's coffin. Dated 240–280.

523 Colour-coat beaker (29.9) outside the end of a juvenile's coffin slightly to the right of the head. Dated 150–250.

621 VRW jar base (29.3) on chest of adult female in coffin. Dated 120–180.

654 KOLN beaker (29.5) beside left ankle of adult, possibly female, no evidence for coffin. Dated 150–220.

689 Upchurch Ware bowl and miniature cup (29.1–2) outside coffin of adult male to right hand side of head. Dated 140–180.

710 Alice Holt/Farnham flagon (29.6) and glass flagon (40.11) inside an apparent child's coffin. Dated to the 4th century.

733 BB2 jar (28.1) inside coffin by right knee of possibly female adult. Dated 180–225.

741 BB1 miniature jar (28.4) inside coffin by right shoulder of adult male. Dated 3rd century.

919 Triere beaker with inverted jar base as lid (29.11–12) in grave fill above coffin, roughly over upper chest of adult male. Dated 200–275.

926 TSK jar (28.7) inside coffin on left foot of adult female. Dated 180–220.

1050 Two TSK vessels (28.10–11) placed outside side of coffin, one at end, one at roughly half way along length (containing bird bones). Two Nene Valley beakers (28.8–9) also possibly derived from this burial. Dated 180–220.

1110 White slipped bowl (29.7) inverted over ankles of adult male laid in a pit (no coffin). Dated 200–250.

1117 BB1 jar (28.2) beyond feet of adult male, no evidence for coffin. Dated 240–300.

1201 TSK jars (28.5–6) one from grave fill, one from beside upper left leg of adult male. Dated 180–225.

## THE JEWELRY

Beads were found with juvenile burials, two of which were very poorly preserved skeletons and the third identified solely by incomplete coffin evidence. In only one case could the beads be shown to be worn, as a necklace in grave 328 (Fig. 39.4), this individual under 8 years old also wore a

Plate 14 West Tenter Street: Child plaster burial 435 with jet bracelet beside it (scale 100mm).

simple copper alloy ring (Fig. 40.3) on the left hand and is dated to the 2nd or 3rd century. The fragmentary remains of two juvenile femurs were the only evidence for a skeleton near a complete shale bracelet (Fig. 39.5) in grave 387. The bracelet was entwined with beads of various colours which had been arranged on at least two threads deduced from jet spacer beads (Fig. 40.9) and which were presumably also a bracelet. The burial is dated to the late 2nd century or later. The small collection of beads (Fig. 40.4) from disturbed grave 506 may also have been a bracelet as they lay against the probable side of the coffin although no skeleton survived. The accompanying early Oxford bowl (Fig. 29.10) dates to 240–80.

A simple shale ring (Fig. 39.6) lay near the left hand of the adult male burial lying on his left side in a 2nd-century grave, 943 (Plate 8), and may have been worn on the left hand, as was the ring in grave 328.

Two unworn items of jewelry, both from 4th-century graves, were the hexagonal jet bracelet (Fig. 39.7) found lying in the grave beside the coffin containing an 8–10 year old partially covered in lime, 435 (Plate 14). The bracelet would have been too large for the child and may have been placed in the grave as an act of mourning by a relative. The Romans had a superstitious belief that jet could ward off evil [Alcock 1980, 52]. Another plaster burial, grave 549, contained an adult female who had been entirely covered in lime; from the lime under the left foot was recovered a copper alloy bracelet (Fig. 39.1), it was noted at Poundbury [Green 1982, 65] that the 4th-century burials

there had few ceramic grave goods and that jewelry, where present, was rarely worn.

The tweezers and cosmetic applicator/remover (Fig. 40.1, 2) found on the neck of an adult male in grave 741 dated to the second half of the 2nd century, may have been worn in a bag or suspended around the neck by some organic material which has not survived.

SHOES (Fig. 42, Finds Catalogue)

The hobnails from shoes were found in six graves but were only worn in two cases. The two individuals wearing shoes, one male and one female, were both accompanied by a pot resting by the ankles and were dated to the later 2nd century. The male, 396, was wearing two stout boots, the female, 654, had only a small pattern of corroded nails, perhaps to reinforce a heel piece, by the right foot.

The unworn shoes were placed in a variety of positions; grave 261, an adult, dated 2nd century or later, had one shoe placed on top of the other within the coffin beside the right foot. Grave 311 of an adult male, late 2nd century or later, had the shoes placed side by side with toes pointing in opposite directions outside the coffin near the left shoulder. An adolescent female in grave 593 had a pair of shoes placed upright side by side as a pillow under her head in the coffin, mid-late 3rd century. The adult male with a pillow of lime in grave 459, dated post-340, was furnished with only one hob-nailed shoe placed in the corner of the coffin by his right foot.

No clear indications of clothing were found on any of the skeletons; the few shoes found are distinctive because their iron element survives.

M. Rhodes comments: 'According to the classical writers, the Romans observed a strict division between indoor and outdoor shoes. In broad terms, this seems to be reflected in footwear from Roman London, where the nailed varieties (interpreted as *caligae* and *calcei*) seem to have been intended for outdoor use, the unnailed varieties (interpreted as *socii* and *carbatinae*) being worn indoors [Rhodes 1980]. Sandals (*soleae*) were sometimes reinforced with nails, and despite the literary evidence, may have been worn outdoors during the summer. All of the nail patterns from West Tenter Street are from nailed shoes. As soil conditions were unfavourable to the preservation of leather, one reason for the apparent absence of footwear in some graves may be that the dead were buried with indoor shoes; a pair of ornate slippers is known from a burial at Southfleet, Kent [Rashleigh 1803].

The type of footwear placed in a grave might reflect beliefs about death. The dead were sometimes thought to be making a journey to the afterlife [Toynbee 1971, 38], for which outdoor shoes would be required. On the other hand, they were sometimes envisaged as dwelling in the grave [*ibid*, 37], for which indoor shoes would be appropriate.'

ANIMAL BONES

Animal bone was found in the backfill of many graves but in only two graves were bones identified as a deliberate deposit. They were both incomplete domestic fowl (see animal bone report below), one from grave 1138, mid 2nd century, placed beside the skull of an adult female, and one, in grave 1050, late 2nd/early 3rd century, placed approximately half way down the grave, outside the coffin, inside a jar (Fig. 28.11). The carcass of a 'domestic chicken' was found in a pottery cooking vessel accompanying burial 719 at Cirencester [McWhirr *et al* 1982, 129], domestic fowl at Lankhills are discussed by D. Brothwell in Clarke 1979, 239–44.

C. Wells has suggested that bird bones may only be found with females [Wells, 1981, 302], although at least one male was found accompanied by bird bones at Lankhills [Clarke 1979, 26 No. 25, 150].

The animal bone redeposited in many grave fills may well have derived from cemetery rituals and feasting. No complete catalogue has been made of these bones, but a catalogue of animal bones submitted with the human bone has been made by T. Waldron and lies in archive.

## CHARCOAL

A rectangular block of charcoal, 539, measuring 0.22m by 0.16m and 0.10m deep, appeared to straddle the south side of the coffin in grave 523 (Fig. 13). It is difficult to interpret the position of the charcoal, it seemed to have been built into the side of the coffin but quite how is unclear, if it was placed into the side of the grave alight it could have burnt its way through the side of the coffin if it was forced against the coffin wood. Burning charcoal appears to have had a religious significance, serving both to light the darkness of the grave and as a symbol of 'change and durability' [Alcock 1980, 60].

## DEEP PIT

A deep pit, 169 (Fig. 16), was dug through the late 3rd/early 4th-century dumping (633) which sealed the central gravel pit. The pit cut a number of earlier graves, and penetrated through the fill of the gravel pit to bottom at 8.70m OD on the natural sand and gravel beneath. The pit (Fig. 21) was roughly circular, its diameter 4.2m where truncated by the post-medieval ploughsoil. Its edge was cut at a 45 degree slope changing to a near vertical slope at the base, which was roughly square, measuring 1.65m by 1.75m, with a flat bottom. The whole feature would have been *c.* 2.5m deep in the Roman period.

The base of the pit was lined around the edge with a layer of grey clay mixed with sand, in which was found a coin of the house of Constantine dated 340–7. The clay formed a packing underlying a wooden frame comprising two *c.* 0.25m wide planks laid flat on the north and south sides of the pit, the northern one apparently 1.65m long, the southern one *c.* 1.45m long. They overlapped and were perhaps jointed to two thinner struts to form a roughly square structure. The western strut was *c.* 60mm wide, the eastern *c.* 100mm wide. The internal measurement of the structure was *c.* 1.10m square. The wood had been reduced to a dark stain on the clay and its exact shape is not certain. The north and south planks projected *c.* 20mm east of the eastern strut and *c.* 5mm west of the western strut.

Irregular ragstone rubble blocks, incorporating one fragment of tile, lay on all four sides of the base structure. The stones rested on the wood flush with the internal edge on three sides, but on the eastern edge the blocks were set back slightly resting on the clay behind the wooden strut. A thin spread of calcium carbonate, 20–30mm deep, lay in a square, 0.57 by 0.65m, placed centrally within the square structure on the flat surface of the natural gravel bottom of the pit.

The pit seems to have been backfilled by *c.* 375 on the pottery evidence which shows that although a broad range of 4th-century pottery types were present, no Porchester 'D' wares were represented (Figs 33, 34). Much stone rubble as well as domestic refuse lay in the lowest layer of fill, the upper layers contained relatively little building material.

Two smaller and shallower intercutting pits, 640 and 895 (Fig 21), led from the northern edge of the larger pit. They had apparently been backfilled at the same time as one another and the larger pit (169) and are interpreted as cut to provide access into the deeper feature.

The interpretation of the large pit (169) is difficult and no close parallels from cemetery areas have been found. The construction at the base is not unlike that of some Roman wells, but there was no evidence that the pit penetrated to the water table and it does not appear that it could have functioned as a well. The presence of stone rubble in the backfill would suggest that the stones *in situ* were the remnants of a larger stone structure, perhaps the discarded debris as a result of robbing of better quality stone from the structure.

The position of the stones on the edge of the timber on three sides of the base

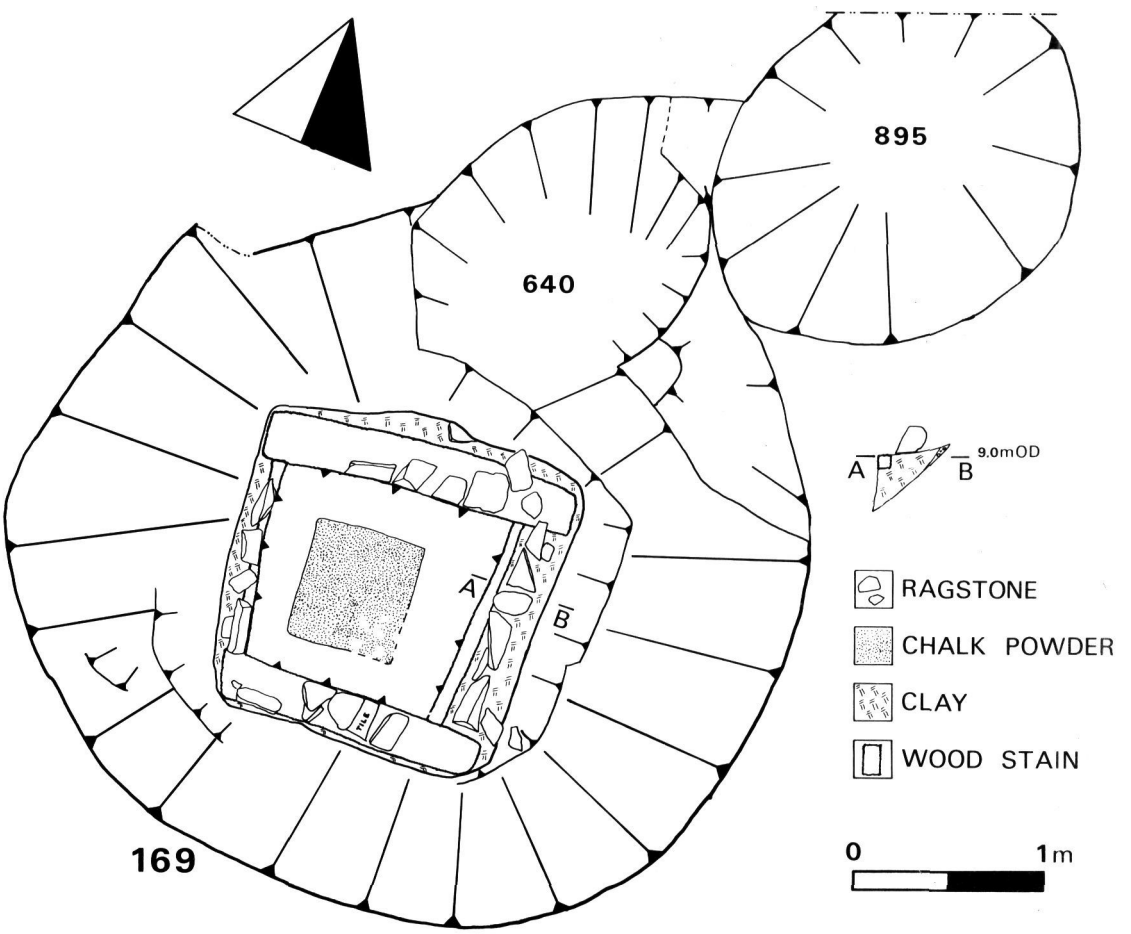



Fig. 21 West Tenter Street: Plan of Deep Pit.

is more suggestive of deliberate packing around some internal feature. It is therefore possible that the wooden frame enclosed some form of tank either constructed of wood or lead or other material which has left no trace or been robbed when the pit went out of use. The tank may have been used to hold rain or ground water, and the calcium carbonate spread on the floor of the pit could be interpreted as having been spilt from or drained out of the tank and accumulated where trapped under its base.

A connection can obviously be made with the plaster burials which as stated above appear to have been covered in slaked or quick lime. It is therefore tentatively suggested that the pit might have been used in the rite of plaster burial, as a source of water to slake the lime. Additional support for this interpretation can be taken from the evidence of the raising of the level of the gravel pit area to that of the surrounding cemetery and the backfilling of the cemetery ditch which would have stood between the ritual pit and the area in which the plaster burials were located.

Although no square tanks have been recorded, circular lead tanks, with Chi Rho symbols on their exteriors, are well known and a connection has been made between them and cemetery sites [Guy 1981, 274]. It has been suggested that they were used for 'ritual ablutions' as distinct from baptismal fonts [West and Plouviez 1976, 120–1]. These tanks are all found apparently deliberately destroyed by the late 4th century, perhaps as the result of a revival of anti-Christian paganism [Guy 1981, 275].

Guy [*ibid* 274] has also shown that the tanks have been found in or near wells or near rivers suggesting that they were used as water troughs. He quotes Augustine of Hippo (354–430) who in *Confessions* VI, 2, describes a pagan custom followed by Christians in which water was used to dilute wine for graveyard meals in cemeteries where martyrs were buried.

A stone-lined pit which did function as a well, measuring 3m wide at the top, 0.9m diameter at the bottom and 2–3m deep, was found on a ritual site at Norden, Corfe Castle [Hughes 1973, 76–7]. The drystone lining was constructed in two phases, the first in rough undressed local stones of varying size, the second more elaborate with shaped stones of similar size and steps leading to the base [Hughes 1973, Fig. 2]. The site was occupied between the late 1st and early 5th centuries.

No evidence for a building or structure was found associated with pit 169. A single undated posthole, 1067 (Fig. 16), 0.47m in diameter and dug to at least 1.20m below Roman ground surface, lay to the north east of the pit and cut grave 1098.

If the interpretation of pit 169 at West Tenter Street as a container for the water supply for the enactment of the plaster burial rite is accepted, and assuming that all the plaster burials from the site were supplied by it, then these burials could be dated to a range of about thirty five years, between AD 340 and 375.

## POST-MEDIEVAL DISTURBANCE

Traces of what might have been late medieval or early post-medieval robbing were found of one wall of a Roman tomb at the east end of the site. All later levels here had been truncated by a World War II static water tank. The 17th-century plough-soil covering the entire site was cut in places by trenches of various depths, some containing tile rubble, these may have been plant bedding trenches.

In the late 17th century large, deep pits were dug with regular straight edges and square corners into the underlying sand and gravel layers. These extensive pits were backfilled with black ash containing large quantities of later 17th-century pottery and animal bone; occasional tip-lines of roof tile lay within the ash matrix.

These pits probably result from the clearance and rebuilding activities following the Great Fire of London. It is interesting to note the relatively neat and orderly way in which these pits were dug suggesting that at ground level boundaries may have been clearly demarcated perhaps as a result of subdivision into smallholding plots for market gardening.

The block bounded by the modern day Tenter Streets was part of a substantial open area to the eastern side of the City of London in the 17th century named Goodmans Fields (see Faithorne and Newcourt's map publ. 1658 and Ogilby's 1676). The soft fill of the ash pits may have left the area as poor building land which was used as a tenter ground in the 18th century (Rocque's map publ. 1745) and certainly remained open land into the 19th century (Horwood's map publ. 1819), it was subdivided and developed as late as the 1850s.

Two rows of terrace houses were constructed along the northern (Scarborough Street) and southern (South Tenter Street) street frontages of the block. A drain which served these houses ran along the southern edge of the excavation area, sloping down from west to east and cutting Roman features in the area of the central Roman gravel pit. Bomb damage and slum clearance left the site flattened but occupied by a few pre-fabricated houses until 1980. Trees and scrub including large *budlia* bushes caused extensive root disturbance which together with worm action carried 17th-century ash in small channels down to the Roman layers.

# II. THE FINDS

## THE ROMANO-BRITISH POTTERY
## By S. J. PIERPOINT

SUMMARY

The Romano-British pottery from West Tenter Street is the largest recorded assemblage recovered from a cemetery site for the city of *Londinium*. Any understanding of the assemblage must encompass consideration of the processes that brought such material to site. The bulk was secondary material, redeposited in the acts of filling in pits and ditches, ritual feasting(?), levelling and the disturbance of earlier interments by later grave digging.

Less than 17% of the pottery could certainly be recognised as burial furniture, either containing cremated bone or placed in graves with inhumation burials. These were usually cooking pots and jars for adults, both male and female, or miniature beakers for children and juveniles. Cooking pots played a dual role as a container for the ashes of the deceased or accompanying an unburnt corpse.

In the 2nd century in particular, the cemeteries may have been a place of pilgrimage, involving the carrying of pottery vessels out from the city to the places of burial. Flagons, beakers, amphorae and Samian bowls seem to have been brought to the site, perhaps in the activity of feasting, and broken.

The custom of interring the cremated human remains in pottery urns and the deposition of vessels during 'feasting', seem to have been abandoned at about the same time, *c.* AD 200–250. On the other hand pottery grave furniture continued to be deposited well into the 4th century.

West Tenter Street thus gives an insight into the use of pottery vessels in burial ritual over three centuries of the occupation of Londinium. The assemblage of the pottery comprises 161 rim estimated vessel equivalents (EVEs), from 10580 sherds weighing 201.5kgs (Fig. 22). It can be divided into those vessels which are part of the intact grave furniture (27.24 rim EVEs; 44.06 base EVEs; 17% and 20% of the assemblage respectively) and those which are not. Burial furniture includes both cremation urns and accessory vessels to cremation and inhumation burials and ranges in date from the Hadrianic period to the 4th century AD. The remainder of the assemblage consists of secondary or redeposited sherds ranging in date from the mid 1st century to the end of the 4th.

Most of the pottery types are well known and thoroughly described elsewhere [Museum of London, Dept. of Urban Archaeology, Catalogue]. However the site of West Tenter Street does provide new information in specific areas. In addition some of the fabrics regularly and particularly occur on London's cemetery sites.

### THE FABRICS

The Trajanic/Hadrianic assemblage

Pottery of the Flavian/Trajanic period seems to be associated withd the early backfilling of the gravel pits, but is frequently redeposited in later contexts. Material included: terra nigra imitations, London ware, London micaceous wares as well as coarse ware jars of Alice Holt/Surrey and Highgate origin together with similar forms of sandy wares (e.g. GW5). Substantial assemblages of contemporary material of this period were represented (Fig. 30). Also present are so-called "feeding-bottles" and Sugar Loaf Court ware [Davies and Tyers 1983] of pre-Flavian/Flavian date.

*Thames-side Kent sources*

Black burnished 2 wares have long been recognised as major elements in the pottery trade to Londinium in the 2nd and 3rd centuries [Williams 1977]. By the Hadrianic period sources in Kent and Essex were supplying London's markets with ranges of typical jars and bowls imitating hand-made black burnished vessels from Dorset. Recent research [Moynihan 1984 B] indicates the importance of the Thames-side sources on both sides of the estuary. It is possible to recognise differences between the Kent and Essex wares, although there is still some ground for uncertainty. The classification adopted here is that all vessels categorised 'TSK' are from Kentish sources such as Cliffe. The vast majority of vessels classified 'BB2' are from Essex, but a proportion remain uncertain.

Much of the TSK pottery at the site is very distinctive, as well as very popular in the Roman period as burial furniture. Dozens of these vessels are known to have been used as cremation pots or accessory vessels. Jars seem far more common than dishes (Fig. 23), with grouped lattice the regular form of decoration. Indented beakers are another popular form, one (Fig. 28.11) occurring as an accessory to an inhumation.

*Lids* (Fig. 27.9–13)

Lids were very common, several being associated with cremation urns. Indeed all intact cremation urns had lids of one kind or another. There were a number of sources in the 2nd century including oxidised (OX2, etc) and reduced types (LD2, LD3, etc). The former are frequently placed with Verulamium white ware urns in the east London cemeteries (RCHM 1928).

| Pottery type | DGLA code | Burial furniture Rim & Base EVEs | | EVEs × 100 Rim | Base | Sherds number | Weight in gms | % site Rim | % site Base |
|---|---|---|---|---|---|---|---|---|---|
| Verulamium white ware | VRW | 390 | 600 | 2315 | 2870 | 1674 | 37284 | 14.4 | 12.9 |
| Thames-side Kent | TSK | 643 | 900 | 1436 | 2266 | 854 | 16878 | 8.9 | 10.2 |
| Black burnished 2 | BB2 | 296 | 563 | 1314 | 1627 | 1108 | 14024 | 8.2 | 7.3 |
| Highgate C ware | HWC | 41 | 200 | 1080 | 784 | 864 | 8703 | 6.7 | 3.5 |
| Black burnished 1 | BB1 | 327 | 364 | 1025 | 763 | 370 | 6957 | 6.4 | 3.4 |
| Samian | SAM | | | 937 | 1394 | 448 | 4650 | 5.8 | 6.2 |
| Alice Holt/Farnham | AHFA | 100 | 100 | 628 | 706 | 290 | 4671 | 3.9 | 3.2 |
| Oxidised fabric 2 | OX2 | 92 | 100 | 510 | 784 | 266 | 3125 | 3.1 | 3.5 |
| Verulamium white-slipped | VCWS | 97 | | 420 | 231 | 100 | 1469 | 2.6 | 1.0 |
| Alice Holt/Surrey | AHSU | 0 | 177 | 389 | 533 | 214 | 2815 | 2.4 | 2.4 |
| Nene Valley colour-coat | NVCC | 233 | 300 | 357 | 763 | 140 | 1209 | 2.2 | 3.4 |
| Sandy fabric 'LD2' | LD2 | | | 238 | 330 | 78 | 807 | 1.5 | 1.0 |
| Oxford red-colour coat | OXRC | 100 | 100 | 220 | 405 | 84 | 914 | 1.4 | 1.8 |
| Verulamium grey ware | VRG | | | 194 | 33 | 61 | 941 | 1.2 | 0.1 |
| Grey ware 5 | GW5 | | | 173 | 426 | 267 | 3207 | 1.1 | 1.9 |
| Oxidised fabric 3 | OX3 | | | 157 | 28 | 84 | 1373 | 1.0 | 0.1 |
| Dressel 20 amphorae | DR20 | | | 135 | 100 | 221 | 25042 | 0.8 | 0.4 |
| Moselle keramik | MOSL | 96 | 100 | 119 | 121 | 28 | 152 | 0.7 | 0.5 |
| Colchester colour coat | COLC | ?100 | ?100 | 113 | 200 | 7 | 164 | 0.7 | 0.9 |
| London micaceous ware | LOMI | | | 107 | 90 | 43 | 749 | 0.7 | 0.4 |
| Sandy fabric 'LD3' | LD3 | | | 106 | 300 | 23 | 375 | 0.7 | 1.3 |
| Oxford white ware mortars | OXMO | | | 106 | 142 | 26 | 1300 | 0.7 | 0.6 |
| Cologne colour-coat | KOLN | | | 100 | 500 | 23 | 378 | 0.6 | 2.2 |
| Oxidised ware 30985 | 30985 | | | 100 | 0 | 16 | 589 | 0.6 | — |
| Oxidised fabric 10 | OX10 | | | 93 | 100 | 41 | 479 | 0.6 | 0.4 |
| Ring & dot beakers | RDBK | | | 91 | 2 | 18 | 102 | 0.6 | — |
| Mortaria (TY97) | TY97 | | | 86 | 39 | 11 | 1751 | 0.5 | 0.2 |
| Verulamium red ware | VRR | | | 79 | 139 | 102 | 1269 | 0.5 | 0.6 |
| Fine micaceous ware | FMIC | | | 69 | 23 | 16 | 237 | 0.4 | 0.1 |
| Terra Nigra & imitations | TN | | | 63 | 79 | 12 | 207 | 0.4 | 0.3 |
| Sandy fabric S1 | S1 | | | 60 | 20 | 5 | 91 | 0.4 | 0.1 |
| Sandy fabric SP44 | SP44 | | | 58 | 38 | 24 | 332 | 0.4 | 0.2 |
| 'London ware' | LOND | | | 55 | 372 | 142 | 844 | 1.3 | 1.7 |
| Highgate B ware | HWB | | | 54 | 54 | 64 | 998 | 0.3 | 0.2 |
| Oxidised fabric 8 | OX8 | | | 45 | 123 | 52 | 594 | 0.3 | 0.6 |
| Sandy ware GW4 | GW4 | | | 40 | 0 | 5 | 104 | 0.2 | — |
| Amphorae PE47 | PE47 | | | 37 | 246 | 391 | 4984 | 0.2 | 1.1 |
| Groggy fabric 1 | GR1 | | | 33 | 0 | 5 | 107 | 0.2 | — |
| Sandy ware SP43 | SP43 | | | 31 | 0 | 2 | 83 | 0.2 | — |
| Sandy ware GW1 | GW1 | | | 30 | 48 | 22 | 230 | 0.2 | 0.2 |
| Storage jar fabric 123 | SJ123 | | | 30 | 0 | 9 | 379 | 0.2 | — |
| Sandy ware SP100 | SP100 | | | 25 | 0 | 3 | 127 | 0.2 | — |
| Eifelkeramik | EIFL | | | 25 | 0 | 2 | 38 | 0.2 | — |
| Oxford parchment ware | OXPA | | | 21 | 0 | 3 | 42 | 0.1 | — |
| Porchester D ware | PORD | | | 19 | 26 | 7 | 105 | 0.1 | 0.1 |
| Oxidised fabric 7 | OX7 | | | 19 | 0 | 3 | 42 | 0.1 | — |
| Colchester 306 bowls | C306 | | | 18 | 0 | 3 | 75 | 0.1 | — |
| Sandy ware S5 | S5 | | | 17 | 0 | 4 | 64 | 0.1 | — |
| Oxidised fabric 9 | OX9 | | | 16 | 58 | 16 | 58 | 0.1 | 0.3 |
| Sandy ware GW7A | GW7A | | | 16 | 2 | 3 | 38 | 0.1 | — |
| Sandy ware GW6 | GW6 | | | 15 | 0 | 16 | 154 | 0.1 | — |
| Sandy ware S3 | S3 | | | 12 | 0 | 1 | 14 | 0.1 | — |
| White slipped ware 1 | WS1 | | | 11 | 173 | 50 | 589 | 0.1 | 0.8 |

Fig. 22 West Tenter Street: Pottery fabrics in order of importance.

| Pottery type | DGLA code | Burial furniture Rim & Base EVEs | EVEs × 100 Rim | Base | Sherds number | Weight in gms | % site Rim | % site Base |
|---|---|---|---|---|---|---|---|---|
| Sandy ware GW3 | GW3 | | 11 | 0 | 2 | 83 | 0.1 | — |
| Sandy ware S7 | S7 | | 10 | 0 | 3 | 43 | 0.1 | — |
| Oxidised fabric 1 | OX1 | | 10 | 0 | 2 | 74 | 0.1 | — |
| Storage jar fabric 127 | SJ127 | | 9 | 0 | 1 | 63 | 0.1 | — |
| Sandy ware GW2 | GW2 | | 9 | 0 | 9 | 105 | 0.1 | — |
| Sandy ware S8 | S8 | | 8 | 0 | 1 | 20 | — | — |
| Oxidised fabric 6 | OX6 | | 7 | 0 | 1 | 1 | — | — |

Other fabrics include (Rim Eves and code in parenthesis): Hoo flagons (Hoo, 6); Storage jar fabric 125 (SJ125, 6); Gillam 238 mortaria (G238, 4); sandy ware S4 (S4, 4); storage jar fabric 123 (SJ123, 3); sandy ware GW12 (GW12, 2); sandy ware GW9 (GW9, 1). Fabrics with rim EVEs of 0 include: Camulodunum 185A, late Roman calcite gritted ware (CALC), Central Gaulish other fabrics (CGOF), Gallo-Belgic white ware (GBWW), London egg-shell ware (LOEG), Late Roman cylindrical amphorae (LRCA; lower half of one a grave furniture), Lyons were (LYON), Southern Spanish amphorae, Sugar Loaf Court ware (SLOW), storage jar fabric 31985 (31985), Fine ware 1 (FW1), groggy fabric 2 (GR2), storage jar fabric 124 (SJ124), storage jar fabric 126 (SJ126), sandy wares 7, 10, 11, 13, S4 (codes GW7, GW10, GW11, GW13, S4), oxidised wares 5 & 13 (codes OX5, OX13) and North Kent Shelly ware (NKSH), Dressel 2–4.

Fig. 22 continued.

*Third century jars*

Besides the miniature vessels and cooking pots which were deposited as burial furniture during this period, a certain amount of residual material was represented. This seemed to include some early Oxford material, but the main forms were cooking pots (in sandy wares like GW3 & GW4 as well as BB1) and storage jars (fabrics 31985, SJ123–127). The sandy ware cooking pots were distinctive with constricted and sometimes decorated necks and angular and flattened rims.

*Fourth century sandy wares*

The site produced an interesting range of mid/late 4th-century sandy wares. Most of the forms are hooked and rolled rim jars (Fig. 33.8–10) and occasional flanged bowls (fabrics: 30985, sp44, S1, sp43, etc). The jars often have horizontal rilling, especially at the neck. At West Tenter Street they are regularly associated with Alice Holt/Farnham wares [Lyne & Jefferies 1979] and late forms of BB1.

## THE FORMS

The forms show a range as wide as the fabrics. Jars are by far the commonest broad category range (42.2%, 33.2% rim/base EVEs) with the necked jar (14.2%, 8.3%) and the lattice burnished jar (9.9%, 10.7%) most common of these. A substantial proportion are present in the form of burial furniture, others may be disturbed burial furniture and the rest consist of miscellaneous secondary material. Bowls/dishes make-up the second largest category (17.0%, 6.5%) with the black burnished style pie-dishes (3.3, 0.9%) and dog-dishes (3.2%, 1.1%) most common of these. One example of each of these occurs as lids for 2nd century cremation urns. Lids (and plates) are the next largest category (11.7%, 12.0%), several occuring on cremation vessels. Indeed all intact cremation urns have lids, although in one case a tile is used and in others bowls and a broken tazza are pressed into service. Beakers (8.8%, 16.9%) and flagons (8.6%, 5.1%) are the next categories. Many sorts of beakers are found, a few as accessory vessels in all periods. Two particularly interesting groups occur. The indented beakers from a Thames-side Kent source (TSK) are a regular feature, although only one occurs as part of the burial furniture. However three identical pots found nearby may be from burials too (Aldgate MoL 2814, Fenchurch St. MoL 2815, and Liverpool St. BM acc. no. 1856–97). There are also a number of miniature oxidised baggy beakers. They are probably of mid-1st to 2nd century date and none occur as grave goods. For the flagons, only one intact example occurs in a grave context and that a 4th century accessory vessel. This correlates with our knowledge of London's cemeteries as a whole. Although 1st and 2nd-century flagons are known from the cemetery areas hardly any are definitely from burial groups. Several fragments of 1st or 2nd-century ring-neck flagons and disc-mouthed flagons occur on site. Other forms include: samian (5.8%, 6.2%), mortaria (2.9%, 1.3%), amphorae (1.1%, 2.9%), storage jars (0.1%, –) and miscellaneous items

| Form Fabric | Rim EVEs | Site %age | Cum site %age | % as grave furniture | % of grave goods |
|---|---|---|---|---|---|
| VRW necked jar | 11.01 | 6.8 | 6.8 | 35.4 | 14.3 |
| TSK lattice jar | 10.89 | 6.8 | 13.6 | 53.5 | 21.4 |
| Misc oxid. lids | 10.72 | 6.7 | 20.3 | 9.3 | 3.7 |
| VRW flagons | 8.57 | 5.3 | 25.6 | — | — |
| Misc sandy jars | 8.40 | 5.2 | 30.8 | — | — |
| BB2 lattice jar | 7.99 | 5.0 | 35.8 | 28.0 | 8.2 |
| HWC necked jars | 6.74 | 4.2 | 40.0 | 6.1 | 1.5 |
| Misc sandy lids | 5.39 | 3.3 | 43.3 | — | — |
| BB1 lattice jars | 5.35 | 3.3 | 46.6 | 42.4 | 8.3 |
| White slipped jars | 4.38 | 2.7 | 49.3 | 18.2 | 2.9 |
| BB2 pie-dishes | 3.93 | 2.4 | 51.7 | 20.1 | 2.9 |
| Samian Dr18–31 | 3.10 | 1.9 | 53.6 | — | — |
| NVCC beakers | 3.04 | 1.9 | 55.5 | 76.6 | 8.6 |
| HWC poppy head Bkr. | 2.74 | 1.7 | 57.2 | — | — |
| VCWS flagons | 2.63 | 1.6 | 58.8 | — | — |
| AHFA flanged bowls | 2.54 | 1.6 | 60.4 | — | — |
| BB1 flanged bowls | 2.54 | 1.6 | 62.0 | — | — |
| Samian Dr.27 | 2.31 | 1.4 | 63.4 | — | — |
| AHSU necked jars | 2.12 | 1.3 | 64.7 | — | — |
| TSK pie-dishes | 2.09 | 1.3 | 66.0 | — | — |
| Alice Holt jars | 2.09 | 1.3 | 67.3 | — | — |
| OXRC bowls | 1.89 | 1.2 | 68.5 | 52.9 | 3.8 |
| GW5 necked jars | 1.73 | 1.1 | 69.6 | — | — |
| Bead rim jars | 1.67 | 1.0 | 70.6 | — | — |
| White slipped flag | 1.51 | 0.9 | 71.5 | — | — |

Fig. 23 West Tenter Street: Catalogue of inhumation burials.

(1.6%, 15.7%). The major forms at West Tenter Street are listed in Fig. 23.

## THE BURIAL FURNITURE

### The Cremations

Pottery as burial furniture can be divided evenly between cremation pots (22) accessory vessels to inhumations (23). The cremation vessels seem to have been placed upright close to or at the surface of the ground. Consequently later activities including post-medieval ploughing has damaged their tops in particular and removed lids. All intact vessels had lids. Most common are Verulamium white ware (VRW) vessels of which there are 6 necked jars and two flagon bases (Figs 24, 25.2–4, 26.1). Two of the former had pottery lids (both inverted), one a BB1 dog-dish and a fourth a tazza minus base (Plate 4). The other two had the tops removed. Stratigraphically, in the area of the central gravel pit (Fig. 9), the earliest of these cremation pots would be a little after AD 120. The latest, dating to the last quarter of the 2nd century, was inside a late Roman cylindrical amphora (LRCA) (Plate 2). This was also the largest of the VRW urns. The use of an amphora to contain the urn is a well-known London phenomenon and the grave group from Great Alie St. [RCHM 1928 158–9] has similarities as does one from Liverpool St [RCHM 1928, 160 no 33] (there are at least three other well-recorded examples). The latter comprised both BB2 grouped-lattice decorated jar and VRW necked jar. Both contained cremated bones and were placed inside the same amphora. The only cremations with jewellery burial goods are both contained in VRW necked jars (Figs 24.4, 25.2).

A further 8 vessels were lattice decorated jars of BB2 type, half of which were from a Thames-side Kent (TSK) origin. These seem to range in date of deposition from the mid-2nd century to the mid-3rd (Figs 23, 26–29). Five of these are of plain lattice style burnish, three have so-called 'grouped-lattice' (e.g. Fig 26.4). All London parallels with clear dating evidence belong to the later 2nd century. There are local parallels for the use of such cremation jars at Aldgate Station, Liverpool St., Bishopgate [RCHM 1928, 156–60, nos 18, 33 & 29] and many others. Interestingly the best parallels come from the burial furniture at West Tenter Street itself. Indeed there is little difference between the style of fabric of the cremation pots and grave goods, except a little in size. The cremation vessels

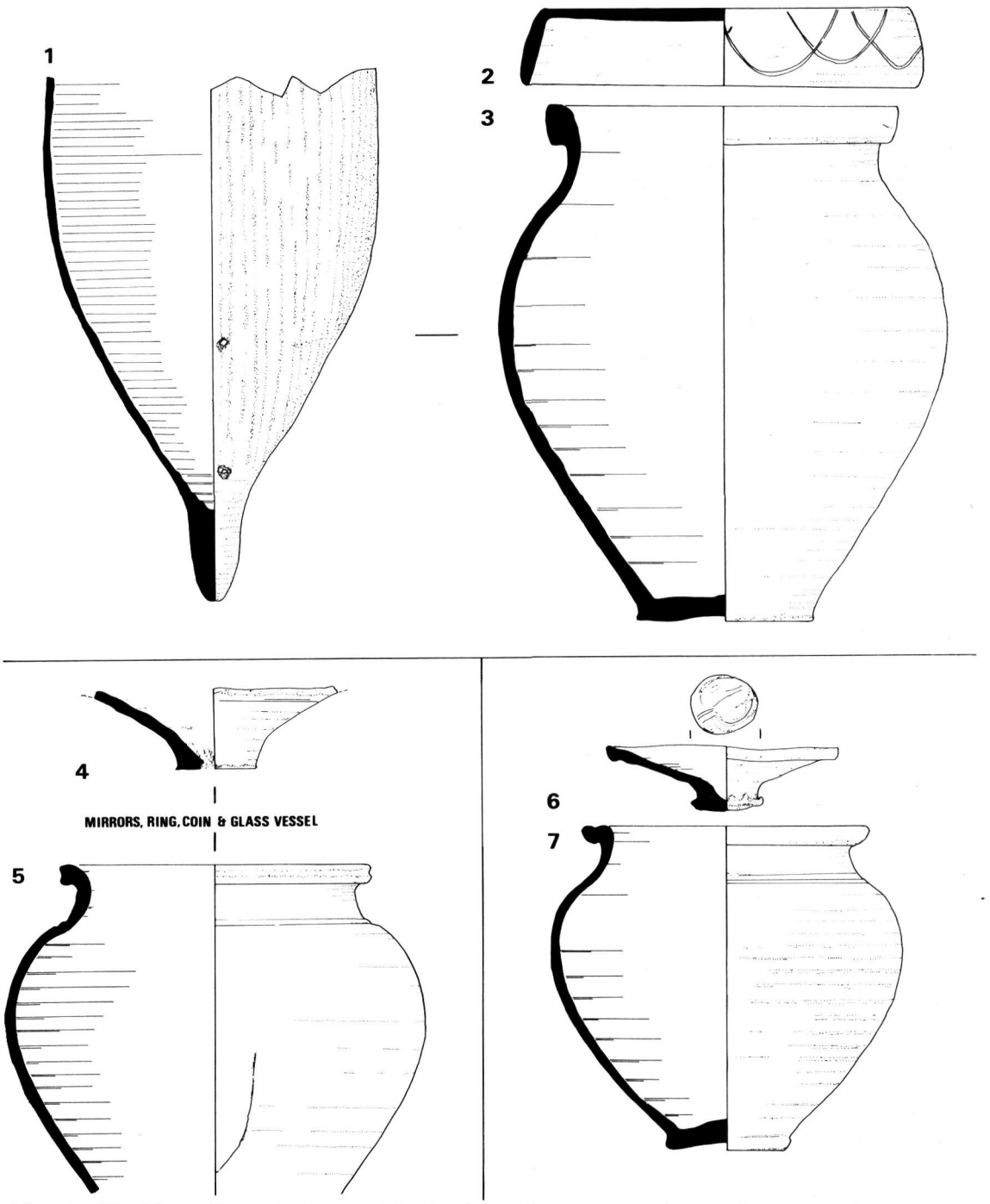



Fig. 24 West Tenter Street: 2nd-century Verulamium white ware cremation vessels. 1–3 Vessels cremation 255 include Verulamium white ware urn with BB1 dog dish lid contained in a Tunisian cylindrical amphorae (LRCA); 4–5 VRW urn and inverted/perforated lid from 1092 (see Fig. 34); 6–7 VRW urn and inverted lid from 1002.

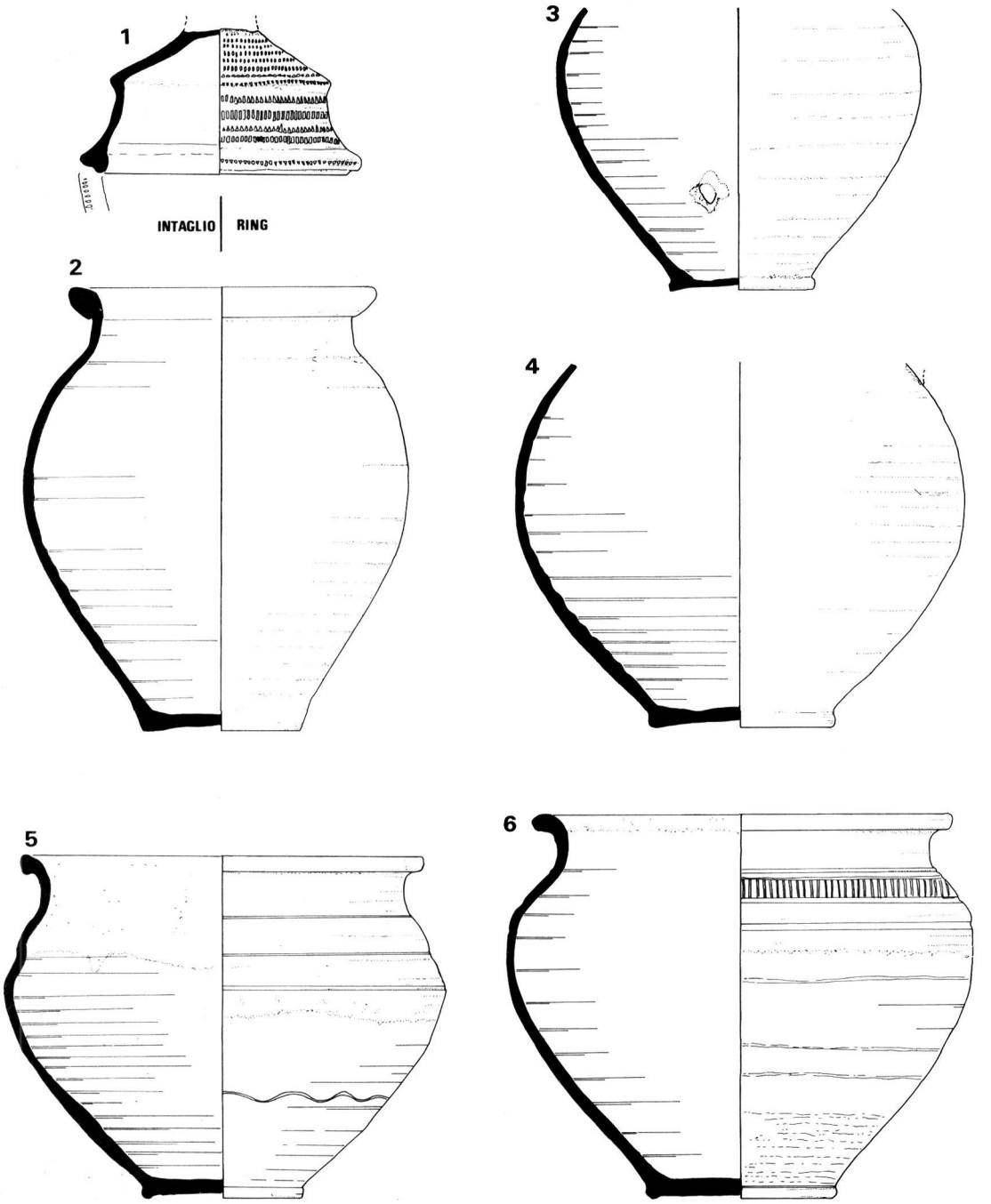



Fig. 25 West Tenter Street: 2nd-century cremation vessels from Verulamium (VRW) and Highgate (HWC). 1–2 VRW urn with broken tazza as lid 675; 3 VRW necked jar base 1088; 4 VRW flagon base 1123; 5 HWC necked jar 979; 6 HWC necked jar 1095.

average 275mm the accessory vessels 195mm in height. Only two vessels have survived with their lids more or less intact. One was a plain BB2 pie-dish (Fig. 26.3–4, Plate 2), the other a tile (Fig. 27.1, Plate 3). There is a single BB1 jar cremation vessel (Fig. 27.3) with acute lattice decoration, presumably no later than the mid-3rd century, of which only the base survives.

The necked and shouldered jars of Alice Holt/ Surrey and Highgate sources are likely to be the earliest cremation vessels from the site. There are two of each, none intact. The best parallels for these as cremation vessels comes from close by. Necked and shouldered jars like these were common as cremation vessels on the Mowbray House site at St Clare Street (unpublished). All the vessels at West Tenter Street should date to the Hadrianic or early Antonine period, AD 120–160 (Fig. 25–5–6; 27.5). These types would have probably run chronologically parallel to the earliest VRW urns. The latest VRW urns would be contemporary with the earliest black burnished ones.

One interesting feature is the use of inverted and/or perforated lids (Figs 24.4; 24.6). Indeed a number of perforated lids, some of which may have come from displaced cremations, occur in residual contexts (Fig. 27.10–11). One suggestion is that an inverted lid would provide a receptacle into which libations could be poured (see the example at Great Alie St [RCHM 1928, 158]) and the perforation would allow liquids to run through. One cremation at Caerleon was provided with a lead pipe leading the ground surface [Wheeler 1929, 1] and continental examples had libation pipes attached to altars [Liversidge 1968, 476].

One other interesting phenomenon is the use of very large urns, much larger than would have been required to contain the amount of cremated remains collected. This seems to have been a popular fashion *c.* AD 200 as we see from the groups illustrated (Figs 24 1–3; 26 3–4) and the Great Alie St. group [RCHM 1928 & above]. Two of these were contained within amphorae, although the use of amphorae was an earlier feature too [RCHM 1928, 152 no. 13]. For the eastern cemetery this seems to have been more or less the end of the cremation tradition. Only one example is significantly later (probably post 250), that from Mansell St. [RCHM 1928, 156 no. 22].

The Inhumations

The 23 accessory vessels with inhumations show a far greater range of type and date than the cremation pots. By far the most common though are BB2 lattice decorated jars, most of which originate from a North Kentish source (five) (Fig. 28). There are seven in number. Six of the seven have grouped-lattice decoration, the other appears to be plain (Fig. 28.6). This group dates to the last quarter of the 2nd century or the beginning of the 3rd century. A close parallel is the accessory vessel at St Clare St [Ellis 1985] closely dated to the last quarter of the 2nd century. The pair of urns inside an amphora at Liverpool St. [RCHM 1928, 159, Fig. 66, i, ii] included both a BB2 grouped lattice jar and a VRW necked jar which must be of similar date. The dating of these vessels has been discussed recently by Moynihan [1984 A]. The use of such pots, as accessories to inhumations rather than as cremation pots, seems to be restricted to the cemetery east of the city wall. It hints that the cremation vessels themselves were not just containers for the human remains, but had other significance in the burial rite. Three further vessels were BB1 lattice jars with obtuse lattice decoration (*c.* late 3rd century in date). At West Tenter Street such cooking pots were only placed with adults at burial. With one exception Verulamium white ware jars do not occur with inhumations. One broken base, probably reused as a bowl, was apparently placed on an individual's chest (Fig. 29.3). Broken flagons probably reused as bowls are a feature of the 'ritual pit' at St. Clare Street nearby [Ellis 1985] and from other cemetery areas.

Although inhumation burials may have been interred at West Tenter St. from *c.* AD 100, no grave goods were deposited with burials until the mid-2nd century. One early example from West Tenter Street is a pair of small vessels, the sandy ware bowl and black burnished handled cup (Fig. 28.1–2) dated 140–180. Of similar mid-2nd century date were two Highgate poppy-head beakers placed with a burial at St. Clare Street [Ellis 1985, 119]. In fact these two inhumations present two recurrent features of the London cemeteries, particularly east London burial practice. The use of pairs of vessels is well-known and occurs elsewhere at:

Mansell St [RCHM 1928, 156 No. 20]; Broad St [RCHM 1928, 156, No. 17]; Bank Station [RCHM 1928, 152 No. 13] and the Mowbray House site at St. Clare Street (unpublished). It seems to be popular in the mid-2nd century both for cremations and inhumations. In one grave (1051) at West Tenter St. a large pottery group including a pair of small Nene Valley beakers and a pair of BB2 jars (Fig. 28, 8–11) may have been disturbed. Large groups of vessels in one grave have been recognised nearby on the Mowbray House site.

The second feature is the use of small and miniature vessels, particularly beakers as accessories. Six small beakers occur as accessories (Figs 28 & 29),

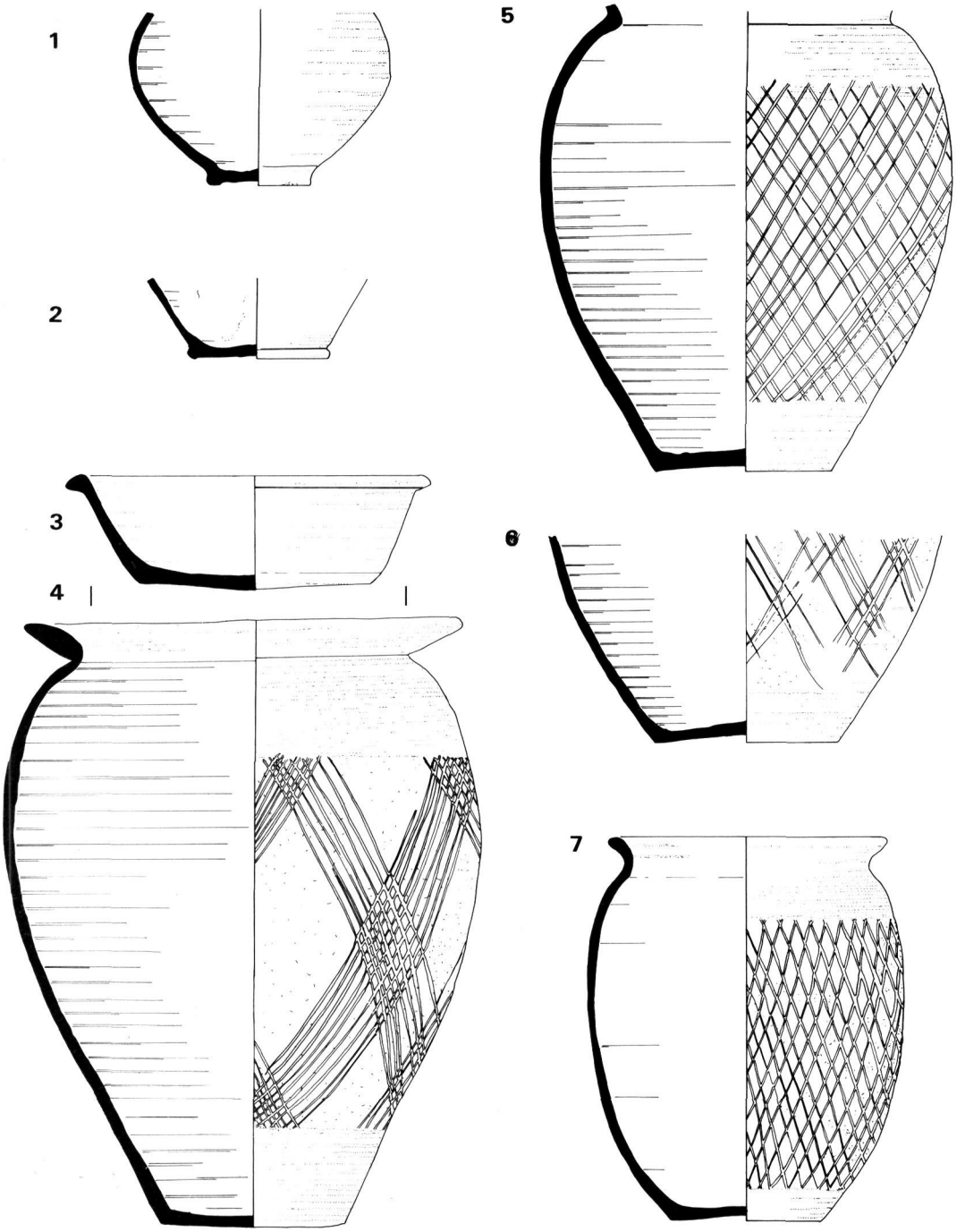



Fig. 26 West Tenter Street: Cremation vessels. 1 VRW flagon base 988; 2 HWC necked jar base 735; 3–4 Large TSK jar and BB2 pie-dish as lid 696; 5 BB2 jar 834; 6 BB2 jar base 224; 7 BB2 jar 1157.

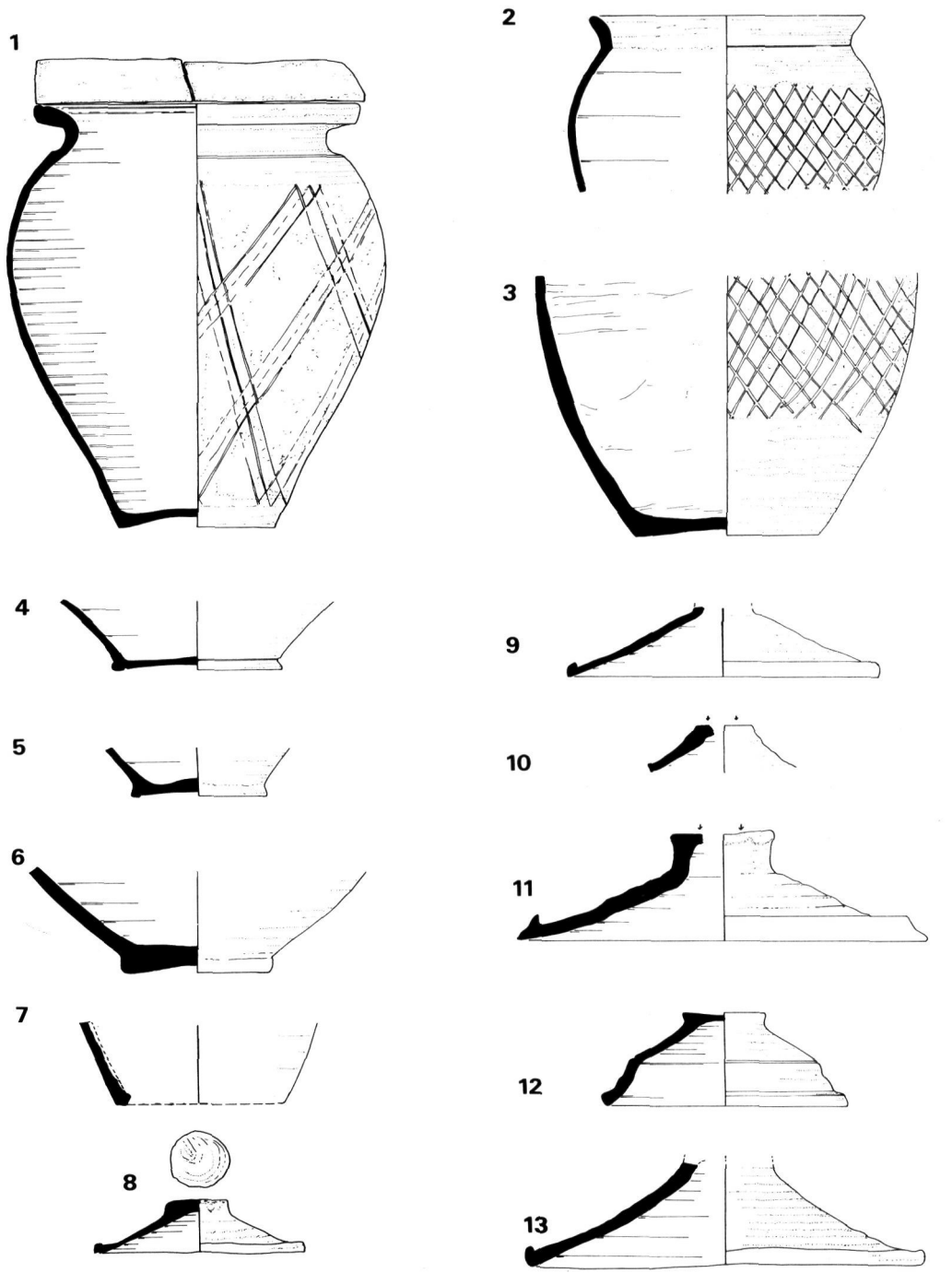



Fig. 27 West Tenter Street: Cremation urns and lids. 1 BB2 urn and tile lid 441; 2 TSK urn 1121; 3 BB1 jar base 1131; 4 TSK jar base 69; 5 Alice Holt/Surrey jar base 1145; 6 VRW urn 610; 7 491 jar base 491; 8–13 residual perforated and unperforated lids.

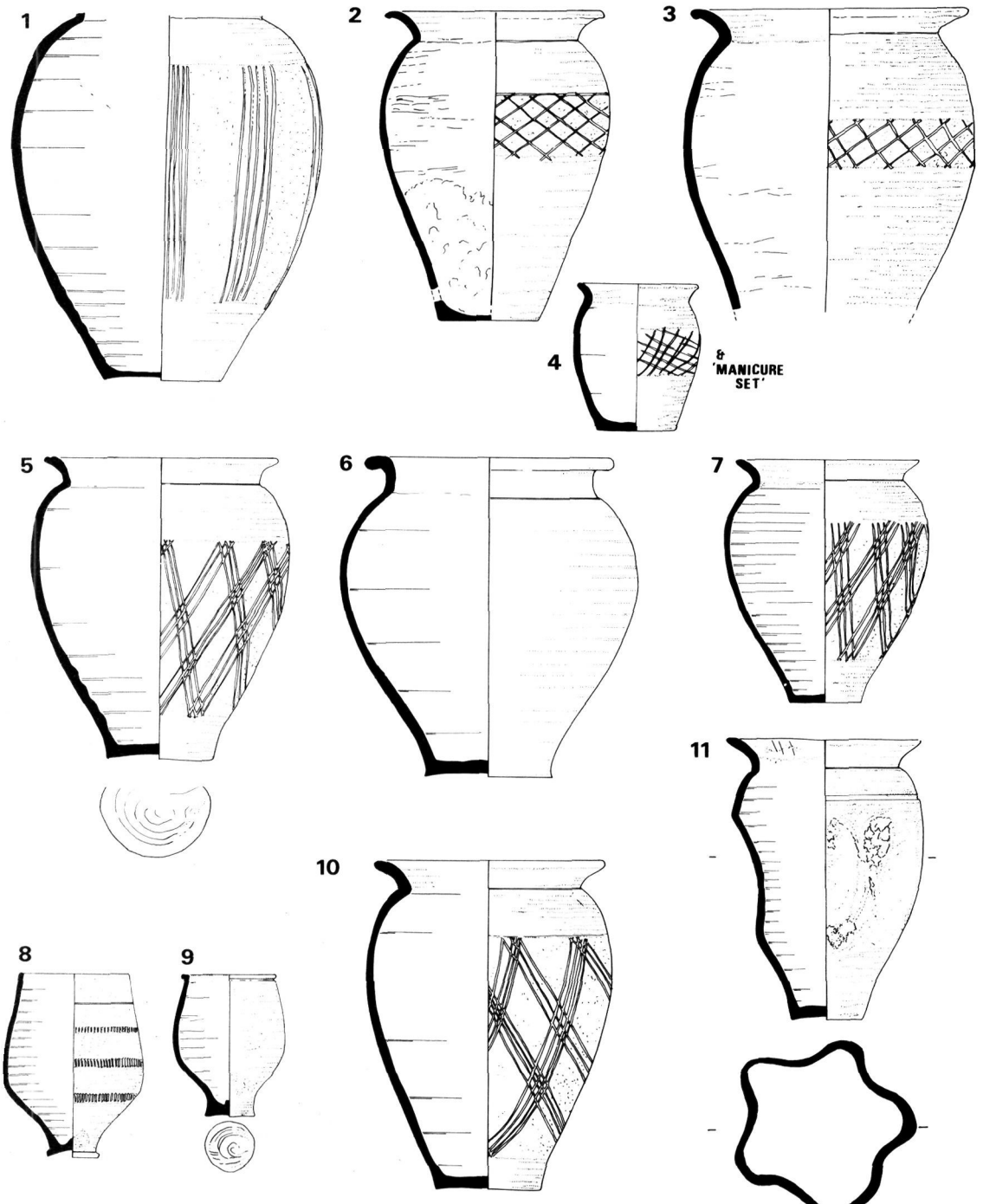



Fig. 28 West Tenter Street: Accessory vessels. 1 BB2 jar 733; 2 BB1 jar 1117; 3 BB1 jar 970; 4 BB1 miniature jar 741; 5–6 TSK jars 1201; 7 TSK jar 926; 8–11 Probable large burial group of two Nene Valley beakers and two TSK vessels from 1050, 8–9 redeposited in 970.

three are Nene Valley, one from Cologne, one from Trier and one possibly a Colchester type. These small vessels are generally, though not exclusively, placed with children and juveniles. They seem to cover a wide date range, from the late 2nd to the early 4th century. One, that from Trier (Fig. 29, 11–12), has a jar base as lid. For the rest, there is a single early Oxford red colour-coated necked bowl (Fig. 29.10), a white slipped jar/bowl (placed over the feet of an inhumation Fig. 29.7, Plate 6), and one of the latest pottery grave goods is a simple 4th-century Alice Holt flagon (associated with a late glass flask Fig. 29.6).

The burial ceramics seems to divide between cooking pots (9) and small/miniature vessels (9). All the former are buried as accompaniments to adults, but three of the latter are also placed with adults. It is significant that both groups can be closely paralleled as accompaniments to cremations. The lack of pottery grave goods for the stratigraphically earliest burials is of interest, but this does not mean that pottery vessels were not brought to and deposited at the cemetery during and after the burial rites. A good example of this is the 'ritual pit' at nearby St. Clare St [Ellis 1985] containing two complete and several incomplete pottery flagons of Antonine date. If vessels were left or deliberately deposited on the ground surface near graves, the continuing digging of graves would bring such items into the archaeological record. Of interest in this respect are the miniature oxidised baggy beakers (Fig. 29.13–16) and a similar group from St. Clare St., in both cases redeposited in later contexts. Could these have formed part of 1st-century burial rites in the area? Interestingly a substantial number of Highgate poppy-head beakers also occur in secondary contexts (according to Fig. 23 the 14th most common vessel type on site). Some of these too could be part of burial ritual or less likely disturbed grave groups. Small oxidised beakers, unguenatria and other miniature vessels are a regular feature of the cemetery areas of Londinium [Evans and Pierpoint 1986]. Samian vessels are known from burial contexts, but none here. However Samian vessels are often very common at cemetery sites in residual contexts and the implication is that they performed a role in burial ritual.

One other interesting aspect is the use at cemeteries of incomplete/broken vessels and even 'seconds'. Certainly incomplete at deposition at West Tenter St. were the following:

1. The Late Roman cylindrical amphora (Fig. 24.1, cremation 255, Plate 2) cannot have possessed a top when buried, but one should note the cremation amphorae from Great Alie Street [RCHM 1928, 158 No. 26i] where the top of a dressel 20 amphorae had been smoothly cut away to contain an urn, but replaced as a lid. The BB1 dog dish inside the LRCA amphorae was also incomplete.
2. The Tazza (Fig. 25.1) used as a lid (cremation 675, Plate 3) was buried minus base. (Directly comparable is the urn from Regent Street; RCHM 1928, 166 No. 50).
3. The VRW jar base (Fig. 29.3) was placed on the chest of an inhumation (621), but may still have been useable as a bowl. It may however have been broken by post-medieval disturbance.

Redeposited Burial Furniture

Some residual material on site is very likely to have been redeposited grave goods or cremation pots. A number of displaced cremation pots still associated with cremated bone could be recognised. Scraps of cremated bone and disarticulated human bone occurred in many contexts on site. Graves intercut. We can expect that some grave items were broken and removed from their original contexts. If all sherds of vessels similar to cremation urns can be interpreted in this way, we could expect at least 7 VRW necked jars, 11 BB2/TSK lattice decorated jars, 3 BB1 jars and 2 necked jars of sandy ware for cremation or accessory pots. There would be at least two dozen pottery lids suitable for such vessels not to mention the various bowls that could be pressed into service. In addition fragments of various small beakers, which were recovered in residual contexts (see above and Fig. 29.13–16), could be interpreted as displaced grave furniture. However, the disturbance of earlier burials by later features and graves seems to be considerably less than this, at least within the excavated area. Nevertheless it is likely that considerably more vessels than the 17% of pottery on the site, which was reliably recognised as grave furniture, played a part in the burial rites.

The Secondary Pottery

The fill of features which were not directly part of the cemetery activity contained a large proportion of the site pottery, especially the initial filling of the central gravel pit, the final raising of the ground level there, and the filling of the deep pit.

The earliest pottery from the West Tenter Street assemblage is of mid-1st century date and consists of amphorae, samian and coarse wares. At nearby St. Clare Street, the roadside ditch and adjacent features were filled with similar material [Ellis 1985]. Such material is thus likely to be connected with the earliest history of the road which probably passed the West Tenter Street cemetery as well.

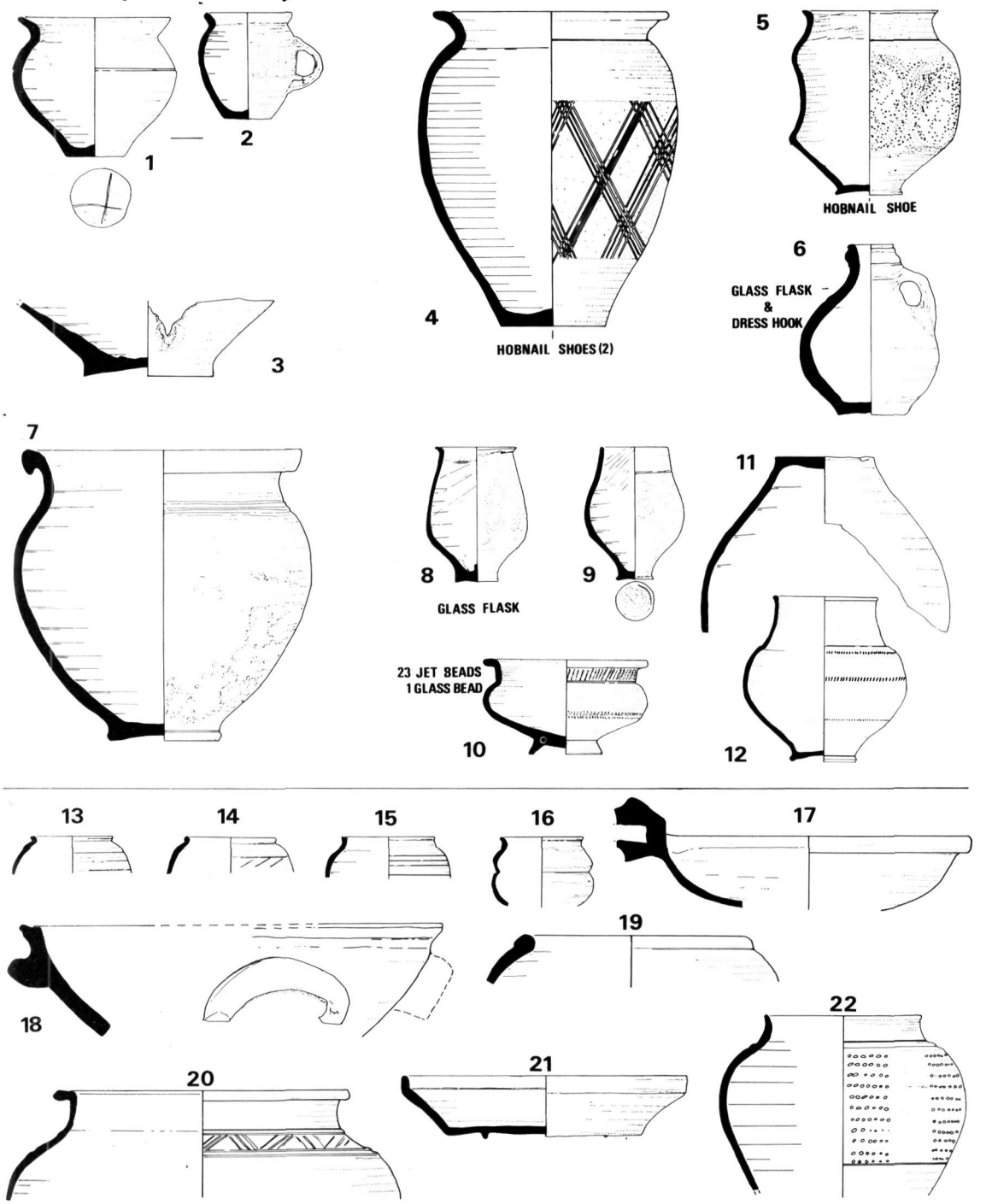



Fig. 29 West Tenter Street: Accessory Vessels. 1–2 Upchurch ware bowl and miniature handled cup; 3 VRW jar base 621; 4 BB2 jar 396; 5 KOLN indented beaker 654; 6 Alice Holt/Farnham flagon 710; 7 White slipped bowl inverted over burial's feet 1093; 8 Nene valley beaker 270; 9 Colour-coat beaker 523; 10 Early Oxford bowl 505; 11–12 Beaker from Triere with inverted jar base as lid 919. Flavian/Trajanic and Pre-Flavian material 13–16 miniature beakers (436, 436, 450, 460); Material redeposited in the central gravel pit includes: 17 London micaceous spouted bowl; 18 strap handled bowl; 19–20 Alice Holt/Surrey wares; 21 Imitation Terra Nigra; 22 Fine micaceous beaker.

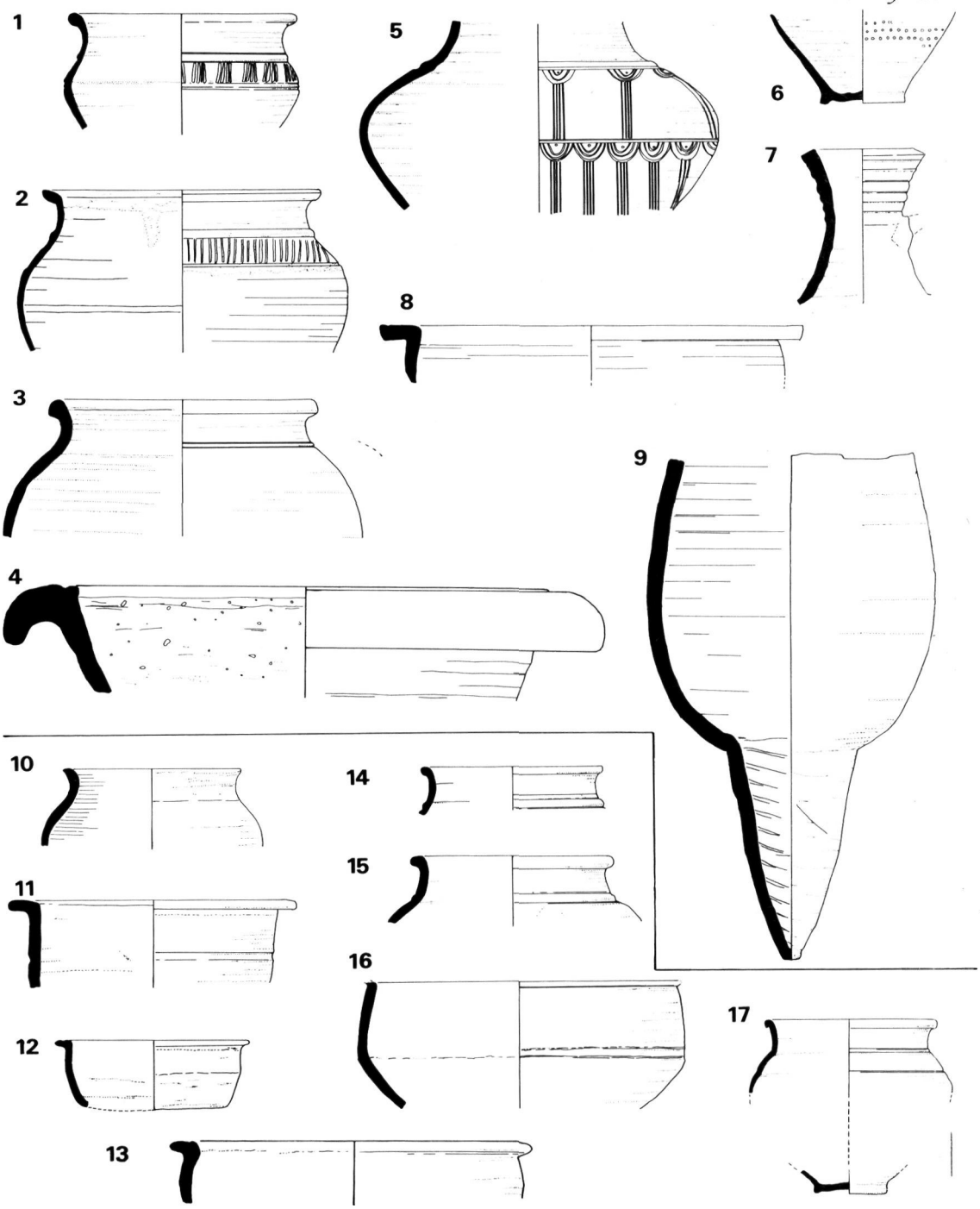



Fig. 30 West Tenter Street: 1–9 Pottery assemblage from the eastern gravel pit (contexts 1128/9). 1–3 Sandy ware necked jars; 4 Bead rimmed mortaria; 5 London Ware; 6 Highgate 'C' beaker; 7–8 Verulamium white ware; 9 Haltern 70 amphorae. 10–17 Pottery assemblage from the central gravel pit. Sandy wares and Alice Holt/Surrey.

The most characteristic fabric type is Sugar Loaf Court Ware (SLOW). Most of the forms here are small beakers in a bright orange fabric. Other oxidised beakers from the site may be of similar date (e.g. Fig. 30.10), together with some sandy ware jars.

The Gravel Pits

The earliest major group of contexts on the site belong to the filling of two gravel pits, underlying the burial area. These contexts provide a vital TPQ for succeeding cremation and inhumation burials. Unfortunately because of the difficulty of excavation in the area some contamination has taken place. However we know some contexts are uncontaminated and these provide a date for the filling of the gravel pits to AD 100–130.

A small deposit of pottery infilling a gravel pit occurred at the extreme east end of the site (contexts 1128/9, Fig. 30.1–9, Fig. 31). This typical dumped deposit was of similar or slightly earlier date to the main gravel pit fill, but contained no BB2. The assemblage here is small but the date is probably Trajanic.

The central gravel pit dump made up 19.5% of the site's pottery, slightly more than the recognised burial furniture (Fig. 32). A few sherds of black-burnished ware do occur in apparently uncontaminated contexts and therefore some of the filling of the gravel pit probably continued after AD 120. A cluster of coins of Domitian and Trajan in the gravel pit area, are related to the fill. The presence of London ware, London micaceous, imitation terra nigra, Alice Holt/Surrey and Highgate wares, which are all significant elements in this assemblage, would be typical of such a period, as would the forms illustrated (Figs 29.17–22, 30.10–18), including shouldered and necked jars, numerous lids, the peculiar spouted bowl (Fig. 29.17) and even late forms of bead rim jar. One peculiar form recognised is the large bowl with ribbon handles (Fig. 29.18) from an uncontaminated context.

The range and proportion of the wares from the grave fills in the central gravel pit area is very similar to that of the gravel pit fill itself, implying that graves cut into the central gravel pit were refilled with the same material.

The Grave Fills

The residual pottery in all graves represents almost 20% of the site's pottery, slightly more in fact than the grave goods themselves. The graves range in date over some 300 years and it is not surprising that the residual material should reflect this. The presence of Trajanic material in graves outside the immediate gravel pit area may suggest that the dumping and filling activities *c.* AD 100–130 stretched right across the site. The graves in the gravel pit area contain on average 0.3 rim EVEs of pottery, the other graves contain only 0.15 rim EVEs.

Some of the material clearly comes from displaced grave goods and cremation urns. Indeed some sherds from the graves do join with adjacent urns. Most of the pottery residual in the graves is second century in date; some must have been brought to the site in the form of urns and accessory vessels. However, if we eliminate vessels that regularly occur as grave goods on site and the redeposited material from the gravel pits, there is still one large group of material that cannot be explained. Approximately 3–4% of the pottery here is samian later than the gravel pit fill and a slightly larger amount is ring-neck and disc-mouthed flagons. In addition as much as 25% by weight of the residual pottery in the graves is amphorae. There are also a few lamp sherds. It is not a new suggestion to propose that such items were part of rites and feasting at the time of or later than the burials themselves. Such material if broken would be readily redeposited in later contexts. If this is the case it is either a mainly 2nd-century practice, or the later rites did not lead to the actual deposition of pottery vessels. One very good parallel for this suggestion is the 'ritual pit' at St. Clare Street nearby, where a substantial group of Antonine flagons and amphorae were deposited in a pit [Ellis 1985].

Third and Fourth-Century Activity

Third and fourth-century fine wares are conspicuously absent from the site except as grave furniture, and it may be that the custom of ritual feasting, if there had been one, was abandoned. One large pit (1093) had been used for burial and the deposition of miscellaneous rubbish. It contained 3.34 rim EVEs of pottery. It appears to also contain the remains of several cremation urns deliberately cleared from the site. Also present was a small amount of contemporary material including late angled-rim jars (GW3, GW4) and storage jars (SJ123–127) deposited *c.* 200–250.

The levelling-up of the backfilled gravel pit area in the late Roman period, (contexts 562, 630–4) clearly displaced a large amount of pottery. Sherds in these contexts are generally small, quite well-abraded and broken up. Levelling activity may well have displaced earlier cremation urns and their lids and particularly broken away their tops. Indeed vessels identical to the three major urn types represent about a quarter of all the sherds in the deposit, even though they are probably a cen-

| Type of fabric | DGLA code | Rim EVEs | Base EVEs | sherds count | Feature %age |
|---|---|---|---|---|---|
| Verulamium white | VRW | 1.02 | — | 20 | 41.8 |
| Verulamium grey | VRG | 0.80 | — | 20 | 32.7 |
| Highgate C | HWC | 0.29 | 0.49 | 20 | 11.9 |
| mortaria TY97 | TY97 | 0.15 | — | 1 | 6.1 |
| Alice Holt/Surrey | AHSU | 0.05 | 1.98 | 35 | 2.0 |
| London Ware | LOND | — | 2.00 | 27 | — |
| Camulodunum 185 | C185 | — | 1.00 | 16 | — |
| London micaceous | LOMI | — | — | 2 | — |
| Total | | 2.44 | 6.47 | 169 | 100.0 |

Also present: SAM; 55 sherds per rim EVE
Amphorae made up 81% by weight. Av sherd weight: 17.8gm

Fig. 31 West Tenter Street: Major pottery forms.

tury earlier than the levelling activity itself. Of these types (VRW, TSK and BB2) rims outnumber bases by 3:2, mirroring the figure for the medieval and later ploughsoil features. This material is likely to be, at least in part, broken and displaced cremation urns.

The Deep Pit (Fig. 33)

Garbage dumped in the fill of the deep pit feature represents 6.2% of the site's pottery (10.06 rim EVEs, Fig. 34). This fill took place after AD 340 according to coin evidence, but probably earlier than AD 375.

| Type of fabric | DGLA code | Rim EVEs | Base EVEs | sherds count | Feature %age |
|---|---|---|---|---|---|
| Verulamium white | VRW | 4.32 | 5.15 | 272 | 13.8 |
| Highgate C ware | HWC | 3.53 | 2.53 | 229 | 11.2 |
| Samian | SAM | 2.61 | 5.22 | 130 | 8.3 |
| Oxidised ware 2 | OX2 | 2.06 | 2.40 | 57 | 6.6 |
| Verulamium slipped | VCWS | 2.00 | 1.00 | 17 | 6.4 |
| White slipped OX3 | OX3 | 0.96 | — | 22 | 3.1 |
| Sandy ware LD2 | LD2 | 0.95 | — | 15 | 3.0 |
| Sandy ware LD3 | LD3 | 0.88 | 1.00 | 12 | 2.8 |
| Alice Holt/Surrey | AHSU | 0.65 | 0.36 | 65 | 2.1 |
| Sandy ware GW5 | GW5 | 0.58 | 1.41 | 67 | 1.8 |
| Terra Nigra etc. | TN | 0.55 | 0.71 | 9 | 1.8 |
| London Micaceous | LOMI | 0.52 | 0.32 | 19 | 1.7 |
| London Ware | LOND | 0.47 | 1.21 | 185 | 1.5 |
| Verulamium mortars | VRW | 0.34 | — | 6 | 1.1 |
| White slipped 8 | OX8 | 0.33 | — | 21 | 1.0 |
| Highgate B ware | HWB | 0.30 | — | 29 | 1.0 |
| Dressel 20 amph. | DR20 | 0.29 | 1.00 | 70 | 1.0 |
| Ring & Dot beakers | RDBK | 0.20 | 0.02 | 4 | 0.6 |
| Total | | 31.38 | 42.48 | 2180 | 100.0 |

Also present: C185B;GBWW;HA70;KOAN;NKSH;VRG;VRR
Average sherd weight: 8.9g 69 sherds/rim EVE
Amphorae: weight 17.5kg 39% of gravel pit pottery by weight.

Fig. 32 West Tenter Street: Pottery fabrics from eastern gravel pit.

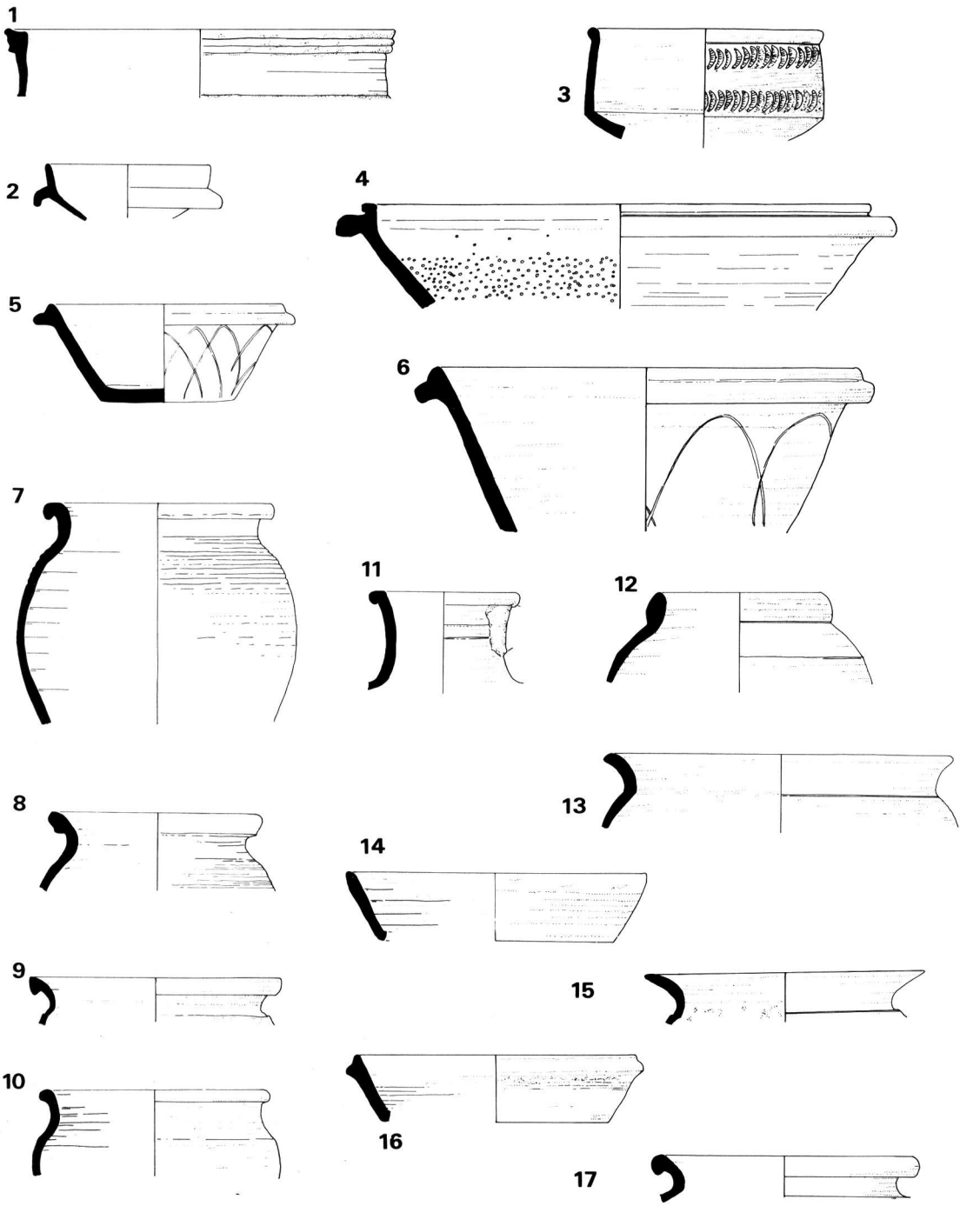



Fig. 33 West Tenter Street: Pottery assemblage from the 'deep pit' (169). 1–4 Oxford wares; 5–6 BB1 flanged bowls; 7–10 Late sandy wares; 11–17 Alice Holt/Farnham wares. Date 340–375.

| Type of fabric | DGLA code | Rim EVEs | Base EVEs | sherds count | Pit %age | Approx. %age less residual |
|---|---|---|---|---|---|---|
| Alice Holt/Farnham | AHFA | 2.42 | 1.72 | 96 | 24.0 | 32 |
| Black burnished 1 | BB1 | 1.41 | 0.94 | 48 | 14.0 | 19 |
| Sandy ware 30985 | 30985 | 1.00 | — | 12 | 10.0 | 13 |
| Sandy ware SP44 | SP44 | 0.53 | — | 4 | 5.3 | 7 |
| Misc mortaria | — | 0.49 | — | 4 | 4.9 | 7 |
| Oxford colour-coat | OXRC | 0.26 | — | 14 | 2.6 | 4 |
| Sandy ware SP100 | SP100 | 0.25 | — | 0 | 2.5 | 3 |
| Nene Valley CC | NVCC | 0.10 | — | 2 | 1.0 | 1 |
| Oxford parchment | OXPA | 0.10 | — | 1 | 1.0 | 1 |
| Oxford WW mortars | OXMO | — | 0.19 | 3 | — | — |
| Misc 1/2nd c. resid | — | 1.87 | 4.00 | 173 | 18.6 | — |
| Misc 2/3rd c. resid | — | 0.66 | 0.14 | 62 | 6.3 | — |
| Other | — | 0.97 | 1.23 | 80 | 9.9 | |
| Total | | 10.06 | 10.50 | 499 | 100.0 | |

Amphorae represent 17% of feature's pottery by weight
Mean sherd weight (amphorae excluded) 20.2gms.
Shattering 43 (43 sherds per rim EVE)

Fig. 34 West Tenter Street: Pottery fabrics from the central gravel pit fill.

The substantial amount of residual material is not surprising on a site with so much pottery in and around the topsoil. The range of contemporary types is typical of that found in 4th-century London. A wide range of Alice Holt/Farnham (AHFA) types including: dog-dishes, everted rim jars, flanged bowls and flagons is present in this relatively small assemblage (Fig. 33.11–17). Excluding obviously residual material, AHFA forms some 30% of the complete assemblage. The second largest group is Dorset black burnished ware, both flanged bowls and exaggerated everted rim jars being present. Next in order of importance are the late sandy ware fabrics (Figs 33, 30.7–10) produced in typical 4th-century hooked rim and triangular rim forms, some with horizontal rilled decoration (Fig. 33.7). Late colour-coats are quite rare, Oxford and Nene Valley sources making up only 3.6% of the group.

The lack of Porchester D and calcite-gritted ware as well as the late forms of Nene Valley and Oxford suggest that this is not one of the latest 4th-century groups. The relatively high proportion of BB1 would also suggest this. A date not long after AD 340 and certainly not later than AD 375 for the group and therefore the filling of the feature is highly likely.

Although burial cannot be proven after this date there is evidence for activity later than the filling of the deep pit; it is confirmed both by coin evidence and pottery. The assemblage from the plough-soil is mixed, but contains a substantial proportion of late Roman material including many of the types represented in the deep pit, but also calcite-gritted ware and Porchester D. Almost 7% of the site's RB pottery comes from such contexts.

Clearly some of the broken tops of urns would have been incorporated in this plough-soil, hence the preponderance of rim sherds over bases. The other interesting feature is the relatively intact nature of the later pottery in these contexts. On the basis of sherds to rim EVEs, the average 4th-century pot is broken into 38 sherds, the average 2nd-century one into 127 sherds.

By contrast the other medieval and post-medieval contexts produced only 5.12 rims EVEs of pottery (3.1% of the site's pottery). The implication of the high proportion of later 4th-century pottery in the ploughsoil is that the ploughing had removed later 4th-century contexts present on the site, but done considerably less damage to earlier more deeply buried contexts.

## THE AMPHORAE
## by D. F. WILLIAMS

About 600 amphorae sherds were recovered from the site. 90% of these sherds belonged to the Gallic wine amphorae (Pelichet 47) or Spanish olive oil jars (Dressel 20).

*Dressel 20*

About one third of the sherds from the site belonged to this type. Seven Dressel 20 rims were recovered all of which can be roughly parallelled with examples from Augst illustrated by Martin-Kilcher (1983) in her scheme for the development of rims. All 7 belong to the period between the mid-1st century and the early 2nd century AD.

*Camulodunum 185A*

There were six sherds of this amphorae type from the Spanish province of Baetica [Tchernia 1980]. They probably originally contained defrutum a sweet liquid made from boiling down the must. They date from the mid-1st century BC to the mid-1st century AD.

*Pelichet 47 (PE47)*

Well over half the sherds were from amphorae of this kind. This is a flat bottomed wine amphorae predominantly made in southern France. The type was produced from the mid-1st to early 4th centuries AD. In Britain the form is not known from pre-Boudiccan levels.

*Dressel 2–4*

The site produced 14 sherds of this form which was made in Italy, France, Spain, The Aegean and Britain during the period from the late 1st century BC to the mid-2nd century AD. The principal content was probably wine. Eight of the fourteen sherds at West Tenter Street have dark-coloured augite inclusions [Peacock 1971]. Peacock [1977] has argued a Campanian origin around Pompeii-Herculaneum.

*Southern Spanish*

There were 8 such sherds. They probably derive from the coastal regions of southern Spain between Cadiz and Malaga and seems to have been mainly used to carry fish based products from the late 1st century BC to the 2nd century AD.

## CONCLUSIONS

The pottery assemblage from West Tenter Street is important because of its large size and long chronological range. However, it is equally significant because of the insight it gives into the use of pottery during burial rites in ancient Londinium.

The site confirms the preference for two types of vessels as burial furniture: miniature vessels and cooking pots. For the inhumations there is an equal divide between the two types. Virtually all the cremations on the other hand were placed in cooking pots or jars. Elsewhere in Londinium's cemeteries miniature vessels are also placed with cremations. It seems likely that the use of jars as burial furniture has a ritual and symbolic purpose as well as a strictly utilitarian one. In the late 2nd and 3rd centuries vessels identical to cremation pots are placed with inhumations as accessories. It seems tolerably clear that this is a ritual use directly analogous to the cremation pot. As the fashion for cremation declines so does the use of cooking pots with inhumations. By the mid-3rd century the cremation rite has almost died out in the eastern Londinium cemeteries and with it the use of cooking pot accessory vessels with inhumation burials. On the other hand, the second tradition, that of miniature or small vessels, continues right through to the 4th century.

North Kent and the Verulamium region seem to have produced pottery vessels particularly popular as burial items.

It seems likely too that pottery vessels played a part in ritual and festivity that did not directly result in their burial. In the 2nd century in particular, the cemeteries may have been places of pilgrimage, involving the carrying of pottery vessels out from the city to the places of burial. The secondary assemblage of sherds shows a strong bias towards flagons, beakers, samian bowls and amphorae that cannot be explained simply by the displacement of grave goods. It is very likely that such vessels were brought to the site during ritual feasting and broken. Libations may have been poured into the urn of the deceased relative. Also part of the activity connected with the cemeteries, judging from accessioned finds at London's museums, were pipe-clay figures and pottery lamps.

The final element in the assemblage seems to be city garbage. Rubbish may have been tossed on to the site by passers-by or dumped on the roadside site convenient for tipping. There appear to have been two major phases when city rubbish was dumped on the site. The first was at the beginning of the 2nd century when gravel pits were infilled, either to establish a new cemetery area or simply as convenient areas for tipping. Two and a half centuries later city garbage disposal may have been responsible for the filling of the deep pit.

Pottery assemblages such as this one can only be understood in terms of the human actions that brought material into the archaeological contexts. West Tenter Street shows that it is not easy to understand cemetery assemblages in terms of burial furniture alone. On the other hand the site gives important clues to changing pottery styles in the city and to the human processes that brought pottery beyond the city bounds.

## ROMAN GLASS
## by C. E. E. JONES

Fragments of some 93 glass vessels and one piece of window glass were recovered by the excavations. 51 of the vessels could be identified as to form as well as forty fragments of indeterminate form. In this latter group are fragments of thin, blown glass of various vessels of the first 3 centuries AD as well as thicker pieces that may have been part of bottles (Isings 50 and 51) or oil flasks (Isings 61) manufactured during the late first and second centuries.

Some glass vessels are deliberately coloured, others are naturally produced from unmodified ingredients. In this latter group the following terms are used in this text: natural blue (NB, a translucent light blue with no trace of green); natural green (NG, a translucent light green with no trace of blue); and natural green-blue (NGB). The predominance of natural green-blue is made clear in the figure (Fig. 35).

Only two deliberately coloured vessels are represented, a cup in green (No. 7) and a bowl or jar in amber (No. 13). The site lacks any early milefiori glass and the majority of recognisable vessels fall within the late 1st and 2nd centuries. Only five vessels are certainly later; the jug (33) commonest in the 3rd and 4th centuries; the colourless beaker (18) is a typical third century product with incised decoration; the colourless flask (26) probably of 4th century date and the 2 flagons (28 & 31) which are early to mid-4th century in date. Nine fragments were burnt, one after breakage (1039).

### THE VESSELS

A number of interesting forms were recovered from the site. Fragments of four pillar-moulded bowls (PMB, Isings 3) were found. All were of natural green-blue glass showing traces of rotary polishing on the inner surface, while the ribbed-surface was fire polished. This form was produced between the mid-1st and early 2nd century.

Number 13 is a thick-walled bowl or jar in amber glass. It has foliate tendril decoration. The whole appearance is similar to a samian bowl (Dr 29 or 37). Vessels from Balkan Lane, Colchester; Bell Yard, Fenchurch St., London and Whitton have similar decoration and probably represent similar forms. The Colchester example came from late 1st–early 2nd century contexts. The type was probably manufactured in the mid-1st century.

Number 18 is a single beaker sherd, a colourless fragment of thick glass. The geometric decoration consists of circular facets and triangles cut in broad lines on surface. Such decoration is typical of Rhenish workshops in the 3rd century. Similar forms are known in London (MoL A28278 & A27279).

Number 26 is a number of fragments of flask with globular body and outsplayed neck. These forms are known from the 3rd century but are

| | Green-Blue | Green | Blue | Coloured | Colourless | Total |
|---|---|---|---|---|---|---|
| Identifiable | 31 | 8 | 2 | 2 | 10 | 53 |
| % | 58% | 15% | 4% | 4% | 19% | |
| Miscellaneous | 24 | 6 | 5 | 0 | 5 | 40 |
| | 60% | 15% | 13% | — | 13% | |

Fig. 35 West Tenter Street: Comparison of the frequency of the various coloured glass fragments.

| Cat no. | context | Glass | Date | Form | Isings no. | height |
|---|---|---|---|---|---|---|
| 1 | 228 | C | L1–2 | Jar | 67A | |
| 2 | 855 & 861 | NGB | 2–3 | Jar | 94 | |
| 3 | 1075 | NB | L1–2 | Jar | ? | |
| 4 | 1090 (Crem) | NGB | M–L2 | Oil Jar | 68 | |
| 5 | 810 | NGB | L1–2 | Jar | 67b or C | |
| 6 | 1039 | NGB | — | Jar | ? | |
| 7 | 633 | TG | L1 | Cup | 36A or 38 | |
| 8 | 196 | NGB | M1–E2 | PM Bowl* | 3 | |
| 9 | 204 | NGB | M1–E2 | PM Bowl* | 3 | |
| 10 | 436 | NGB | M1–E2 | PM Bowl* | 3 | |
| 11 | 684 | NGB | M1–E2 | PM Bowl | 3 | |
| 12 | 131 | C | L1–E2 | Bowl | ? | |
| 13 | 685 | AMB | M1 | Bowl | — | |
| 14 | 1056 | NGB | L1–2 | Bowl | — | |
| 15–16 | 269, 276 | C & NGB | L1–2 | Beakers | — | |
| 17 | 562 | C | L1–2 | Beakers | 52 | |
| 18 | 562 | C | 3 | Beaker | — | |
| 19 | 562 | C | L1 | Beaker | 29 | |
| 20 | 100 & 155 | C | — | Beaker | — | |
| 21 | 269 | NB | 2 | Flask | 28B | |
| 22 | 590 | C | 2 | Unguentarium | 82(A?) | |
| 23 | 633 | C | — | Flask | — | |
| 24 | 812 | NGB | L1–E2 | Flask/flagon | — | |
| 25 | 948 | NGB | L1–E2 | Flask/flagon | 52a/82a | |
| 26 | 1094 | C | 3 | Flask | 104 | |
| 27 | 1155 | NGB | L1–E2 | Flask | 8 | |
| 28 | 269(Grave) | NGB | EM4 | Globular Flagon | — | 107 |
| 29 | 579 | NGB | — | Flagon | — | |
| 30 | 634 | NB | L1–2 | Flagon | — | |
| 31 | 709(Grave) | NG | EM4 | Globular Flagon | — | 106 |
| 32 | 269 | NGB | L1–3 | TM Jug* | 56 or 88 | |
| 33 | 373 | NGB | 2–4 | Jug | 99 | |
| 34 | 1038 | NG | — | Jug | 56 or 88 | |
| 35 | 1075 | NGB | 2–3 | Jug | — | |
| 36 | 61 | NB | — | Bottle | 52 | |
| 37 | 378 | NGB | — | Bottle | 50 | |
| 38 | 422 | NB | — | Bottle | 50 | |
| 39 | 562 | NGB | — | Square Bottle | 50 | |
| 40 | 562 | NB | — | NB | 50 | |
| 41 | 845 | — | — | Square Bottle | 50 | |
| 42 | 911 | NGB | — | Bottle | 50 | |
| 43 | 1035 | NGB | — | Bottle | 50 | |
| 44 | 1039 | NGB | — | Bottle | 50 or 51 | |
| 45 | 1048 | NGB | — | Bottle | 50 or 51 | |
| 46 | 1060 | NGB | — | Square Bottle | 50 | |
| 47 | 1060 | NG | — | Square Bottle | 50 | |
| 48 | 1094 | — | — | Square Bottle | 50 (Dec) | |
| 49 | 154 | NGB | 2? | Globular? | — | |
| 50 | 835 | NB | L1–2 | Globular? | — | |
| 51 | 1060 | NGB | L1–2 | Globular? | — | |
| 52–53 | 207 & 562 | TUR | — | Tesserae | — | |

Fig. 36 West Tenter Street: Catalogue of Roman glass.

commonest in the 4th. This particular context is early to mid-3rd century. The form is rare in Britain. Harden [1978] only mentions two (Bladock and Chilgrove), but two more local examples are known. One from St. Clare House is very close geographically and in terms of quality. It has been redated to the 3rd century [Harden and Green 1978]. This example has bands of incised lines as decoration unlike the West Tenter Street example. Another example is known from Shadwell. The distribution of all known examples in south-east England probably reflects trade of the period.

Some of the finest pieces of glass at West Tenter Street are the flagons. Numbers 28 and 31 are particularly noteworthy single-handled types (Figs 40.10, 11). Only 8 other examples of this form are recorded in Britain. Bushe-Fox [1932, 85, No. 62] mentions one from Richborough from a pit infilled in the 4th century. A pit at Burgh Castle contained 11 vessels including two one-handled flagons of natural green glass [Harden 969, Plate XI, E]. Harden [*ibid*, 76] dates these to the late 4th or 5th centuries. Three further examples came from the Lankhills cemetery. They are also of natural green or pale olive green glass very similar to the London finds. No. 28, from grave 270, is very close to Lankhills No. 551 with the handle taken from the shoulder and drawn upwards to end in a scissor fold at the rim and not the neck as usual. A mid-4th century date is likely for the West Tenter Street examples. Number 31 is a complete flagon of green glass from grave 710. The handle is trailed over the shoulder ending and decorated with four tooled knicks. The rim is formed by outward, upward and then inward folding of the glass. Height 106mm.

## SMALL FINDS
by S. J. PIERPOINT
with contributions from F. JENKINS, C. JONES, G. LLOYD-MORGAN, and others

### CLAY LAMPS

440 (972) Fragment of factory lamp in white ware with a cream/yellow slip probably of Gaulish origin. Loeschcke type 10. From Trajanic gravel pit fill.

476 (519, Fig. 37.2) Factory made lamp in soft orange fabric with a blocked channel on the nozzle and a raised rim around the discus. It is Loeschcke type 9B with an illegible stamp on the base. It is of Gaulish origin *c.* AD 100–150. It was laid in grave 518.

900 (627) Fragment of factory lamp in oxidised fabric. Some traces of red slip. 2nd century probably British manufacture. From fill of grave 626.

902 (633, Fig. 37.1) Loeschcke type 9B factory lamp in a hard grey fabric stamped 'Attusa F' (ecit). It is probably of Gaulish origin. Attusa seems to have been active in lamp production in Gaul *c.* AD 75–125. It has a blocked channel and a raised rim around the discus. From the dumping sealing graves in the central gravel pit.

914 (550). White clay factory lamp with a raised rim around the discus and a blurred mask at the centre. Only the upper part of the discus is present. The filling hole is off centre. Loeschcke type 10(?), 2nd century. From fill of grave 549.

915 (810) Open lamp in white ware with a cream/yellow slip. Fragment only present. Loeschcke type 12. From fill of grave 907.

918 (695) Factory made lamp of Loeschcke type 9B or 10 of Gaulish origin. Handle and part of discus only present. There is a raised rim around the discus. The fabric is orange with a brown slip. Early–mid 2nd century. From fill of grave 694.

921 (1075). Factory made lamp in orange fabric probably of North Italian manufacture. Tip of nozzle only present. Probably Loeschcke type 9B or 10. Late 1st or 2nd century. From gravel pit fill.

952 (207). Factory made lamp in grey fabric with a grey slip probably of Gaulish manufacture. Form is Loeschcke type 10. Fragment of discus only present. 2nd century. From post-medieval ploughsoil.

953 (1046). Factory made lamp of Loeschcke type 10 in orange fabric, probably of North Italian manufacture. Part of discus only present. 2nd century. From fill of grave 1047.

### CRUCIBLE

912. Base of ceramic crucible with copper alloy smelting waste inside and out. The base is flat and 32mm diameter (562), from dumping sealing graves in central gravel pit area.

### CERAMIC EYE

948 (1072). Trimmed base of Verulamium White ware vessel painted with red and white pigments. Probably symbolic eye used in the Roman period in ritual treatment of illnesses [Barker 1982, 15–16]. Associated with 3rd-century pottery (Fig. 37.3), from demolition rubble in eastern tomb.

### PIPE-CLAY FIGURE
by F. JENKINS (Fig. 37.4)

913 (129). A portion of the front half of a moulded pipe-clay statuette of the Venus type. All that remains are the bare legs of the goddess to the right of which are the folds of the robe which covered her back. It is virtually certain that the statuette was produced in the Rhineland because the robed type of Venus was apparently not included in the repertoire of the Central Gaulish manufacturers of moulded pipe-clay statuettes.

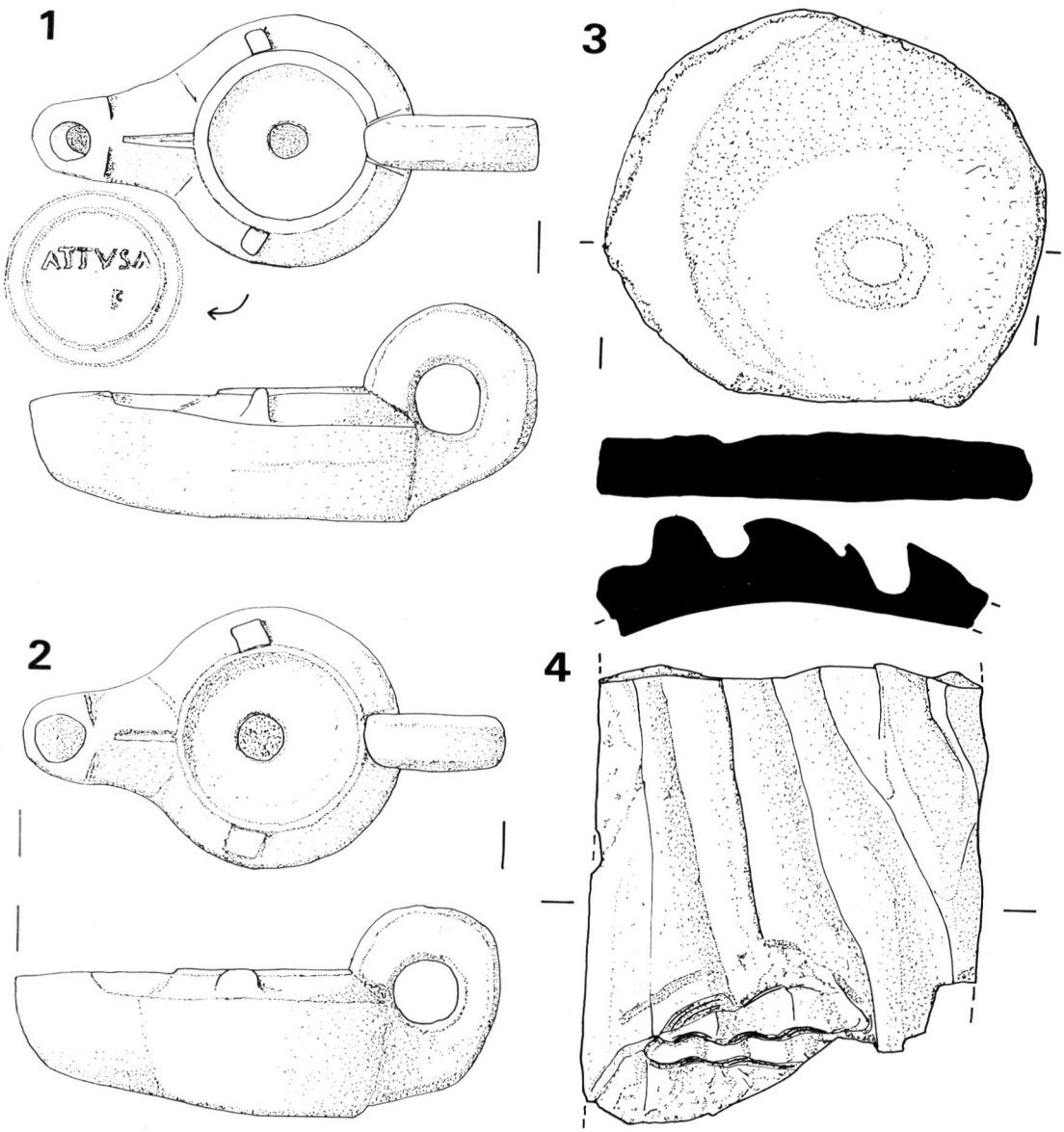



Fig. 37 West Tenter Street: Small Finds. 1 Clay lamp (440); 2 Clay lamp (476) used as a grave good; 3 Painted pottery 'eye' (1072); 4 Fragment of clay pipe Venus figure with painted decoration (129). 1:1

The brown and pinkish red pigments are evidently vestiges of paint. Several coloured statuettes are known indicating that the makers followed the Roman convention of painting sculptured figures [Jenkins 1958]. The cults using Venus figures seem to have been civilian in character and popular in Londinium as well as Gaul. From a post-medieval pit.

## JEWELLERY GRAVE GOODS

### GROUP OF GRAVE GOODS FROM CREMATION 1092

Burial 1092 contained a Verulamium White Ware urn with perforated lid (Fig. 24.4–5). Inside the urn was a group of personal items (Fig. 38, 1–5). These comprised a box mirror (38.1) a rectangular mirror (38.2), a per-

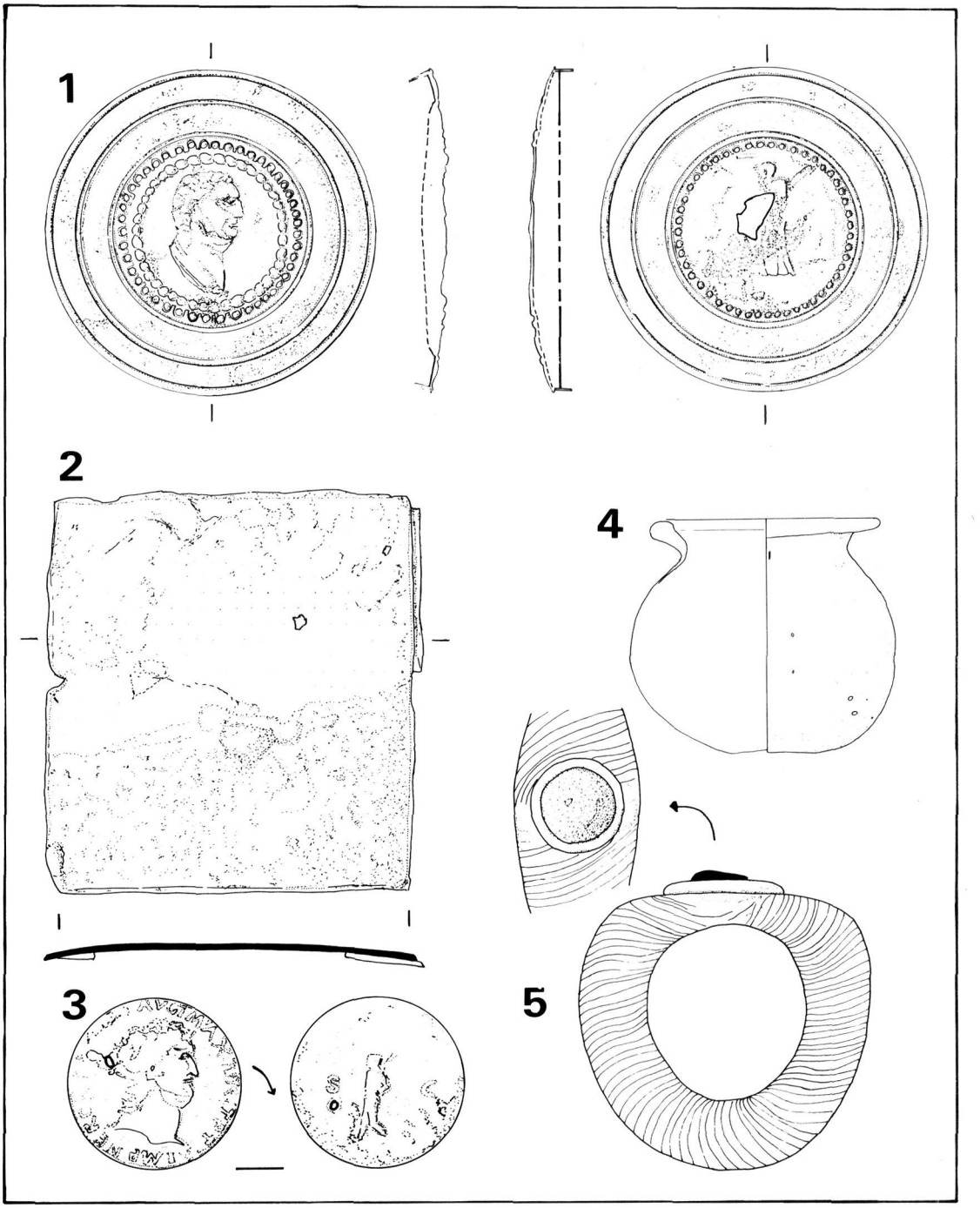



Fig. 38 West Tenter Street: Grave group from cremation 1092. 1 Box mirror with head of Nero and figure of Victory; 2 Rectangular mirror; 3 Perforated coin of Nero; 4 Glass perfume/unguent pot; 5 Glass ring with stone setting. Antique group deposited AD 120–140. 1–3 at 1:1. 4–5 at 2:1.

forated coin of Nero (38.3), a glass unguent pot (38.4) and a glass ring (38.5).

## THE LID MIRROR
by G. LLOYD-MORGAN

868, 906.

This comprises the two sections of a lid mirror. Each is decorated with a plaque identical to the obverse and reverse of coins produced by the mint of Lyons during the last four years of Nero's reign (orichalcum issues of AD 64–68) where the emperor's head terminates in globe [Lloyd-Morgan 1981 Group Sa 78–81]. Some of these have well-prepared legends comparable with published coin types. In this case and others the lettering has been replaced by beading around the edge of the plaque. The only other British example is the well-known mirror from Coddenham, Suffolk discovered in 1823 [Toynbee 1964 384–5 pl. LXXVIII]. This example is not in the pioneering corpus by Froehner [1889, 395–405] though he does cite one other example without inscription from the Feaurdent collection. A further example has come to light at a cremation cemetery at Kastel Celeusum—Pförring, Lkr. Eichstätt in the upper Danubian Limes area. The coin plaques at West Tenter Street and elsewhere are extremely thin sheet metal and in many cases this part is heavily corroded. The example here is in very good condition. The Coddenham mirror shows an 'adluctio' scene where the emperor addresses a group of soldiers. Another type is the 'Decursio' with two cavalry men seen on a mirror at Stahl bei Bitburg [Menzel 1966, No. 108'52 Taf. 47 Abb. 6]. The West Tenter Street example provides a welcome addition to this small subgroup decorated with uninscribed imitations of Neronian coinage and a figure of Victory.

904. A rectangular mirror (Fig. 38.2), with traces of ash (*Fraxinus sp*) in the corrosion on the reverse (identification: J. Watson).

The rectangular mirror is one of the common forms found throughout the Empire [Lloyd Morgan 1981, Group A, 3–20]. Early examples have been found at Hayling Island [Lloyd Morgan 1980, 98,104] and at Usk [Usk 1967] as well as Bagendon [Clifford 1961, 152,194, Plate 1]. Relatively complete examples in London have come from Harper Road, Southwark [Dean and Hammerson 1980, 20] and Moorfields Marsh in 1865 [Cuming Museum, Southwark No. C912]. Such mirrors were made of a high percentage tin bronze (speculum) and would have been protected by a wooden frame which may have been highly painted [Brogan and Smith 1984, 282–3, Plate 150]. One of the mirrors from Nijmegen still has fragments of the wooden backing still in situ [Lloyd Morgan 1981, 4, Plate 1, No. 2, Frag. iii] and a report from Chichester talks of a rectangular mirror with a wooden frame secured by iron studs [Down and Rule 1971, 80, Grave 87c 100].

905. The Perforated coin (Fig. 38.3)

Copper alloy as. (IM)P(NER)O CAESAR AUG(pm). AD 67–8. Reverse SC Victory l. Corroded as RIC 329.

906. The perfume flask (see glass report & Fig. 38.4)

907. The glass ring (Fig. 38.5)

The glass ring comprises a number of elements. The ring itself is very small, more suited to a child than an adult. It is of clear glass with a trailed yellow glass decoration of *c.* 87 twists encircling the ring. The bezel is flattened with a circular setting of white glass to contain the cornelian stone. A number of similar rings are known generally with 1st–2nd century associations. They come from as far apart as Caerleon and Kirkbride, Cumberland [Charlesworth 1975, 88]. The British Museum lists 8 continental examples [Marshall 1907, 231–2] and one [ibid 1578, 231] from Orvietto is a particularly close parallel. A continental, particularly Rhineland, origin is likely for the West Tenter Street example. Wheeler [1930, Fig. 30] notes two London examples, one from Smithfield the other from Moorgate Street. Neither are dated but both are in locations which have produced Roman burials.

## DISCUSSION

The group of finds from grave 1092 is a particularly fine one. Many of the items are likely to have been produced in the 1st century, yet the deposition of the burials took place in the period AD 120–150, based on the dating of the urn and on stratigraphic grounds. The group is unusual and quite outstanding.

The mirrors are particularly fine. It is unusual to have two mirrors associated with a single burial, but not unparallelled. Excavations at Kempten-Keckweise produced mirrors from a number of graves. One of Claudian date had a total of four, one rectangular and three disc mirrors [Mackensen 1978, 256, Grave 202, No. 5–8, Taf. 79]. One at Hufingen in southern Bavaria [Biegel 1981, 45–8] had a hand mirror and a hinged lid form normally found in southern France. There are also several examples from Ljubljana including one grave which had fragments of a rectangular mirror and a hand mirror also poorly preserved, but quite distinct from its companion [Petru 1972, 29, 152, Taf. XVI, No. 2].

## THE OTHER MIRRORS

24, 34, 55, 917, 947. Four further fragments of plate mirrors, 24, 34, 55, 917, were recovered on site, all from residual contexts. Nos. 24 and 55 may be the internal portions of rectangular or simple disc mirrors. All had one finished reflecting surface, and an unfinished underside. These can be classified as group Za [Lloyd-Morgan 1981, 107–8], all are likely to be 1st century in date. No. 947 is the corner of a rectangular mirror of group A [Lloyd-Morgan 1981, 3–20] and similar to the complete example from the cremation group No. 904 (above).

## OTHER JEWELLERY AND ORNAMENTS
(Figs 39–40)

Bronze armlets, bracelets and anklets were popular burial accoutrements by the 3rd and 4th centuries.

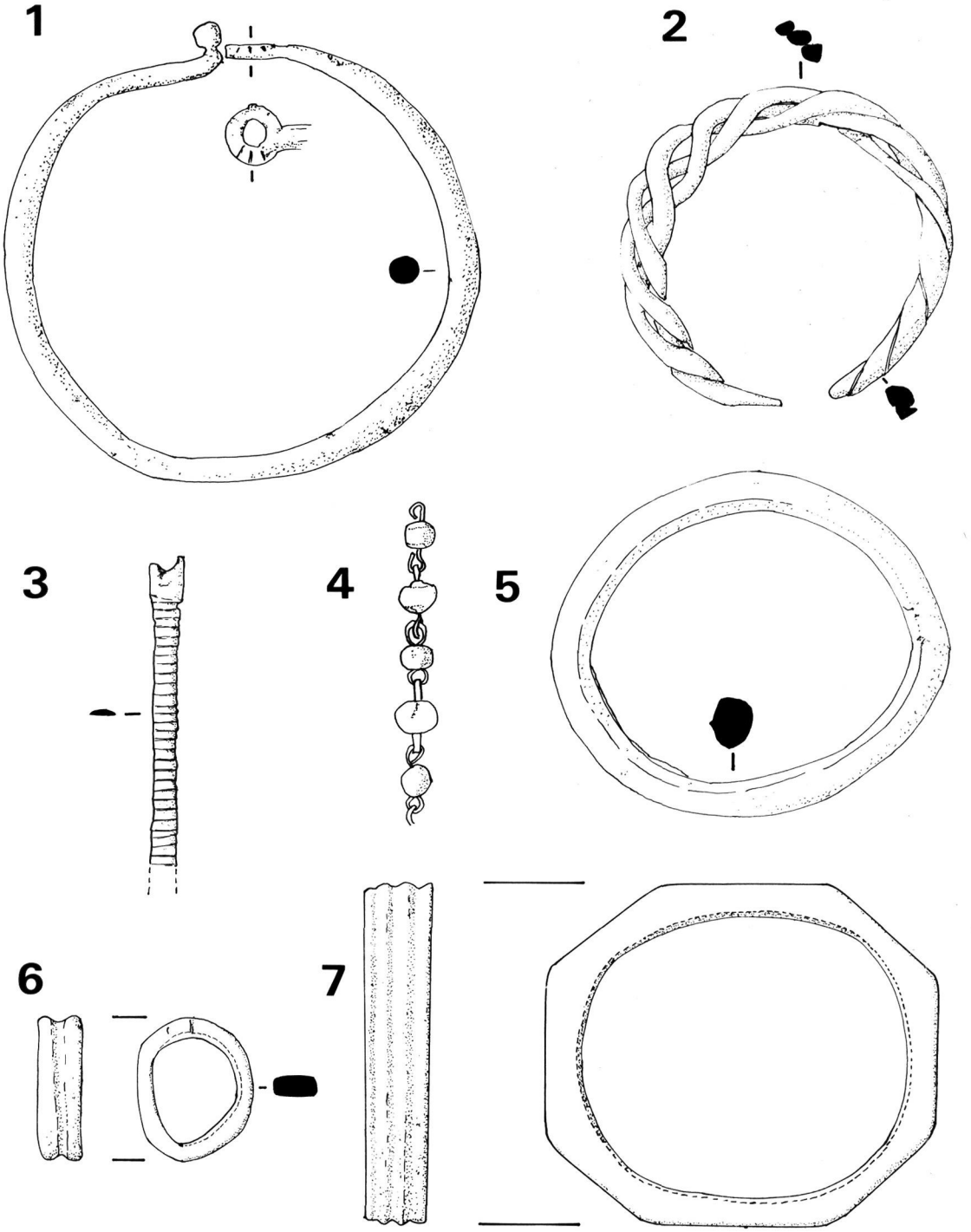



Fig. 39 West Tenter Street: Grave Goods. 1 Copper alloy bracelet (549); 2 Twisted wire copper alloy bracelet (387); 3 Copper alloy anklet (217); 4 Necklace of alternating green and blue glass beads with copper links (328); 5 Shale oval bracelet (387) with glass bead necklace (see Fig. 36.9); 6 Shale ring (943); 7 Octagonal bracelet of jet or canal coal (435). All 1:1.

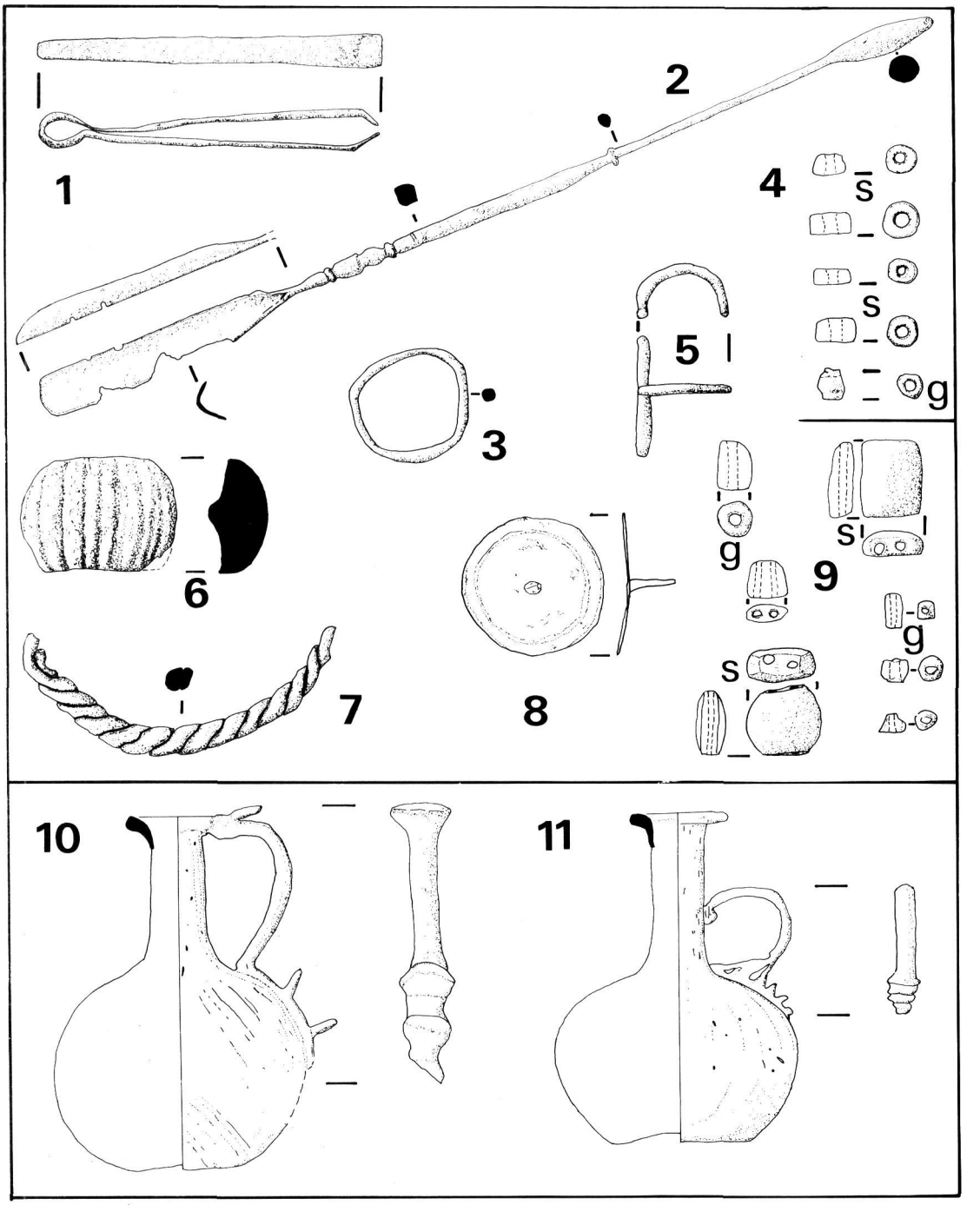



Fig. 40 West Tenter Street: Grave Goods (1–5 and 9–11) and small finds (6–8). 1–2 Manicure set of tweezers, ligula and scoop (740); 3 Copper alloy ring (328); 4 Shale(s) and glass (g) bead necklace (506) with pottery vessel (Fig. 26.10); 5 Copper alloy dress hook (710); 6 Melon bead (835); 7 Twisted wire bracelet fragment (169); 8 Copper alloy stud (633); 9 Shale(s) and glass bead necklace (387) associated with shale bracelet (Fig. 35.5); 10 Glass flask (270) with miniature beaker (Fig. 26.8); 11 Glass flask (710). All drawn at 1:1 except 5 (2:1) and 10–11 (1:2).

Significant numbers have been found in Colchester [Crummy 1983, 36–45] as well as one or two examples from graves in London [Bentley and Pritchard 1982, 148–50, Burial 12, Fig. 20].

561. Plain copper alloy armlet (Fig. 39.1) with a hook and eye clasp, but with some hint of decoration around the eye. *c.* 75mm × 70mm with a circular cross-section with thickness of 5mm. A very similar example from Colchester [Crummy 1983, 1651] is of 3rd–4th century date. Hook and eye clasps [Wheeler 1930, 102] are known in London, but bracelets of this type are unusual. Grave good from a 4th-century chalk burial (549).

651. Three strand copper wire armlet (Fig. 39.2) with inhumation 387. There is no closing device, other examples have loops, hooks or elaborate 'terminals'. A similar bracelet comes from nearby Mansell Street [Wheeler 1930, Plate XL.5], Crummy [1983] lists a number from Colchester cemeteries, 53mm × 52mm.

65. Fragment of similar copper alloy twisted cable armlet (Fig. 40.7) from a residual context in deep pit 169.

106. Copper alloy anklet or armlet with transverse grooves (Fig. 39.3). From a residual context (217). Similar bracelets are known from Colchester cemeteries [Crummy 1983; 1676–1684]. It probably had some form of hook and eye clasp.

## JET AND SHALE BRACELETS

Two bracelets of jet or shale were certainly deposited with burials at West Tenter Street. Several other fragments were recovered from redeposited contexts. Virtually all examples are of post AD 250 date in terms of deposition.

300. Plain oval shale bracelet 63mm × 54mm (Fig. 39.5) The cross-section is ovoid. From inhumation 387 found with bracelet of shale and glass beads (Fig. 40.9 and below).

377. Also with inhumation 387 a fragment of a second almost identical one (not illustrated). Probably also associated with this burial was copper alloy bracelet (No. 651) described above. Shale bracelets of this kind are relatively common [Lawson 1976 and Crummy 1983, p. 36–7] particularly in the 2nd and 3rd centuries.

389. Bracelet of jet or canal coal (Fig. 39.7) with inhumation 435 (Plate 14). Bracelets of this kind have parallels from the late 2nd to the 4th centuries [Lawson 1976, 254]. This example should be 4th century in date. Octagonal bracelets of this kind normally have grooving around the edge. One from Colchester [Crummy 1983, No. 1568] is almost identical. Internal diameter 53mm × 43mm. The best local parallel comes from Borough High Street, Southwark [Wheeler 1930, Fig. 31] although this a much cruder example.

68. Fragment of circular or oval shale bracelet similar to No. 300 with similar ovoid cross section. Found in grave fill of 262 (not illustrated).

256. Fragment of shale bracelet similar to No. 68 but section is flattened on one side. Found in fill of 4th-century pit (429) (not illustrated).

404. Large fragment of circular shale bracelet of 47mm internal diameter. The cross section is identical to No. 300 (Fig. 39.5). Found in pit of date later than AD 287 (493) (not illustrated).

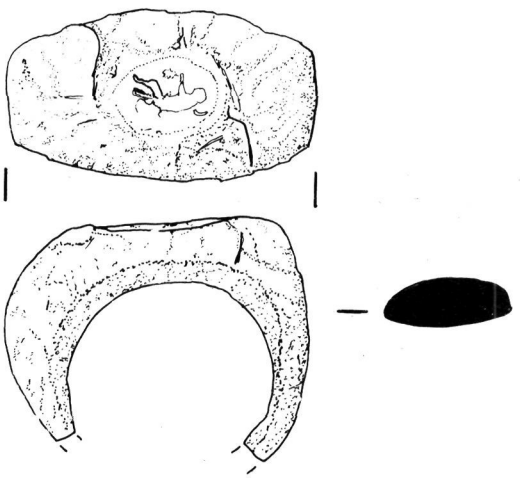


Fig. 41 West Tenter Street: The Intaglio Ring.

541. Fragment of poor quality shale bracelet similar to No. 300 but of considerably smaller diameter. The cross section is identical. Found in dump of 4th-century date (not illustrated).

## FINGER RINGS

856. Irregular shaped shale finger ring (Fig. 39.6) from inhumation 943 (Plate 8). Shale rings are quite rare only two are listed from Colchester [Crummy 1983, 45], neither from cemetery groups. Wheeler [1930, Fig. 30.19] illustrates one from 'London'. The date of this example is early or mid 2nd century.

251. Simple circular cross-sectioned copper-alloy ring (Fig. 40.3) 20mm in external diameter. Worn on the left hand of inhumation 328 together with a necklace of green and blue glass beads (Fig. 39.4) connected by copper hooks. Rings of this sort occur during all phases of the Romano-British period.

764. Fragment of copper alloy hair ring 14mm external diameter from post-hole 743 (not illustrated).

Iron ring with intaglio from cremation 675 (from notes by M. Henig, Oxford, and Jobbins and Harding of Geological Museum).

903. Burnt iron ring with an intaglio setting (Fig. 41). The ring had been burnt with a cremation and placed in a Verulamium white ware urn with a broken tazza as a lid (Fig. 25.1–2). The gemstone is composed of jasper or sard onyx and is a maximum 14.5mm long. The iron is in the form of a broad flat ribbon of 18mm maximum internal diameter. The device on the intaglio is a 'satyr on a rock' in profile to the right. In his left hand he holds a *pedum* or *lagobolon*, in his right hand a bunch of grapes. Crummy [1983, No. 1793] illustrates a ring similar to this with identical D-shaped section. Wheeler [1930, Fig. 30. 16–18] notes three from London from Westminster (Aquarium site), Moorgate Street and Miles Lane (City of London). Normal associations for London and other examples [Henig 1978, 71, 156, 157 App 109, 161–70

App 37, App 41] 1st century or early 2nd century. The example from West Tenter Street must have been deposited *c.* AD 120–150.

## COPPER ALLOY 'MANICURE SET'

766, 777, 778. Tweezers and spoon-probe (Fig. 40.1–2). From inhumation 741 together with a BB1 miniature jar and coin which was interred in the period AD 250–300. The tweezers are typical of the Roman period with loop at the top and a very slight expansion towards the jaws. Some examples have a suspension ring through the loop as on some Dark Age examples. An alternative feature is a bar and loop toilet-set holder [Crummy 1983, 1885]. One probable example was discovered in the 'deep pit' fill at West Tenter Street (No. 63, not illustrated). The spoon probe is quite fine comparing with similar examples from Colchester [Crummy 1983, 1296]. Frequently these items have been deliberately bent at the probe and/or spoon end. This example is quite straight. Such items are normally interpreted as cosmetic extractors and applicators. A partial example was discovered redeposited in a nearby context (No. 778, not illustrated), bent both at probe and spoon ends. A fragment of a 2nd pair of tweezers was redeposited in the late Roman dumping (No. 911, not illustrated).

## BEADS AND CLOTHING ATTACHMENTS

A number of beads were discovered from many parts of the site in residual contexts. However there were three inhumations with bead necklaces or bracelets. All three are unsexed juveniles. The two dated examples are of mid to late 3rd or 4th century in date.

250. Set of 23 alternating blue and green glass beads (Fig. 39.4) worn as a necklace on inhumation 328 together with a plain copper alloy finger ring (Fig. 40.3). The glass beads have a complete perforation through which has been passed copper alloy wire wrapped over at each end so as to engage with similar devices on adjoining beads. The beads are globular in shape with circular cross-sections.

439 (Grave 387). String of 30 glass and jet beads (Fig.

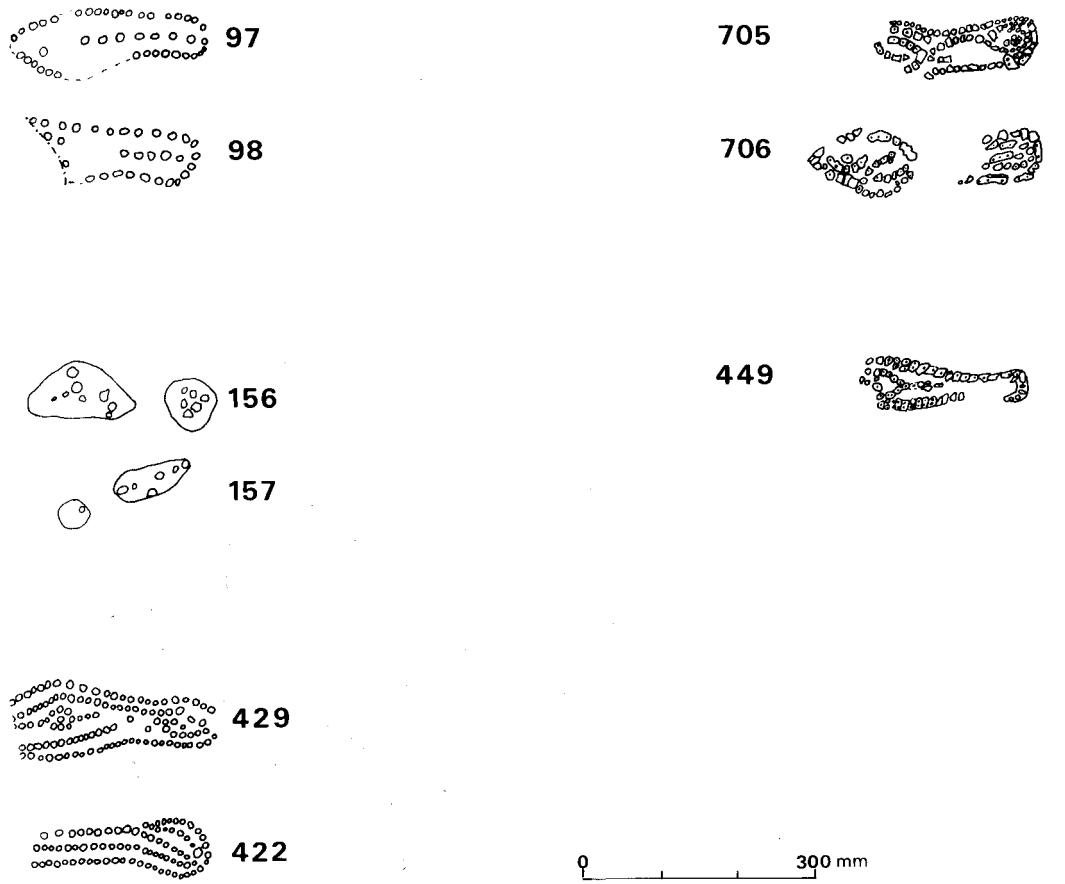



Fig. 42 West Tenter Street: The hobnail shoes.

40.9) they were found with a shale bracelet (Fig. 39.5) and were probably also a bracelet. There are four jet 'spacers' with perforations for a double string. There are 7 cylindrical beads (4 green, 2 turquoise and 1 blue); 4 elongated blue beads with a square cross-section and 15 globular beads (8 blue, 1 red and 6 of no definite colour). All these forms are noted by Guido [1978, 91–102]. The beads are all opaque. The blue and red ones are of uniform colour, the green ones are often stripey. None are very distinctive as to date, but the square sectioned types are normally 3rd or 4th century in date [Guido 1978, 96]. Large numbers of cylindrical beads were recovered from cemetery deposits at Lankhills [Guido 1979, 292–300]. The circular double perforated jet beads occur in late third century contexts at Verulamium and Brough-on-Humber [Lawson 1976, 244].
496 (Grave 506). A set of 24 jet beads and one glass bead (Fig. 40.4) were found together with an Oxford bowl (Fig. 29.10) in one grave group. All the jet beads are of simple disc type and the glass bead of plain globular type. Neither the glass [Guido 1978] or jet [Lawson 1976] beads is very distinctive as to date. The group however dates to the mid to late 3rd century on the basis of the pottery vessel and stratigraphy. There was no surviving skeleton and it is uncertain if these were a necklace or bracelet.

## HOBNAILED SHOES (Fig. 42)
## by M. RHODES

Unless otherwise stated, the nail-pattern types are those defined by Rhodes (1980, 105–7). The sizes are given according to the English Shoe-Size Scale for adult shoes, rounding up for half sizes. The nails were too corroded for the excavators to determine whether their heads were up or down, although for the purpose of the following catalogue, it has been assumed that the shoes were placed in the graves the right way up. If this were not the case, right shoe nail patterns would have the appearance of left shoe patterns, and vice versa.

**Grave 261, adult, 2nd century or later**
97–98: Matching pair of nailed shoes. Type A nail patterns having a nearly continuous line of nails around the edge, with a more widely spaced row along the centre line. The foreparts of 98 were missing, but 97, the right shoe of the pair, was complete: length *c.* 260mm, Adult Size 6. A late 3rd–4th century shoe from London has a similar nail pattern (MacConnoran 1982, 51, No. 106), although it is not dissimilar to the Type B pattern from 1st–2nd century contexts, and such a simple design might perhaps recur at any date.

**Grave 311, Adult ?male, 2nd century or later**
156–157: Two shoes. Corroded patches of hobnails indicated shape of the heels and foreparts, although were apparently absent from the waists. Nail patterns could not be distinguished.

**Grave 396, adult male, AD 150–200**
A pair of shoes worn at the time of burial.
422: Right shoe, foreparts missing. Two parallel outer nail rows curved around the heel and appeared to terminate at the back of the arch. A single row of nails along the centre line. Overall length >240mm.
429: Left shoe, pointed toe. Hybrid A/C nail pattern—two rows followed the outer edge, the innermost ending in a leaf(?) motif at the heel. Two shorter lines of nails crossed the tread diagonally from the great toe; the inner line being interrupted in the middle of the tread by a circle of nails with a central nail. A pattern of somewhat similar character occurs on a shoe from an early–mid 3rd century deposit at New Fresh Wharf (MacConnoran 1986, 218 top left). Length 316mm, Adult Size 11.

**Grave 654, adult ?female, AD 150–200**
Cluster of nails from heel of right shoe, worn at the time of burial (not illustrated).

**Grave 593, adolescent female, late 3rd or 4th century**
705: Right shoe, most of forepart missing. Hybrid A/C nailing pattern, nails in waist follow line of arch; cluster of nails at the heel.
706: ?Left shoe. Type A or hybrid A/C nailing pattern, with apparently pointed toe. Arrangement in tread unclear; cluster of nails at heel. Length *c.* 256mm, Adult Size 5.

**Grave 459, adult male, AD 340 or later**
449: Right(?) shoe with Type A nailing pattern, toe missing. Motif in tread could be a Y or a circle around a central nail. >230mm long, greater than Adult Size 2.

## THE COINS
## by M. HAMMERSON

### SUMMARY OF COINS

The 43 coins from the site may be summarised as follows:

| | |
|---|---|
| Nero, AD 54–6 | 3 |
| Domitian, AD 81–96 | 4 |
| Trajan, AD 98–117 | 1 |
| possibly Hadrian, AD 117–138 | 1 |
| Antoninus Pius, AD 138–161 | 1 |
| Marcus Aurelius, AD 161–180 | 1 |
| Septimius Severus, AD 192–211 | 1 |
| Severus Alexander, AD 223–235 | 1 |
| Central and Gallic Empires, AD 253–273 | 7 |
| Irregular antoniniani, *c.* AD 270–300 | 7 |
| Aurelian, AD 270–276 | 1 |
| Carausius, AD 287–296 | 4 |
| House of Constantine, AD 320 | 1 |
| AD 330–348, regular | 2 |
| irregular | 5 |
| AD 350–355 | 1 |
| *c.* AD 355–365, irregular | 1 |
| House of Valentinian, AD 367–375 | 1 |
| House of Theodosius, AD 388–402 | 1 |

## THE COINS AND THEIR CONTEXTS

Since this appears to be primarily a cemetery site, the coins should first be looked at in regard to their contexts before any comment may be made about what they may signify. The bracketed numbers with the coins are their small-find numbers.

### Coins from Graves

(399) Nero—in association with pottery of *c.* AD 250–300, and redeposited with grave backfill.

(905) Nero—in a cremation urn dated to AD 120+, together with a box mirror decorated with Neronian coin patterns.

(849) Domitian—in association with pottery of *c.* AD 120–200.

(95) Domitian—within coffin fill of otherwise undated grave.

(530) Antoninus Pius, (527) Marcus Aurelius, (531) Tetricus I—all in same layer of fill of a grave, with pottery dated *c.* AD 300–400.

(767) Septimius Severus—under left humerus of inhumation buried with a BB1 jar of *c.* AD 250–300.

(428) Irregular Victorinus, (474) Victorinus or Tetricus I—sole dating evidence for grave.

(155) Gratian—from a pit containing an infant burial. This cut the surface of an earlier "chalk burial", probably of 4th century date, and could have derived from its fill.

(419) Irregular 340's—beneath the skull; uncertain whether originally deposited in mouth.

(296) Constans—from a "chalk burial".

### Coins from other Roman features

A gravel pit containing redeposited cremation urns, and possibly backfilled by *c.* AD 120, contained several coins: (876) Nero, (858, 854) Domitian, (861) ?Hadrian, (855) Trajan, and (872) Claudius II. The contexts of most of these coins were insecure, and they may have derived from later Roman graves or other features cutting the gravel pit fill. Only the coin of Nero was securely sealed on the floor of the pit.

The deep pit F.169 had (756), an irregular coin of *c.* AD 340–347, sealed at its base, while two coins of Carausius (689, 47) were from the ploughsoil above it; conceivably they derived from its backfill. Other pits were associated with the deep pit; the features all seemed to be backfilled with pottery of the 4th century, perhaps as late as AD 380; the coins from these other pits—(587, 674, 655)—were mainly residual, dating to *c.* AD 260–275, though (588), an irregular issue of *c.* AD 355–65, gives the earliest backfilling date.

Dumping levels apparently immediately predating the deep pit contained coins (945) of Severus Alexander (unlikely to have circulated after *c.* AD 250) and (551) an irregular copy of the 340's. The latter gives some support to the evidence of coin (588) from the deep pit itself. The two coins (59, 71) of the early 270s, together with pottery of *c.* AD 250–300, from the ditch (F. 206) seem to provide some mutually consistent evidence for the date at which it may have been filled, though the precise context of coin (58) of Arcadius from the uppermost fill is uncertain and leaves the date of the backfilling of the ditch in a little doubt, perhaps.

Of the remainder of the coins, some derived from ploughsoil over the graves (15, 417, 32, 3, 418, 35, 70, 816, 61); all dated from AD 258–375, and all or some may have derived from the backfill of graves, though this is quite uncertain. Others (1, 16, 46) were from post-medieval contexts. Whether they derive from the use of the area as a cemetery, or from dumping of other occupation material from elsewhere, it is not known.

## COIN EVIDENCE AND THE DATING OF THE CEMETERY

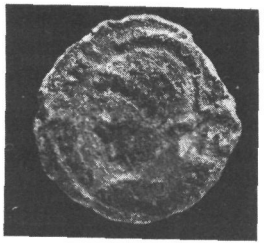
The analysis of coin and ceramic evidence in (II) above suggests that, of the ten graves containing coins, seven were dated AD 250–400; three of those contained coins dating to AD 194 or earlier. A further two contained single coins—one of Nero (905), fairly heavily worn, and one of Domitian (849), very heavily worn—but were associated with pottery of *c.* AD 120–200; the state of wear of the coins suggests that the graves should date later rather than earlier within that time bracket, and may even be later, as much 1st century bronze coinage remained in circulation, in an extremely worn state, until at least *c.* AD 260. In the tenth grave, the only dating evidence present was a coin of Domitian (95); this was fairly heavily worn, and although wear cannot be interpreted in terms of absolute years, it is possible that the coin circulated well into the 2nd century.

It would appear, therefore, that most graves in which coins were present, whether as ritual offerings or redeposited, do not date earlier than the mid–late 2nd century, whilst several are definitely mid-3rd century or later.

Although the coin of Nero (905), buried in a cremation urn of AD 120+ with a box-mirror bearing Neronian portraits, showed fairly heavy wear, it is pierced for suspension and the two objects may have been heirlooms buried with their owner. The coin may have been worn as a talisman from the time it was minted, and regularly polished, both of which processes could have accounted for its state of wear in a relatively short time; alternatively, it may have been used as a pendant after seeing some circulation. By itself the coin's evidence is ambiguous; it is not perhaps sufficiently worn to suggest use or circulation into the 3rd century, although the vessel in which it was placed suggests a deposition date of at least AD 120.

Although the coins from other Roman features provide useful dating evidence, it is uncertain whether they are from primary deposition or

407



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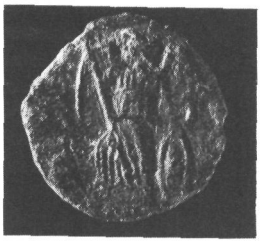

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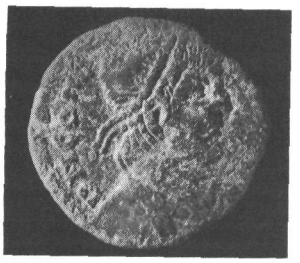

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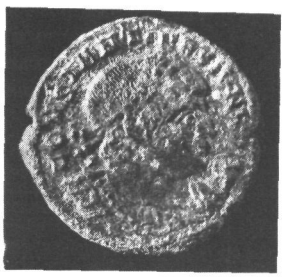

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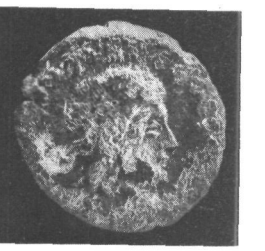

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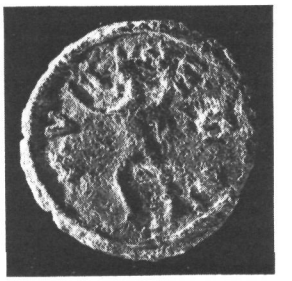
587



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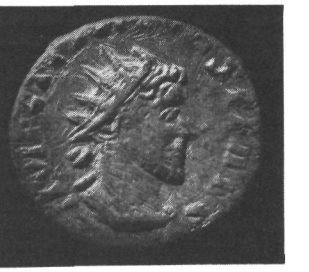

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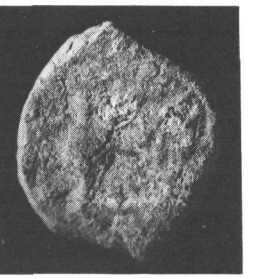
531

30



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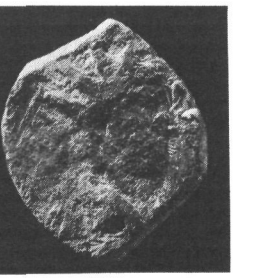

Plate 15 West Tenter Street: Coins (407, 419, 551, 46, 296, 588, 587, 478 (obverse corroded), 32, 531, 30, 674, 418).

whether they are redeposited in the backfill of features. However, these and the remainder of the coins from the site present a coin pattern where the greatest number of coins date to the second half of the 3rd century, and where there is a secondary 'peak' during the later Constantinian period and a rapid tail-off in numbers thereafter. This is a normal pattern of coin-loss on many occupation sites. On a cemetery site, its significance is perhaps less clear; on the rather tenuous assumption that they all derive from funerary contexts, the coin pattern is more likely to depend on fashions or practices in burial rites than on any loss of coins from everyday trade.

## DETAILED LIST OF WEST TENTER STREET COINS

As a guide to the length of circulation coins might have seen a grading letter is added in brackets. Thus (A) = unworn, (B) = slight wear, (C) = medium wear, (D) = fairly heavy wear, (E) = very heavy wear; a question mark indicates uncertainty due to corrosion. Rev. = Reverse; Irr. = Irregular copy.

RIC = Roman Imperial Coinage 10 vols., London, 1920–

LRBI, 2 = R. A. G. Carson, P. V. Hill, J. P. C. Kent, "Late Roman Bronze Coinage", London 1965, Parts 1 and 2

| Context | SF | Identification | | Date (AD) |
|---|---|---|---|---|
| 475 | 399 | Nero, *as*, RIC 318; rev. SC, Victory | (D) | 64–68 |
| 1183 | 876 | Nero, *as*, RIC 329; rev. SC, Victory | (C?) | *c.*67–68 |
| 1091 | 905 | Nero, *as*, RIC 329; rev. SC, Victory | (D) | 67–68 |
| 941 | 858 | Domitian, *as*, as RIC 301; rev. Moneta | (D) | 95–96 |
| 766 | 849 | Domitian, *sest.*, as RIC 279; rev. Jupiter | (E) | 85–96 |
| 264 | 95 | Domitian, *as*; rev. illegible | (D) | 81–96 |
| 944 | 854 | Domitian, *as*; rev. illegible | (D/E?) | 81–96 |
| 922 | 855 | Trajan, *as*, RIC 402; rev. Victory | (C) | 98–99 |
| 1035 | 861 | possibly Hadrian, *as*. | (E) | 120–140? |
| 571 | 530 | Antoninus Pius, *dp.*, RIC 990 or 1015; rev. Fortuna | (D) | 157–159 |
| 571 | 527 | Marcus Aurelius, *sest.*, RIC 1033; rev. SC, Roma | (D) | 172 |
| 740 | 767 | Septimius Severus, *dp.*, RIC 664 (variant); rev. Saeculi Frugifero | (C) | 194 |
| 945 | 632 | Severus Alexander, cast copy *den.*, as RIC 139; rev. illegible | (?C/E) | *c.*222–235 |
| 1104 | 872 | Claudius II, *ant.*, as RIC 13; rev. Aequitas | (B) | 268–270 |
| 55 | 15 | ?Postumus or Victorinus, *ant.*; rev. uncertain; coin clipped in half | (?C) | *c.*260–273 |
| 491 | 474 | Victorinus or Tetricus I, *ant.*; rev. Pax | (C) | 268–273 |
| 205 | 71 | Tetricus I, *ant.*, RIC 88; rev. Laetitia | (B) | 270–273 |
| 205 | 59 | probably Tetricus I, *ant*, RIC 125; rev. Salus | (B) | ?270–273 |
| 207 | 417 | Tetricus II, *ant.*, RIC 270; rev. Spes | (B) | 270–273 |
| 34 | 16 | probably Gallic Empire, *ant.*; rev. illegible | (?) | ?258–300 |
| 641 | 587 | Irr. Cladius II, AE 14.5 × 13mm; copy as RIC 259 (Consecratio) (Plate 15) | (D) | *c.*270–300 |
| 527 | 478 | possibly Irr. Victorinus, copy as RIC 112ff. Rev. has INVICTO, Sol, whereas RIC has INVICTVS. Corroded (Plate 15) | (?C) | *c.*270–300 |
| 167 | 32 | Irr. Victorinus or Tetricus I, AE 15.5 × 14mm; rev. uncertain, possibly Mars Ultor (Plate 15) | (C) | *c.*270–300 |
| 571 | 531 | Irr. Tetricus I, copy as RIC 87; rev. Laetitia (Plate 15) | (D) | *c.*270–300 |
| 167 | 30 | Irr. Tetricus I, AE 17.5mm, copy as RIC 100; rev. Pax (Plate 15) | (C) | *c.*270–300 |

| Context | SF | Identification | | Date (AD) |
|---|---|---|---|---|
| 665 | 674 | Irr. Gallic Empire, AE 11.5mm, copy as RIC (Victorinus) 112 or Tetricus I (82), rev. Invictus (Plate 15) | (B) | *c.*270–300 |
| 220 | 418 | Irr. Gallic Empire, AE 16 × 14mm, copy as RIC (Tetricus I) 110; rev. probably Pietas (Plate 15) | (B) | *c.*270–300 |
| 666 | 655 | Aurelian, *ant.*, RIC 140; rev. Restitut Orientis | (C) | 270–276 |
| 679 | 689 | Carausius, *ant.*, variant as RIC 48; rev. Laetitia | (B) | 287–293 |
| 494 | 407 | Carausius, *Ant.*, RIC 665, rev. Salus Aug (Plate 15) | (B) | 287–290 |
| 186 | 47 | Carausius, *ant.*, as RIC 118 ff, rev. Pax | (?) | 287–293 |
| 189 | 35 | Carausius, *ant.*, as RIC 119; rev. Pax | (?B) | 287–293 |
| 260 | 70 | Crispus, AE3, RIC(Trier) 261; rev. Virtus Exercit | (C) | 320 |
| 184 | 816 | Constantius II, AE3, LRB1.57; rev. 2 standards | (C) | 330–335 |
| + | 1 | Constans, AE3, LRB1.138; rev. 2 victories | (B) | 347–348 |
| 150 | 419 | Irr. Constantinopolis, AE 14mm, copy as LRB1.52 (Plate 15) | (C) | 340–347 |
| 562 | 551 | Irr. Urbs Roma, AE 14.5mm, copy as LRB1.376 (Plate 15) | (B) | 340–347 |
| 113 | 46 | Irr. Constantine II, AE 17mm, copy as LRB1.48; rev. 2 standards (Plate 15) | (B) | 340–347 |
| 683 | 756 | Irr. Constantinian, AE 14mm, copy as LRB1.87; rev. 1 standard (Plate 15) | (?) | 340–347 |
| 460 | 296 | Irr. Constans, AE 14mm, copy as LRB1.401; rev. 1 standard (Plate 15) | (C) | 340–347 |
| 760 | 791 | Constantius II, AE3, LRB2.257; rev. Fallen horseman | (D) | 353–354 |
| 641 | 588 | Irr. Constantius II, AE 16.5mm, copy as LRB2.72; rev. Fallen horseman (Plate 15) | (B) | *c.*355–365 |
| 362 | 155 | Gratian, AE3, LRB2.517; rev. Gloria Novi Saeculi | (B) | 367–375 |
| 220 | 61 | Gratian, AE3, LRB2.500; rev. Gloria Novi Saeculi | (D?) | 367–375 |
| 204 | 58 | Arcadius, AE4, as LRB2.566; rev. Victory | (B) | 388–402 |

# III THE HUMAN BONES FROM WEST TENTER STREET
by TONY WALDRON

## PART 1: THE INHUMATIONS

### INTRODUCTION

The human bones from the cemetery at West Tenter Street comprised 112 discrete burials, a quantity of disarticulated bone which had been recovered mostly from grave fills, and 27 discrete groups of cremated bone from both *in situ* and redeposited cremations; the cremations are dealt with in part 2 of this report. Bones in three of the disarticulated contexts (405, 488 and 747) could be matched with some certainty to discrete inhumations (406, 541, 667) and have been considered as part of those skeletons.

### PRESERVATION OF THE MATERIAL

The site had clearly been considerably disturbed over the years, one sign of this being the number of inhumations which contained intrusive

human or animal bone. There were four inhumations (3.6%) which contained intrusive human bone only, ten (8.9%) which contained only intrusive animal bone and a further four which contained both intrusive human and animal bone. In total, therefore, eighteen—16.1%—of the inhumations showed this evidence of disburbance. The number of disarticulated contexts which contained animal bone was considerably greater, as might be expected (archive Appendix 1). Thus, of the 109 contexts, 36 (33.0%) had animal bone mixed with the human material. In addition, thirty three of the contexts contained fragments of burnt bone; in nine cases, the context contained *only* burnt bone. Finally, fifteen contexts contained both burnt bone and animal bone. This high proportion of what one might call 'mixed bone contexts', suggests a considerable degree of disturbance and this is borne out by the number of graves which show evidence of having been cut into.

The bones themselves had suffered from much post mortem damage and only a small number of the inhumations contained more than one or two long bones from which a complete range of measurements could be taken. In the majority of the inhumations, the skulls had taken a good deal of punishment after burial and could not be measured (archive Appendix 2). The number of skeletons in which more than 75% of the bones had survived was small and this greatly affects the quality of the information, both anthropological and pathological, which can be derived from them.

## ANTHROPOLOGICAL EXAMINATION SEX, AGE AND HEIGHT

### 1. The burials

The bones from the inhumations were examined in order to determine the sex, age at death and height. Standard methods were used (Workshop of European Anthropologists, 1980) and the results have been included in the catalogue of the remains contained in archive Appendix 2. The examination of the bones included standard measurements; some of these were used to determine height and, occasionally, probable sex of the skeleton. The measurements are contained in the archive material.

*Sex and age:* The sex of a skeleton is best determined from the morphology of the bones of the pelvis. When the pelvis is absent or too fragmentary for the distinction to be made, the next most reliable means of differentiation is to be made from the shape and form of the skull. From either skull or pelvis (and preferably both), sex can be assigned with reasonable, but never complete confidence. (The bias in sexing the skeleton has been reported as being both towards over-diagnosis of males (Weiss, 1972) and females (Meindl *et al*, 1985b) suggesting that this is as yet a far from exact science.) If neither the pelvis nor the skull is present (or are in too poor a state for examination) then sex may be assigned from certain bone measurements but since there is a considerable degree of overlap between male and female measurements (Stewart 1979) sex can not be attributed with such a high degree of certainty and where measurements form the basis for sexing, I have generally assigned a 'probable' sex to the skeleton.

In the fully mature skeleton, that is, one in which all the epiphyses have fused and all the teeth have erupted, age can be estimated from the degree of tooth wear; this is most usually done by reference to the charts published by Mills (1963). An estimate of age may also be made from the fusion of the cranial sutures and from the morphology of the pubic symphysis (see, for example, Meindl and Lovejoy 1985, Meindl *et al* 1985a). In the immature skeleton, age can be estimated with more precision from the state of epiphyseal fusion or from the pattern of dental eruption if the skeleton is reasonably complete. None of the methods used for ageing adult skeletons is precise, however, and at best, a range of age can be derived; in this report I have expressed the age of the adult skeletons in ten year age groups.

For incomplete, immature skeletons, it is possible (from amongst other things, a consideration of size) to categorise them as either infant (under five years of age) or juvenile (five to fifteen years). I have not attempted to assign sex to either of these groups.

Amongst the burials at the site there were seven infants, seventeen juveniles, fifty seven adult males and twenty six adult females; five adult skeletons were too fragmentary for a sex to be assigned. Sixty-nine skeletons had an age assigned to them and of these, the majority were below 45 years of age at death (see Fig. 6).

*Height:* The height of skeletons was calculated from the formulae published by Trotter in 1970 which are based on the length of the long bones. In the results (archive Appendix 2) the height is given in metres with the standard error of the measurement. The standard error is an estimate of the range within which the 'true' height is likely to fall and its magnitude depends upon which bone length is used in the calculation. A height of 1.70m with a standard error of $\pm 0.0299$ (as might be obtained in a male skeleton using the combined lengths of the femur and tibia) means that the 'true' height

is likely to lie within the range 1.67 to 1.73m; the greater the standard error, the greater the range. Heights were always calculated from whichever of the surviving bones had the lowest standard error in Trotter's tables.

The mean height of the 44 male skeletons in which it could be calculated was 1.71m (standard deviation 0.05m) with a range of 1.59–1.84m. For the 15 female skeletons the mean was 1.57m (standard deviation 0.04m) and the range was 1.50–1.66m. The two means are approximately equal to 5ft 7ins and 5ft 2ins respectively. The distribution of height by sex is shown in Fig. 43.

*Cranial index:* The cranial index (Brothwell 1981) compares the breadth and length of the skull and gives an indication of the round-headedness or long-headedness of an individual or a population. Only fifteen skeletons (nine males and six females) had skulls which were sufficiently intact to permit this index to be calculated. Of the males, five were in the dolichocephalic range and four mesocephalic; of the females, two were dolichocephalic and four mesocephalic. That is to say, all tended to be round rather than long headed (archive Table 4).

*Platymeria and platycnemia:* These indices describe the shape of the proximal part of the femur and tibia respectively. The femoral index could be calculated on fifty skeletons (forty male, ten female) and the tibial, on thirty eight (twenty nine males, nine females). There was no significant difference between the results in males or females (archive Table 4). Most of the femoral indices fell into the platymeric range (that is, below 85) and most of the tibial indices within the mesocnemic range (above 63). That is, the femora tended to be relatively flat in the transverse plane and the tibiae rather flat in the anteroposterior plane.

2. The disarticulated bones

*Sex and age:* Amonst the disarticulated material it was possible positively to identify one infant and thirteen juveniles. Of the remainder, seven males and three females could be distinguished with some certainty.

A reasonably precise age could be assigned to seventeen individuals amongst this group but in many cases the bones were too fragmentary to be assigned either age or sex (archive Table 6).

*Heights:* These were determined for three individuals only. Two of these individuals were female (557, 687) and their heights were 1.68 and 1.60m respectively; the height of the single male (684) was 1.70m.

Height (m) and sex distribution of skeletons from West Tenter Street

| Metres | Male | Female | Sex Unknown |
|---|---|---|---|
| 1.50– | | 4 | |
| 1.55– | 1 | 7 | |
| 1.60– | 5 | 3 | |
| 1.65– | 15 | 1 | |
| 1.70– | 14 | | |
| 1.75– | 7 | | 1 |
| 1.80+ | 2 | | |
| Total | 44 | 15 | 1 |

Fig. 43 West Tenter Street: Skeletons, height and sex.

## NON-METRIC CHARACTERISTICS

Wherever possible, the skeletons were examined for the presence of cranial and post-cranial non-metric traits using the descriptions of Berry and Berry (1967) and Finnegan (1978) as a guide. Because the skeletons were often relatively incomplete or, frequently damaged when complete, in many cases it was not possible to carry out this determination (archive Tables 7 and 8).

Few of the cranial traits were common, but in the skulls in which the observations could be made, metopism was present in 8 of 48, and ossicles were present in the lambdoid suture in 8 of 35 and the supra-orbital foramina were open in 33 of 42. In the 50 intact mandibles, a mylohyoid bridge was present in 9, 2 of type 1 and 7 of type 2 (Arensburg and Nathan 1979).

Amongst the post-cranial traits, the most notable was the fact that a substantial number of the taluses had a single facet on the anterior joint (16 of 44 examined) and this was mirrored by the observation that many of the calcanea had a single facet on the corresponding articular surface (17 of 45).

## DENTAL HEALTH

Number of teeth present

The fact that many of the skulls and mandibles had suffered post mortem damage or were missing meant that many of the total number of adult teeth were missing. There were no teeth present at all in 25 of the 88 adult (15 years or more) skeletons present. Of the remainder, 1–8 teeth were present in 7 skeletons, 9–16 in 9, 17–24 in 19 whilst the other 28 skeletons had between 25 and 32 teeth. Had the full complement of teeth been present in all the adult skeletons, then a total of 2816 (88 × 32) teeth would have been expected. As it was,

only 1370 were present. There were, in addition, however, 200 empty sockets and 29 unerupted teeth. This total (1599) represents 56.8% of the total expected. Amongst the adults, 117 teeth had been lost antemortem and there were a further 42 teeth with caries and four dental abscesses (archive Table 9). Four juvenile teeth had also been lost before death, perhaps as the result of dental disease. The overall diseased and missing index (Diseased + Missing teeth/total number of teeth × 100) in the adults is 8.2%.

Dental wear

As mentioned earlier, dental wear was assessed using the charts published by Mills (1963). The results were used either to age the skeleton or to confirm the age arrived at by other means.

Caries

The 42 caried teeth came from a total of 21 individuals; twelve with one, four with two, three with three and one each with five and eight caried teeth respectively. The type of caries was noted using the classification of Moore and Corbett (1983). As expected, the majority of caried teeth were molars or premolars; the predominant types of caries were those affecting the contact areas between the teeth and massive caries, that is, where the tooth had been largely destroyed by the disease (see Fig. 44). In one case (484) the dental caries had developed in relation to a small super-numerary tooth which had pushed the lower right first incisor forward. The accessory tooth was in contact with both right lower incisors and all three teeth were caried, presumably because food debris had become lodged between them.

Number of teeth with caries and type of caries in skeletons from West Tenter Street

| | Caries Type | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Incisors | 0 | 0 | 0 | 0 | 0 | 2 |
| Canines | 0 | 0 | 0 | 0 | 0 | 2 |
| Pre-molars | 0 | 6 | 0 | 0 | 0 | 8 |
| Molars | 0 | 4 | 0 | 1 | 2 | 17 |
| Total | 0 | 10 | 0 | 1 | 2 | 29 |

Key:
1 = caries at interstitial enamel/cementum junction
2 = caries at contact areas
3 = caries at buccal enamel/cementum junction
4 = caries in buccal fissure
5 = caries in occlusal fissures
6 = massive caries

Fig. 44 West Tenter Street: Teeth and Caries.

Dental abscess

Four skeletons had a dental abscess. In two (748, 1141) the abscess had developed in teeth affected by massive caries (the right lower second molar and the right lower first molar respectively). In the two other cases (1053, 1163) the teeth around which the abscesses had developed had fallen out (the right lower first molar and right lower canine respectively).

Alveolar disease

The presence of alveolar disease was scored on a four point scale, following the description given by Brothwell (1981). There is an obvious relationship between the degree of alveolar disease and age, with a general tendency for it to become more pronounced with increasing age (archive Table 11). There is also a clear relationship between alveolar disease and other aspects of dental disease. The DM index increases considerably as the staging of alveolar disease increases (archive Table 12). This is to be expected, of course, since disease of the gums is a consequence of poor oral hygiene and, when severe, will result in the loss of teeth even in the absence of caries.

The interaction between alveolar disease, tooth disease and age is examined in archive Table 13. It would be expected that the DMI would not only increase with increasing proportion of alveolar disease but with increasing age. There is some suggestion that this does occur in the 25–35 and 45+ year age groups so far as alveolar disease is concerned and with age for the second category of alveolar disease, but generally the trends are weak. This is probably a reflection of the small numbers in many of the cells.

Dental calculus

The degree of calculus on the teeth was also scored on a four point scale, again using Brothwell's classification as its basis. Extreme degrees of calculus were noted only rarely, but there was a trend for the amount of calculus on the teeth to increase with increasing age (archive Table 14).

Other dental disease

*Supernumary and vestigial teeth:* Three skeletons had supernumary teeth; as described above, one had contributed to the development of dental caries. In one of the two other cases (541), a small accessory tooth had pushed the left second incisor laterally whilst in the third case (1018) an accessory tooth

Summary of pathological findings by aetiological category in skeletons from West Tenter Street

| Congenital | Traumatic | Infective | Metabolic |
|---|---|---|---|
| 10 | 13 | 4 | 0 |
| Degenerative | Malignant | Circulatory | Dental |
| 39 | 0 | 0 | 43 |
| Other | None | Unknown | |
| 9 | 12 | 41 | |

Fig. 45 West Tenter Street: Pathology by aetiological category.

in the right maxilla had pushed the canine inferolaterally so that it no longer occluded with the tooth below.

One skeleton (1052) had a vestigial right upper third molar which was probably of no significance to the individual during life and the dentition was otherwise unremarkable.

*Impaction:* In one skeleton (502) both the upper third molars were impacted and in one other (1134), the upper left wisdom tooth was impacted. There was no other dental disease in either case.

Dental disease in the disarticulated material

There were few teeth amongst the disarticulated material, only 65 permanent and 6 deciduous teeth. Of the permanent teeth, two were caried (in contexts 342 and 849); a further twelve teeth (from four contexts, 94, 228, 708, 767) had been lost antemortem, presumably as the result of dental disease.

## PATHOLOGY

The only diseases which it is possible to recognise in skeletons are those which produce changes in the bones or teeth and these are amongst the minority which may affect man during life. Thus any investigation of skeletons from archaeological contexts will tend to underestimate the prevalence of disease amongst them. This tendency will be exaggerated if the bones themselves are in a poor state of preservation or where the skeletons are fragmentary. The examination of the inhumations from West Tenter Street showed that about two-thirds of the adult skeletons had some pathological change ranging from rather minor dental disease to widespread disease affecting many bones and joints.

Each of the pathological changes found in the bones or the teeth was attributed to a 'most probable' aetiological category and the number of cases within each of these categories is shown in Fig. 45. It should be noted that the numbers within the table exceed the total number of inhumations since a single skeleton might have more than one category of pathological change. From the table it will also be noted that only 12 skeletons were considered to be free from any pathology and that in 41, it was not possible to say whether any pathology was present or not because the skeletons were too fragmentary. Where sufficient of the skeleton is preserved, some pathological change is more likely to be found than not. For example, as may be seen from Fig. 46, in three quarters of the adult skeletons which were sufficiently intact to allow an age to be derived there was some pathological change and it was possible to be certain that five (7.2%) were free from any signs of disease. By contrast, about 60% of the adult skeletons in which age could not be derived were put within the 'pathology unknown' category.

It is also of interest to note that the likelihood of finding pathological change in the skeletons is age-related. None was found in any of the infant or juvenile skeletons although (as may be seen in Fig. 46), many had to be placed in the 'unknown' category because they were poorly preserved. Nevertheless, this observation is in line with what is known about disease in modern infants and

Proportion of skeletons from West Tenter Street with pathological changes by age

| | Infant | Juvenile | Adult | |
|---|---|---|---|---|
| | | | Age unknown | Age known |
| No pathology | 1 | 6 | 0 | 5 |
| | (14.3) | (35.3) | | (7.2) |
| Pathology unknown | 6 | 11 | 11 | 13 |
| | (85.7) | (64.6) | (57.9) | (18.8) |
| Pathology present | 0 | 0 | 8 | 51 |
| | | | (42.1) | (73.9) |

Figures in parentheses are percentages.

Fig. 46 West Tenter Street: Pathology by age.

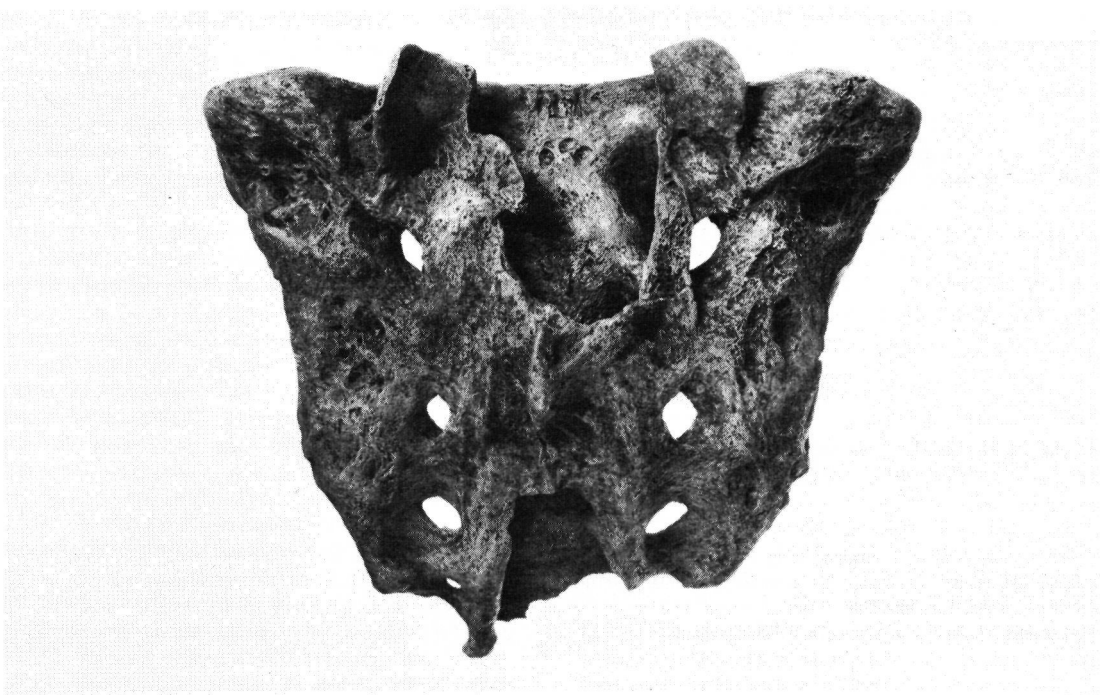

Plate 16 West Tenter Street: Spina bifida, unfused first two segments of sacrum (767).

juveniles amongst whom one would not expect to find a high prevalence of diseases which affect the skeleton.

The largest number of changes was attributed to dental disease which has been discussed above. The next largest category is of the degenerative disorders in which I have included all the so-called arthropathies, the diseases which directly affect the joints. Thirteen skeletons showed signs of trauma, mostly fractures of one or more bones, ten with some form of congenital abnormality, four with evidence of infection and nine skeletons with changes which would not readily fit into any of the major categories. (The changes found in each of the skeletons are summarised in archive Appendix 3.)

Congenital abnormalities

Four conditions accounted for all the cases under this head, spondylolysis (4), spina bifida occulata (1), lumbarisation of the sacrum (4) and cervical rib (1).

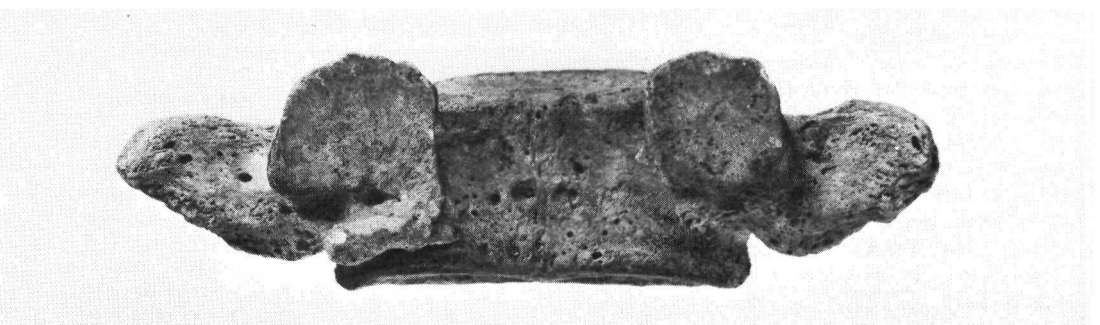

Plate 17 West Tenter Street: Spondylolysis of the fifth lumbar vertebra.

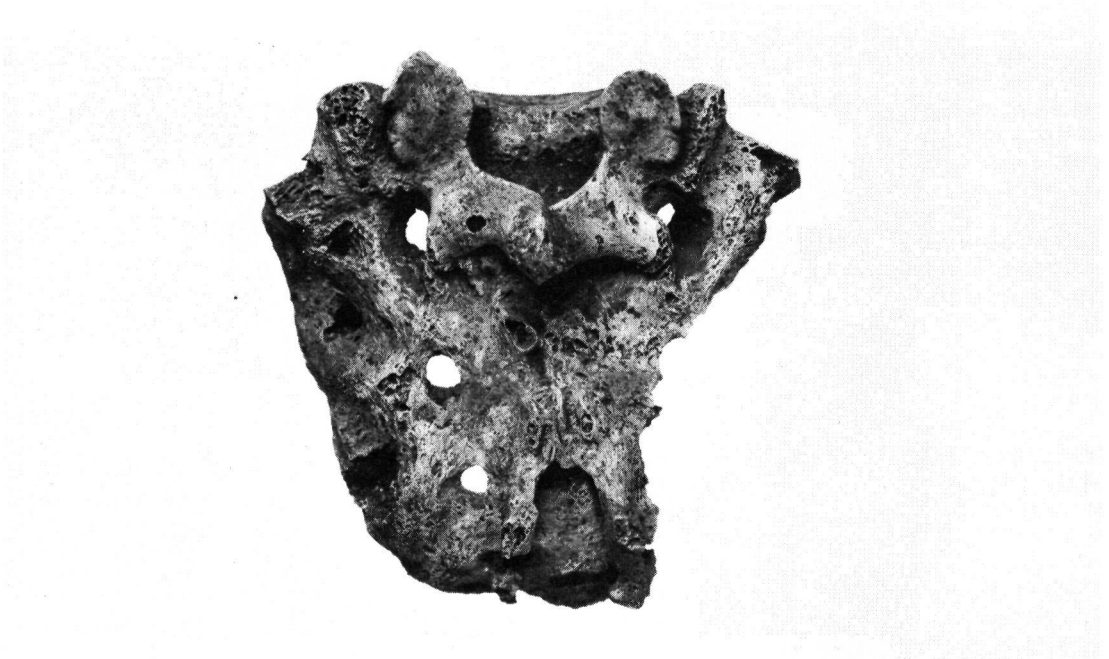

Plate 18 West Tenter Street: Lumbarised first segment of sacrum.

*Spina bifida occulta:* In the single case of spina bifida (767), the first two segments of the sacrum had failed to fuse posteriorly (Plate 16). In this form, the condition does not declare itself clinically (and for this reason it is described as being 'occulta') and the individual would have had no symptoms or signs during life.

*Cervical rib:* This is an elongation of the transverse process of the seventh cervical vertebra. During life there are usually no signs associated with the condition unless the cervical rib is sufficiently long to interfere with the nerves in the cervical plexus in which case neurological abnormalities may be noted in the arm on the same side. In the present case (860), the cervical rib was not sufficiently elongated for this to have occurred.

*Spondylolysis:* Spondylolysis is a relatively common condition in which the laminae of the fifth lumbar vertebra become separated from the body (Plate 17). Although I have included it amongst the congenital conditions, since it is often referred to as being a congenital anomaly of the spine, there is actually some debate as to its true aetiology and there is some suggestion that it may be caused by trauma (Hensinger and MacEwen 1982). Again, the condition may not cause any problems during life unless the vertebral body, which is unsupported posteriorly by the facet joints, slips forward on the sacrum. There was no evidence on the affected vertebrae or their related sacra to suggest that this had happened in the four cases here (1087, 1098, 1110, 1150) and the condition was almost certainly silent during life.

*Lumbarisation of the sacrum:* It is relatively common to find abnormalities at the lumbro-sacral junction (Timmi, Wieser and Zinn 1977). Either the fifth lumbar vertebra may become incorporated into the sacrum (sacralised) or, as in the four cases here (974, 992, 1125, 1163), the first segment of the sacrum has an appearance more like that of the fifth lumbar vertebra; that is, it has been lumbarised (Plate 18). This condition, like those described above, usually has no clinical effects.

Infective lesions

None of the skeletons had the distinctive signs of specific diseases such as tuberculosis or leprosy but in three cases, there were fusiform swellings of one or more bones, sometimes accompanied by periostitis, which were most probably the result of a low grade osteomyelitis. The swellings were found in the middle of the left ulna (676), at the distal end of the left tibia and fibula and right fibula (732) and affecting the whole of the right fibula (1052). The diagnosis in 732 is supported by the presence of a sinus in the anterior surface of the

Plate 19 West Tenter Street: ? low grade osteomyelitis, sinus in the anterior surface of tibia (732).

tibia through which pus probably drained (Plate 19).

In one case (1150) a proliferative lesion was noted on the tip of the spinous process of the seventh cervical vertebra (Plate 20). The cause of this lesion is not immediately obvious, but the most likely is that it represents a bony reaction to an infection in the overlying soft tissues.

Plate 20 West Tenter Street: Proliferative lesion on tip of process of seventh cervical vertebra (1150).

Trauma

There were ten skeletons with clear evidence of fractured bones. Amongst the group, fractures were most commonly found in the ribs (five cases—688, 1041, 1110, 1112, 1163). Three fractured clavicles were present (in 541, 604 & 1110), two fractured fibulae (992, 1163), a single fracture of the radius and ulna (1053) and a single crush fracture of a lumbar vertebra (931). In addition, two skeletons (701, 860) had lesions which were almost certainly the consequence of trauma.

The majority of the fractures were well healed and well aligned. One of the clavicular fractures (604) had not been well set, however, and the clavicle was shortened and had osteophytic lipping around its sternal end. There were proliferative bony changes on the sternum around the clavicular articulation caused by the alteration produced in the normal relations of the sternoclavicular joint by the badly healed fracture.

The fracture in the radius and ulna was in the classic position of a 'parry' fracture and had probably been sustained when the individual (1053) had been protecting his head from a blow. The injury had been inflicted some while before death but the bones had never united probably because the arm had not been properly immobilised and a false joint (pseudarthrosis) had developed between the broken ends of the bones (Plate 21). This would have caused the forearm to have been unstable since it would have bent at that point during movement and the individual would have had to learn a strategy to cope with his flapping arm.

Plate 21 West Tenter Street: Ununited parry fracture with false joint (pseudarthrosis) (1053).

In three cases (931, 1041, 1163) the skeletal evidence suggests that the injuries followed a fall or some other major trauma. In the first case, the first lumbar vertebra was flattened in the antero-posterior plane and the radiograph of the bone suggested that a crush injury had been sustained such as might occur as the result of a fall. The second skeleton (1041) had two fractured left ribs but also had osteophytosis around the first phalanx of the left hand and the distal articulation of the right talus; the most conservative explanation of these changes is that they were secondary to trauma experienced at the same time as the ribs were fractured. Fractured ribs were also a feature in the third case (1163). Here they were accompanied by a fracture of the fibula and by signs of osteoarthritis in the right wrist which could have resulted from trauma. Again, it is reasonable to suppose that all the bony injuries occurred together.

In one skeleton (860) the bodies of the second and third lumbar vertebrae were fused together around their anterior and lateral margins (Plate 22). There was no other spinal pathology and it is most likely that these changes resulted from trauma, such as that which might have followed a fall. The radiographs did not show any certain evidence for a crush fracture.

Two lesions in fragments of bone from 701 were probably also caused by trauma. The first phalanx of the right foot had a proliferative lesion at its distal end and was probably fused to the distal phalanx (which was missing). A rib fragment also had a proliferative lesion which looked like the remnants of the callus which develops around a break.

The skeleton of a young woman (925) had transverse cuts on the second, third and fourth lumbar vertebrae (Plate 23) which looked as though they might have been made by a weapon. There was no

Plate 22 West Tenter Street: Fused second and third lumbar vertebrae (860).

reaction around the cuts and no signs of healing so that they must have been made either shortly before, or after death. If they were the result of an attack, the weapon which made them would have had to be plunged deep into the abdomen and this would have caused severe internal bleeding which would soon have caused the victim's death. One factor which mitigates against the cuts having been made during life, however, is that had they been made by a series of transverse slashes across the abdomen, then the bones of the pelvis would almost certainly have been damaged also, but the pelvis was completely unmarked. Under these circumstances, it seems more likely that the damage was somehow caused after the body had been buried.

Degenerative changes

In this category I have included all the conditions which primarily affect the joints even though the term does not fully take account of all the aetiological factors. The most frequent changes noted were calcification or ossification into tendons or ligaments other than those on the vertebral bodies. I will refer to this as 'extra-spinal' hyperostosis even though I have included some which occurs on the laminae of the vertebrae in order to differentiate from the hyperostosis which occurs in DISH; *vide infra*. Extra-spinal hyperostosis was noted in varying degrees in 17 skeletons. In four further cases (688, 748, 1031, 1110) the hyperostosis was accompanied by changes in the vertebral column which were characteristic of diffuse

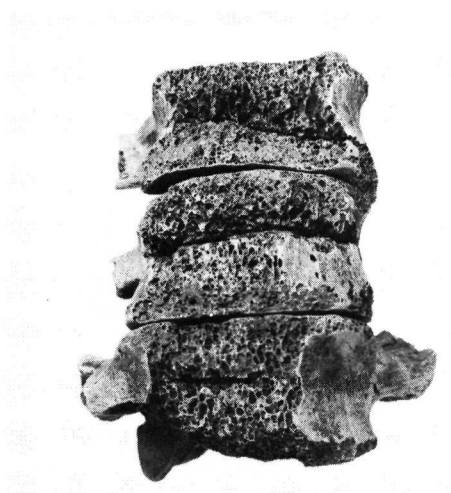

Plate 23 West Tenter Street: Transverse cuts on second, third, and fourth vertebrae (925).

Distribution of extra-spinal hyperostosis in 17 skeletons from West Tenter Street without DISH

| Shoulder | Elbow | CT joint* | Pelvis |
|---|---|---|---|
| 2 | 2 | 2 | 5 |
| Hip | Knee | Ankle | Ligamentum flavum |
| 1 | 2 | 3 | 8 |

*Costo-transverse joint

Fig. 47 West Tenter Street: Extra-spinal hyperostosis no DISH.

idiopathic skeletal hyperostosis (DISH; Resnick, Shaul and Robins 1975). Many of the skeletons had other spinal changes including osteophytosis, osteoarthritis and Schmorl's nodes. There were four cases of generalised osteoarthritis and a single case of periostitis which was probably secondary to an ulcer on the leg.

*Extra-spinal hyperostosis:* The cause of ossification or calcification in tendons or ligaments is not clearly understood. In some cases it may be related to an injury to a specific tendon or ligament but this is unlikely to be the cause of hyperostosis which affects a joint which is relatively well protected from injury (such as the costo-transverse joints) or when the hyperostosis is generalised. Hyperostosis is a feature of several diseases affecting the joints and occurs in its most extreme form in DISH. In all but one of the cases described here, however, the hyperostosis occurred in the absence of any other joint disease. In the single exception (1141), there was also evidence of osteoarthritis in the cervical vertebrae.

The sites of the hyperostosis are shown in Fig. 47. As may be seen, it was most commonly found on the pelvis, including the ischial tuberosities, the iliac crests and around the rims of the obturator foramen. The only large joint which was not affected was the wrist although two of the cases with DISH had extraspinal lesions at this site. The most common site for hyperostosis, however, was on the laminae of the vertebrae. Calcified spicules taking their origin from the superior margin of the laminae were found in almost half the cases. In life, these spicules would have been contained within the ligamentum flavum. They have been reported commonly in other archaeological specimens (see, for example, Waldron 1985).

*DISH:* This is a condition which is becoming increasingly recognised in palaeopathological material and has probably been much misdiagnosed in the past (Rogers, Watt and Dieppe, 1985). The cardinal feature of DISH is calcification

Distribution of extra-spinal hyperostosis in 4 skeletons from West Tenter Street with DISH

| Shoulder | Elbow | Wrist | CT joint | Pelvis |
|---|---|---|---|---|
| 3 | 1 | 2 | 1 | 3 |
| Hip | Knee | *Ligamentum flavum* | | |
| 1 | 2 | 2 | | |

Fig. 48 West Tenter Street: Extra-spinal hyperostosis with DISH.

of the longitudinal ligament of the spine which eventually causes the vertebrae to fuse and extra-spinal hyperostosis. The facet joints are invariably normal and the disc spaces are not narrowed. It is a matter for conjecture as to whether extra-spinal hyperostosis which occurs in the absence of any other joint changes represents an early form of DISH but it is probable that this is so in some cases at least.

All four skeletons affected with DISH (748, 921, 1031, 1110) were males, two were aged at least 40, one at least 35 whilst the skeleton of the fourth case was not sufficiently well preserved to allow an age to be estimated although it was clearly adult. None of the cases was severe which is to be expected given the relatively young age of the skeletons and in only one case (1110) had the vertebrae fused (Plate 24). The sites of extra-spinal hyperostosis are shown in Fig. 48. The pelvis was involved in three of the four cases, the shoulder in three and the wrist and knee in two. These proportions are similar to those found in modern populations with DISH (Resnick, Shaul and Robins 1975). Each of the skeletons also had Schmorl's nodes present and in one (1110), spondylolysis was present. In two of the cases (748 & 1031) there were changes around the right shoulder which may have been caused by osteoarthritis (see Kerr *et al* 1985) Osteoarthritis of the cervical spine and wrist was present in a third case (921). The left facet joints of the second and third cervical vertebrae were fused and there were proliferative changes and eburnation on the third and fourth facet joints.

*Osteoarthritis:* There was one case of particularly severe osteoarthritis (865). Many of the bones of the left wrist were affected whilst on the right side, the capitate (the only one of the right carpal bones to survive) and the metacarpals and one proximal phalanx were also involved. The right patella showed marked eburnation and its posterior surface was deeply scored (Plate 25). The left patella had not survived but the patellar surface of the left femur was eburnated and there were osteophytes around the joint margin. Of the bones of the foot, only the right cuboid had been affected and showed eburnation on the surface which articulated with the lateral cuneiform.

The osteoarthritic changes affecting the right wrist of skeleton 1163 have already been referred to and may have been secondary to trauma to the wrist. Those in the wrist and cervical spine in 921 have also been mentioned above. Osteoarthritis in the cervical spine was also noted in 992 with new

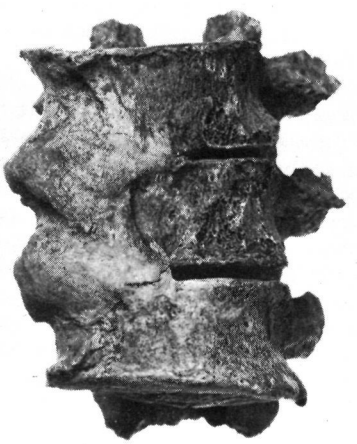

Plate 24 West Tenter Street: DISH: fused vertebrae (1110).

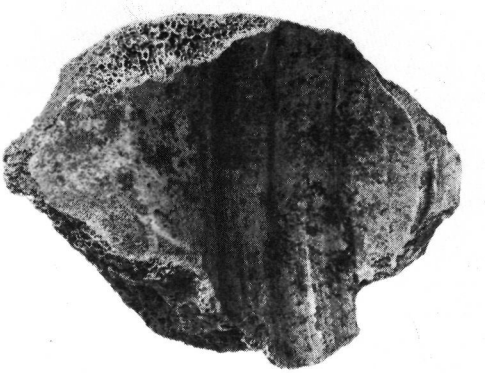

Plate 25 West Tenter Street: Deeply scored posterior surface of right patella (865).

bone growth and eburnation affecting the facet joints of a number of cervical and thoracic vertebrae. Finally, in skeleton 927, both sternal ends of the clavicles showed degenerative changes and there was proliferation around the margins of the sterno-clavicular joint on the right sternum with focal eburnation.

*Spinal pathology:* All the spinal changes present were noted in adults. This is probably a reflection of the better state of survival of the vertebrae in adults than in infants and juveniles rather than an indication that the younger age groups were entirely free of disease. Each of the surviving vertebrae was examined for the presence of Schmorl's nodes, osteophytosis and osteoarthritis. Schmorl's nodes are depressions in the superior or inferior surfaces of the vertebral body which are caused by the herniation of part of the inter-vertebral disc. They are common in the thoracic and lumbar vertebrae and are sometimes considered to be the result of repeated minimal trauma; they apparently cause no ill effects. In the present series 19.3 and 13.2% of the thoracic and lumbar vertebrae respectively had Schmorl's nodes (archive Table 19).

Osteophytes are growths of new bone which develop around the margins of a joint. They may be present in the absence of any other joint changes and since they are found more frequently in older than in younger individuals, they are sometimes considered to be a normal concomitant of ageing. Their presence in the spine is sometimes used to age a skeleton if there is no other means of doing so. Osteophytes were found in all parts of the spinal column but most frequently in the lumbar and least frequently in the cervical vertebrae (archive Table 19). Osteoarthritis can be said to be present only if osteophytes are found in conjunction with other changes such as eburnation, scoring of the joint surface, sclerosis, bone cysts or—in the spine—signs of degenerative disc disease. A small number only of the vertebrae were affected by osteo-arthritis and in this case, the cervical vertebrae were the most commonly affected (see archive Table 19).

Other lesions

The lesions under this head included four cases of osteochondritis dissecans, two of periostitis and one unusual osteophyte.

*Osteochondritis dissecans:* This is a common lesion, but commonly overdiagnosed (Burkett 1982). It results from a defect in the articular cartilage and manifests itself as a small pit in the joint surface beneath which the bony trabeculae can be seen. In the four cases here the lesions affected the proximal articulation of the left and right first phalanges of the foot (767 and 1098 respectively), and the proximal ends of the first right metatarsal and the left third metatarsal (1156 and 1200).

Plate 26 West Tenter Street: Oval lesion on medial surface of tibia, ? reaction to ulcer in the superficial tissue (1052).

*Periostitis:* In one skeleton (1052) the left tibia and fibula had severe periostitis and on the medial surface of the tibia, there was a roughly oval lesion which had probably been caused by the reaction to an ulcer in the superficial tissue (Plate 26, 11). In the second case (1141), there was a much less severe periostitis affecting the distal ends of both tibiae on the lateral surface around the fibular articulation.

*Unusual osteophyte:* A large smooth osteophyte was attached to the head of the right femur of skeleton 1053 (Plate 27). Its cause is completely unexplained.

In inhumation 947 a proliferative lesion was present within and around the posterior border of the right acetabulum. Most of the rest of the pelvis was missing as was the head of the right femur. However, a small part of the surgical neck was

Plate 27 West Tenter Street: Large smooth osteophyte on head of right femur (1053).

present which also had some new bone growth on it (Plate 28). Although it is not possible to be certain about the cause of these lesions, they most likely resulted from alterations in the normal anatomy of the hip joint such as might have followed a fracture of the femoral neck of a slipped femoral epiphysis.

The disarticulated bones

There was little pathology in the disarticulated material and most of what there was was dental disease. Ante-mortem tooth loss occurred in four contexts (94, 228, 708 & 767) and dental caries in two (342, 849). Schmorl's nodes were found in vertebrae from context 342 and there was a right first metatarsal from 912 with a proliferative lesion on the posterior surface of the distal articulation. The joint surface was slightly eburnated, suggesting that the individual had suffered from osteoarthritis. The superior surface of a left talus from 652 was eburnated suggesting that this individual also had had osteoarthritis.

The most interesting example of pathology from amongst this material was a tibia from a fragmentary skeleton from a young woman. The tibia, which lacked its distal third, showed a fusiform swelling on its lateral side which was probably the result of an indolent osteomyelitis.

## DISCUSSION

The bones from West Tenter Street illustrate many of the difficulties which confront the palaeopathologist in his interpretation of disease in the past. Although the material represents a relatively large number of individuals—probably not less than 280—there is a much smaller number of reasonably discrete inhumations for examination. The disturbances which the cemetery had undergone has resulted in the loss of, or damage to the

Plate 28 West Tenter Street: New bone growth on surgical neck of femur, possibly resulting from injury (1053).

bones which has reduced further the information available. Finally, because the cemetery was in use for approximately three centuries, it becomes almost impossible to detect trends in, for example, the frequency of disease, in age at death or height, since when the data are stratified, the numbers in each cell (age/sex) become too small for reliable statistical analysis. This is exemplified when the age and sex of the skeletons is shown for the different phases of the cemetery. When sub-divided in this way, the numbers are too small to permit any trends to be discerned (archive Table 20).

Consequences of disturbance

In order to make the best estimate of age and sex and to classify pathological changes into their most probable cause, it is essential that the skeleton is considered *in toto*; the less complete the skeleton, the less reliable are the conclusions based upon its study. This is particularly true for the classification of the diseases of joints which are probably the most common pathological changes noted in skeletal material (Rogers *et al*, in press). The survival of the various parts of the skeleton in the present series was extremely patchy as may be seen from Fig. 49 in which I have compared the number of bones expected from the 88 adult skeletons with the number which were actually present. As may be seen, no bone was present more frequently than 66% of the expected number. Of all the bones, those which appeared to survive best were the vertebra whereas those which survived least well were the phalanges, carpals and tarsals. I have discussed elsewhere the various factors which may affect the survival of human bone (Waldron, in press) but recovery is clearly one which has to be considered and it may well be worth while to sieve those areas in which the small bones of the hands and feet are likely to be found. Other parts of the skeleton which survive poorly include the sternum, the pubic symphysis and the corocoid and acromion. The poor surivival of the pubic symphysis is particularly unfortunate as it is an important adjunct to ageing the skeleton whilst the poor survival of the small bones of the hands and feet has serious consequences for, amongst other things, the classification of spinal abnormalities. Many changes in the spine are part of a generalised arthropathy—ankylosing spondylytis, Reiter's syndrome or DISH, for example—and the pattern of change in the small joints of the hands and feet may be crucial for its classification.

Demographic considerations

*Age and sex:* It is commonly observed that expectation of life in the past was considerably less than it is today and the West Tenter Street skeletons appear to bear this out although it must be remembered that a cemetery population is not necessarily representative of the living population and it is most certainly not a random sample. Nevertheless, the age distribution found here is similar to that found in the Romano-British cemetery at York by Warwick (1968) and at Lankhills (Clarke 1979), although the somewhat curious method used to tabulate the ages at the latter site makes comparison more difficult than it need be. At Cirencester, on the other hand, the mean age at death of the males seems to be greater than that of the females (Wells 1982) although this is probably a chance finding.

The number of juveniles in the present series is 21.4% which is similar to that found at Cirencester (17.1%), at Lankhills (29.2%) and at the very much smaller site at St Bartholomew's Hospital where the proportion was 22.2% (Bentley and Pritchard 1982). By contrast, only 8.3% of the Trentholme Drive (York) skeletons were juvenile; see Fig. 50. Whether these differences truly reflect differences in burial practice, patterns of mortality or skeletal survival is impossible to say.

Recovered bones as a percentage of number expected from 88 adults

| | % | | % |
|---|---|---|---|
| Phalanges (of foot) | 5.4 | Carpals | 16.8 |
| Body of scapula | 14.8 | Proximal fibula | 19.4 |
| Phalanges (of hand) | 22.1 | Body of sternum | 22.7 |
| Manubrium sterni | 23.9 | Patella | 26.7 |
| Pubic symphysis | 29.0 | Tarsals | 30.4 |
| Distal fibula | 32.4 | Parietal | 33.0 |
| Coracoid | 35.3 | Distal ulna | 40.9 |
| Occipital | 41.5 | Acromion | 41.5 |
| Frontal | 42.1 | Zygoma | 42.2 |
| Metatarsals | 42.9 | Proximal clavicle | 43.8 |
| Distal clavicle | 45.5 | Proximal tibia | 46.0 |
| Calcaneum | 46.6 | Talus | 47.7 |
| Occipital condyle | 47.8 | Distal tibia | 49.6 |
| Proximal humerus | 50.0 | Metacarpals | 50.2 |
| Distal radius | 50.6 | Mandibular head | 51.2 |
| Distal femur | 51.2 | Glenoid | 52.9 |
| Proximal radius | 54.0 | Distal humerus | 56.9 |
| Mastoid | 58.0 | Proximal femur | 58.6 |
| Mandibular ramus | 59.1 | Acetabulum | 60.8 |
| Proximal ulna | 62.0 | Petrous temporal | 63.6 |
| Mandibular body | 64.2 | Sciatic notch | 66.0 |

Fig. 49 West Tenter Street: Percentage of recovered bones.

Age distribution (%) of skeletons from different Romano-British sites

| | Infants | Juveniles | Adults | n |
|---|---|---|---|---|
| Cirencester | 9.4 | 7.7 | 82.8 | 362 |
| Lankhills | 13.0 | 16.2 | 70.8 | 284 |
| St. Bartholomew's Hospital | 11.1 | 11.1 | 72.2 | 18 |
| Trentholme Drive | 1.7 | 6.6 | 91.7 | 290 |
| West Tenter St | 6.3 | 15.2 | 78.6 | 112 |

Fig. 50 West Tenter Street: Age from Romano-British sites.

The sex distribution of the skeletons at West Tenter Street, as at most other large Romano-British sites is heavily biased towards males (2.2:1; see Fig. 51). As Wells says in his Cirencester report (Wells 1982, 135), this is more likely to be a cultural rather than a biological phenomenon.

On the heights of the Romano-British population, there seems to be almost complete unanimity. In the present series, the mean height of the males was 1.71m and of the females, 1.57m. At Circencester the means were 1.69m and 1.58m respectively whilst at York they were 1.71m and 1.55m. At Poundbury the mean height for males was 1.69m and for females 1.57m (Thould and Thould 1983). These heights are almost the same as those of the modern British population.

*Non-metric traits:* Non-metric traits in the skeleton are commonly considered to be genetic (or epigenetic) in origin and are sometimes used to try to determine kinship amongst groups of skeletons (see Scarre 1984, for example). Amongst the West Tenter Street skeletons the most common non-metric characteristics was the presence of a double, rather than a single, facet on the inferior talar articulation and on the corresponding articulation on the calcaneum (archive Table 8). It seems reasonable to suppose that the development of joints is genetically, rather than environmentally determined, and the relative frequency of this trait may indicate a considerable degree of closeness in the relationship of the skeletons recovered from the site, but it would be impossible to be certain about this.

This particular non-metric trait does not appear to have been commented on in previous reports from large Romano-British sites so that we cannot compare its frequency with that elsewhere. Metopism, that is, the survival of a sagital suture in the frontal bone, has been observed both at Cirencester and at York where its prevalence was 8.2% and *c.* 5% respectively. At West Tenter Street metopism was present in 8 of the 48 skulls in which it was possible to make the observation, a prevalence of 16.7%. It would be curious if the prevalence of this trait were twice as great at West Tenter Street as at other Romano-British sites and it is more likely that the rate is artificially high because of the poor survival of the skull.

*Dental health:* Almost a quarter of the adults at West Tenter Street (21 out of 88) had dental caries and overall, 3.1% of all the permanent teeth were caried, a rate similar to that reported from Cirencester (5.1%) and from Trentholme Drive (4.6%; Cooke and Rowbotham 1968). At the St Bartholomew's Hospital Site, 4 of the 18 skeletons (22.2%) had caries and caries was found in the deciduous teeth of one of the juveniles. None of the deciduous teeth from West Tenter Street was caried.

*Pathology:* The most interesting and frequent pathology identified in these skeletons was that caused by the different degenerative diseases. Of these, the occurrence of DISH is perhaps the most notable.

Diffuse idiopathic skeletal hyperostosis is a relatively common disease occurring in about 3–4% of modern males and about 2–3% of females. The prevalence of the condition increases considerably with age and it is not seen in patients under about the age of 40. Although it is a disease of very great antiquity (Rogers *et al* 1985), descriptions of it have only recently begun to appear in the palaeopathological literature largely due to the work of Rogers and her colleagues (Rogers *et al* 1981). In the skeletons from West Tenter Street, DISH was present in 4 of the 88 adults, a rate of 4.5% which compares extremely well with the prevalence of 5% found by the Thoulds (1983) in their examination of 416 skeletons from Poundbury Camp.

*DISH* is not mentioned in the other reports on large Romano-British cemeteries, however. Wells in his report of the Cirencester skeletons does not recognise a single case but does go into considerable detail about osteo-arthritis, relating much of it either to occupational tasks or to the style of life. Osteoarthritis, he writes (Wells 1982, 152), 'reflects, above all, what may be called the "wear and tear" of joints as a result of minor strains and stresses inseparable from a normally vigorous and physically active life. It is the most useful of all diseases for reconstructing the life style of early populations. Its anatomical localization reflects very closely their occupation and activities . . .'. This concept of osteoarthritis as a 'wear and tear' condition has been called into question by some modern rheumatologists (Huskisson *et al* 1979) and it is doubtful that the notion of a simple relationship to physical activity would gain much support nowadays.

One of the skeletons from St Bartholomew's Hospital (Bentley and Pritchard 1985, 155) was reported to have 'advanced osteoarthritis in the lower spinal column, the hip joints and both wrists' (p. 155). DISH is not mentioned and it would be of interest to have a more detailed description of that skeleton in order to characterise the lesions more closely. Warwick, in his York report, refers to rheumatoid arthritis, although the changes described are not consistent with that diagnosis, but not to DISH although the pair of fused vertebrae in Plate XXVIc could well be such a case. It is possible that some cases of DISH were mistakenly diagnosed as ankylosing spondylitis, as has probably happened frequently in the past (Rogers *et al* 1985).

In view of the fact that DISH is almost never diagnosed in living patients before the age of 40, it is of interest that the three cases in the present series to which an age could be given were all relatively young; one at least was probably under 40 and the other two were almost certainly not much older. It is more likely that the disease begins at an earlier age than present clinical experience would indicate than that the natural history of DISH has changed since Roman times. DISH is frequently asymptomatic and the condition may be found incidentally when radiographs are taken for other purposes. When it does produce stiffness or pain the changes are often severe. Thus in modern clinical practice, the early changes of DISH are not noted, either because the patient has no complaints until the condition is in a relatively late stage or because minor changes are not observed on radiographs. The palaeopathologist is in the privileged position of being able to observe change in the skeleton at whatever stage the disease happens to be at the time of death. In this way he may be able greatly to add to the knowledge of the natural history of some diseases which affect the skeleton and this is probably the case in DISH. This may be yet another example of the truth of the motto which used to adorn the entrance to many autopsy rooms, *Mortui viventes docent*; the dead teach the living.

## PART 2: THE CREMATIONS

Twenty seven discrete groups of cremated bone were recognised at West Tenter Street. Each of the cremations was examined in order to determine which parts of the skeleton were represented and, where possible, positively to identify individual bones. The weights of each of the separate anatomical groups of fragments (skull, pelvis, long bone, for example) were recorded together with the total weight of the unidentified fragments.

### GENERAL CONDITION OF THE CREMATIONS

The majority of the cremations were fragmentary, as may be judged from the weights and number of attributable fragments (archive Appendix 4). In virtually every case the bones were white in colour, only lightly charred and not very distorted, suggesting that the bodies had not been subjected to very great heat during the cremation.

Animal bone: Six of the cremations contained animal bone or shell. Sheep bones were found in four contexts (255, 901, 1002, 1092), a pig molar in one (1092). None of the animal bones was burnt and it seems most likely that their presence is an indication that the site had been disturbed.

### AGE AND SEX

Age and sex were determined as described in part I. Because of the fragmentary state of most of the cremations, it was possible to make a positive assessment of age in only two cases and in only one case for sex (Fig. 51). Cremation 1002 contained the largest number of identifiable bones, many of which were unfused. From the pattern of epiphyseal fusion it was evident that this individual could have been no more than 16 years at death but there were no parts of the skeleton present which could be used for sexing. The second cremation which could be aged (255), contained a relatively large number of identified fragments including some from the cranium. From the degree of closure of the cranial sutures the age was estimated to be at least 35. There is a considerable amount of variation in the age at which the cranial sutures close, however, and the confidence which can be placed in this estimate is much less than for the previous case. There was no indication of the sex of this individual.

Cremation 1088 contained only thirty identifiable fragments but amongst them was a reason-

Sex distribution (%) of skeletons from different Romano-British sites

| | Male | Female | Unknown | n |
|---|---|---|---|---|
| Cirencester | 57.2 | 25.7 | 17.1 | 362 |
| Lankhills | 42.5 | 30.0 | 27.5 | 200 |
| Trentholme Drive | 80.0 | 18.0 | 2.0 | 290 |
| West Tenter St | 50.9 | 23.2 | 25.9 | 112 |

Fig. 51 West Tenter Street: Sex from Romano-British sites.

ably intact sciatic notch which had the wide angle which is more characteristic of female than of male skeletons. This was the only feature on which to make an assessment of sex. It was not possible to assign an age to the individual beyond saying that she was an adult.

Of the remaining cremations, nine had clearly come from adults. This assertion is based either on the fact that identifiable bones were fused or of such a size that they were obviously fully grown. In the final fifteen cases, both sex and age remain unknown.

### PATHOLOGY

Traces of pathological change were noted in only two contexts. The unburned mandible in 696 had lost a single tooth (the right lower second molar) before death most likely as the result of dental disease. There was no sign of caries in the remaining teeth, however. Two thoracic vertebrae from 442 had Schmorl's nodes and, in addition, one had slight osteophytosis.

## PART 3: LEAD LEVELS IN BONES FROM WEST TENTER STREET

Bone samples were taken from 53 adults from the West Tenter Street site for lead analysis. Two (628 & 967) were from lead coffins and will be considered separately. The samples (all ribs) were dried to constant weight, taken up into weak hydrochloric acid and analysed by atomic absorption spectrophotometry; the results are expressed as micrograms of lead/gram dry weight.

The results were all within the range 29–271 μg/g and, as can be seen in Fig. 54, the levels were not normally distributed; there is a considerable tail to the right and some suggestion for a bimodal distribution. Since the sample is in no sense random, the lack of a normal distribution is not surprising. What is more surprising, however, is that there is no difference between male and female levels (Fig. 52) since, in general, men have higher body burdens of lead than females. In the West Tenter Street bones, the mean lead level in the females (124.1 μg/g) is slightly *higher* than that in the males (107.8 μg/g); this difference is not statistically significant, however, ($t = -0.91$, $p > 0.05$) and the most likely explanation for this result lies in the small number of females (12) in the sample.

There is a weak trend for increasing levels with increasing age which becomes slightly more evident when the results for both sexes are combined (Fig. 53). The fall in lead levels in the oldest group is not an anomaly since both lead levels—in modern populations, at least—decline in later life as the bones begin to become osteoporotic. The differences which are seen, however, are not statistically significant ($F = 0.94$, $p > 0.05$). Again, this is partly a reflection of the small numbers in each cell but also because the methods of ageing skeletons are not precise and there is bound to be a considerable error in the assignment of age. This would tend to minimise any apparent age dif-

Lead levels (micrograms/gram dry weight) in bones from West Tenter Street

| | Age (years) | | | | |
|---|---|---|---|---|---|
| | 15− | 25− | 35− | 45+ | Unknown |
| *Male* | | | | | |
| Mean | 75.0 | 115.3 | 111.4 | 105.7 | 118.5 |
| Standard deviation | 33.1 | 61.1 | 59.8 | 44.9 | 67.2 |
| Number | 5 | 16 | 10 | 6 | 2 |
| *Female* | | | | | |
| Mean | 99.5 | 110.5 | 141.3 | | |
| Standard deviation | 0.7 | 61.4 | 56.2 | | |
| Number | 2 | 4 | 6 | | |

| *Total* | | |
|---|---|---|
| | Male | Female |
| Mean | 107.8 | 124.1 |
| Standard deviation | 54.7 | 53.0 |
| Number | 39 | 12 |

Fig. 52 West Tenter Street: Lead levels.

Lead levels (micrograms/gram dry weight) in bones from West Tenter Street by age (both sexes combined)

| | Age | | | |
|---|---|---|---|---|
| | 15− | 25− | 35− | 45+ |
| Mean | 82.1 | 114.3 | 122.6 | 105.7 |
| Standard deviation | 29.5 | 59.5 | 58.9 | 44.9 |
| Number | 7 | 20 | 16 | 6 |

Fig. 53 West Tenter Street: Lead levels by age.

ferences in lead levels and the 'true' difference is likely to be greater than that shown in Fig. 53.

## LEAD COFFINS

The lead levels in the bones from the two lead coffins (628, 967) were 11,848 and 11,752 µg/g, respectively which are so great that the only plausible explanation is that the bones have become contaminated with lead from their surroundings. This post-mortem accumulation of lead is perfectly in accord with my experience elsewhere (Waldron 1983). In both cases, bones were available from two coffins in the vicinity; specimens 406 and 541 adjacent to 628 and 972 and 1,000 adjacent to 967. None of these results was unusual (100 & 90; 189 & 54 µg/g, respectively) which suggest that the lead from the coffins did not leach out for a great distance into the surrounding area.

## COMMENT

Bone lead levels in the modern adult population is between 40 and 60 µg/g, approximately half those found at West Tenter Street. Levels in pre-metal working populations are considerably lower (Rogers & Waldron 1985).

Can we infer, therefore, that the population represented at West Tenter Street was more heavily exposed to lead than modern man? The answer is almost certainly, yes, although we cannot be precise as to the extent to which this was the case since we do not know the contribution made to the bone lead concentrations from lead in the soil; this can be very great at times (Waldron 1983). However, the concentrations found at West Tenter Street are similar to those found in a larger sample taken from the Romano-British cemetery at Poundbury; the mean at Poundbury is about 105 µg/g and the contribution from the soil represents only about 9% of the total (Waldron, unpublished results). This is good confirmatory evidence that the levels at West Tenter Street are a reasonable approximation of the true levels and adds weight to the notion that the way of life followed by the Romano-Britains was conducive to a greater exposure to lead than is the case today.

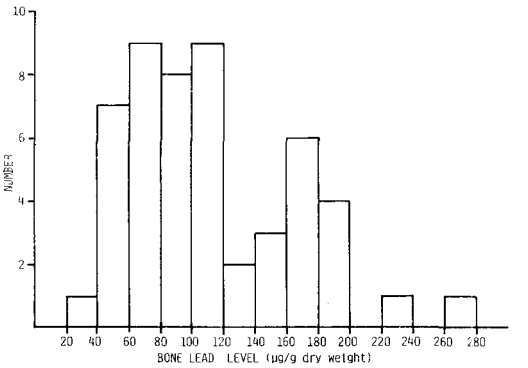


Fig. 54 West Tenter Street: Distribution of lead levels (Histogram) (micrograms/gram dry weight) in bones from West Tenter Street.

# THE ANIMAL BONE
## by TONY WALDRON

None of the non-equine animal bone found amongst the human material was of great intrinsic interest except for a right mandible from a dog which had an oblique cut mark on the internal surface towards the distal end (Plate 29). This cut is probably the result of dismemberment rather than skinning and suggests that the dog may have been eaten in the past and Harcourt (1974) refers to several dog bones with defleshing cuts in his own collection.

## THE HORSES

There was evidence for two horses at West Tenter Street, an almost complete skeleton (1044) and a single metacarpal (from context 1046). The skeleton was in a good state of preservation but entirely lacked the skull and cervical vertebrae which were removed by the cutting of grave 864. The absence of the teeth is particularly unfortunate since it is from the teeth that the best estimate of age is made.

## SKELETAL ELEMENTS

The elements of the skeleton which were present are shown in archive Table 1 and the measurements taken from the bones are given in archive Table 2. There were no skinning or butchery cuts on any of the bones and none had been gnawed.

AGE AND SEX

Without the teeth the age of the horse cannot accurately be estimated. It was certainly adult, however, since all the epiphyses had fused and as both the small metacarpals were extensively fused to the shaft of the large metacarpals, it must have been well into its maturity (Sisson and Grossman 1955). The single metacarpal from 1046 was also fused so the animal from which this bone came was also an adult. The small metacarpals had not fused to the shaft of the main bone, however, so that it was probably younger than the more complete horse.

The pelvis of the horse was rather intermediate in shape between that of the male and female and may, therefore, have been a gelding, castrated before the sexual differences in the pelvis had been established.

Withers height

The height of the horses was calculated from the formulae given by Boessneck (1970). For 1044, an estimate of height could be made from the right metacarpal and both metatarsals. The results were 148.1, 143.4 and 144.0cm respectively (14.6, 14.1 and 14.2 hands); the height of 1046 was estimated as 145.5cm (14.3 hands). These horses, therefore, were on the large side for Romano-British horses and certainly much larger than the pre-Roman Iron Age ponies for which a height of about 124–132cm (12–13 hands) was common. Luff (1982) in her account of Romano-British horses comments on the increase in their size and speculates as to whether this was caused by gelding, by better breeding or by imports. In the case of 1044, it seems most likely that this was a gelding, especially given the intermediate shape of the pelvis.

Slenderness index

Bökönyi's (1968) slenderness index, defined as minimum shaft width/total length × 100 was calculated for both complete metacarpals. For 1044 the result was 14.3 and for the single metacarpal, 13.6, suggesting that both horses were stocky in build.

Plate 29 West Tenter Street: Dog's right mandible, oblique cut mark on internal surface arrowed, possibly as a result of dismemberment for eating.

Comment

Although the remains of these two horses are far from complete, we can, nevertheless, gain some information from them. They were both stocky animals standing substantially taller than their Iron Age predecessors and that the more complete skeleton may well have come from a gelding.

Unfortunately there is no knowing to what use the horses were put during their life but there is certainly no evidence to suggest that they were used after death. There were no butchery marks and no skinning cuts on the skeleton so that we may assume that they had been neither eaten nor skinned.

THE DOMESTIC FOWLS

There were two skeletons of domestic fowls which had obviously been buried intact at West Tenter Street although they were by no means complete when recovered. Both were examined and compared with type specimens in the collection of the Extra-Mural Department of the University of London. The bones which were present are listed in the table (in archive).

Some of the bones had unfused epiphyses indicating that the birds were both juvenile although they were not of the same age, 1051 being at an earlier stage of development than 1140. Neither bird had developed a spur scar on the tarso-metatarsus (West 1985).

The more mature of the two birds (1140) was smaller in size than a modern bantam hen whereas the younger was intermediate in size between a bantam hen and a bantam cock. This bird may thus have been a young cockerel or a hen bird from a large breed.

There were no signs of butchery on any of the bones which supports the view that the birds had been buried whole, almost certainly as part of a ritual.

## IV. CONCLUSIONS

The excavation at West Tenter Street has provided the largest group of Roman burials to be recorded from the vicinity of Roman London. The 13 distinctive cremation burials and 120 inhumation burials probably represent a significantly larger usage of the site. Clear evidence was found for the recutting and re-use of some inhumation burials and seven cremation urns had obviously been disturbed and discarded in dumped material. In addition cremated and uncremated human bone was found scattered throughout the area.

The nature of the site, a long narrow strip running at an acute angle to a probable Roman road, has provided a sample trench which indicates the possible layout of the cemetery and the distribution of burials within it. The substantial tombs at the east end of the site are likely to have been built by a roadside, and burials grouped around them. Whilst post-medieval disturbance may have distorted the picture, it appears that the burials may have been quite widely spaced behind the tombs, their density increasing some distance from the road.

The frequency and grouping of the burials may have been affected by social factors such as family plots, burial club plots, or religious groupings. The only distinctive evidence for such practices was the close grouping of plaster burials in the western part of the site. The apparent dip in the ground which would have been left in the area of the central gravel pit in what was otherwise probably a fairly flat and even landscape may have influenced the choice of burial there. It is possible that gardens may have been planted and enclosed specific parts of the cemetery although no trace of such was discovered.

In the absence of inscriptions we cannot be certain of the origins or occupations of the inhabitants of the graves. They can be said to have been living in Londinium when they died but that does not necessarily mean that they were native inhabitants of the town which must have had a sizeable transient population. A wide range of occupations would have been followed by the town's populace and a likely mix of merchants, soldiers, and government officials with their families and an attendant population of craftsmen and servants, freedmen and slaves [see *eg* Merrifield 1983], drawn from throughout

the Roman Empire, might be expected to have been buried in the cemeteries.

No burial goods indicative of an occupation were found, nor was there pathological evidence from the skeletal material for any distinctive occupational injuries. The single case of a 'parry' fracture could have been sustained by a soldier, however the damaged limb had not been properly set and the injured person had evidently not received the medical attention which would have probably been available to a professional Roman soldier.

The paucity of evidence for traumatic injury, and the nature of the injuries that were noted, are indicative of a civilian population. The apparently high levels of lead in the bones could be taken to indicate an urban population taking its water from lead water pipes, although the preparation of food and drink in lead lined vessels, or its consumption from pewter vessels may have been a contributory factor as well.

The incidence of caries and the few cases of DISH noted here may point to a population that ate well, DISH being possibly a sign of obesity [Waldron 1985], certainly no signs of malnutrition were found. This might be some indication, therefore, of city dwellers living in a certain degree of comfort. This interpretation is in contrast to that of the Roman population of Cirencester who were considered hard-working on the apparently uncertain basis of the incidence of osteoarthritis there [Wells 1982, 152].

The close parallels that can be drawn with the pathological evidence from the other published urban Roman cemeteries would again suggest that a 'typical' urban population is represented at West Tenter Street. The age ranges at death, height of the population, and the greater numbers of men than women are remarkably similar from all these sites.

The burial practices encountered at West Tenter Street are also well paralleled elsewhere and seem to have been common to Romano-British cemeteries with little sign of regional variations. The wood coffins constructed with lead strip reinforcing appear to be unique to London, but this is probably indicative of the work of a particular craftsman or workshop rather than a burial rite.

The small proportion of burials furnished with ceramic or glass vessels, or other grave goods, suggests that this practice was "the exception rather than the rule" [Evans and Pierpoint 1986, 206]. However of those burials so furnished it has been possible to detect patterns in the deposition of vessels and to suggest that larger vessels in a limited range of forms may have been selected either to contain cremated bone or to accompany adult inhumation burials. This practice was followed in the 2nd century but cremation ceased by the mid 3rd century and no adults were accompanied by ceramic vessels in the 4th century. A few child burials were furnished with miniature vessels, and this practice continued into the 4th century. Jewelry also appears to have been considered appropriate for child burials.

The 'richest' burial, in terms of the largest number of burial goods of intrinsic interest, was a cremation. The group, consisting of a rare circular box mirror decorated with a head of Nero, a rectangular mirror, a pendant coin of Nero, yellow glass ring, and small glass jar, are particularly interesting as evidence of heirlooms, or items some of which had long been held of value, being deposited in a Verulamium White Ware jar at least 60 years after their likely date of manufacture. The iron signet ring, also found accompanying a cremation, was an unusual find from a cemetery.

The small number of burials accompanied by distinctive dating evi-

dence in a primary context has inevitably caused difficulties in dating and phasing the cemetery area. The greatest reliance has been placed on the dating of the ceramic vessels which contained or accompanied the burials and this must be qualified by the assumption that the vessels themselves were not long-lived before they were used, and that the accepted dating for them may change. On the strength of this evidence alone it can be suggested that cremation burial on the West Tenter Street site commenced in the 2nd century and finished by the mid 3rd century. Inhumation burial started in the 2nd century and continued into the 4th century. Secondary coin evidence points to inhumation burial being practiced after 340, and the area was probably at least being visited, if not used for burial, at the end of the 4th century.

The frequency of burial during any one period is not easy to quantify and various assumptions have had to be made to suggest a phasing of the site. The presence of a preponderance of 2nd-century pottery sherds in many grave fills may be coincidental but means that many of these graves can only be dated to the 2nd century or later and it is quite likely that the number of 3rd-century burials has been underestimated. The predominance of cremation urns and inhumation burials dated by grave goods to the 2nd and early 3rd centuries, and the number of graves so dated by stratigraphic evidence, may however suggest a greater use of this area of the cemetery in that period than in later periods.

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The full site archive is held at the Museum of London, site code WTN 84, the human remains have been reburied in the East London Cemetery.

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