IV CERAMIC BUILDING MATERIALS

1. TIN-GLAZED TILES (Fig. 132) with contributions by B. Williams

2933 CC, unstrat. Tile in *cuenca* technique with areas of white and pale blue tin glaze, and brown, yellow and copper-green lead glaze between raised borders. Fine soft buff fabric without gross inclusions. Probably Sevillan, early 16th-century. Mr. B. Williams comments,

'This is at present unparalleled in Britain, nor has a parallel yet been found in Spain.' *Thin-sectioned*, results forthcoming in Mr. Williams' survey.

2934 Exeter Museum, not acc. From Exeter. Sherd of a tin-glazed tile in *cuenca* technique, fabric as **2933**, glazed mauve, yellow, blue, white and green. Reconstruction based on a complete example from Haccombe church, Devon. Mr. Williams comments,

'This belongs to my type 7 from the Lord Mayor's Chapel, Bristol; the tiles there were laid after 1521 and probably before *c.* 1537.' *Thin-sectioned*, results forthcoming in Mr. Williams' survey.

2935–40 are Dutch tin-glazed tiles of the late 16th and early 17th centuries, with cream or buff fabrics; they are *c.* 16–17 mm thick and have nail-holes at their corners.

2935 HS, unstrat. and MY 1011. Tiles of the same design painted in dark blue and green; cf. de Jonge 1971, Fig. 5a, probably late 16th-century.

2936 CC, unstrat. Painted in yellow, red-brown and blue. Probably late 16th-century.

2937–40 Exeter Museum, not acc. From St Nicholas Priory. **2937** painted in dark blue, green and yellow, probably late 16th-century. **2938** painted in dark blue, turquoise green and orange; cf. *ibid.*, Pl. 6b, probably late 16th-century. **2939** painted in light and dark blue and yellow; cf. *ibid.*, Pls. 11–13, *c.* 1600–50. **2940** painted in green, orange-red, blue and mauve; cf. Korf 1973, 69, Fig. 76, *c.* 1600–50.

2941–2 Exeter Museum, not acc. From St Nicholas Priory. Tiles with quarries like those of **2935–40**, painted in light and dark blues. Probably Dutch, 17th-century. Further fragment as **2941** from GS 15.

2943 St Nicholas Priory. Thin tin-glazed tile fragment. Usual fabric. Possibly Dutch, late 17th- or early 18th-century.

2. ROOF FURNITURE (Figs. 133–4)

2944 Exeter Museum Antiquity No. 6232. Found below the tower of the Roman Catholic church in South Street in 1883. Zoomorphic roof-fitting. Hard grey fabric with sand filler and sparse black mica plates (?fabric 105). Thin patchy slip, orange-brown glaze. Wheel-thrown body with applied head and legs. A circular hole in the underside of the body, to aid the passage of air to the *int* of the vessel during firing, demonstrates that this is not an aquamanile, as first reported (D'Urban 1883, 315; G.T. 1883, 52).

Two further examples of zoomorphic or anthropomorphic crest-tiles are known at Exeter. A document of 1394–5 lists a crest-tile carrying the figure of St Paul amongst the building materials of 229 High Street (Erskine and Portman 1960, 146) and the 17th-century Chevalier Inn in Fore Street displayed until 1941 a horse-and-rider finial (Portman 1966, Pl. 30) of the type described by Dunning (1974).

2945 RS 211 and other layers, associated with Saintonge polychrome sherds of *c.* 1300. Sherds of a louver. Soft red fabric with stone inclusions, thin green glaze.

2946 TS 316, L.23, with mixed 14th- to 16th-century finds. Bodysherd of a louver with half of each adjacent baffle. Hand-made fabric 105 with thin slip and shallow incised lines.

2947 GS, unstrat. Fragment of an oven tile. Fine light grey fabric without gross inclusions, stabbed underside, green-glazed top. Fabric and glaze are very similar to South Somerset pottery of the 16th and 17th centuries.

2948 NS 1501, associated with pottery **2269–2358**, shortly after *c.* 1680. Flat peg-tile 13 mm thick. Fine red fabric, unglazed. These tiles are very rare at Exeter; two examples from this context are the only ones from the excavations. Not local.

2949 GS, unstrat. Fabric 84 with moulded crests and thick green glaze. Probably 14th- or 15th-century.

2950 FG 9, Dissolution deposit, *c.* 1538–50. Micaceous fabric 81 with brushed slip lines and patchy green-black glaze. Moulded crest. From a building constructed *c.* 1300 and demolished *c.* 1538.

2951 GS 228, L.7, associated with pottery **2729–83**, *c.* 1500–50. Fabric 83 with iron-stained green glaze. Knife-cut crests. Late medieval.

2952 EB 564. 15th-century. Fabric 84.

2953 FG 9, as **2950**, *c.* 1538–50. ?Fabric 82. Brushed slip lines, patchy mid green glaze; *c.* 1300–1538.

2954 EB 564, as **2952**, 15th-century. Fabric 83.

2955 TS 316, L.4, associated with pottery **2100–73**, *c.* 1660. Fabric 81 with incised lines, thin brushed slip and no glaze.

2956 GS 108, associated with clay pipes of type L1, *c.* 1690–1720. North Devon gravel-tempered ware with usual glaze covering top two-thirds of tile.

2957 From the roof ridge of 42–4 Magdalen Street, built in 1659. Fine unglazed red earthenware with incised wavy line. Mortar adhering to underside.

2958 Provenance and fabric as **2957**. Green glaze over most of surfaces.

2959 CC, unstrat. Applied cresting strip, separated from rest of tile, exposing pairs of pinch-marks along the top of the lower tile fragment, to which applied strip has been added. Fabric 80, green-glazed, 16th- or early 17th-century.

2960–3 GS, unstrat. Fine red earthenware, orange-brown and orange-green glazes. Possibly South Somerset, post-medieval.

2964 TS 316, L.1, associated with pottery **2100–73**, *c.* 1660. Fabric 80, patchy dull green glaze.

2965 TS 316, L.23, possibly 15th-century. Fabric 83 with inclusions on *int* surface. Moulded crests, thin patchy glaze.

2966 FG 9, Dissolution deposit, *c.* 1538–50. Fabric 83, with scored lines and traces of green glaze.

2967 GS, unstrat. Fabric and glaze as **2960–3**.

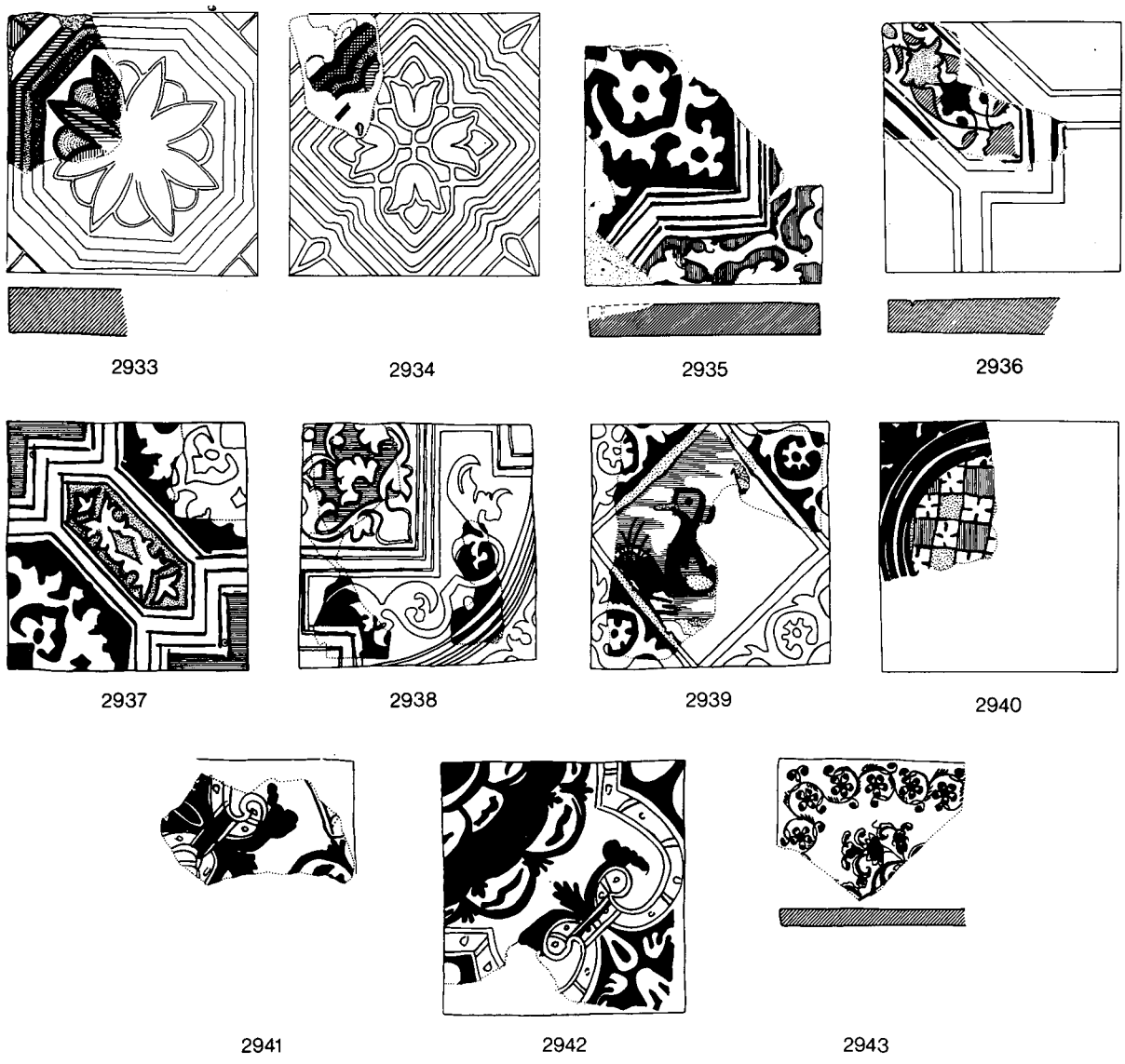


Fig. 132. Tin-glazed tiles (scale 1:4).

Discussion

There are no crest tile or other roof tile fragments among the deposits of slate of 12th- and early 13th-century date, and the earliest stratified crest fragments are present in deposits dating after *c.* 1250. The earliest sizeable groups belong to the 15th century, which already include those with low moulded crests (**2952**, **2954**); two similar fabrics (82, 83) are characteristic of these groups, but they also include a few micaceous wares. The much larger series of early 16th-century groups, including many finds from Dissolution contexts, contains examples of a new fabric containing calcareous inclusions (80) and this is the most common early post-medieval ware, normally with broad crests (**2964**). From the late 17th- and early 18th-century groups come a variety of plain red earthenware tiles (**2960–3**, **2967**), which may be of South Somerset manufacture; North Devon gravel-tempered tiles (**2956**) are much less common. All the complete post-medieval examples from the excavations are *c.* 440–80 mm long (**2956–8**, **2964**).

3. BRICKS (Fig. 135)

Bricks were apparently imported into Exeter as early as 1478, when 1000 *bryke* arrived in the port with 2000 paving tiles and other goods of probable Low Countries origin (TCA). The earliest examples from the excavations have come from two sites in contexts firmly attributable to the first half of the 16th century (QS 8–15; LL 69, 76) and a further example was recovered from a pit of the second half of the century (QS 1). Such

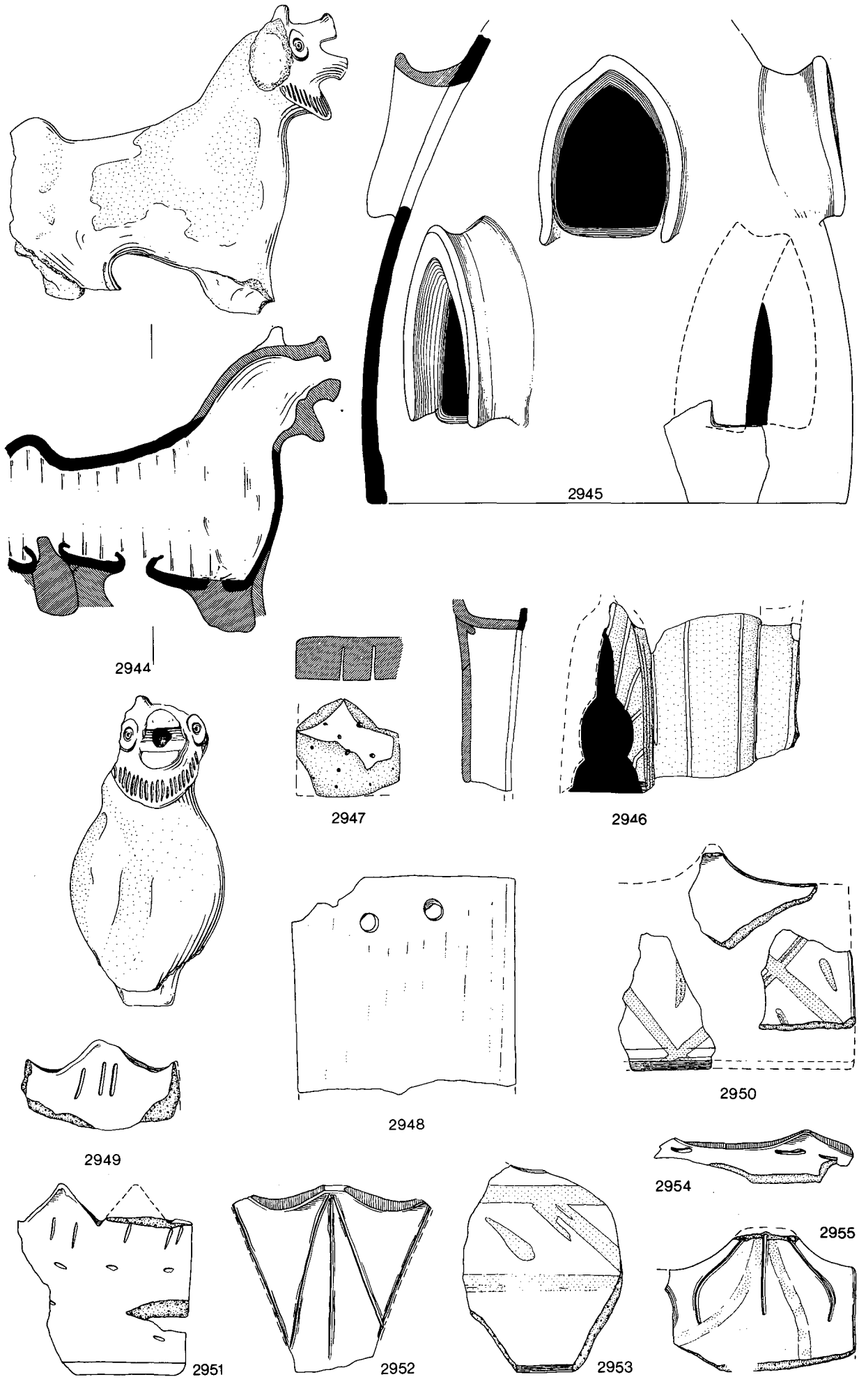


Fig. 133. Roof furniture (scale 1:4).

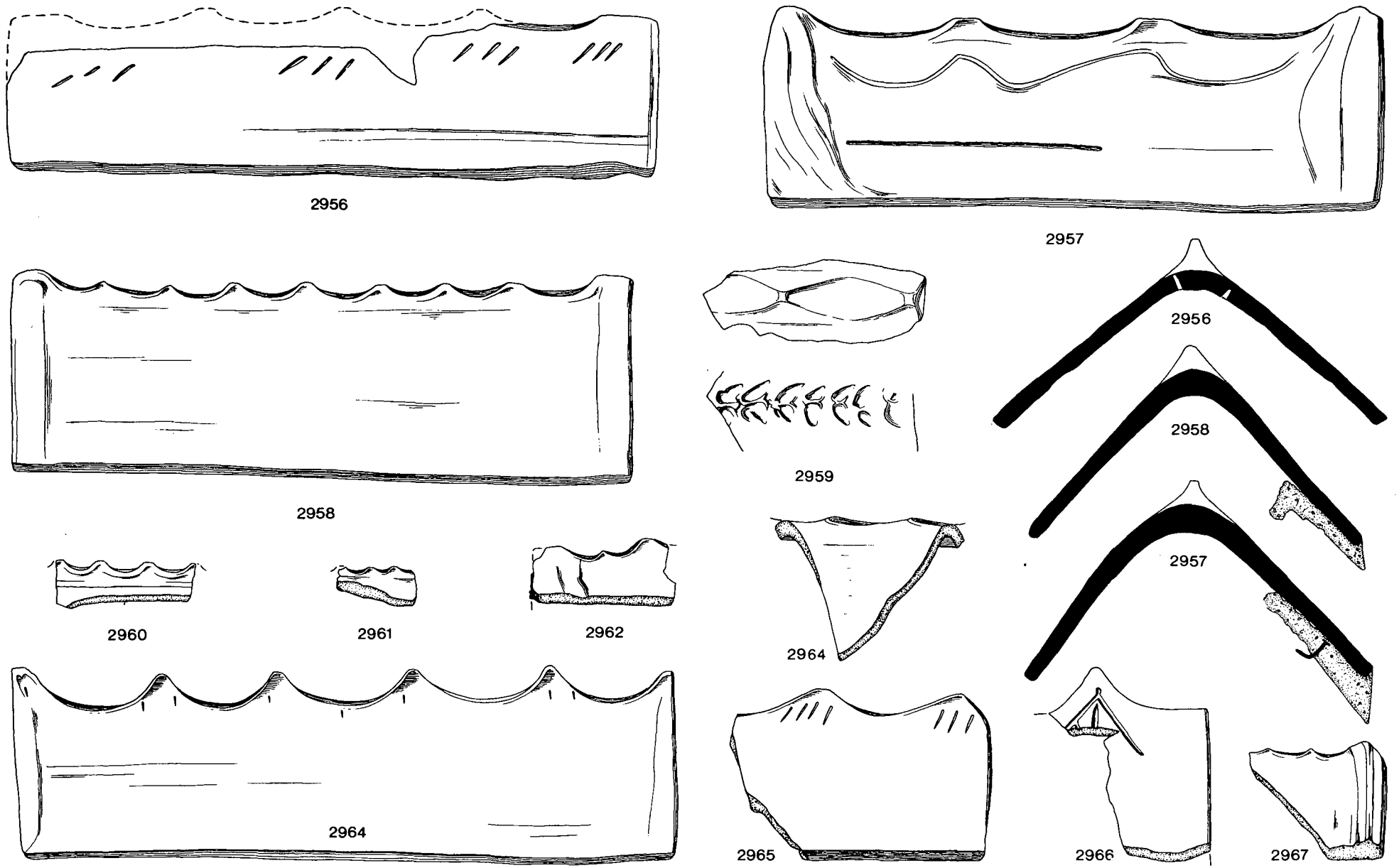


Fig. 134. Ridge tiles (scale 1:4).

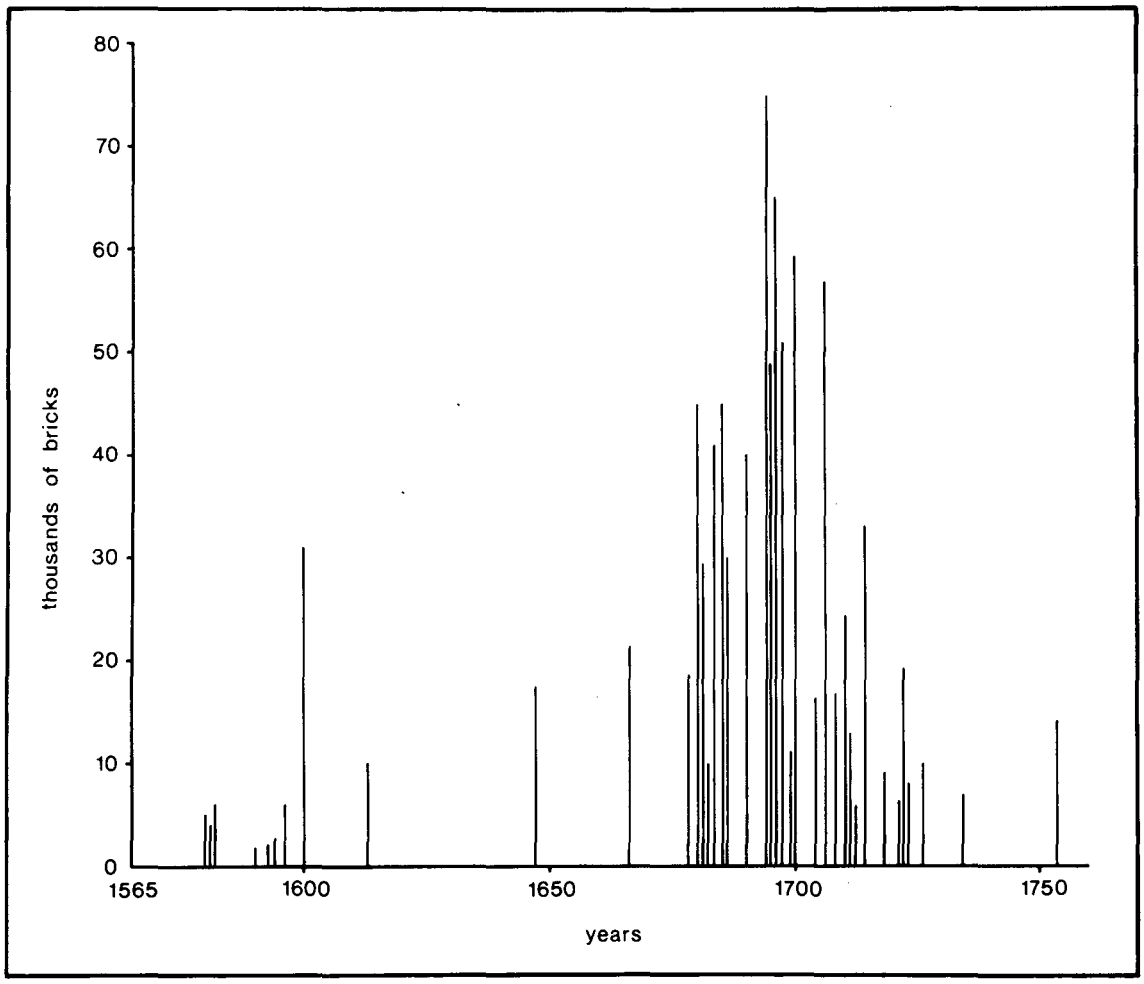


Fig. 135. Imports of Flemish brick, 1565–1756 (sources: PRO E.190. Exeter Port Books; DRO Exeter Town Customs Accounts).

early finds usefully demonstrate that brick was occasionally used in Devon at a much earlier date than has hitherto been realised (cf. Hoskins 1957, xiii).

Brick is listed in a few Exeter inventories of the late 16th and early 17th centuries (Portman 1966, 59) and it must have been coming into wider use at this time: examples were discarded in foundry waste of *c.* 1570–1624 at Albany Road, and in slightly later pits at Trichay Street (TS 316, L.17) and Goldsmith Street (GS 96). After the Civil War it was a commonplace building material in the city, and the excavated evidence adds little to the picture derived from the city's buildings.

Origins

The documentary evidence indicates that there were at least three major sources of bricks at Exeter. First, local production in the city's suburbs is attested by the 1690s (Hoskins 1957, xiii), but must have begun at a considerably earlier period. Second, the importation of brick from the Low Countries, recorded as early as the 1470s (above), became a regular feature of Exeter's customs documents from the late 1570s. The totals recorded are shown in Fig. 135.

The figure shows that, although these bricks regularly arrived at Exeter for at least two centuries, the largest quantities came between *c.* 1675 and 1714, when the boom in Exeter's cloth sales in the Low Countries caused merchants to search for any form of return cargoes. They are sometimes described as ballast (e.g. Portman 1966, 60) but this is not strictly true; they were listed in the accounts as items of trade, and paid import duties accordingly. The accounts commonly list them as 'Flemish' or 'Flanders' brick, and the likelihood that most came from this area is strengthened by the records of shipments from Calais and Ostend. Third, the Coastal Port Books record the arrival of shipments of brick from Lymington and Southampton in Hampshire. The earliest recorded instance is of 1000 bricks in 1696 (PRO E.190.970/11), and a scatter of examples is to be found in early and mid 18th-century accounts, but by the 1770s the trade was operating on a larger scale; in three years in that decade a total of 118,000 bricks was brought from Hampshire (Clark 1956,

III, cxxi). In addition, the Coastal Port Book of 1736–7 lists the arrival of 300 Stourbridge bricks from Bristol (PRO E.190.1001/4).

The characteristic Flemish bricks of small size (*c.* 170 × 80 × 35 mm), and with pale yellow or buff fabrics, have been found on five occasions. Several were recovered from the fill of a pit (NS 1501) of *c.* 1680–90; others formed the rear wall of a post-Civil War cellar in Magdalen Street, and further examples lined a well (MA 2) and a drain (VS 505). They have been seen in the city's standing buildings on only four occasions, and are noticeably less common in Exeter than at Topsham, where many buildings incorporate them.

The rest of the collection consists of coarse red wares of larger size which are probably local products. All the finds from 16th-century deposits are of this class, and in the 17th and 18th centuries they are much more common than the Flemish type.

4. THE MEDIEVAL FLOOR-TILES

by J.P. Allan and Laurence Keen

A. INTRODUCTION (Fig. 136)

The study of Devon's floor-tiles is a neglected topic. The principal publication on the subject appeared more than 130 years ago (Hewett 1849) and it is very unfortunate that many of the tiles which were found last century and in the earlier years of the present century received only brief mention and are now lost. In Exeter, Shortt (1840, 25–6, 29) recorded the discovery of many decorated tiles on the sites of the Dominican Friary and the early 14th-century hall of the Vicars Choral in South Street, but only one of these (**T.67**) can now be traced. The second discovery had previously received a brief entry in the *Gentleman's Magazine* of 1834 (anon. 1834, 40–2), where the designs of ten tiles were illustrated; these tiles were dispersed into private hands and can no longer be identified. In the latter part of the last century, an elaborate decorated pavement was found in St Thomas parish on the probable site of the lost chapel dedicated to St Michael (Worthy 1892, 157–8), but again no finds survive. Further tiles were found during the reconstruction of the parish church of St Mary Major (Tucker 1866, 210), but they were discarded. The cathedral restoration of 1870–7 by G.G. Scott brought the removal of several of the areas of medieval pavement recorded by Hewett (1849), and the reconstruction of the adjacent Bishop's Palace resulted in the loss of tiles noted by Tucker (1848, 225). In the surrounding district, 'a vast collection of encaustic tiles' was found during the restoration of Tiverton parish church (Hughes 1858, 43–4) but none of these can now be traced. Further decorated tiles were formerly to be seen at Ipplepen (Compton 1846, 154) and Doddiscombsleigh (Hewett 1849, 101); more were discovered on the site of the Bishop's Palace at Chudleigh (Montgomerie-Neilson 1933–6, 56) and at Buckfast Abbey (Hamilton n.d., 80). With the exception of some tiles from the last site which were donated to the British Museum (Eames 1980, Nos. 1073–1102, 2120–7), these also are now lost. Thus the poverty of Devon's churches and museums in collections of medieval tiles may result as much from the lack of diligent early collectors as from the rarity of pavements in medieval Devon.

Indeed these tiles have proved to be frequent finds during recent excavations in the city, with over 2000 fragments recorded from some 19 sites. There are no examples of mosaic tile, and the other decorated tiles all appear to belong to a single inlaid series of uniform manufacture dating to the late 13th and early 14th centuries (series 1). In addition, there is a large collection of plain tiles of 15th- and early 16th-century date, some local (series 2), others imported from the Low Countries (series 3) and ?Normandy (series 4). Whereas the tiles of series 1 were supplied principally to ecclesiastical patrons, the later plain tiles were equally popular in secular households.

B. SERIES 1: INLAID TILES (Figs. 137–40)

Fabric

This fabric most commonly fires dark red or orange-red but is sometimes reduced dark blue-grey. Its inclusions are described below (p. 247).

Form

All tiles are square (usually *c.* 125–30 mm) and thin (*c.* 17–22 mm), with four knife-cut scoops (**T.70**) and bevelled edges. These scoops are almost invariably roughly cut, and not perfectly conical in form. **T.53** is an exception, having a plain back and being slightly larger. It might belong to a different series. All the designs are inlaid with white slip which varies in thickness between 1 and 3 mm.

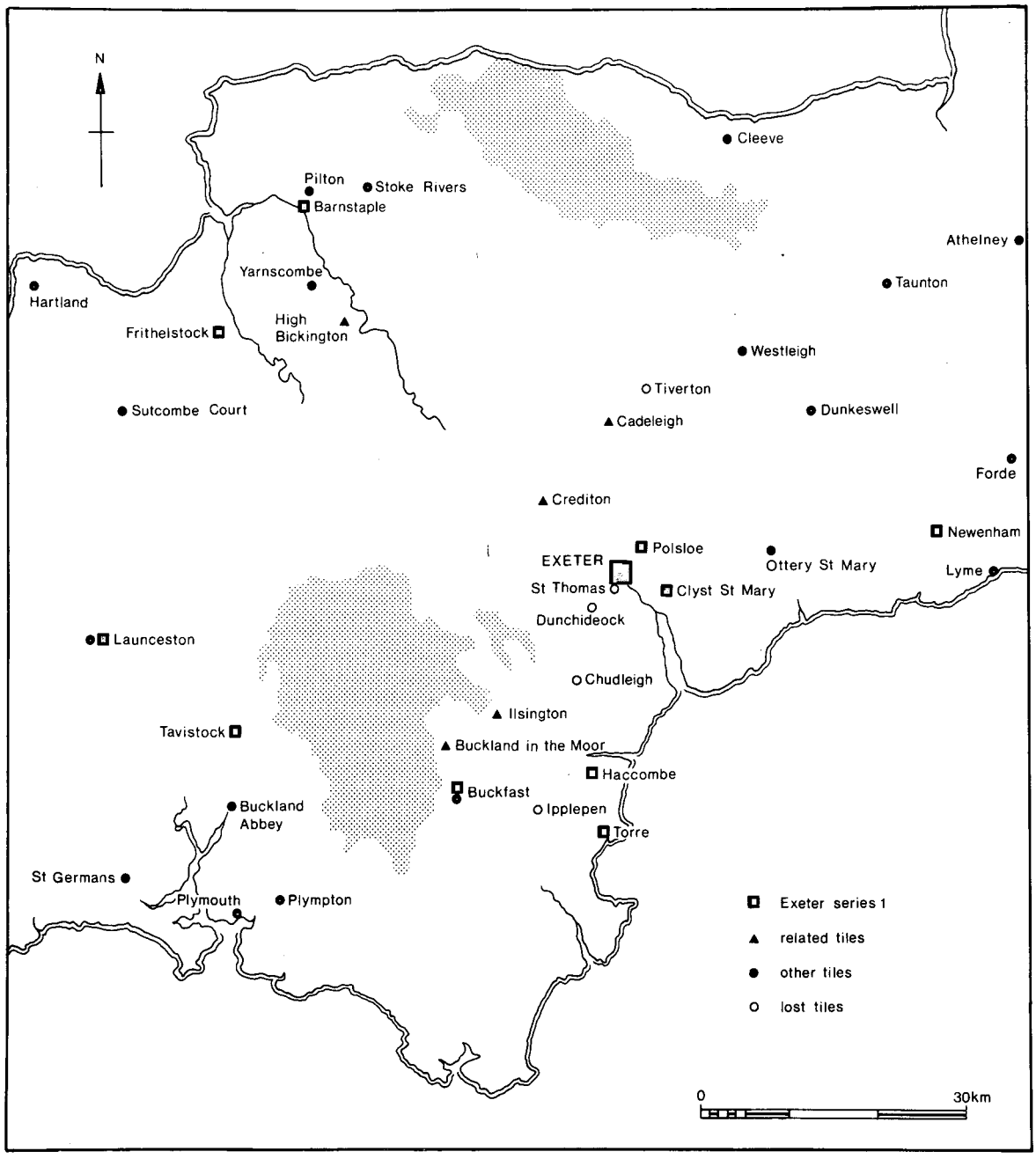


Fig. 136. The distribution of medieval floor-tiles in Devon.

Designs

Most of the designs belong to the stock repertoire of Wessex tiles. They include royal arms of England, both reversed (**T.1**) and correct (**2–4**); royal arms of Scotland (**5**); arms of Cornwall (**6**); arms of de Clare (**9–10**) with probable variants (**7**, **8**, **11**); arms tentatively identified by Searley (1921, 199) as those of Beaumont of Gittisham (**13**); and double-headed eagles (**14**, **16**) and a variant of the same theme (**15**) borne by Richard of Cornwall and his son Edmund as King of the Romans between 1252 and 1300. Amongst the other designs, two found only at Polsloe Priory appear to have been commissioned specifically for that house. These are the wheel of St Katherine (**63**), to whom the priory was dedicated, and Sagittarius (**64**), the sign of the zodiac of the feast day of St Katherine.

Provenance

(a) The following designs have come from excavations in the city:

Ecclesiastical sites

Franciscan Friary, church: **1–2, 5–7, 9–10, 14–15, 22, 24, 28, 33, 42–3.**
Franciscan Friary, area of dorter: **2, 14, 31, 67.**
St Nicholas Priory, church: **?2, 12, 20–1, 23, 25–9, 31, 35–6, 44, 46, 52–4, 60, 62.**
St Nicholas Priory, area of garden: **12, 53, 61–2.**
Polsloe Priory: **12–13, 18, 25–6, 33, 45–9, 51, 55–7, 59–64, 67.**
Mary Major church: **4, 10, 15, 25–6, 31, 37, 46, 50–1, 61.**
Cathedral Close, graveyard: **8, 17, 20–1, 24, 28–9, 33–4, 36, 39, 41, 44, 49, 52, 65.**
St Edmund's church, Exe Bridge: **44, 67.**

Secular sites

All Guildhall sites: **4–5, 12, 19, 25, 36, 38, 41–2, 44, 49, 66.**
Valiant Soldier: **28.**
Cricklepit Street: **20, 28, ?65.**
Mermaid Yard: **4, 6, 7 or 11, 29, 46.**
City Wall, Northernhay: **4.**
Bartholomew Street West: **34.**
Pollard's, Old Post Office Street: (Exeter Museum Acc. No. 53/1925/2) **52.**
179 High Street: (Exeter Museum Acc. No. 87/12/4) **58.**
South Street 1833: (Exeter Museum Antiquity No. 4201) **67.**

(b) The following parts of the cathedral have tiles of these designs *in situ*:
Archive Chamber: **13, 17, 21, 29, 31, 34–6, 49, 66.**
St Paul's Chapel: **4, 7, 15, 44, 46.**
Chapel of SS Katherine and Andrew: **25, 48, 50.**

(c) The following parts of the cathedral have loose tiles which appear to have belonged to earlier floors in the rooms where they now lie:
The Chapter House: **15, 21, 31–2, 34, 36, 44, 47.**
The Exchequer Chamber: **19, 25–6, 29, 31, 35, 45, 54.**

(d) Examples of the following designs are present elsewhere in the cathedral: **13, 15, 23, 25, 28, 31, 34–5, 44, 49, 51, 54, 60, 67.**

Date

None of the decorated tiles from the excavations survived *in situ*, and those from medieval deposits are not sufficiently closely dated to provide any help in dating the series. The only excavated tiles whose context is at all useful to an understanding of their chronology are those from the Franciscan friary outside the city walls. The friars were granted this site in 1291–2, and their new buildings were under construction by 1303; a major grant towards the fabric followed in 1310 (Little and Easterling 1927, 15–19). The tiles come from the area of a transept and the dorter; it is improbable that they date to the years before *c.* 1300.

The most useful evidence for the date of these tiles comes from Exeter Cathedral. The cathedral fabric rolls record regular purchases of floor-tiles (*tegulae*) and payments to paviours between 1279–80 and at least 1325–6. There are also a few references to later purchases of paving tiles by the Dean and Chapter: 200 in 1389–90, and others in 1395–6 (Oliver 1861, 376–7). The accounts occasionally specify the area being paved. In a few instances, such as the south tower (Allan and Jupp 1981, 147) it is clear that paving took place shortly after the builders' scaffolds had been dismantled, and this was probably commonplace. The evidence for the dating of the surviving or recorded pavements is as follows:

(1) The four floors of the eastern transepts (the Exchequer Chamber, the Archive Chamber, the chapel of SS Katherine and Andrew, and the chapel of St James) may be considered together. The construction of these transepts was clearly very well advanced at the time of the first surviving fabric roll, that of 1279–80 (Erskine 1981, 2–3) and they were the first part of the new work in the cathedral to approach completion. Their paving will presumably have been undertaken in the years around 1280 or shortly afterwards. The accounts of 1279–80 record ten separate payments to paviours, the expense varying between 2s. 8d. and 4s. 2½d. (*ibid.*). Since most of the work mentioned in that year took place in the eastern transepts, it is probable that the entries were for pavements there. Indeed, within the church only these transepts and the small chapel of St Edmund at the west end of the nave would have been ready for tiling at that date. It is not, however, impossible that the floor of the Chapter House, which has close affinities with the pavements in the eastern transept, was the work mentioned in some or all of the entries of 1279–80.

(2) The chapel of St Paul was well advanced by 1310–11, when its roof was leaded and its bosses primed (*ibid.*,

54, 59; Bishop and Prideaux 1922, 48). However, the glazing of its windows did not take place till 1318–19 (Erskine 1981, 109).

(3) The area of pavement recorded by Hewett (1849, Pl. 27, Fig. 4) within the pulpitum receives specific mention in 1324–5 when 2000 tiles for 'la Pulpytte' were bought at a cost of 16s. (Erskine 1981, 156).

(4) The latest floor composed of tiles of this series is probably that which survives at Haccombe church. Only a small area is preserved *in situ* (Compton 1846), and it can no longer be demonstrated that the other tiles come from a single pavement. However, many of the tiles in the church show a number of features, notably the rather careless execution of the inlay, which suggest that they all come from a single floor. Its dating relies on two armorial tiles which are unknown elsewhere. The first shows the arms of de Haccombe (Searley 1921, 199, No. 15); the second was identified by Searley (*ibid.*, No. 17) as those of the Archdeacon family who inherited the manor of Haccombe in 1330 (*idem* 1918, 1919). Unfortunately some doubt is attached to the identity of the second design, since the arms of Archdeacon (*argent three chevrons sable*) are indistinguishable without tinctures from those of de Clare, whose arms are commonly depicted on floor tiles. Searley's identification however may receive some support from the idiosyncratic depiction of the coat, with the addition of a wavy line to the chevrons which is not found on arms of de Clare.

If these are indeed the arms of Archdeacon, the pavement can be dated after 1329 when Sir John Archdeacon began the family's associations with Haccombe by his marriage to Cecily de Haccombe. He inherited the manor in 1330 (*idem* 1918, 1919); a possible context for the laying of the tiles is the foundation of an archpresbytery at this small rural church in 1337 (*idem* 1921, 180–8).

Several of the tile-stamps are identical to those used in some of the major pavements of the 'Wessex' series. These stamps, which presumably were brought from Wessex, occur largely in the early pavements of *c.* 1280 at Exeter Cathedral. The Wessex lions and griffins in roundels used extensively there (Hewett 1849, 25–30) have been found on only one other occasion (**T.17**) in the city. Since the stamps were about 30 years old when they came to Exeter and had been much used in Wessex, they were presumably discarded shortly after 1280.

The four pavements of *c.* 1280 lack any examples of the armorial tiles (**1–13**) which are common components of many of the other Exeter pavements. With two exceptions (**5**, **13**) these tiles, together with the two-headed eagle and its variants (**14–16**), appear to allude to a single individual, Edmund Earl of Cornwall, who married Margaret, daughter of Richard de Clare, in 1272 (Ward-Perkins 1941, 41). Edmund died in 1300. This group appears to date after 1280 and was presumably first commissioned before 1300, although some stamps were certainly used after 1310 (St Paul's Chapel) and two designs depicting the King of the Romans are present at Haccombe (Searley 1921, 194, Nos. 3, 13) where they may date to the years after 1329.

Among the pavements which lack dating evidence, three show similarities to the examples in the eastern transepts. First, the fragments recently relaid in the cathedral Chapter House, which appear to derive from its medieval floor, consist almost entirely of the early floral designs and beasts of Wessex origin. There are four exceptions. One Low Countries tile and one pattern paralleled at Crediton certainly do not belong to the original series, and two other fragments (of designs **15** and **44**) may also be insertions; a few miscellaneous fragments from other parts of the cathedral were incorporated in the floor in recent years. In addition, the series from Polsloe Priory and St Nicholas Priory contain many examples of these early patterns, but with a variety of other designs. Neither of these substantial collections includes examples of the Edmund of Cornwall series. They probably date to *c.* 1280–1300.

By contrast, the tiles depicting the arms and device of Edmund form the most striking element in a number of closely related pavements. The Greyfriars finds are closely paralleled at Newenham (Allan and Silvester 1981, 163–5), and it is clear from the descriptions of the floors in the Bishop's Palace and St Michael's chapel in St Thomas that they were very similar (Tucker 1840, 225; Worthy 1892, 157–8). The series from Launceston Priory and Frithelstock Priory also contain several examples of these types and are probably of similar date. One distinctive feature of the Newenham pavement was the use of plain narrow third tiles with square ninth-part tiles at their intersections, which formed borders around each individual tile. Plain tiles of these two types were found in abundance in the Greyfriars church, where a similar arrangement may be inferred. Such borders seem to be a distinctive element of this group of pavements: they are absent both from the floors of the eastern transepts and from the fragments from the Chapter House and Polsloe Priory. The latter floors used instead the rectangular half-tiles in a variety of combinations.

The collections from the Cathedral Close graveyard and the various secular sites in the city are miscellaneous in character; the material from some individual sites may well come from a variety of floors. However, it may be noted that there are very few examples of the 'Wessex' stamps on these sites, so it is unlikely that many come from the earliest Exeter pavements. On the other hand, the new repertoire of designs represented at Haccombe (including some examples paralleled at Buckland-in-the-Moor) does not occur at Exeter, and there is only one example (**65**) of the group of designs used at Crediton, Buckland Abbey and Plympton Priory, which are probably of 14th-century date. The Exeter pavements could all date before *c.* 1330, but there are few fixed points in their chronology. A seriation of the dated patterns is shown in Fig. 137.

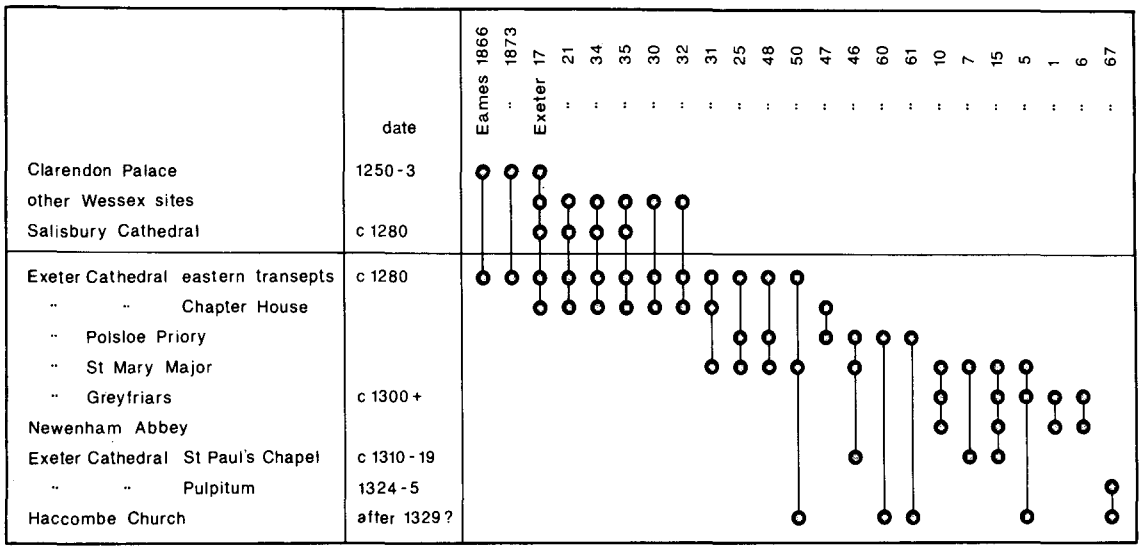


Fig. 137. Seriation of selected designs of Exeter series 1, showing the gradual abandonment of tile stamps brought from Wessex.

C. SERIES 2: GRAVEL-TEMPERED TILES

Description

This series has a very distinctive fabric, characterised by abundant quartz and quartzite and usually containing fine calcareous particles (p. 247). The tiles are *c.* 140–5mm square, *c.* 20mm thick, with a distinctive combination of knife-stabbing and scoops on their backs (**T.72**). They are usually coated with a layer of thick plain white slip on their upper surfaces; a few have glaze dribbles but most are unglazed.

Provenance

This is not a common type, and examples are known from only four sites. The principal finds are a collection of at least 25 tiles from the excavations in the precinct of the Greyfriars outside the South Gate and a small collection from Polsloe Priory.

Date

Some of the finds from the Greyfriars' church were present in the filling of a late grave (FG 53) which post-dated one containing 80 tile fragments derived from a well-worn floor of series 1. All the other datable examples of series 2 come from Dissolution contexts. None shows heavy wear, so it appears probable that this series belongs to the 15th or early 16th century.

Place of manufacture

This fabric is so close on visual examination to North Devon gravel-tempered ware that a North Devon source seems probable, so the series may well be a predecessor of the post-medieval North Devon relief-decorated tiles (Keen 1969). This suggestion receives some support from the observation of D.F. Williams (p. 247) that these products show similarities in thin-section to medieval pottery of North Devon type.

D. SERIES 3: LOW COUNTRIES-TYPE TILES

Description

Sandy red earthenware fabric with clay pellets, often with a few calcareous inclusions. Most tiles are either glazed dark green or have yellow slip, often scraped very thin and glazed pale yellow, but a few examples have very dark mauve-black glaze which presumably results from the addition of iron. The corners of the tiles

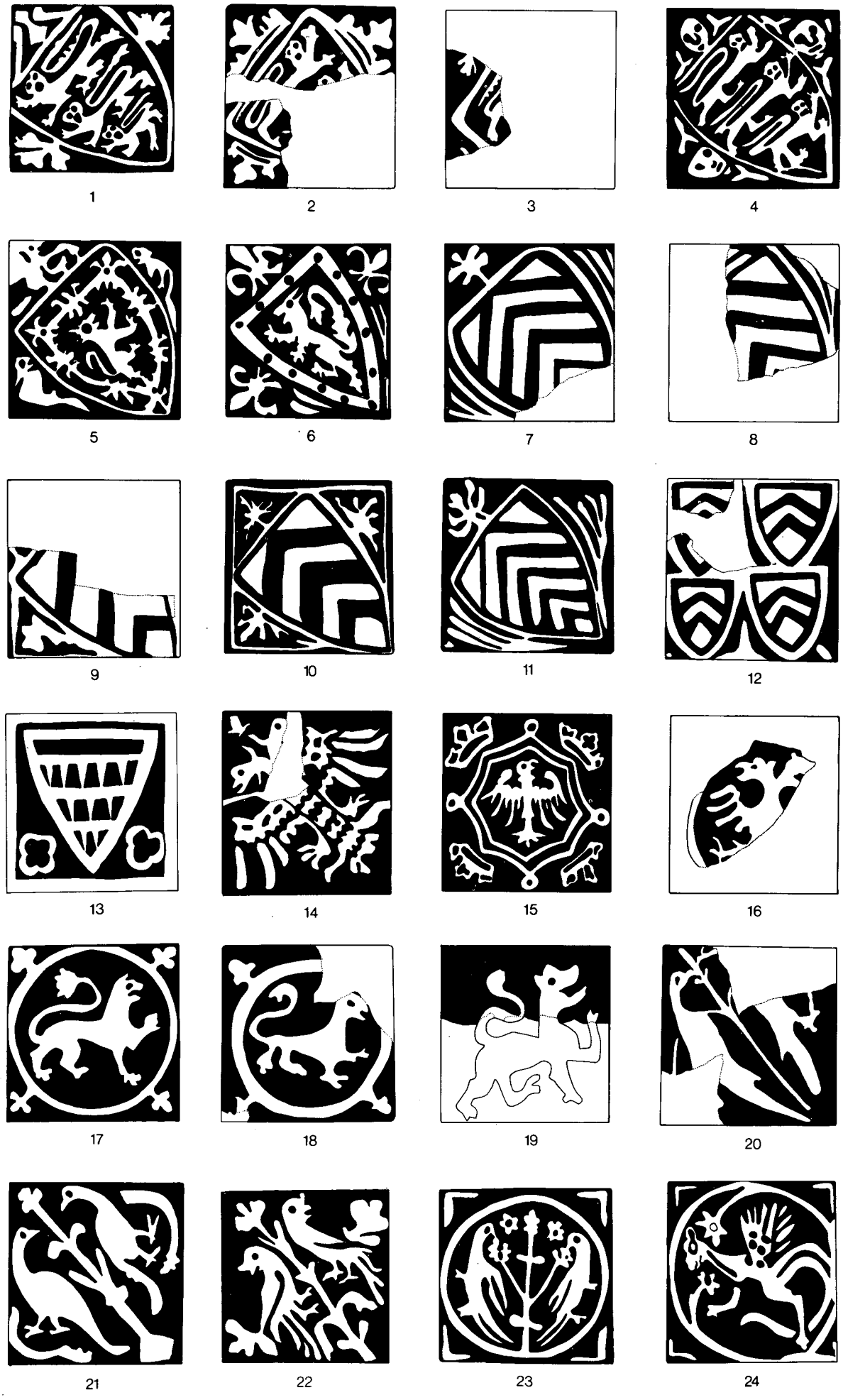


Fig. 138. Inlaid floor-tiles of Exeter series 1 (scale 1:4).

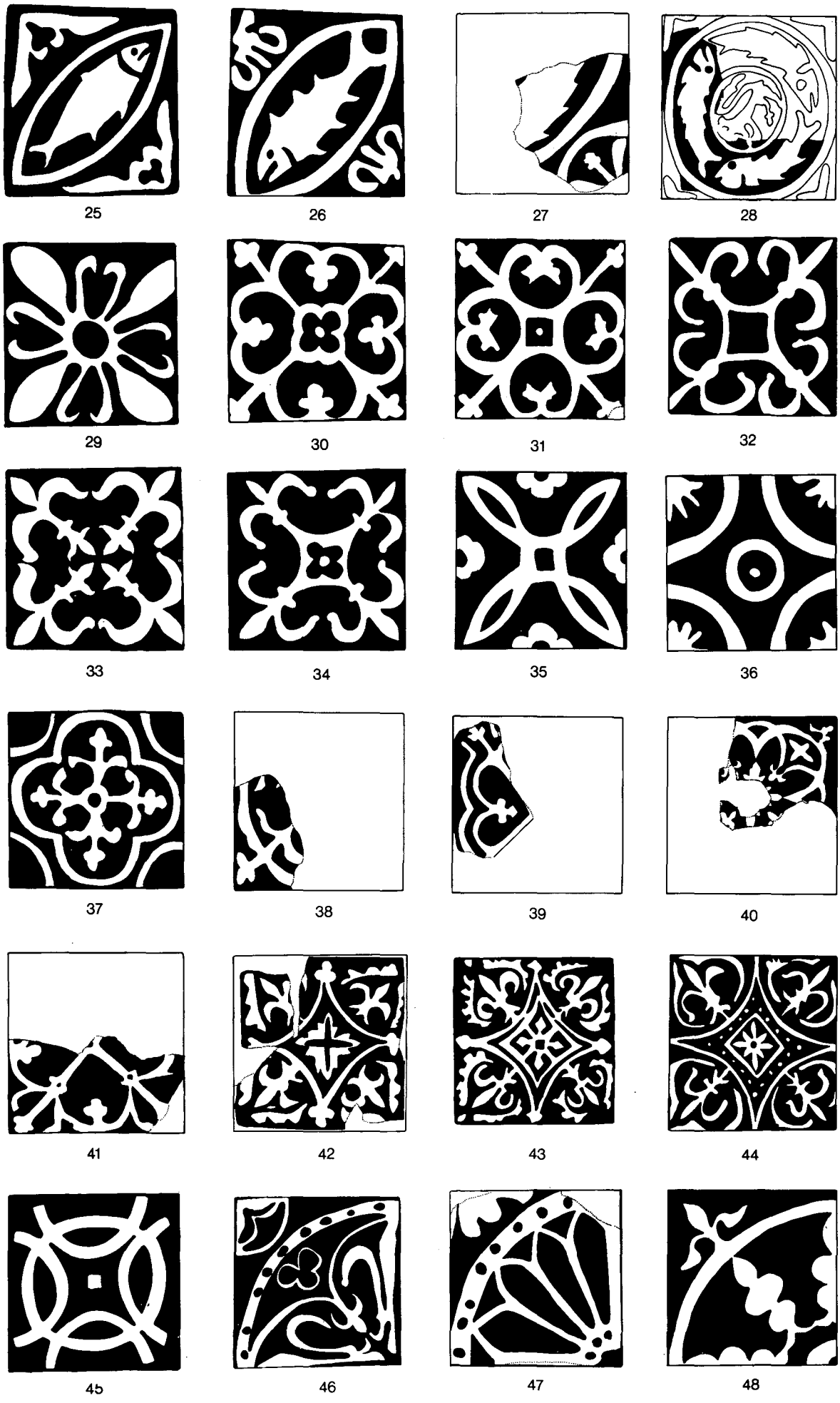


Fig. 139. Inlaid floor-tiles of Exeter series 1 (scale 1:4).

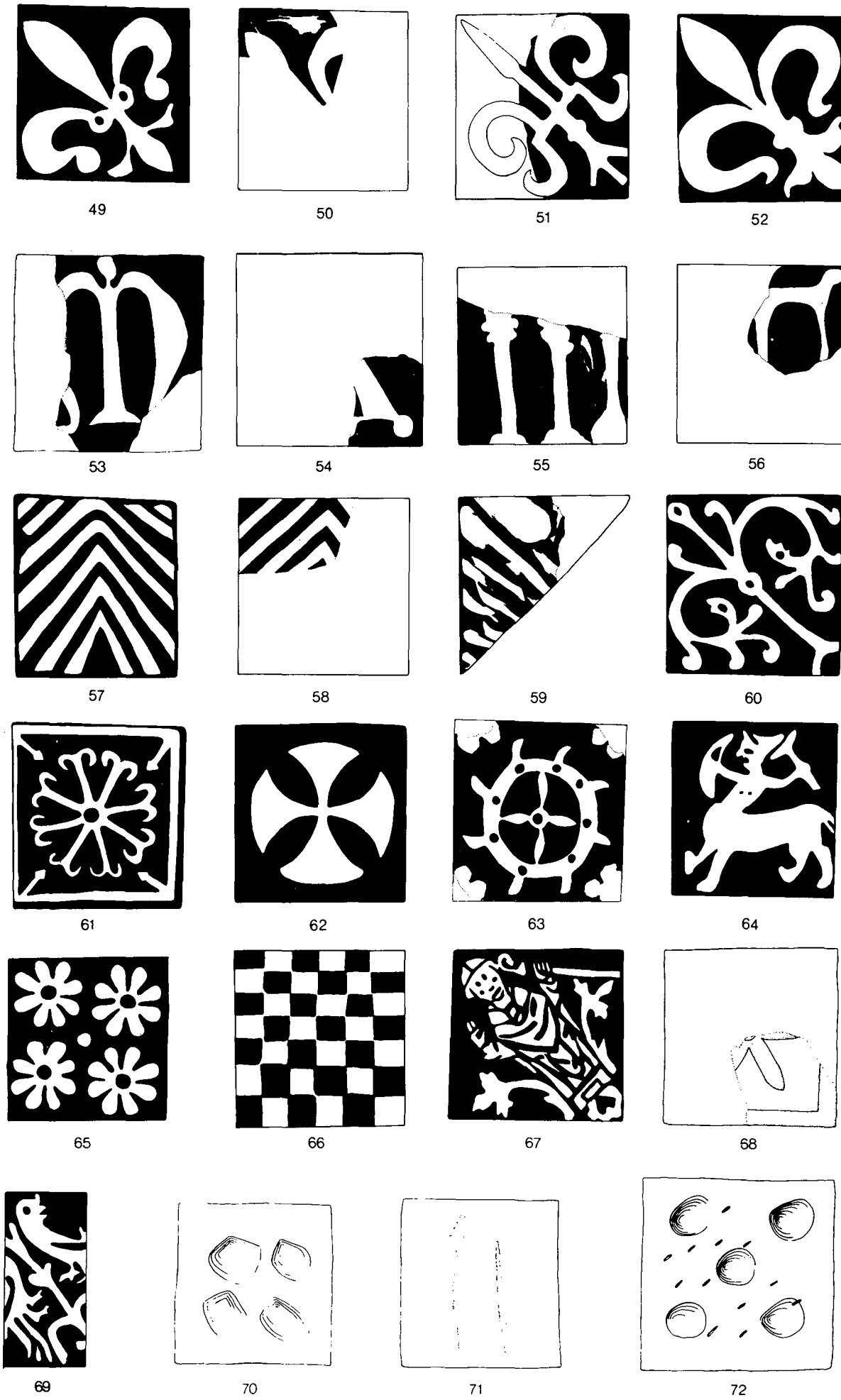


Fig. 140. Inlaid floor-tiles of Exeter series 1 (**49–67, 69**); tile with stencilled slip (**68**); back of Exeter series 1 tile (**70**); glaze scars on plain tile (**71**); back of Exeter series 2 tile (**72**) (scale 1:4).

characteristically show nail-holes; their backs are sanded and none is scooped. All tiles are square; lengths of the few complete sides are 110, 115, 125, 195 and 200 mm.

Provenance

These tiles are remarkably frequent finds at Exeter, both on secular and ecclesiastical sites; at least 394 fragments from over 160 tiles are present in the collection. The bulk of the finds are from secular sites; at Preston Street a few remained *in situ*, laid parallel to the walls of the room in which they were found; unfortunately too few remained to show the pattern in which they were laid, but green-glazed and slipped yellow-glazed tiles were found in residual contexts above this floor approximately in equal numbers. Three other secular sites (Goldsmith Street site 1, Queen Street and 198 High Street) each produced several dozen fragments in residual contexts, suggesting that they once had similar floors.

Date

There are many finds from early and mid 16th-century contexts in the city (GS 228, GS 33–38, GS L.7, QS 3) and in Dissolution deposits (at the Greyfriars sites). None of the 17th- or 18th-century deposits contains more than one, two or three examples and these can probably be dismissed as residual.

Documentary evidence

These belong to the very widespread series of floor tiles imported from the Low Countries to many English sites. They receive frequent mention in the late medieval customs accounts of other English ports (e.g. Gras 1918, 608–11, 651–75; Kerling 1954, 128–30). At Exeter the earliest reference noted is of 1437–8 when the cathedral fabric rolls record the purchase of 33 pieces of large Flemish pavement (*pec' pavimenti flandres larg'*) purchased for 2s.9d. (D & C MS 2687). The Town Customs Accounts and Exchequer Customs Accounts of the late 15th and early 16th centuries record the arrival of many batches of *tyle* or *paving tyle* from unspecified sources; some of these are presumably the Low Countries floor tiles recovered from excavations. Occasionally these tiles arrived with typical Low Countries cargoes: for example a total of 4000 tiles arrived in 1477–8 with pitch and tar, Holland cloth and other goods characteristic of the Low Countries trade (TCA). In the early years of the 16th century there is a scatter of similar references — 500 paving tiles in the *James of Middelburg* in 1509–10, for example (PRO E.122.201/4) — but these are insufficient to gain a clear picture of the scale of importation. The trade must have ceased or have been greatly diminished after 1550, since the fine series of Elizabethan customs accounts provides no comparable references.

E. SERIES 4: TILES WITH A WHITE FABRIC, POSSIBLY IMPORTED FROM NORMANDY

Description

These tiles have a rather granular white fabric, commonly with streaks or lumps of red or pink clay up to 45 mm in size. The most prominent inclusions are sparse rounded or sub-angular quartzite fragments up to 4 mm across; samples tested with dilute acid showed no calcareous inclusions. All tiles are glazed either bright copper-green or yellow; examples with green glaze are marginally the more common type. Glaze runs across the face of the tiles, showing they were stacked vertically when fired. Complete examples are square, varying between 145 and 160 mm in length; they are usually *c.* 20 mm thick. A few are scored diagonally for division into triangular half-tiles.

Provenance

Fragments of at least 191 tiles of this class have come from 15 sites in the city. There is a scatter of finds from Polsloe Priory and the Greyfriars excavations, but the bulk of the finds come from eight secular sites; a tenement on Frog Street produced more than 100 examples. These tiles must quite frequently have been used in town houses. A few examples survive on the floor of the fireplace of the first-floor chamber which once formed part of the Deanery but which is now occupied by Exeter Cathedral School. They are possibly *in situ*.

Date

These tiles were evidently in circulation some time before 1538; several examples from Greyfriars sites had

received enough wear to remove their glaze before the Dissolution. Further tiles are stratified in early 16th-century contexts (QS 3, QS 8–16, GS 228, *etc.*). There are a few finds in later deposits (GS 33–38, TS 316) but they are strikingly less common in deposits belonging to the years after *c.* 1600.

Place of manufacture

These tiles belong to a class widely distributed near the south coast of England, for example at Southampton and Bishop's Waltham (Hampshire), Poole and Dorchester (Dorset), and Haccombe (Devon). Others have been found as far away as Carmarthen in South Wales.

Since they are so common at Exeter, the possibility of their manufacture in South Devon merits consideration. Samples of fired South Devon ball clay and kiln saggers used in the Bovey Tracey kilns were compared visually with these tiles, but the grain size of all the ball clay samples was very much finer and the inclusions in the saggers quite different. Moreover, the streaks of red clay in the fabric do not seem to occur in the South Devon ball clay beds. The widespread and coastal distribution of these tiles suggests that they are probably imports.

When the Haccombe tiles of this type were examined earlier this century by two Devon potters, both expressed the opinion that the tiles were French, and one potter attributed them to Normandy (Searley 1921, 196). Exeter's customs accounts of the late 15th and early 16th century contain numerous references to the importation of north French tiles. During many of the years between 1490 and the 1530s tiles described as *paving stonys* or *tylestonys* arrived in batches of several hundred or of one or two thousand with the characteristic products of Normandy.[1] Some came in ships of Le Havre or Rouen. The largest annual total of these tiles which was noted was in 1526–7, when 10,500 were imported; in most other years the total was between 1000 and 3000 (e.g. TCA 23–4 Henry VII; 12–13 Henry VIII; 18–19 Henry VIII; PRO E. 122.201/3; 201/4). There are too many cargoes of imported tile whose origin is uncertain to provide a more accurate assessment of the quantities arriving. As with the Dutch tiles, however, it is clear that importation had ceased or virtually ceased by *c.* 1550, since no mention of Normandy tiles was found in the later 16th-century accounts.

NOTE

1. H. Touchard (1967, 62) drew attention to a reference in Exeter's Town Customs Account of 1401 which he believed to be a record of the importation of Breton tiles (TCA 1–2 Henry IV). In September of that year the Breton ship the *Seynt Marie* of *Cancale* brought 30,000 *lapid' tegul'* to the city. Touchard suggested that they were tiles made in the *pays* of Penthièvre where there were post-medieval kilns. There are however many references in nearly every Exeter customs roll of the 15th century to the arrival of *lapid' tegul'* from the South Devon ports of Salcombe, Dartmouth, *etc.* These must surely be Devon slates, and they arrived in batches of tens of thousands. Touchard's reference is probably also to slates, conceivably from Brittany but more probably from South Devon. His comments upon this entry were the source of the statement by Le Patourel (1968, 121) that Breton pottery was brought to Exeter in the late 14th and 15th centuries (Le Patourel, pers. comm).

F. DISCUSSION

There are few medieval towns in Britain where the study of medieval floor-tiles from a large number of sites has been attempted. Exeter is not only fortunate in this respect but because it has been possible to construct a framework for dating, largely on the basis of information on the floor-tiles in the cathedral contained in the fabric rolls. Furthermore, because of the large number of tiles from the 19 sites excavated it has been possible to extend the analysis of the tiles far beyond the usual study of tile design and distribution and, for the first time in floor-tile studies, to attempt a seriation of the tile designs for Series 1. When the study of the floor-tiles of Devon and Cornwall being undertaken by one of the writers (L.K.) is completed, for the first time it will be possible to understand more than has hitherto been known about the organisation of the medieval floor-tile industry. For the present, however, the study of the tiles from Exeter has shown graphically the spread of that industry from the heartland of Wessex, where the industry, under royal patronage, was initiated.

It is now possible to show that a small number of tiles found in recent excavations at Winchester Castle may be identified with tiles ordered and laid in the castle in 1241–2 (Norton 1980, 53). Wasters with some of the designs, together with other patterns, have been identified at Marwell Manor, near Winchester, suggesting that the tiles were made there (*ibid.*). This important group is the earliest dated group of tiles in the country. Tiles of the same group have now been identified at Christchurch and Wimborne, Dorset, and at Beaulieu, Hampshire (Norton 1980, 53; Keen 1983, 70). However, none of the designs in this group is found at Clarendon Palace, in the King's Chapel pavement and an excavated kiln dated 1244–6, previously considered to be the earliest surviving material of the inlaid floor-tile industry.

The pavement of the Queen's Chamber, Clarendon Palace, dated to 1250–2 (Eames 1980, 187–8) has designs which are closely related to pavements at Winchester and Salisbury and to material from many other

sites in Wessex. The pavements at Winchester Cathedral and at Salisbury Cathedral, largely on the basis of Norton's recent detailed examination of the pavement at Christchurch, Dorset (1980), can be dated no longer to *c.* 1235 and the 1250s respectively, as Eames has suggested (1980, 189–90), but to *c.* 1280. This later dating explains more easily the rapid expansion of the medieval floor-tile industry in the last two decades of the 13th century, although the actual process of this expansion needs more investigation to show if the same blocks were being used to produce tiles at widespread sites, or if tiles from these sites were derived from the same source. Significantly, however, Clarendon designs are found in the Exchequer Chamber in Exeter Cathedral (Eames 1980, Nos. 1866, 1873), while another (**T.17**) also provides a link with Clarendon. As the seriation table shows (Fig. 137), tiles from other Wessex sites, notably Shaftesbury Abbey, are linked to the floors of the eastern transepts and Chapter House of the cathedral, paved about 1280 or shortly afterwards.

The presence of designs not found in Wessex demonstrates the making of new design blocks and the establishing of a local industry. Where this operated from is not certain. However, as the distribution of Series 1 tiles shows (Fig. 136), the concentration of sites in and around Exeter suggests that the production centre may have been here. The outlying sites of Newenham, Haccombe, Buckfast, Launceston, Frithelstock and Barnstaple are perhaps too far from Exeter for it to be suggested reasonably that the tiles derive from this production centre, and it is possible that by the time the pavements at these outlying sites were needed the tile-makers had become itinerant. The probable dating of the Haccombe material to after *c.* 1329 might reinforce such a view.

The tile industry in Devon can be shown to have continued into the 15th and early 16th centuries, and the surviving use of medieval tile-blocks in the post-medieval pottery industry of North Devon (Keen 1969) serves to indicate a likely centre for the continuing medieval production. The gravel-tempered tiles of Series 2, most probably produced in North Devon, provide an important piece of information in this respect and demonstrate the importance of detailed analysis of undecorated material.

The unique production in North Devon of relief-decorated, single colour floor-tiles in the 17th and 18th centuries (Keen 1969) no doubt was inspired by the medieval inlaid floor-tile industry which the material from Exeter helps to elucidate.

G. THE VALIANT SOLDIER KILN

In 1973 a kiln was excavated in the garden of an extra-mural property beside Holloway Street (SX 9220 9224; Fig. 1, Valiant Soldier site). No ancillary buildings were found.

The kiln (Fig. 141)

The kiln structure belonged to Musty's type 2A, having two flues but no internal support (Musty 1974, 44). It was small, the interior of the oven being about one metre in diameter. The oven floor (VS 55–2) was compact and burnt, and it seems that the kiln load was stacked on this surface, although no impressions of any wares were found. A small slot of regular depth and profile surrounded the oven floor. Its fill was continuous with that over the floor and filling the flues (55–1). The burning of the oven floor extended down the edges of this slot, which was evidently open at the time of firing. Immediately below this, an earlier slot in the same position (55–3) contained no kiln waste and had a very clean fill. This also was of regular depth and profile. The interpretation of this feature is uncertain; its position must mark the inner edge of the kiln walls, which had been entirely removed. The absence of any stakes or burnt clay *in situ* make it unlikely that it was intended to accommodate a timber framework for the walls of the kiln. It may well have served to channel hot air around the sides of the kiln from the flues. The underlying slot (55–3) was clean and unbaked and may perhaps have been dug too deeply and backfilled before use. The southern flue retained on its western side a clay-bonded stack of waster tiles; these presumably formed the base of an arch of tiles over the flue. In the northern flue the side of a baked clay cheek survived on its western side and fragments of a second cheek on the opposing edge of the flue; these also probably formed the bases of an arch. The latter flue contained a deposit of charcoal *c.* 30 mm deep. Each flue led into a shallow oven pit. Neither stoking pit was very fire-reddened and both had dirty, slightly compacted surfaces. Both flues were filled with mixed brown loam containing wasters, burnt slates and charcoal lumps (VS 54–1, 55–1, 56–1). No clear evidence of the kiln's superstructure was found during the excavation.

The kiln is unusual in two aspects. First, it is very small; the ovens of most other medieval kilns are at least two metres wide. Second, tiles kilns are generally of rectangular plan whilst this is circular. The Hermitage kiln in Dorset, although probably considerably earlier in date and used principally for the production of pottery, offers a possible parallel. Although that kiln is not easily interpreted, it is of small size like the Valiant Soldier kiln, and it also had a shallow oven pit and small stoke-holes (Field 1966, 174–5).

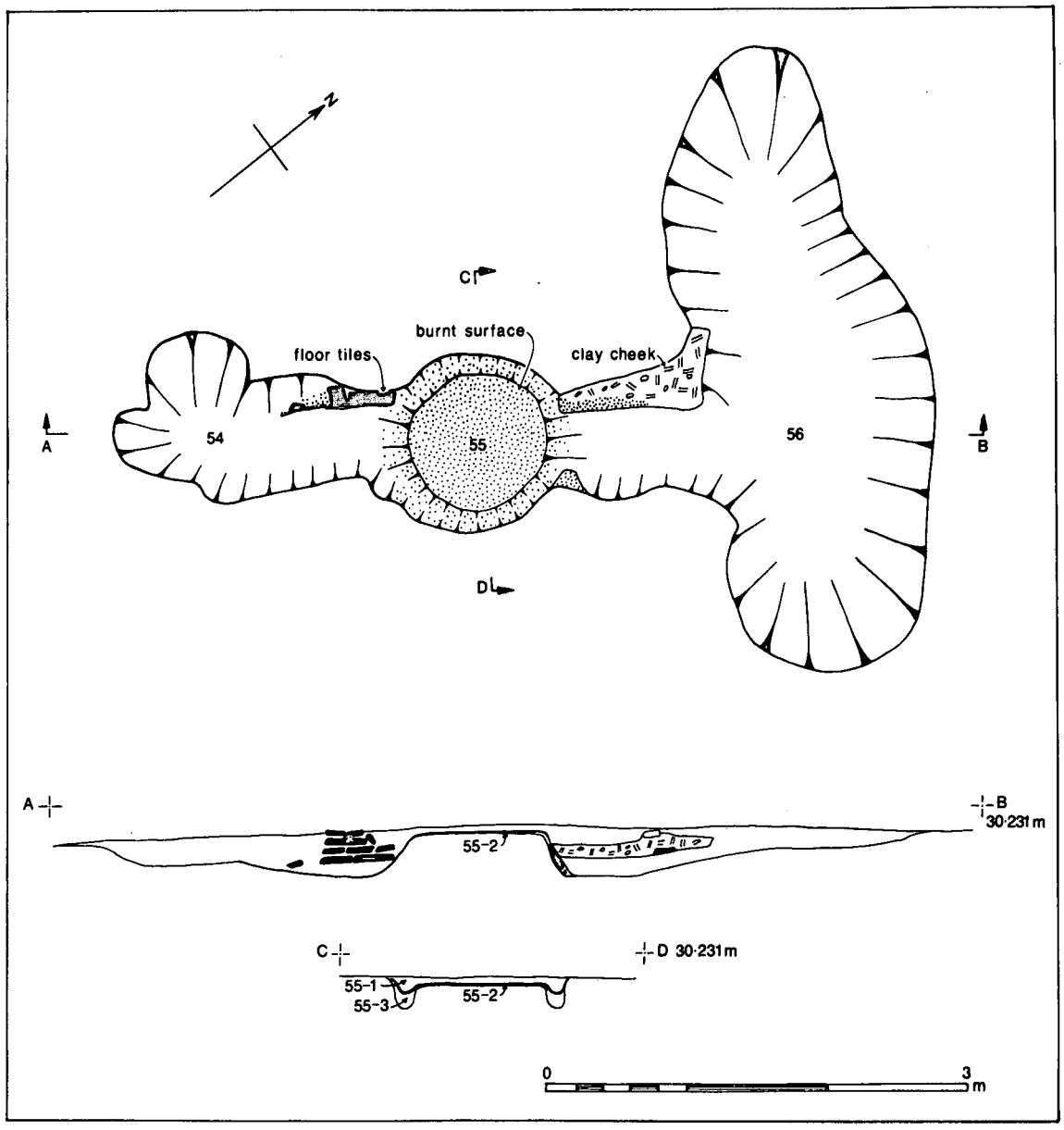


Fig. 141. The Valiant Soldier tile kiln.

The products (Figs. 142–3)

The kiln produced 58.56 kg of kiln waste. Floor-tiles were the principal product, forming 79% of the total by weight and 58% of all sherds. Ridge tiles made up 11% and 12% by these indices and wheel-thrown pots 8% and 23% respectively; the rest of the fragments were unidentifiable.

All the wares have a brick-red or orange-red oxidised fabric, often with dull grey surfaces. Visible inclusions comprise sparse angular quartz lumps up to 5 mm, iron oxide inclusions and hard brown mudstone particles. The fabric has a rather granular feel and looks much like that of Exeter bricks.

Large thick square tiles

Only one complete side, measuring 280 mm, is present but eleven fragments have a presumably central scoop on the back *c.* 140 mm from an edge, suggesting that they were the same size as the complete example. Thickness varied between 44 and 50 mm. Undersides most commonly have knife-stabbing and five scoops (**T.76**), but a few have been stabbed by a circular or triangular implement (**83–4**).

The upper surfaces commonly have a wash of white slip which usually fails to cover the whole tile. The glaze over this is often thin and patchy but where it gathers it is dark grey or black. Some examples are stamped to a depth of between 2 and 7 mm either with an open circle (**T.73–4, 78–82**) or with a rosette;

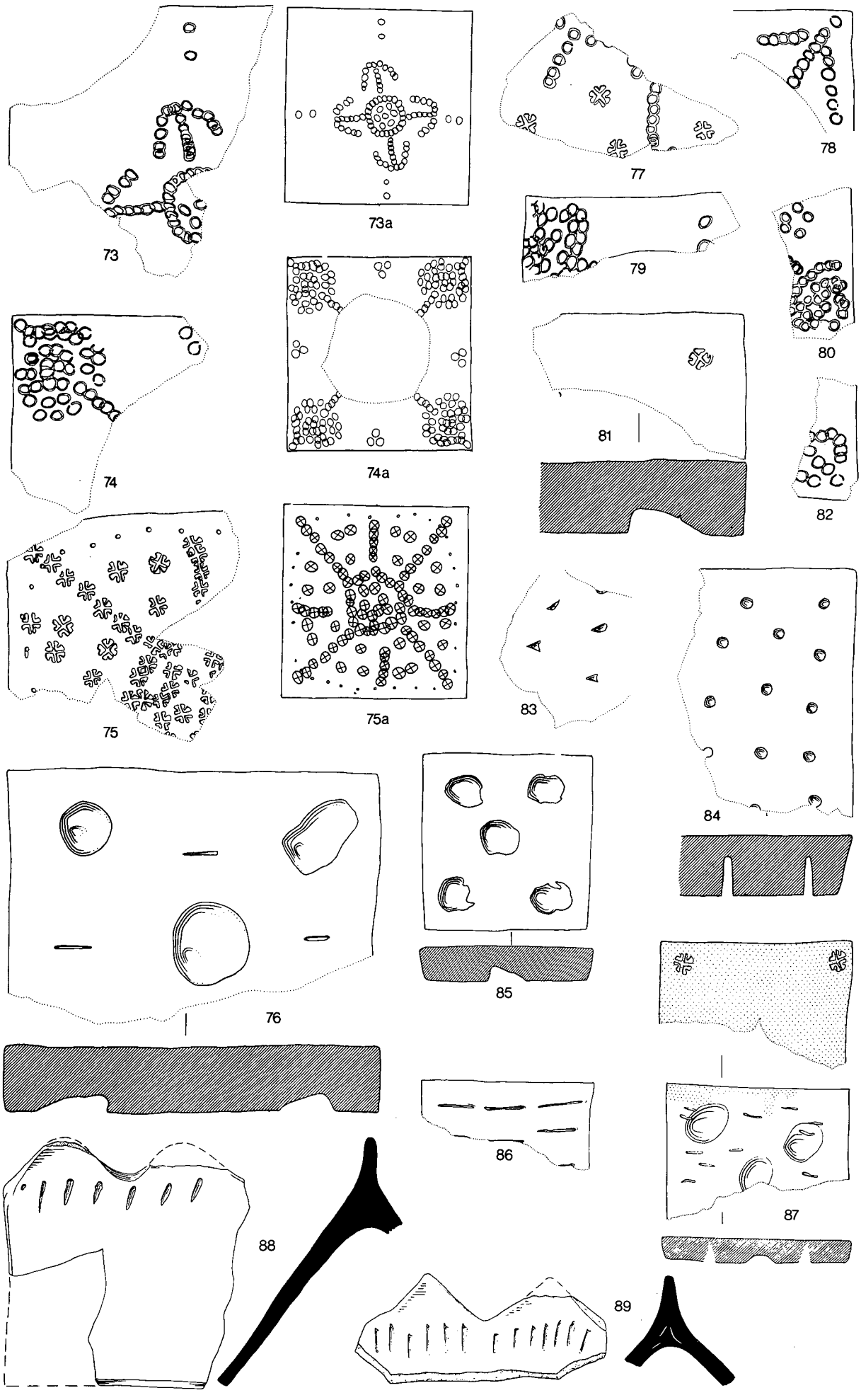


Fig. 142. Floor-tiles from the Valiant Soldier kiln (scale 1:4 with suggested restorations of designs 1:8).

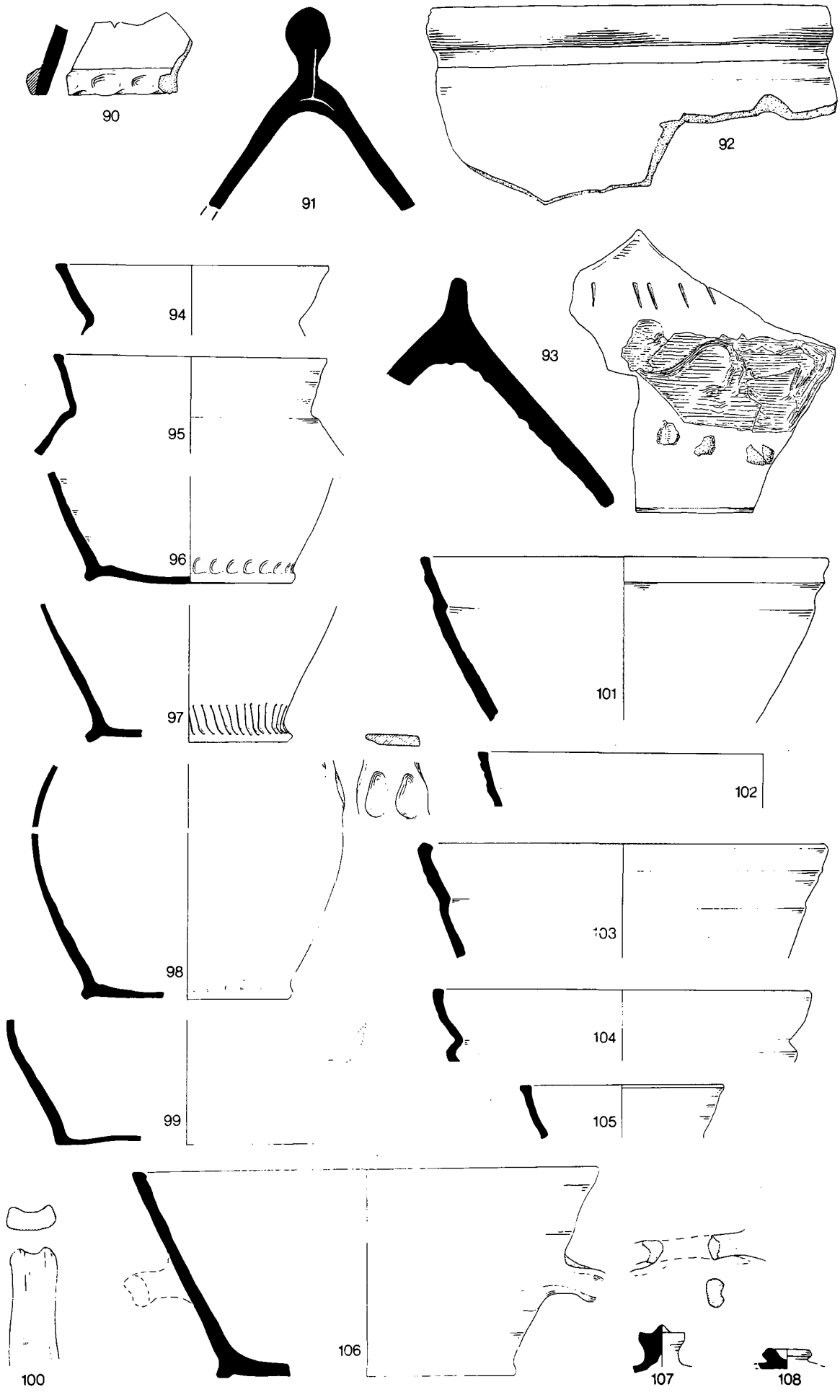


Fig. 143. Tiles and pottery from the Valiant Soldier tile kiln (scale 1:4).

most of the stamped tiles are unslipped and glazed mid green, but there are exceptions (e.g. **T.77**). Suggested reconstructions of some of their patterns are illustrated at one eighth actual size (**73a–75a**).

Small thin square tiles

These are *c.* 130 mm square and between 17 and 30 mm thick. Their undersides generally have five scoops (**T.85**) although stabbed backs also occur (**86–7**). Most commonly these have slip and mid green glaze; some have unglazed slip. One of the latter type is also stamped (**87**). Since the smaller tiles are less than half the length of the large ones and are much thinner it is unlikely that they were used in the same floor.

Ridge tiles

The crests are most commonly moulded and knife-stabbed with both triangular (**93**) and rather rounded (**88**) peaks. One is exceptional in having a moulded clay rod running along its ridge (**92**). These tiles were apparently fired using slate setters, since slates adhere to several examples; however slates may sometimes have adhered to wasted crest fragments lying in the kiln flues (e.g. **93**).

Wheel-thrown wares

The products comprise rims from ?cooking pots (**94–5**); jugs (**96–100**); bowls (**101–4, 106**); and two possible lids (**107–8**). All have a granular earthenware fabric similar to that of the tiles but lacking the coarse chert or quartzite filler. Both unglazed and partially glazed cooking pots are present; one rim sherd of the latter has a slate fragment adhering to its top. The jugs have either plain bases, or ring bases with closely grouped thumbing or very shallow thumbing (**96–8**). Most jugs show traces of patchy, thin white slip which evidently was applied when liquid, as it has dribbled over parts of handles and bases. The glaze is mid or dark green over the body and light yellow-green with iron-bleeding over the slip; it is occasionally speckled copper-green. Bowls are commonly unslipped and unglazed but two examples have internal slip at the base with thin yellowish glaze flecked with copper. Both the lid sherds are unglazed.

Quality

In general the quality of the kiln products is low. The wheel-thrown wares are simple and the glaze is usually dull and poor. Whilst this may often have resulted from the discoloration of wasted sherds, it may also reflect difficulties in achieving sufficiently high temperatures in this small kiln to produce a good glaze. Perhaps significantly, no wasted sherds are heavily over-fired.

Date

The kiln overlies a medieval garden soil (VS 73) with pottery of *c.* 1250–1400 and is cut by a pit (VS 51) filled with pottery and clay pipes of *c.* 1650–90. Only four sherds were associated with the kiln but they enable it to be dated more closely. There are two sherds of Coarse Sandy ware, one sherd of St Germans-type ware and one of South Somerset gritty ware. The Coarse Sandy wares indicate a date after *c.* 1500; the South Somerset gritty ware seems to go out of circulation in the first half of the 16th century. These associations thus favour a date of *c.* 1500–50. The production of bowls in the kiln also suggest a date after 1500 (p. 00); the jugs with ring feet and closely grouped thumbing have a long life, stretching back at least to the early 15th century (**1483**) and continuing into the 16th century.

No definite kiln products have been recognised elsewhere in the city, although one or two possible fragments of the plain tiles are present. Production must have been small-scale and was probably short-lived.

5. PETROLOGICAL ANALYSES

A. THE PETROLOGY OF THE VALIANT SOLDIER KILN WARES

by Duncan H. Brown and Alan G. Vince.

Four samples, two of them pottery, one a floor-tile and one a ridge tile, were thin-sectioned. They came from the mass of waste in the kiln flues. The samples are diverse in character. One pottery sample (type fabric 2A) contains a high proportion of quartz; the second pottery sample (type fabric 2B) contains more sedimentary rock temper and has a similar range of inclusions to the Bedford Garage kiln. The floor-tile's inclusions are comparable to those of the sherd of fabric 2B, but the tile is much more heavily tempered. However, the ridge tile proved completely different, being petrologically identical to the floor-tiles of Exeter series 2 (p. 236). It is so different that it seems unlikely that this was actually made in the kiln.

Fabric 2A

This contains abundant sub-angular quartz (up to 0.4 mm), sparse rounded quartz (nearly 1 mm), moderate chert or flint, possibly lava (also 0.4 mm) and sparse felspar and subangular iron ore of the same dimensions. A sedimentary rock, perhaps slate or shale, is present, sparse and up to 1 mm in size. The matrix is anisotropic; it contains muscovite, but it is difficult to distinguish the natural inclusions from the temper.

Fabric 2B

This has abundant inclusions of sub-angular fine-grained sedimentary rock (up to 1 mm, mainly smaller). The rock is highly coloured, ranging through brown and black. Moderate quantities of angular and sub-angular quartz and quartzite (up to 0.5 mm), chert or lava (*c.* 1 mm), and sparse rounded black iron ore are also visible. The anisotropic matrix displays abundant angular quartz (*c.* 0.1 mm) and sparse muscovite (*c.* 0.2 mm).

Floor-tile

This contains abundant sub-angular quartz (up to 0.4 mm) moderate rounded quartz (up to 0.5 mm) and large granite fragments (*c.* 4 mm). Pieces of sandstone, 2 mm in size, and some muscovite are also present with what may possibly be lava. The matrix is anisotropic.

Ridge Tile

This contains inclusions up to 2 mm in size of moderate angular and subangular quartz, and fine brown-stained sandstone, orthoclase felspar, mudstone, clay pellets and granitic rock fragments, all sparse to moderate. There are also thin platelets of shell, 0.02 mm thick and 0.4 mm long, and microfossils 0.4 mm long. There is sparse muscovite up to 0.2 mm in size. The matrix contains abundant specks of carbonate and is a calcareous clay.

B. A NOTE ON THE PETROLOGY OF THE OTHER FLOOR-TILES

by Duncan H. Brown, Alan G. Vince and D.F. Williams

Series 1

This displays inclusions of abundant, well-sorted, sub-angular to rounded quartz (average *c.* 0.2 mm), with sparse fragments of a fine-grained sedimentary rock and sandstone, both 0.2 mm. The anisotropic matrix contains moderate angular quartz (*c.* 0.1 mm across) and sparse muscovite of similar size. It may be worth noting that the range of inclusions is broadly similar to that of the Valiant Soldier fabric 2B.

Series 2

Thin-section study shows a fairly clean clay matrix containing large grains of quartz up to 2 mm across, frequent pieces of sandstone, potash and plagioclase felspar, shale and some flecks of mica. The sample contains much fine carbonate. The range of inclusions present in this sherd is similar to that noted in the pottery of Okehampton Castle fabric 1, which is of North Devon origin.

Series 4

This very different fabric is characterised by numerous quartz grains (average size 0.05–0.40 mm) with a scatter of slightly larger grains and flecks of mica. The common nature of the inclusions give no indication of origin.

Museum of London and
University of Southampton.
March 1982.

V THE NUMISMATIC FINDS

by Norman Shiel with contributions from Marion Archibald, the late Michael Dolley and M. Kowaleski

1. THE COINS FROM THE EXCAVATIONS OF 1971–80

A. INTRODUCTION

A total of 143 post-Roman numismatic finds was submitted for identification. They include very few 19th- and 20th-century pieces because deposits of that date were commonly removed by machine before excavation began. Since there is no hoard material, this is quite a substantial series, but the same excavations recovered more than 400 Roman coins (Shiel in Bidwell 1979; further report by Shiel forthcoming). The post-Roman series exceeds the total number of firmly provenanced pieces from the city known from previous publications and from unpublished museum material. Of course many further finds must have been made in earlier years but their documentation and provenances are now lost. Descriptions of the British coins minted after 1700 have been excluded from the present report; a summary of these items is presented in MF 109. They have however been included in the analysis of coin loss (Fig. 144).

B. ENGLISH, SCOTTISH AND ANGLO-IRISH COINS (Pl. 3)

E.1 *Provenance*: HS 241, associated with pottery **27–8**.
Penny, William I, type IV, *c.* 1072–4.
AEGELRC ON PERHI. *Mint*: Wareham. *Moneyer*: Aegelric.
North 1963, type 844; Brooke 1916, not listed.
Diam: 19 mm. *Wt*: 1.17 gm. *Patination*: Cleaned.
For the arrangement in sequences and the dating of this issue see Dolley 1966, 17. Brooke (1916, ccxliv–ccxlv) shows Aegelric as a well attested moneyer of this reign and mint but records no specimen of William I type IV in the National Collection. He instead mentions the piece in the Carlyon Britton collection (Carlyon Britton 1908, Pl. IX, No. 4). The reverse reading of that coin is the same as of this coin discovered in Exeter but the two are from different dies. Carlyon Britton (*ibid.*, 111) also refers to a further example in the Henry Symonds collection but it was not there when that collection finally came to be sold at Glendining's on 26th and 27th September 1973 (Glendining & Co. 1973). The coin is slightly bent but not much worn and will have been lost well before the end of William's reign.

E.2 *Provenance*: CC 289, robbing of the apsidal end of the late Saxon minster church, associated with pottery **127–30**.
Penny, William II, type II, *c.* 1089–92.
SEPINE ON PILTI. *Mint*: Wilton. *Moneyer*: Sewine.
North 1963, type 852; *cf.* Brooke 1916, type 167 and Pl. XXXIII, No. 13.
Diam: 20 mm. *Wt*: 1.25 gm. *Patination*: Greyish.
The nearest reading to this recorded by Brooke (*ibid.*) gives the mint name as PILTII. This coin, though brittle and encrusted with salts when discovered, shows little sign of real wear and cannot have been much in circulation. Loss, therefore, probably occurred within a few years of issue, almost certainly before the end of the century.

E.3 *Provenance*: EB 745, residual in a 15th-century context.
Cut halfpenny, Henry I, type XV, *c.* 1134–5.
North 1963, type 871.
Diam: Uncertain. *Wt*: 0.52 gm. *Patination*: Cleaned.
The attribution of this fragmentary and virtually illegible coin is far from certain. The pieces fit together to show a clean-cut edge and on the reverse of the largest fragment the quadrilateral on a cross fleury design is visible as well as traces of the letters . . .]PN[. . .. It is impossible to say whether they are part of a moneyer's name or that of a mint. The obverse is totally illegible and while it may be that some of the wear is due to water action, the piece seems to have seen considerable use before loss, perhaps remaining in circulation through and beyond the troubled times that followed its issue.

E.4 *Provenance*: PP 1556, residual in a late 15th-century context.
Penny, short cross, class Ib, 1180–9.
FIL AIMER ON LVN. *Mint*: London. *Moneyer*: Philip Aimer.
North 1963, type 963.
Diam: 19 mm. *Wt*: 1.26 gm. *Patination*: Greyish.
The reverse is from the same die as one in the Ashmolean Museum collection (Metcalf 1969, No. 542). The coin shows moderate wear and will have been lost about the time of the recoinage of 1205.

E.5 *Provenance*: EB 256, residual in a late 14th- or early 15th-century context.
Penny, short cross, class Va/Vb mule, 1205–8.
Obv: HENRICUS/ /RX, five pearls to crown, pellet for chin.
Rev: Initial mark: cross *pattée* WILLEM-ON-LV. *Mint*: London. *Moneyer*: Willelm.
North 1963, types 969 and 970.
Diam: 19 mm. *Wt*: 1.03 gm. *Patination*: Blackish.
This muling between obverses and reverses of adjacent classes is common enough, and particularly well-attested for these classes. The moneyer Willelm is well-known for both, although coins on which the third L of his name does not occur are distinctly less common. Less common still is the obverse reading with REX abbreviated to RX, with not a single such variant among the 390 short cross pence from the Ashmolean Museum collection (Metcalf 1969). This coin is not unduly worn and lack of definition is due rather to a leaching-out of the silver that has taken place. Loss may well have occurred before 1220.

E.6 *Provenance*: BSW 149, unassociated.
Penny, short cross, class Vc, 1208–10.
ILGER ON LVNDE. *Mint*: London. *Moneyer*: Ilger.
North 1963, type 971.
Diam: 17 mm. *Wt*: 1.19 gm. *Patination*: Black.
The reverse appears to come from the same die as one in the Ashmolean collection (Metcalf 1969, No. 571). The condition of the piece is similar to that of its predecessor and its loss will have occurred in the early 1220s.

E.7 *Provenance*: GS 38, residual in a late 16th-century context.
Penny, short cross, class VII, 1218–42.

ILGER ON LVNDE. *Mint*: London. *Moneyer*: Ilger.
North 1963, type 978.
Diam: 18 mm. *Wt*: 1.27 gm. *Patination*: Blackish.
For a comparison see Metcalf 1969, Nos. 577–8, from different dies. This class of short cross pence has yet to be subdivided in any certain way but the character of this coin suggests that it was struck early during the period of issue. Short cross pence as a whole were efficiently demonetised by the late 1240s but this coin is not very worn and may well have been lost somewhat before that terminus.

E.8 *Provenance*: GS 120, associated with pottery **1072–94**.
Penny, short cross, class VIIIb, 1242–7.
. . .]OLE ON LVN[. . . *Mint*: London. *Moneyer*: Nicole.
North 1963, type 982; cf. Metcalf 1969, No. 589.
Diam: 17 mm. *Wt*: 1.03 gm. *Patination*: Black.
This is a poorly preserved example of a badly made issue and further sub-classification is not possible. In any case a *terminus ante quem* for loss is provided by the fact that the whole short cross issue had been demonetised by 1250.

E.9 *Provenance*: RS 838, unassociated.
Farthing, Edward I, class II, January–May 1280.
Mint: London.
North 1975, type 1052.
Diam: 13 mm. *Wt*: 0.26 gm. *Patination*: Black.
This extremely well preserved piece, clearly showing the reversed Ns of class II, cannot have remained at all long in circulation after the time of its issue.

E.10 *Provenance*: MS 17, L.1, top surface of Roman city ditch.
Penny, Edward I, class IIIb or c, 1280–1.
Mint: York (Royal).
North 1975, type 1021.
Diam: 19 mm × 17 mm. *Wt*: 1.11 gm. *Patination*: Greyish.
This piece is quite worn and may have remained in use until the early years of the 14th century.

E.11 *Provenance*: PS 185, unassociated.
Halfpenny, Edward I, class IIIe, 1280–1.
Mint: London.
North 1975, type 1045.
Diam: 15 mm. *Wt*: 0.66 gm. *Patination*: Brownish.
This coin is not very worn and will probably have been lost before the end of the 13th century.

E.12 *Provenance*: TS 191, L.1 (cf. pottery **888–921**).
Penny, Anglo-Irish, Edward I, 2nd issue, 1281–2.
Mint: Dublin.
Dowle and Finn 1969, 21, type 64.
Diam: 19 mm. *Wt*: 1.15 gm. *Patination*: Cleaned.
This penny is not unduly worn and will have been lost before 1300. Shortt (1841, 58) records a second Anglo-Irish coin from Exeter: a penny of John minted by William of Limerick.

E.13 *Provenance*: PP 1013, floor of post–*c.* 1300 monastic kitchen.
Penny, Edward I, class IX or X, 1299–1310.
Mint: Durham (Royal).
Diam: 19 mm. *Wt*: –. *Patination*: Black.
This consists of two conjoined fragments together making up a little over half a coin, but precluding more precise classification. The coin is not unduly worn and could well have been lost about the beginning of Edward III's reign.

E.14 *Provenance*: MY 1000.
Penny, ?Edward III, ?1327–77.
Mint: York (episcopal).
Diam: –. *Wt*: –. *Patination*: Blackish.
This is an extremely badly preserved central fragment of a medieval long cross penny. The obverse is totally illegible whereas the reverse shows the central quatrefoil which enables the attribution to the York Episcopal mint. The attribution to Edward III is very tentative and based on the dimensions of the design on what is left. Considering both the extreme wear and heavy clipping suffered by the coin, it seems safe to say only that a date of loss before the early 15th century is very unlikely.

E.15 *Provenance*: GS 38, associated with pottery **1882–1920**, **J.9–10** and **J.14**.
Half groat, Henry VIII, 3rd coinage, 1544–7.
Initial mark: None. *Mint*: Canterbury.
North 1975, type 1852.
Diam: 19 mm. *Wt*: 1.65 gm (chipped). *Patination*: Cleaned.
The coins of Henry's third and last issue were struck in an increasingly debased silver which reached a nadir at .333 fine. This piece has the appearance of a rather better standard than that and was probably struck early in this short final period. It is worn but a *terminus ante quem* is provided by the fact that the base issues of Henry and Edward VI had been called in for re-issue by the early 1560s.

E.16 *Provenance*: RS 739, garden soil containing clay pipe stems and **J.24**.
Threepence, Elizabeth I, 1572–3.
Initial mark: Ermine.
North 1975, type 1948.
Diam: 19 mm. *Wt*: 1.91 gm. *Patination*: Blackish.
This coin is virtually as issued and can have seen scarcely any circulation at all. Its loss must have occurred before 1575.

E.17 *Provenance*: 38 North Street, 177, found lying on lath-and-plaster of ceiling.
Shilling, Elizabeth I, 1584–7.
Initial mark: Escallop.
North 1975, type 2014.
Diam: 30 × 28 mm. *Wt*: 5.39 gm. *Patination*: Greyish.
This very worn and slightly clipped coin is the sort of piece that remained in use for a long time. Many such pieces are found in hoards of the Civil War period in the mid 17th century. It is therefore reasonable to assume a date of loss for this coin as late as the reign of Charles I.

E.18 *Provenance*: EB, unstrat.
Twopence, Elizabeth I, 3rd issue, 1583–1603.
Initial mark: Uncertain.
North 1975, type 2016.
Diam: 17 × 15 mm. *Wt*: 0.07 gm. *Patination*: Blackish.
This piece is worn and cracked but small change reached such a state more quickly than larger denominations such as **E.17**. This coin will have been lost before *c.* 1625.

E.19 *Provenance*: EB 175, 19th-century.
Twopence, Elizabeth I, 3rd issue, 1583–1603.
Initial mark: Uncertain.
North 1975, type 2016.
Diam: 13 × 12 mm. *Wt*: 0.26 gm. *Patination*: Black.
This coin has been clipped, cracked and pierced with a neat hole 2 mm in diameter, hence the impossibility of precise attribution and its extremely low weight. It will have survived for anything up to 30 years in circulation.

E.20 *Provenance*: TS, unstrat.
Sixpence, James I, 1604.
North 1975, type 2102.
Diam: 25 mm. *Wt*: 1.25 gm. *Patination*: Blackish.
This coin is very chipped and excessively worn. To have reached its present state it will have remained in circulation for most of the 17th century.

E.21 *Provenance*: CC, unstrat.
Regal farthing, James I, type 1a, 1613–14.
Initial mark: Fret.
North 1975, type 2130; Peck 1964, type 40.
Diam: 13 mm. *Wt*: 0.31 gm. *Patination*: Black.
This scarce example of one of the earliest copper farthings, though chipped and holed, is little worn and will have been lost well before the end of James' reign.

E.22 *Provenance*: PS 506, post–*c.* 1750 context.
Halfcrown, Charles I, 1635–6.
Initial mark: Crown. *Mint*: Tower of London.
North 1975, type 209.
Diam: 34 mm. *Wt*: 13.51 gm. *Patination*: Black.
This coin is fairly worn and will have been in use for several decades before loss sometime after the Restoration.

E.23 *Provenance*: CC L.14.
Regal farthing, Charles I, 'Richmond Round', 1625–34.
Initial mark: Heart.
Peck 1964, type 175.
Diam: 17 mm. *Wt*: 0.50 gm. *Patination*: Greenish.
The obverse is weakly struck but there is little sign of wear and loss before 1640 seems probable.

E.24 *Provenance*: GS L.3, garden soil with mixed 16th- and 17th-century finds.
Regal farthing, Charles I, 'Richmond Round', 1625–34.
Initial mark: Double rose.
Peck 1964, type 202.

Diam: 17 mm. *Wt*: 0.60 gm. *Patination*: Greenish.
The type of punctuation and the form of the harp suggest a date for this coin towards the end of the issue. It is very little worn and unlikely to have been lost after 1640.

E.25 *Provenance*: VS 51, associated with clay pipes of types 5G, 7NE, 3S, LC, *c.* 1650–90.
Regal farthing, Charles I, 'Richmond Round', 1625–34.
Initial mark: Double rose.
Peck 1964, type 204.
Diam: 17 mm. *Wt*: 0.53 gm. *Patination*: Blackish.
This piece is in a similar sate to **E.23** and may also be presumed to have been lost by 1640.

E.26 *Provenance*: CC, unstrat.
Regal farthing, Charles I, 'Richmond Round', 1625–34.
Initial mark: Uncertain.
Diam: 17 mm. *Wt*: 0.45 gm. *Patination*: Blackish.
This piece is in a similar state to **E.23** and may also be but the details have been lost more by corrosion than by wear; hence its date of loss will not be much later than theirs.

E.27 *Provenance*: GS site 1, unstrat.
Regal farthing, Charles I, 'Maltravers Round', 1634–6.
Initial mark: Rose.
Peck 1964, type 248.
Diam: 17 mm. *Wt*: 0.35 gm. *Patination*: Blackish.
This piece is very worn and may not have been lost before 1650.

E.28 *Provenance*: CC, unstrat.
Regal farthing, Charles I, 'Maltravers Round', 1634–6.
Initial mark: Woolpack.
Peck 1964, type 252.
Diam: 17 mm. *Wt*: 0.42 gm. *Patination*: Blackish.
This piece, struck on a very thin flan, is little worn and will have been lost before 1640.

E.29 *Provenance*: CC, grave 18.
Regal farthing, Charles I, 'Maltravers Round', 1634–6.
Initial mark: Chipped off.
Diam: 17 mm. *Wt*: 0.41 gm. *Patination*: Blackish.
This badly chipped but not very worn piece will have been lost within about a decade of issue.

E.30 *Provenance*: GS 91, small mid 17th-century pit group.
Regal farthing, Charles I, Rose, 2f, 1636–44.
Initial mark: Crescent.
Peck 1964, type 340.
Diam: 14 mm. *Wt*: 0.93 gm. *Patination*: Cleaned.
This is not much worn and is unlikely to have been lost much after 1650.

E.31 *Provenance*: EB 175, as **E.19**.
Twopence, (turner), Scottish, Charles I, 1632–9.
Burns 1887, type 7; Earl of Stirling's Coinage, type 2b; Stevenson 1959, type 3c.
Diam: 16 mm. *Wt*: 0.70 gm. *Patination*: Blackish.
This is a legitimate example of a series which was quite extensively copied. It has seen considerable circulation, presumably passing locally for a farthing. Date of loss will have been sometime in the 1650s.

E.32 *Provenance*: CC, L.5, containing mixed post-medieval finds.
Twopence, (turner), Scottish, Charles I, 1642–50.
Stevenson 1959, type 5602.
Diam: 20 mm. *Wt*: 2.60 gm. *Patination*: Cleaned.
This is a very worn piece which presumably circulated as a farthing before loss towards the end of the century. That the circulation of Scottish coins in Devon was not confined to bronze is evidenced by the presence of a 30s. piece in a small hoard of Charles I halfcrowns from Cockington (unpublished, private collection), Torquay.

The post-Civil War coins of the 17th century are summarised below. Full descriptions of each item will be found on MF 105–8.

E.33–40 Farthing trade tokens, all Exeter types: John Bennet 1657; Ambrose Paige 1658; Edward Hickman 1659; William Keagly 1664; Francis Bass 1665; John Palmer 1667; Mermaid Inn 1666; William Snow 1671. These are respectively Williamson (1889–91) Devon types 86; 139; 116; 126; 85; 143; 165; 282.

E.41–55 Farthings: Charles II 1673; 1675; 1679; 1672–9; 1672–9; James II 1687; William and Mary, date illegible; William III 1695 (Reverse Brockage); 1698.
Halfpennies: William III 1697; date illegible.
Sixpence: William III 1697.
Shilling: William III 1696–7 (Chester Mint).

A list of the 18th-century coins will be found in MF 109.

C. FOREIGN COINS

F.1 *Provenance*: EB 402, residual in a 13th-century context.
Miss M. Archibald writes,
'Bronze core from a gold-plated forgery of a Frisian derivative of a Louis the Pious (814–40) *solidus* of the MVNVS DIVINVM type.
Obv: . . .]OV[. . . .]III. ., devolved head and shoulders of Emperor to the right.
Rev: LIVIIVZ OVIIVN, cross *pattée* within a dotted circle adumbrating the wreath of the ultimate prototype, the wreath ties denoted by II.
Diam: 21 mm (max). *Wt*: 2.43 gm. *Patination*: Cleaned.
'The immediate prototype of this piece is a gold Frisian copy of the MVNVS DIVINVM *solidus* of Louis the Pious first struck in 816–18. The present example is however made of bronze and is the core of a plated forgery whose gold surface has not survived. Care was taken to examine the piece both before and after cleaning for any traces of gold or gilding but none was found. (Similar copper/bronze cores of forgeries of Ancient British gold staters have survived.)

'This piece is very corroded, especially the obverse, on which it was impossible to determine the exact forms of the effigy and the letters of the legend. The head seems to be a wide one like those which appear on the more devolved derivatives cf. Dolley and Morrison 1966, 80, Pl. III and Grierson 1951, Pl. III, XVIb). The obverse lettering is *c.* 3 mm high and what little is visible suggests that the legend, while considerably blundered, still retains recognizable elements of the LVDOVICVS of the ultimate prototype. On the reverse the lettering is *c.* 4 mm high with the effect that the inner circle (i.e. the devolved wreath) measures only 8 mm at its maximum diameter: these features are thus larger and smaller respectively than on any of the Frisian prototypes illustrated by Grierson. The individual letters are poorly executed but when the missing cross-bars are restored the legend becomes a fairly accurate attempt to render the original Carolingian MVNVS DIVINVM.

'The Frisian copies include coins where the legends are yet more devolved into a series of Is with the occasional O (for the D) or V, often coming at the cardinal points rather than in their proper positions; the present forgery is therefore likely to have been copied from a prototype falling somewhere in the middle of the series of Frisian *solidi*. In general terms it may therefore be dated to around the middle of the 9th century. Whether this forgery was made in England or in Frisia it is not possible to be sure, but the latter would seem to be more likely. Several of the Frisian-type *solidi* have been found in England e.g. at Cambridge and Lewes (listed by Grierson 1951, 34).

'The possibility that this object was not a false coin manufactured for circulation and trade purposes but instead for use as an ornament, must be considered but can almost certainly be rejected. The MVNVS DIVINVM *solidi have* been copied for ornaments in gold and (gilt) bronze (e.g. *VCH Hertfordshire* I, 253) but although the effects of corrosion have impaired the edges of the present specimen, there are parts of the edge which are intact and there is no trace anywhere of any mounting or of an integral border of the type common on English disc-brooches with coin prototypes at this period (Wilson 1964, 35). Generally too, the types on the brooches, other than those cases where actual coins are used, are further removed from the immediate coin-prototype.

'Although this object is the remains of a false coin, it still has great interest as another example of a Frisian coin of the mid 9th century found in England with all its implications for contact with the Netherlands.'

F.2 *Provenance*: CC, unstrat., above late Saxon cemetery.
Miss M. Archibald writes,
'Hungarian. Denier, Andrew I, 1046–61.
Obv: +REX ANDREAS (letters here normalised), within inner circle, cross of three lines with pellet-in-annulet centre, a pellet in each quarter; reeded outer border with triple bindings in line with the arms of the cross.
Rev: +PANONIA, within the inner circle, a cross with pellet-in-annulet centre; a wedge in each angle.
Diam: 18 mm. *Wt*: 0.92 gm (14.2 grains). *Patination*: Blackish.
'This is the first medieval Hungarian coin known to me from an archaeological context in England. Extraordinary as such a find is, there was a political event at precisely the right time which provides a context for the arrival of a Hungarian coin in England. After the death of Edmund Ironside in 1016 and the triumph of Cnut, the two sons of the former were exiled in 1017 and found refuge in Hungary. In 1054 Edward the Confessor was still childless and negotiations were begun to arrange the return of the elder and only surviving son of Edward 'the Exile'. He eventually reached England in 1057 but died before the end of the same year. It would have been natural for Edward the Exile and members of his suite to have brought cash with them to England from Hungary and although they ought to have changed it into English money, no doubt a certain proportion escaped the net. While one is often reluctant, in a period of peace and active trade, to postulate a direct connection between a political event and the deposition of a coin, in the present circumstances, while a more prosaic route for the coin's arrival in England cannot be entirely ruled out, the coincidence of the dates is so suggestive as to make me reasonably confident in postulating some connection with the return of Edward the Exile from Hungary.'

Coincidentally, another early Devon discovery may well have arrived in like manner. It recently came to light that a *denarius* of Charles the Bald was discovered last century at Culm Davey and a case can be made to link the arrival of this coin with the return of the Frankish entourage of Aethelwulf's new bride, Charles' daughter Judith (Dolley and Shiel 1980, *passim*).

F.3 *Provenance*: GS, unstrat.
M. Dolley writes,
'Portuguese. Billon *dinheiro*, Alphonsus III, 1248–79.
Obv: ALFONSVS REX, cross *pattée* with alternate crescent and stars in the quarters.
Rev: PO / / RT / / VG / / AL , five shields arranged in cross with four breaking the inner circle and legend (above).
Diam: 17 mm. *Wt*: 0.44 gm. *Patination*: Greenish.
cf. Texeira de Aragao 1874–80, Pl. III, D. Alfonso 2; Reis 1964, Pl. 4, No. 7. Loss will not have occurred before the end of the 13th century. Such a coin is exceptional in an English context, presumably because these pieces would gain scant appreciation on account of their inferiority.'

F.4 *Provenance*: CC, unstrat.
Denmark, Sweden and Norway united. Sterling, Eric VII (XIII) of Pomerania, 1412–39.
Mint: Naestved.
Diam: 15 mm. *Wt*: 0.63 gm. *Patination*: Cleaned.
This coin is very worn and may well not have reached Exeter until the second half of the 15th century. It is possible that it had by then seen some circulation as a worn penny as it is not very much smaller than, for example, a light coinage penny of Edward IV.

F.5 *Provenance*: CC L.5, as **E.32**.
French. *Denier tournois*, Louis XIV, 1649.
Mint: Paris.
Diam: 16 mm. *Wt*: 1.39 gm. *Patination*: Cleaned.
This coin is not very much worn and will have been lost, possibly after having been passed as a farthing, not very long after issue.

F.6 *Provenance*: GS L.7, cf. pottery **1921–9**.
Diam: 21 mm. *Wt*: 2.00 gm. *Patination*: Cleaned.
A very corroded coin which appears to be a late 17th-century French *liard*.

D. JETTONS

J.1 *Provenance*: EB 459.
?English bronze jetton, early 14th-century.
Obv and Rev: Similar: long cross with four pellets at end of each arm, cross arrangement of five pellets in each quarter within inner circle; legend replaced by pellets.
Diam: 21 mm. *Wt*: 0.89 gm. *Condition*: Very worn.

J.2 *Provenance*: CC 18.
French brass jetton, 14th-century.
Obv: *Chatel Tournois*, as Barnard (1916) Pl. V, No. 28.
Rev: Cross of three strands *fleurdelysée* and *fleuronnée* at each angle.
Diam: 26 mm. *Wt*: 2.79 gm. *Condition*: Very worn.

J.3 *Provenance*: PP 1325, priory dorter floor.
French brass jetton, late 14th- or early 15th-century.
Obv: AVE MARIA GRACI PL, heater shield of France modern.
Rev: Long cross of three strands *fleurdelysée* with quatrefoil in centre, enclosed by a tressure of four arches *fleuronnée* at each angle.
Diam: 30 mm. *Wt*: 4.60 gm. *Condition*: Little worn.

J.4 *Provenance*: HS 141, associated with pottery **111–18**.
French brass jetton, late 14th- or early 15th-century.
Obv: SIT NOM CII DOMINI lozenge of France ancient enclosed in a tressure of four arches with a *fleur* in each spandrel.
Rev: SIT NOM CII OMI, cross potent within an inner circle whence issue four four-leaved flowers to the cantons of the cross; cf. *ibid.*, Pl. VII, No. 65.
Diam: 28 mm. *Wt*: 8.90 gm. *Condition*: Very little worn.

J.5 *Provenance*: QS 42, without useful associations.
French bronze jetton, mid 15th-century.
Obv: VIVE·LE·ROI·ET·LE·DOFIN, heater shield of France modern ensigned with a large open crown which cuts a granulated inner circle.
Rev: AVE·MARI·STELLA·DEI·MATER, cross *fleurdelysée* cantoned by four four-leaved flowers which spring from an inner circle; all within a second and graulated inner circle.
Diam: 26 mm. *Wt*: 2.17 gm. *Condition*: Little worn.

J.6 *Provenance*: GS site 2, unstrat.
French brass jetton, late 15th-century.
Obv: Crowned heater shield with arms of France modern differenced by annulet in chief, — beaded circle. Legend with ornate Lombardic lettering beginning at 2 o'clock MD[. . . rest obscured; cf. Barnard 1916, Pl. VI, No. 45.
Rev: Cross of three strands *fleurdelysée* within quatrefoil and with rosettes in spandrels and alternate Lombardic Ms and inverted Vs (? = *V*irgo *M*aria) on cusps; cf. *ibid.*, Pl. VII, No. 74.
Diam: 28 mm. *Wt*: 4.77 gm. *Condition*: Worn.

J.7 *Provenance*: CC, unstrat.
French bronze jetton, late 15th-century.
Obv: + MARIA · GRACIA · PLENA · DNS (rosette spots), similar to last but in better style.
Rev: Similar to last.
Diam: 29 mm. *Wt*: 6.29 gm. *Condition*: Cleaned.

J.8 *Provenance*: CC L.5, as **E.32**.
French bronze jetton, late 15th- or early 16th-century. Cf. *ibid.*, Pl. VI, No. 58; Pl. VII, No. 59. This imitates the *écu d'or* of Louis XI (1461–83).
Diam: 29 mm. *Wt*: 2.9 gm. *Condition*: Little worn.

J.9 *Provenance*: GS 33, associated with pottery **1882–1920** and **J.10**, **J.14**.
German brass jetton, early 16th-century.
Obv: Cross *fleuronnée* quartering arms of France modern

and of Dauphiné, — beaded circle. Fictitious legend with small and restrained Lombardic lettering.
Rev: Field of France ancient within corded border. Fictitious legend from same fount.
Diam: 31 mm. *Wt*: 2.65 gm. *Condition*: Very worn.
The types correspond closely to those of Barnard 1916, Pl. VII, No. 60 but the dies are different.

J.10 *Provenance*: GS 33, as **J.9**.
German brass jetton, mid or late 16th-century.
Obv: Ship of cog or nef type with flag of St George on staff above poop, pennant at bow, and ambiguous confusion of fighting-top and furled yard-beaded circle. *Initial mark*: Crown and a fictitious legend still in Lombardic lettering.
Rev: Arms of France ancient within a double lozenge contained by beaded circle, a star flanked by annulets in each segment. No initial mark but again a fictitious legend in the same Lombardic lettering.
Diam: 26 mm. *Wt*: 1.95 gm. *Condition*: Somewhat worn.
The piece more or less agrees with Barnard 1916, Pl. XXIX, Nos. 8 and 9, though it is from very different dies with the ship seen unusually from starboard instead of port. The metal and fabric would point to a German origin, perhaps in Nuremburg.

J.11 *Provenance*: GS 228 L.13, below pottery **1729–83**.
M. Dolley writes,
'*Obv*: Archaizing open and jewelled crown with central fleur flanked by stars — beaded circle. Border of 15 stars in place of legend. Neat and precise work.
Rev: Dancing, narrow-waisted male figure holding tendrils of vine (?) in both hands and with bunch of grapes (?) on or above head.
Diam: 31 mm. *Wt*: 2.67 gm. *Condition*: Little worn.
'The metal and fabric are suggestive of Lotharingian work of the late 15th or early 16th century, for all that the obverse type is one well-known from the French series of the same epoch (cf. *ibid.*, Pl. VII, Nos. 68–74). The reverse finds its nearest parallels in some Italian counters perhaps rather loosely associated with the same period (cf. *ibid.*, Pl. IV, Nos. 16 and 19), but their fabric appears to be cast, whereas the present piece is patently struck.'

J.12a–b *Provenance*: GS 228 L.13, as above. (Two from the same die.)
M. Dolley writes,
'*Obv*: Fleur-de-lys of late, severely angular form within beaded circle. Fictitious legend IESMISGEIESIMEN (?) in mannered Lombardic ('hyper-Gothic') lettering. Cruder work.
Rev: Horizontal phallus with glans (? circumcised) to left and testicles to right, the whole traversing the entire field. Above and below uncertain fronds — perhaps a stylized rendering of the hair of the female pudenda.
Diam: 21 mm. *Wt*: 0.82 gm. *Condition*: Little worn.
'Again the metal and fabric would seem to indicate manufacture towards the Rhine in the latter part of the 15th or early 16th century. Nothing remotely comparable was noted by Barnard, and this class of obscene jetton lies outside the experience of the present writer and of his immediate colleagues. Where the reverse type is concerned the closest analogies are provided by some obscure and largely unpublished cast pewter tokens of much smaller module and apparently of mid 14th-century date, and these will shortly be the subject of detailed discussion and publication by Mr. W.A. Seaby and the present writer on the basis of a small but highly significant group from the cabinet of the Salisbury and South Wiltshire Museum in the context of a hoard from Dublin of their innocent precursors, and by Mr. L.O. Lagerqvist and the present writer against the background of controversy concerning the identity of the notorious Swedish *biygdpenning*.'

J.13 *Provenance*: GS L.10, garden soil with finds of various dates. Nuremburg brass jetton, late 16th-century.
Obv: Three crowns and three fleurs-de-lys disposed alternately around a rose, the whole within a beaded circle. Fictitious legend with serifed Roman lettering.
Rev: *Reichsapfel* (cruciferous orb) within double tressure formed of alternate arcs and angles, a pellet flanking each point-beaded circle. Fictitious legend with Roman lettering as on obverse.
Diam: 24 mm. *Wt*: 1.49 gm. *Condition*: Average wear.
Metal and fabric alike are typically German and characteristic of the late 16th century, while the types indicate a Nuremburg *atelier* not all that remote from those of Schultes and Krauwinkel. The piece approximates to Barnard (1916) Pl. XXXII, No. 82, but the absence of intelligible legends makes a more precise attribution impossible.

J.14 *Provenance*: GS 38, as **J.9.**
Nuremburg brass jetton, late 16th-century.
Obv: Generally as the preceding piece, but the execution is ruder, and the main type is ringed with annulets.
Rev: Generally as the preceding piece, but again the execution is ruder, and the main type is ringed by pellets.
Diam: 24 mm. *Wt*: 1.50 gm. *Condition*: Worn.

The other jettons are summarised below. They are presented in detail in MF 110–12.

J.15–21 Nuremburg brass as **J.13–14**, late 16th-century.
J.22–4 Nuremburg bronze, types as above but Damien Krauwinkel.
J.25–30 As **J.22–4** but Hans Krauwinkel, *c.* 1580–1610.
J.31 As **J.22–4** but brass, Wolf Laufer, *c.* 1618–60.
J.32 Nuremburg brass, 1580–1610, Hercules and Pallas, as Barnard (1916), Pl. XXX, No. 32.
J.33 Nuremburg brass, mid 17th-century, laureate bust.

E. COIN WEIGHTS

CW.1 LL 75, Dissolution deposit, *c.* 1538–50. Weight in bronze for a half rose noble of Edward IV (1461–70 and 1471–83). This denomination was introduced in 1464 which provides a *terminus post quem* for the weight.
Diam: 12 mm. *Wt*: 1.90 gm. *Condition*: Very little wear.
Cf. Lawrence 1909, 297, and Pl. 1, No. 2. This is an example of one of the earliest of all known English coin weights. It will have been lost or discarded at about the time it became obsolete in 1489.

CW.2 GM 403, construction trench of farm parlour.
Square weight in bronze for a half unite of 11s. of James I (1603–25). This particular value of coin was issued only between 1612–19 which may be presumed to indicate the working life of the weight.
Dimensions: 13 × 13 mm. *Wt*: 4.99 gm. *Condition*: Little wear.
Cf. Lawrence 1909, 297. A similar piece was found in 1980 at Stoke-in-Teignhead, Devon.

CW.3 TS 316 L.23, cf. pottery **2100–73**.
Weight in bronze for a Spanish quadruple pistole.
Obv: Arms of Spain with small countermark in the form of an H between two crowns.
Rev: Large crown over XXI viii (not clear).
Diam: 24 mm. *Wt*: 26.99 gm. *Condition*: Very worn.
The weight of this piece suggests its use in connection with the large gold coin rather than an over-generous weight for the silver eight *reales* piece. The primary use of such weights for foreign gold and silver coins was in Ireland where they were legal tender and in widespread use. This had been recognised as early as 1476 but the greatest quantities of foreign money circulated in the 17th and 18th centuries, hence the proliferation of weights such as this, against which they could be checked. This could have been lost any time in the 17th century.

CW.4 GS L.24, cf. pottery **1949–61**.
Weight in brass, possibly 18th-century.
Diam: 19 mm. *Wt*: 3.24 gm. *Condition*: Very worn and filed.
This may be a coin weight for such as the half pistole which had a nominal weight of 3.37 gm, or perhaps an avoirdupois weight for two drachms (3.54 gm) such as a chemist would use.

CW.5 GS L.18, cf. pottery **1930–48**.
Weight in brass of late 18th- or early 19th-century appearance.
Diam: 15 mm. *Wt*: 2.715 gm. *Condition*: Worn and filed.

This is probably a coin weight for the third guineas which were struck during the latter part of George III's reign. They had a nominal weight of 2.79 gm and were demonetised in 1803 to render these weights obsolete.

F. OTHER ITEMS

A.1 EB 59, associated with pottery of horizon K, mid or late 15th-century.
Uniface lead seal. *Diam*: 28 mm.
Relatively little work has been done on these pieces. They occur quite commonly and there are many varieties occurring over several centuries of their production and use. Cf. Caldecott and Yates (1907), usefully summarised by D.J. Vorley (1981, 282–4). Cf. also Dean 1977 and Archibald 1979 for the publication and discussion of comparable material, together with an outline of other writings on the subject.
Open crown over arms of England, rose to left, star to right. The few letters of the legend which remain visible appear to read . . .]ANPAR[. . . The style of the piece suggests a date in the late 14th or early 15th century.

A.2 GS 11, small 17th-century group.
Uniface lead seal or token. *Diam*: 30 mm. Traces of simple line pattern.
This could date to any time in the late medieval/early post-medieval period.

A.3 PP 952, latest pre-Dissolution floor surface in priory kitchen.
Uniface lead token. *Diam*: 12 mm.
The only legend consists of the monogram W S. This appears to be an example of the class five in Caldecott and Yates (1907), datable to the 16th century.

A.4 38 North Street 177, as **E.17**.
Lead token or merchant's tally. *Diam*: 24 mm.
Obv: IAMES WHITE OF EXON around arms.
Rev: 38
As houses were not numbered until quite recently it must remain a curious coincidence that the number on the reverse should be that eventually given to the house in which it was found. The lettering and style of the inscription is very like those found on the tokens which were issued in large numbers in the mid 17th century, and the item was almost certainly issued by the merchant James White, who became a Freeman of the City in 1617–18 (Rowe and Jackson 1973, 120).

A.5 VS 55, garden soil with late medieval and early post-medieval finds.
Uniface lead token or weight. *Diam*: 30 mm. *Condition*: Very worn.
This piece has a crude petal design such as is commonly found on lead tokens but the deliberate small central piercing may suggest its use or re-use as a suspended weight. It is probably of late 17th-century origin.

A.6 GS site 1, unstrat.
Uniface lead token. Six-petal design. *Condition*: Chipped and worn.
Late 17th- or early 18th-century.

A.7 VS 480, 19th-century.
Bone disc. *Diam*: 33 mm.
Obv: EDWIN GLADE dog (?golden retriever) left.
Rev: 3d.
The purpose and date of this item are uncertain but a late 18th- or 19th-century date is probable.

A.8 CC, trench 4, L.5.
Bronze medallic gaming counter. *Diam*: 29 mm. *Condition*: Very worn.
Obv: WILH[. . .]ANG[. . .]SCO·FR·ET·HI·REGINA bust
LGL·RECHENDF under bust
Rev: MARIA·ANG·SCO·FR·ET·HI·REGINA bust
This gaming piece of late 17th-century German manufacture could well have remained in use through much of the 18th century.

A.9 CC, unstrat.
Bronze commemorative medallion. *Diam*: 37 mm.
Obv: THE BRITISH GLORY REVIVED UNDER ADMIRAL VERNON full-length figure right of Vernon; ship in left background, cannon in right.
Rev: HE TOOK PORTO BELLO WITH SIX SHIPS ONLY NOV 22 1739, stylised scene of naval assault by six ships on Porto Bello.
This is one of a series of medals struck to honour the successes of Admiral Edward Vernon (1684–1757) against Spanish interference in British maritime trade. He captured this port in the West Indies in only two days with a tiny force, exceeding his orders but winning popular acclaim. The piece is somewhat chipped but not much worn and may have been lost sometime during the early part of George III's reign.

2. A MEDIEVAL COIN FORGER'S DIES FROM TRICHAY STREET (PL. 4) MF 114–15)

Among the most important individual finds from the excavations are two medieval coin dies (PL. 4) which were found lying *c.* 100 mm apart in layer 23 of pit TS 316. Although the preservation of organic materials in this layer was very good, there was no sign that they were deposited in a bag or other holder. They were associated with further late 14th- and 15th-century finds (glass **G.44**, **46**; leather **L.39–51**). Early coin dies of any sort are items of exceptional rarity as, for obvious reasons, great care was taken to guard them when in use and to destroy them when past use. Although there was a mint in operation in Exeter for much of the late Saxon and early medieval period, these two dies can in no way have been connected with it. They must be a forger's dies.

D.1 Die for the reverse of a gold noble.
Metal: Iron.
Dimensions: Base 45 × 45 mm; striking surface 33 mm diam; height 39 mm.
Condition: Decay has resulted in the loss of part of one side of the base, but otherwise the condition is remarkably good. The striking surface, virtually none of which has been damaged, is generally clear in point of detail, especially as regards the lettering.
Initial mark: Cross *pattée*.
Legend: IHD : AVTEM : TRANSIENS : PER MDIVM : ILLOR : IBAT
'Jesus himself passing through the midst of them went his way' (Luke IV, 30). The S of IHS is bungled. A groove has been cut in the side of the die above the initial mark, presumably to facilitate matching with the obverse die.

D.2 Die for the reverse of a gold half-noble.
Metal: Iron.
Dimensions: Base 45 × 40 mm; striking surface 29 mm diam; height 30 mm.
Condition: The body of this die is in good condition with no part missing but the striking surface is so badly corroded and pitted that most of the type and legend have been lost. The initial mark and legend are totally lost save what is possibly the V of ARGVAS. The small groove, cut in the side to facilitate matching with the obverse die, gives an indication of where the initial mark would have been.

The style and spelling are enough to indicate that these are a forger's dies and their context confirms this. Gold was never struck at the medieval mint of Exeter which had in any case long since ceased its operations when a regular gold coinage was first introduced by Edward III. That both are reverse dies is unfortunate for dating purposes. Given the overall similarity of fabric and the fact that they were found together, the two items must be regarded as contemporary products of a single hand and sufferers of a common fate. A *terminus ante quem* of 1413 and almost certainly of 1412 may be derived from the initial mark of the noble which the die **D.1** sought to copy. The central part of the striking surface of the half-noble die is insufficiently clear for it to be possible to decide which, if any, initial letter is meant to be there. The latest safe *terminus post quem* is 1351, when the fourth coinage of Edward III commenced.

The gold coins of the late 14th century became progressively devalued as the price of gold rose, until they were reduced in weight in 1412, the noble going down from 120 grains to 108 grains. This led to the rapid disappearance of the earlier and heavier gold coins, which by that time were not in any case common. As early as 1381 a statute had been passed banning the export of English gold coins, save in payment of wages for the king's fortresses overseas, and the clipping of gold and other coins was rife. Whether these dies were used to forge coins for use in overseas trade it is clearly impossible to say; certainly it might be thought that there was a slightly higher chance of successfully issuing specious pieces in such a way. The nature of the dies is such that, whoever the intended victims of their products, the coins produced must have been gold of reasonable quality and therefore malleability. The production of these dies will almost certainly have been contemporary with that of the coins they copied. The finds associated with them include leather which is broadly of that period, and they were probably discarded or lost shortly after their working life.

In view of this find, the discovery by Dr. M. Kowaleski of documentary evidence for the forging of coinage at this date, both in Exeter and elsewhere in Devon, is of considerable interest. Dr. Kowaleski writes,

> 'There are at least two cases of the forging of coinage in the years around 1400 recorded in Exeter documents. First, John Falewille and John Forster were indicted before a Commission of Oyer and Terminer for counterfeiting the king's money in Exeter and Devon by forging coins of pewter and other metal (*Cal. Pat. Rolls* Henry IV, **1**, 554). The case is mentioned in 1401; the capture of Falewille and an unnamed companion (probably Forster) as felons is mentioned in the City Receiver's Account of 1400–1 (DRO).
>
> 'Second, a Gaol Delivery Roll of 1388–9 (PRO J.S. 3/179, m.34) records a case tried at Exeter Castle in which Elias Everyngham, a glover, was indicted before the Justices of the Peace in Exeter for making *molas* (moulds — presumably dies) and "for making diverse false monies from false metals, of groats, twopences, pennies, and halfpennies in deception of the people of Newport near Barnstaple for many years." He was found guilty; his "moulds" would presumably have been presented as evidence during the trial, but then destroyed.'

These references can hardly refer to the excavated dies, since they refer to coinage of much lower value, but they serve to show that counterfeiting was not a very rare activity.

3. THE COINS FROM PREVIOUS EXCAVATIONS IN EXETER

A. INTRODUCTION

A variety of post-Roman coins with Exeter provenances have been published or survive in Rougemont House. It is unfortunately very difficult to draw any general conclusions from this body of material, since some types of coin have clearly attracted more attention than others and the museum collection has been accumulated in a random manner. As with many other classes of Exeter's antiquities, the serious study of post-Roman coins began with work in the 1830s and 1840s by W. T. P. Shortt (1840; 1841), who published two Anglo-Saxon pieces (*ibid.*, 90) and a substantial number of medieval and later finds (*idem* 1840, 35, 55, 63; *idem* 1841, 44–96). Shortt also undertook a detailed study of the many tradesmen's tokens found in the city (*ibid.*, 72–83), an early example of this sort of work. However he did not regard the finds of jettons or 17th-century regal farthings as worthy of specific record. He states (*ibid.*, 72) that 'Nuremburg jettons (are) continually dug up here in great numbers, both of early and later date, the latter Krauwinckle, Schultes and Lauffers generally.' Similarly he records that regal farthings were continually dug up in Exeter but were 'not worthy of the collector's attention' (*ibid.*, 73). No doubt many of the unprovenanced pieces of these types in Rougemont Museum and elsewhere are Exeter finds. After Shortt's death, the subject of post-Roman coinage received very little attention. Although a scatter of coins came to the city museum between the 1870s and 1930s, no corpus of Exeter finds was published to supplement Shortt's work and very few stray finds have been acquired by the city museum since the last war. To the writer's knowledge only seven post-Roman Exeter coins have been published from the city excavations before 1971, but they include one important 9th-century piece (Montgomerie-Neilson and Montague 1929–32, 141; *idem* 1933–6, 107–8). The writer has

recently published all the hammered coins in the Rougemont House cabinet (Shiel 1980) and described the quarter noble of Henry V from the Cathedral (*idem* 1975). One poorly documented post-medieval hoard was noted by Brown and Dolley (1971, 28) and was presented in more detail, together with a second hoard, by the writer (Shiel 1977). A third Exeter hoard, comprising 'many gold and several hundred silver coins' of James I and Charles I, was recorded by Jenkins (1806, 212). In addition a small series of unpublished coins was located in 1981 in Rougemont House and is presented here (**R.1–7**).

The distribution pattern of these earlier finds is shown in Fig. 144; pieces dating after 1700 have been excluded, since the frequency and accuracy with which the coins are recorded is more or less in inverse proportion to their modernity.

B. FURTHER UNPUBLISHED COINS FROM EXETER

R.1. Not accessioned, found while excavating 246 High Street in July 1894. Penny. Probably Edward III. *Mint*: York (episcopal). *Condition*: Clipped, worn and partly fragmented.

R.2. Antiquity No. 5216, found in excavations at 12 Southernhay in 1882. Penny. Possibly 14th-century. *Condition*: Very worn, much of legend lost.

R.3. Antiquity No. 5210, found in Bartholomew Street in 1879. Half groat. Henry VIII, third or posthumous issue. *Condition*: Worn.

R.4. Not accessioned, found in excavations at Castle Street, 1903. Shilling. Edward VI. *Condition*: Very worn; nearly all legend removed by clipping.

R.5. Antiquity No. 5207, found at 7 Magdalen Street in 1881. Sixpence. Elizabeth I, 1567. *Condition*: Worn.

R.6. Not accessioned, find-spot as **R.1**. *Liard*. Louis XII of France. *Condition*: Worn.

R.7. Acc. No. 171/08. Found at Matford House, Exeter. Copper 10 *Reis* piece. John V of Portugal, 1720. *Condition*: Little wear.

C. COINS FROM PREVIOUS EXCAVATIONS AT POLSLOE PRIORY

The following coins, deposited in Rougemont House Museum in 1936–7, come from the excavations of A. W. Everett at Polsloe Priory. Since the coins from the recent excavations on that site have been published here, these earlier finds have been included in the present report.

PP.1 Base metal forgery of a groat of Henry VI. Annulet Issue, 1422–7. *Initial mark*: Pierced cross. *Mint*: Probably Calais but not clear. North 1975, type 1427. *Diam*: 24 mm. *Weight*: 2.60 gm. *Patination*: Black.
This unusual item is corroded rather than worn and has a high copper content. It is impossible to be certain of its place of manufacture.

PP.2 Nuremburg jetton. Late 16th-century. *Condition*: Worn.

PP.3 Nuremburg jetton. Hans Schultes, *c.* 1550–74. *Condition*: Worn.

PP.4 Shilling. Charles I. *Initial mark*: Triangle in circle, 1641–3. *Condition*: Somewhat clipped but not very worn.

PP.5 Rose Farthing. Charles I, *c.* 1636–44. *Condition*: Worn.

PP.6 Halfpenny token. Lawrence Righton of Dorchester, 1669. Williamson 1889–91, Dorset type 75. *Condition*: Very little worn.

PP.7 Farthing. Charles II, 1675. *Condition*: Very worn.

PP.8 Farthing. William and Mary, 1694. *Condition*: Very worn.

4. DISCUSSION

In discussing the coins, the series from the excavations has been considered in conjunction with the random collection of Exeter finds which is published or survives in the Rougemont Museum collection. Five coins of Anglo-Saxon date are now known from the city. In addition to the two foreign pieces published here (**F.1, 2**), two English ones are listed by Shortt (1841, 90),[1] and a 9th-century coin came from the Deanery excavations[2] (Montgomerie-Neilson and Montague 1933–6, 107–8).[3] Despite the presence of a mint of some significance at Exeter throughout most of the late Saxon and Norman periods, none of its coins are present among those from the excavations and there is only a single example among the miscellaneous Exeter finds.[4] Given the small size of the sample, however, this is not very surprising; for example only one of the seventeen early 13th-century short-cross pence in the hoard from Loxbeare, Devon, was of local mintage (Shiel forthcoming). Exeter coins are not especially rare but one would not expect many in such a small sample as this. What is more remarkable is the paucity of early material of any sort, not only from Exeter, but from Devon as a whole. There are only a very few Saxon and Norman coins from elsewhere in the county, despite the certainty of occupation and activity at so many sites and the presence of four late Saxon mints in the county.[5] Perhaps more remarkable still is the rarity of recorded coin hoards from Devon: only two modest hoards, both of short-cross pence and one of them found as recently as 1980 (Loxbeare), are known from the whole period of post-Roman occupation down to the 17th century. Neither is the series of later medieval coins from Exeter particularly extensive: in addition to the 19 coins dating between 1200 and 1500 from the excavations of 1971–80, a further 16 pieces are recorded from the city.

During the 17th century, Exeter again saw various bursts of activity in the production of money. No specimens of the coinage produced for Charles I have been found in the city although a few are known from Devon's Civil War hoards. The small denominations of this coinage are very rare and the larger ones generally occur infrequently as single finds. Rather more surprising is the occurrence of two silver coins of

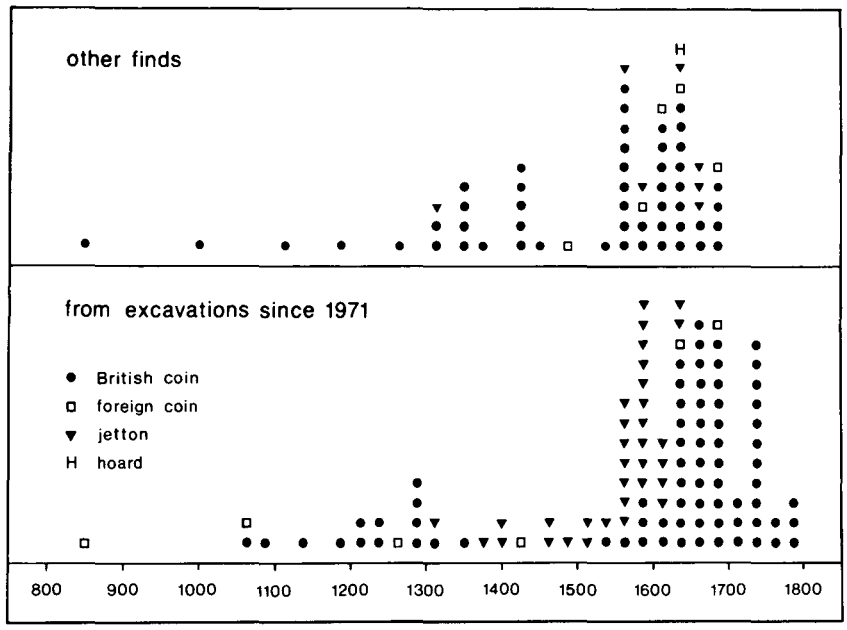


Fig. 144. The pattern of coin loss, A.D. 800–1800.

William III, both of provincial issue. Some of these issues could remain for some time in local use, as **E.49** shows; and others (such as **E.50**) could circulate far afield. The one silver coin of William III from the 1976 excavations at Upper Bugle Street, Southampton is a similar instance, for this was also a provincial issue: a Norwich shilling of 1697 (report by writer forthcoming).

The other monetary item produced locally in the 17th century was the token. These were usually used in the immediate vicinity of their issue, although some, such as the Dorchester piece (**PP.6**) from excavations at Polsloe Priory and tokens of Totnes, Poole, Lyme Regis, Saltash, Corfe Castle and even Bedford listed by Shortt (1841, 77–83)[6] presumably reflect the widespread retailing areas within which Exeter fell. These tokens were in use for a comparatively short time before the production of small change by the mint. The eight such pieces from the excavations and more than 50 tokens recorded by Shortt (*ibid.*) are a high yield and show that a considerable volume of these products must have been produced.

The chronological distribution of all the documented finds from Exeter (except the 50 tokens of the 1660s and 1670s listed by Shortt) is summarised in Fig. 144. In the period before the late 16th century the finds are not really sufficiently plentiful to discern any clear pattern of loss. The most numerous medieval pennies are those of the 1280s and the 1350s; this reflects the state of the coinage as a whole. There is a far larger number of late 16th-century pieces, the majority of them Nuremburg tokens. A further upsurge in the incidence of single finds occurs in the 17th century with the introduction of small change in the form of copper farthings of regal, token or Royal Mint issue and this century is more fully represented than any other, both in excavated material and in earlier finds.

Table 21 shows clearly that the smaller the value of a coin the less was the trouble taken to prevent its loss or to obtain its recovery.

	Edward I to end of hammered coinage.	Milled to 1700.	18th-century.
¼d.	9	17	3
½d.	1	4	19
1d.	4		2
2d.	3		
3d.	1		
4d.			
6d.	1	1	
1s.	1	1	
2s. 6d.	1		

Table 21: Number and values of coins and tokens from excavations, 1971–80.

Although foreign jettons are common here there are few foreign coins. Occasional items no doubt reflect the city's commercial life. For example a 'small copper coin of Guelderland' of 1690 which was recorded by Shortt (1841, 69) arrived here in the boom years of the Dutch trade. Similarly a *gros blanc* of Henry VI was minted at Rouen (*ibid.*, Pl. V, No. 8) a port with strong commercial connections with Exeter. A variety of *liards, doubles tournois*, medals *etc.* of France (*ibid.*, 44, 47, 59; **F.5–6**) perhaps came to the city in the course of the same trade. Pieces of a standard and value comparable to those of their English counterparts were used in England, as their occurrence in hoards of predominantly English material demonstrates. It is therefore surprising to see that the number of continental coins in a significant port such as Exeter is quite small. This is particularly true of the later period when small English bronzes served as small change. It is however remarkable that such a small group should include foreign pieces of such exceptional interest (**F.1–3**).

Microfiche 113 compares the percentages of the total collection formed by the main classes of coins from recent excavations at Exeter, Poole and Southampton. The figures reflect both the much larger number of hammered coins at Exeter and the documentation of many more modern British finds on the other sites. However the samples are too small, and the conditions of recovery too varied, to reveal different patterns of coin usage.

Although not unusually numerous, the numismatic finds from recent Exeter excavations include several items of particular individual interest; the forger's dies and the early foreign pieces are the most notable. Equally important, the gathering under controlled conditions of a series of the more commonplace post-Roman coins will allow their patterns of distribution and loss, with their potential interest to the student of economic history, to be studied. As such, they make a useful contribution to the small but growing body of numismatic evidence from post-Roman excavations.

NOTES

1. The first is a penny of Aethelred II, attributed by Shortt to Pulnoth of York. The published engraving, however, (*ibid.*, Pl. V, No. 5) shows that the coin is a helmet-type penny of Pulfsige of Exeter as Gunstone (1977) No. 573. The second, from St David's church, is described as 'a copper stycas (*sic*) of what monarch it is unknown'. Sadly this coin is not illustrated.
2. A penny of Archbishop Ceolnoth of Canterbury (833–70), recently discussed by Dolley and Shiel (1980, 11).
3. Shortt (1840, *passim*) also records the discovery of a variety of late Byzantine coins from Exeter, and a further example is listed by Fox (1952, 247). It is probable that these are collectors' pieces.
4. The Aethelred II penny described above (n.1).
5. The writer knows of only two further Anglo-Saxon pennies from Devon. Gunstone (1977) records the finding of a Lydford penny (*ibid.*, No. 586) at Lydford; in fact there is some doubt about its true provenance (Fox 1952, 248). The discovery of a penny of Harold I at Bradninch is recorded by Croslegh (1911, 269), but he provides no details.
6. Some doubt must unfortunately be expressed about the authenticity of finds recorded by Shortt, since it is probable that collectors' pieces were sometimes passed off as Exeter finds in order to encourage Shortt to buy them (Bidwell 1980, 3, 85, 87).

Addendum

Since the completion of this report, the writer's attention has been drawn to a sixth Anglo-Saxon coin from Exeter. Jenkins (1806, 376) illustrates a penny of Edward the Confessor of sovereign type as Brooke (1916) type IX with the variation of annulets in two angles of the cross. The reverse is precisely as Brooke (1916) No. 350, the moneyer Outhgrim of York. The type is dated 1056–9.

Acknowledgements

I wish to thank Marion Archibald, the late Michael Dolley and Maryanne Kowaleski for their contributions to this report. Professor Dolley also wrote a preliminary report upon the coins from Goldsmith Street and has generously allowed inclusion of some of its contents here. His comments upon the Trichay Street coin dies have also been extremely helpful.

Exeter,
January 1982.

Postscript

In his description of the obscene jettons **J.12a–b** (p. 252), Michael Dolley mentioned his intention of publishing with Mr. W.A. Seaby a group of medieval pewter tokens. We understand from Mr. Seaby that the intended paper had not been written at the time of Professor Dolley's death in 1983.

VI THE GLASS

by R.J. Charleston

1. INTRODUCTION

A. MEDIEVAL GLASS

The excavations in Exeter provide a remarkable cross-section of the types of glass which may be anticipated on English sites. The Goldsmith Street excavations have turned up an important series of glass-fragments with a 13th- to 14th-century context, representing most of the types of this period found on other contemporary sites. Pride of place must be accorded to the fragments of a bowl (**G.1**) of virtually colourless glass with threads and prunts of the same material and prunts of blue glass, an interesting example of a type best represented in England by the bowl from the Dominican Friary at Boston, Lincs., found in a late 13th-century context (Charleston 1972a, 45–6, 52–3, Pl. 3, Fig. 9). Of the same general family is the small yellow-green fragment (**G.47**) with remains of a blue prunt or thread. All the glasses of this group, of which examples have been found at Southampton, Winchester, Nottingham, London and other centres, are probably of Italian origin (*idem* 1981a, 66–8). Although the Exeter finds do not include the perhaps most spectacular glasses of this group — the goblets with tall thin stem (often with an elaborate central knop), thread-decorated bowl and wide spreading foot — they do show samples of their northern counterparts, made in green 'forest glass' (*verre de fougère, Waldglas*) and found widely distributed in England, France, Belgium and Holland. This potash-lime glass (Italian glass being made with soda) was much more liable to decay, and much of the medieval Exeter glass shows characteristic brown weathering which has sometimes almost completely consumed the glass, turning it to brown or black powder and making it strikingly light in weight. The tall-stemmed goblets are represented by **G.3**, **9–10**, and some of their stem-components and ornaments are probably to be found among the group **G.4–8** (cf. also **G.44**). **G.9** and **10** show the flanged bowl-ribbing which characterises this group and which is found repeatedly on the continent of Europe. Whether the English examples were made here or imported is a moot point. No fragments seem to have been found on English glass-making sites, and their rarity and occurrence mainly on sites of royal or noble residences, or the town houses of rich merchants, suggest that they may have been imported from the continent of Europe, probably from France. A fine jug (**G.2**) may also derive from the same source, its nearest analogues coming from Southampton, Pevensey, Battle Abbey, and Penhallam in Cornwall, all places within easy reach of France. The presumably somewhat later examples from Pevensey and Battle, however, are perhaps more likely to be English-made. Almost certainly indigenous products (although glass vessels are recorded as coming in to Exeter from Normandy in the early 16th century) are the lamps, urinals and common bottles of green glass found in reasonable abundance in Goldsmith Street (**G.13–29** and perhaps also **G.30**, **35–6**, **40**, **42**, **46**). The lamps, characteristically represented by their thickened stub-bases (**G.28–9**), have lost — as is usually the case — their relatively thin and therefore easily broken cup-tops, some 130 to 170 mm in diameter (*idem* 1981a, 70–1, Fig. 25). Of the urinals, the characteristic convex thickened base-fragments survive in **G.21–3**, together with a number of spreading mouth-fragments (**G.13**, **16–20**, **35–6**, **46**), showing in some instances the often recurring upturned rim (**G.13, 16, 35–6, 46**). Urinals have hitherto been recognized in two forms, to which has now been tentatively added a third (*idem* 1983). The first shape, which seems to have lasted from the 14th until at least the 17th century, had a wide flat rim often with upturned lip, cylindrical neck and globular body (*idem* 1981a, 71, Fig. 24); the apparently rarer second form had a piriform body with conical neck and wide flat rim like that of the first (*ibid.*, 71, Fig. 26 datable to *c.* 1500). The first type is probably represented at Exeter by **G.13**, the second possibly by **G.46**. The third type seems to have been blown thicker and had a globular body with shortish wide neck leading to a splayed mouth without the horizontal rim. At Exeter this type may be represented by **G.36**.

Medieval bottles are perhaps even more diverse, although this may relate more to size than to shape, which in any case is very seldom completely restorable, the thin glass of the body being nearly always broken (**G.14–15**, **24–7**, **40**, **42**). Necks and bases, however, are frequently found, the former frequently cut off somewhat aslant (a feature exaggerated during the 16th century), the latter with a 'kick' of varying depth, often distorted by the careless application of the pontil. Both frequently show signs of ribbing (**G.14–15**, **24**), imparted by blowing in a mould with internal flutes; this ribbing has often been 'wrythen' in the working to give a spiral round neck (**G.14**, **15**) and body. This ribbing may be closely set or relatively widely spaced out

(cf. **G.42**). One notable bottle (**G.40**), datable by context to the late 13th century, has been blown in a mould with mesh-design, a rare occurrence in the medieval period, as is the tubular neck without outsplayed rim. The milky weathering too is unusual, all these features constituting a degree of abnormality which suggests foreign manufacture.

In a 12th- to 14th-century pit at Mary Arches Street was found one example (**G.33**) of a 'slick-stone' or 'calender', a depressed hemisphere of solid glass used in the calendering of textiles, but probably also in a variety of other industrial processes requiring a smoothing action (*ibid.*, 72–3) A considerable number of examples were found in medieval layers in the industrial area of Winchester, ranging in date from the 12th to the 14th century, and in size from 65 to 85 mm but mostly in the 65 to 75 mm range, some of them showing signs of heavy wear hardly to be expected from the mere calendering of linen. An example of probably late 17th-century date at Exeter is provided by **G.151**.

Considerably more important in the medieval scheme of things was the production in glass of vessels intended for industrial, alchemical and distilling purposes (*ibid.*, 71–2). The most important of these vessels was the alembic, the retort-like still-head which fitted over the cucurbit holding the liquid to be distilled and which discharged the distillate into the 'receiver' by means of a tube. This collected the liquid as it ran down from the dome of the alembic into a channel formed by a fold in the glass above the alembic collar. A fragment of this part of an alembic occurred in Goldsmith Street (**G.41b**), together with a section of tube which no doubt belonged to it (**G.41a**). A second tapering tube (**G.39**) may have come from another alembic, although it is distinctly unusual for an alembic tube to be ribbed. Ribbed tubing, however, no doubt intended for laboratory use, does occur on at least one 16th-century glass-making site (*idem* 1967, 71, Fig. 20). There is literary evidence to show that laboratory glassware was being made in the Weald of Surrey/Sussex in the 16th century (Thorpe 1929, 55), as well as excavated material from the glass-making sites themselves (Wood forthcoming). There is also, however, evidence that 'stilling' glasses were being imported into England in the late 16th–early 17th century (Godfrey 1975, 248). The balance of probability is that the Exeter glass was made in this country. It is interesting that glass stills are recorded in the possession of the Exeter apothecary Charles Eveleigh in 1661 (p. 236). Two 16th-century examples occur at Exeter (**G.71** and **90**).

The coil-base of a bottle, jug or bowl of opaque-red glass (**G.43**) belongs to a quite large class of opaque-red glasses of medieval date found in this country (Charleston 1981a, 69). Although they may have been imported, opaque-red glass was made in the Weald (Kenyon 1967, 161–2, Pl. 3).

The dating of English medieval glass is very uncertain, and some types (e.g. urinals and lamps) appear to have continued virtually unchanged for several centuries. It is probably the best course, until fresh dating evidence accumulates, to accept the context-dating for the Exeter finds.

B. POST-MEDIEVAL GLASS

When we come to the 16th century, fresh types are added to the old medieval repertoire, some of them probably the result of inspiration from the continent. Apart from these adopted forms, however, there is a considerably increased volume of glass-imports from the rest of Europe, by far the greater part, both in quantity and quality, coming from Venice. In the second half of the 15th century there seems to have been a great surge of energy on the island of Murano, where all 'Venetian' glass was manufactured, and not only were many new types of glass (coloured, opaque, *millefiori*, *etc.*) evolved, but also new styles of glass decoration, notably by means of enamelling and gilding. Most important of all, however, was the perfection of a formula for crystal glass (*'cristallo'*) of a beautiful lustre, and capable of being blown into thin forms of great elegance. 'Crystal' in name, it nevertheless tended to have a brownish or greyish tinge, especially in the fracture. Probably of late 15th-century date is a small fragment of the rare emerald-green glass (PP 1583, not illustrated) probably coming from a vessel with enamelled and gilt decoration. Vessels so decorated were by no means uncommon in England, as we know from surviving whole pieces, from literary sources and from excavated examples (Charleston 1981a, 77–8). Henry VIII had several green glass 'cruses' and 'spice-plates' in his collection of Venetian glass (Hartshorne 1897, 465). An example of a type of *cristallo* glass which was often enamelled and gilt is **G.58**, three examples of these beakers being known from a single pit at Southampton (Upper Bugle Street: Charleston 1981a, 77–8). Unenamelled examples are frequently seen in Italian late 15th-century paintings, and usually have a milled applied thread of glass as a footrim. A foot-fragment found at Exeter (**G.72**) may have come from a beaker of this type. Also from this phase of Venetian glass-making (found in contexts of the first half of the 16th century) are straight-sided bowl-fragments probably from goblets of biconical form, common in this period (**G.50**, **53**, **70**, the first two with mould-blown decoration, **G.50** blown into a mesh-mould, **G.53** into a ribbed mould, the ribs then being pinched together sideways to produce a second type of mesh-design — 'nipp'd diamond-waies'). Comparable glasses have been found in similarly dated contexts at Southampton (*idem* 1975, **2**, Nos. 1524–5, 1527, 1543, 1554, *etc.*). One fragment of a large goblet-bowl (**G.52**) perhaps of the same type, is decorated with half-a-dozen turns of fine applied opaque-white thread, also a commonplace at this time. A more important use of opaque-white (*lattimo*)

threading, however, is found in the numerous glasses decorated with vertical bands (*a fil*) and cables (*a retortoli*) incorporated into the body of the glass. An Exeter fragment (**G.49**) showing these two types of *lattimo* threading in alternation comes from a context of the first half of the 16th century, a fairly early date for this type of decoration. Henry VIII in 1542, however, had a glass 'rowid (i.e. striped) with white' as well as others with 'diaper worke of sondry fashions' (Hartshorne 1897, 465), which may refer either to this striped decoration (perhaps that *'retortoli'*) or to the more complex variant where two paraisons striped in this way were blown one within the other, to produce a net-pattern (*a reticella*). Only the simpler type of decoration occurs at Exeter (**G.49, 74, 89, 95–7**). The later numbers may confirm the evidence from other sources that the type continued well on into the 17th century. **G.97** illustrates a further development of this decorative mode by the inclusion of blue threads as well as white, a feature also found on other English sites (e.g. at Coventry). It is uncertain whether all these glasses were made in Venice itself, or whether some may not have been made in the numerous glasshouses *à la façon de Venise* set up in many parts of Europe in the 16th and 17th centuries. The cylindrical beakers (**G.74** and **89**) are of types more at home in northern Europe than in Italy, and would tempt the supposition that they might have been made in the Netherlands, from which source numerous imports of glasses into Exeter are recorded (p. 263). However, the Venetians are well known to have trimmed their styles to the customers' requirements, and there is as yet no certainty in the matter.

Some time before the middle of the 16th century the monumental Gothic forms represented by the biconical goblets began to give way before a new taste in glass characteristic of the Renaissance, lighter and more elegant, and exemplified in the three-piece wine-glass where the relatively tall slender stem dominated the design. The apogee of this phase in glass-making is reached in the perfect harmony between bowl, stem and foot seen, for instance, in the glasses represented by Veronese in his pictures of about 1560–70. These show tallish stems with hollow-blown 'inverted balusters' as their main component, but this shape of stem was often enhanced by blowing into a mould which produced a design of lions' masks alternating with festoons in relief. These 'lion-mask' stems are already to be seen in the pattern-book of a Netherlands glasshouse (Beauwelz) operating about 1550–5, and they seem to be virtually universal in the glassmaking of the *façon de Venise*, appearing in varying forms at, e.g. Hall in the Tyrol, Barcelona, in Bohemia, and above all at the London glasshouse of Jacomo Verzelini, active in the last quarter of the 16th century. Exeter has produced one of these 'lion-mask' stems (**G.118**). It is impossible to say whether this was made in Venice or in England, and the type may persist until almost the middle of the 17th century (Moorhouse 1971b, 63, Nos. 1–3). The elegant 'inverted baluster' stem, which can be documented in London about 1600, assumed an exaggerated height in England during the first third of the 17th century, when after 1615 the English industry came under the dominance of Sir Robert Mansell. The great preponderance of these 'cigar-stems' on English sites compared with their relative scarcity on the continent of Europe suggests that they were English-made, produced predominantly if not exclusively in London. A number of these stems, but none of them of exaggerated height, have been found at Exeter (**G.93, 104, 109, 124**). Two of them were found in association with the pointed round-funnel bowl characteristic of English glasses in this period (**G.104, 109**, the latter octagonal in section). A further stem-shape, which probably overlaps the cigar-stem in date (probably *c.* 1620–60), may be derived from it. It is shorter, but broader, hollow-blown with the lower end of the paraison covered by a capstan-shaped piece of solid glass worked up over it and joining it to the foot (**G.105**). This is a form greatly favoured in the Netherlands in the second half of the 17th century, and the Exeter glass may be one of the recorded imports from Holland, although an English origin is likely, and the attribution gains support from the shape of the accompanying bowl.

Two tiny fragments (**G.87** and **92**) have more significance than their size would suggest, being parts of stems made by the manipulation of ribbed tubing to produce complex formations known in the jargon of the time as 'of extraordinary fashions'. These correspond to the 'serpent stems' of the contemporary Netherlands glasshouses, but are usually in monochrome glass rather than the coloured threads of the continental glasses (Charleston 1980, 289–90, Fig. 3; Oswald and Phillips 1949, Figs. VII–VIII).

Allusion has already been made to the tall cylindrical glasses which were the typical beer-glasses of northern Europe. Exeter has produced from the Queen Street site, apart from the white-striped example already referred to, two specimens of this shape (**G.75–6**) decorated by means of an applied spiral trail of self-coloured glass which has been blown into a vertically ribbed mould, producing the effect known as the 'chequered spiral trail' (Tait 1967, 94–112). The trailing on these two fragmentary beakers is relatively thin, and a more normal version of this decoration, with a broad trail flattened and divided into cushion-shaped elements, exists in **G.147**, a fragment which, despite its association with late 17th-century material, belongs to the earlier part of that century. It comes from a shorter and wider beaker with spreading lip and probably originally a foot made by pushing in the base and laying a milled trail round the basal angle. The type is well represented in the Gracechurch Street 'hoard' dating from the first half of the 17th century (Oswald and Phillips 1949, Figs. XV–XVI). On these glasses, however, the thin threading is more in line with that of the Exeter cylindrical beakers (**G.75–6**) than with that of **G.147**. One further glass belongs in this general

category — the tall slightly conical beaker (**G.110**) made in two sections and decorated with two applied horizontal threads milled by means of a rigaree. Analogous glasses at Gracechurch Street (cf. *ibid.*, Fig. XIV, decorated with applied *lattimo* threads) and the apparent absence of this shape of glass from continental finds suggest that this may be an English product.

One further type of Venetian or Venetian-style glass at Exeter perhaps warrants mention — the glass dish represented in two examples (**G.119** and **G.127**). Others have been found at Waltham Abbey (*c.* 1640 — see Charleston 1969, 87–8), Nonsuch Palace (before 1682) and Basing House (before 1645 — see Moorhouse 1971b, 66, No. 18), and they may represent the 'trencher plates' of Edward Salter's patent of 1608. In 1609 glass 'trenchers for sweetmeats' were included among goods 'vendible in India' by the East India Company.

Two glasses of foreign but not Venetian manufacture call for mention before we pass beyond the mid 17th century. The first is a bizarre flask (**G.94**) made of a bubbled pale green glass with a swelling in the neck, a curious cut-out indent at about a third of its height, and a cut-out footrim. A pair of broken-off scrolled handle-terminals are applied towards the top of the neck. The metal of this piece is quite un-English, and nothing of this shape seems to be recorded in French glass. The bulge in the neck gives a distinctly Islamic flavour, and Spain is perhaps the most likely country of origin. This piece may have some affinity with a flask found in a 17th-century context at Dartington Hall (Platt 1962, 223). The second item (**G.123**), unfortunately from an unstratified context, consists of two fragments of a beaker or wine-glass of colourless metal with part of an inscription apparently engraved on it: these traces are more probably the ghosts of an enamelled inscription where the enamel has flaked or been weathered away during burial. A number of fragments of glasses of this character has been found in England (e.g. at Poole and Dartford, unpublished). The Dartford fragments had pronounced affinity with the fragments of a wine-glass bowl with French inscription excavated at Strasbourg (Rieb 1972, 138–41); this in turn fitted into a well-known series of enamelled glasses with French inscriptions and of undisputed French origin (Barrelet 1953, 72, Pls. XXXVIII–XL).

As for the English country-made glasses of this epoch, the old-established categories may be seen continuing — the urinals (**G.63–4**, **98**, **101** and **102**(?), **135**), the bottles (**G.56–7**, **62**, **65–6**, **100**) and the 'slick-stones' (**G.151**). The lamps, however, seem to have disappeared. Beside these traditional types of green forest-glass, however, new forms arise. The bottle-types diversify greatly. First comes a pear-shaped bottle (**G.81–6**) with cut-out foot which is clearly derived from Venetian prototypes, probably by way of Germany (Rademacher 1933, 71, Pl. 14b, 15; Schütte 1976, 107, 111, 116, Fig. 7,7) or Holland (Renaud 1962, 110, Fig. 4, 6). The German material is dated to the late 15th or early 16th century, the Dutch between 1470 and 1571. In view of the recorded trade-contacts between Exeter and the Netherlands ports, these bottles may well have been among the 'Flemish glasses' documented, a suggestion borne out by the fact that all the fragments occurred on the same Queen Street site and have the appearance of being parts of a single consignment — of a type by no means common on English sites.

Second among the new bottle-types come those which have evidently been blown into a full-size mould, usually square (**G.140**, **150**, **164**) or polygonal (hexagonal, **G.80**) in plan. Such bottles are known from English glass-making sites; one intact and several fragmentary examples of polygonal bottles have been found at Woodchester in Gloucestershire (*floruit c.* 1600; Daniels 1950, 11, Pl. V), and an intact small rectangular-plan flask on the Brookland Farm site, near Wisborough Green in Sussex (dated *c.* 1570–1600; Kenyon 1967, 182–4, Pl. XVI, 3). Such bottles were in common use in the first half of the 17th century (e.g. Charleston 1969, 88–9, Fig. 31) and beyond. Analogous to these flasks were the numerous more or less cylindrical 'apothecary's vials' (**G.112**, **143**, **152**, **159**, **162–3**) which became the standard form in the 18th century and lived on into the 19th, often made in colourless metal towards the end of this period. With these flasks and vials should be numbered the wide-mouthed and albarello-type storage jars of which the city provides a number of examples (**G.106–7**, **111**, **136**).

Apart from the plain-walled vials, the mid 16th century brought a type of ribbed flask which had clear continental ancestry. This was a small vessel of flattened form made with a second gather of glass which came up to the base of the neck and which was blown into a ribbed mould and then twisted before the body was flattened (**G.68** and **113**). This type is found in Germany (Rademacher 1933, 56, 94, Pl. 8, c, e) and dated to the 16th century, having close analogies with the ribbed cups and beakers of *Maigelein* type, which go back into the 15th century. The earliest datable English example comes from a London context of between 1590 and 1630 (Hume 1956, 102, No. 12), but a number of other English examples exist, and some fragments occur on English glass-making sites of about 1600 (Charleston 1972b, 133–4, Figs. 60, Nos. 11–12, from Rosedale, and 63, No. 44, from Hutton; see also Daniels, 1950, 12, Pl. VI, No. 41). The Exeter example (**G.113**) may have been of some age when it was jettisoned in a late 17th-century context, but an example (unpublished) found at Nonsuch Palace, the terminal date of which was 1682, may provide an analogy.

A further type of flask, perhaps to be regarded as a handled cruet, is represented by **G.141**. Close parallels to this piece have been found in London (in a context of about 1580 — Hume 1956, 98, No. 1), at Basing House (prior to 1645 — Moorhouse 1971b, 64–5, No. 16) and in Chichester (Charleston 1981b, 224–5, No. 24, with

handle intact). The character of these parallels suggests that if **G.141** was discarded *c.* 1680, it was already of considerable age.

Last among the green 'forest' glasses, but in some ways the most significant, are the tall cylindrical beakers made of a single paraison, the foot pushed in to form a deep conical dome of double thickness (**G.148**) with a deep fold at its edge enclosing trapped air (*ibid.*, 87–9). These beakers were most frequently decorated by means of light 'wrythen' mould-blown ribbing, a feature seen in the typically in-curving rim-fragment **G.79**.

The Civil War seems to have caused a break in the continuity of glass-forms in England. When we come to the Restoration a new order of form prevails. The best evidence for the taste of the later 1660s and earlier 1670s is provided by the famous series of letters and drawings sent by the London glass-seller John Greene to his supplier in Venice, one Allesio Morelli. The letters are dated between 1667 and 1672, and provide ample evidence for the popularity of certain types of drinking-glass in this period (Charleston 1980, 292–4). In a movement of taste which is paralleled on the continent, we find instead of the long-stemmed glasses of the Mansell era, short-stemmed glasses of which the central feature is normally a plain or ribbed hollow-blown spherical knop between 'mereses' (discs) of varying formations and arrangements, the bowls being either round-funnel, conical or flat-based conical. Glasses of this kind are represented at Exeter by **G.125–6**, **128–9**, **131** and **166–7**. Of these, **G.128** shows a rib-moulded bowl and knop and an undulating thread laid round the base of the bowl, an alternative trim to a plain or milled cordon. **G.129** and **131** have ribbed feet, while **G.130** has rather exceptionally a ribbed hollow-blown true baluster in place of the spherical knop. Since these forms were clearly fashionable in England, as is demonstrated by the great numbers ordered by Greene, it is to be supposed that they would have been made in the English *façon de Venise* glasshouses too. At present we have no safe means of distinguishing these from the true Venetian product.

A further type of glass imported by Greene depends for its effect on material rather than shape, being made of opaque-white (*lattimo*) glass with blotches of blue marvered into the surface (**G.117**), a type of glass referred to by Greene as 'speck'd enamel.' A further piece of *lattimo*, this time without any embellishment, is the neck fragment **G.134**. Both are probably of Venetian manufacture.

The last quarter of the 17th century saw a new era in English glass-making, with the perfection by George Ravenscroft (probably in 1676) of a potash glass partially fluxed by the addition to the batch of lead-oxide, a formula probably widely taken up in the 1680s after the lapse of Ravenscroft's patent and his own death. The earliest of Ravenscroft's identifiable glasses suffered from the defect known as 'crizzling', caused by an undue proportion of alkali in the melt, and showing itself in an internal network of shining lines and an incipient surface roughness. The Exeter fragment **G.153**, which shows this defect, is made with a hollow-blown shouldered stem on which its round-funnel bowl is mounted direct without the use of a merese as would have been normal in the Greene glasses. It is perhaps the product of one of Ravenscroft's rivals, and is of a form very common in the period about 1680–90. Another stem-fragment of the same shape (**G.149**) is apparently of lead-glass and uncrizzled, and perhaps therefore somewhat later in date than **G.153**. A further lead-glass fragment (**G.158**) shows one type of round-funnel wine-glass with hollow inverted baluster stem such as has survived intact above ground in many examples. It represents the full maturity of Ravenscroft's 'invention'.

One type of perhaps English glass which turns up in some quantity about 1700 is a gingery brown in colour decorated with threading of opaque-white, usually 'combed' into arcaded or feather designs (cf. Charleston 1975, 223, 225–6, Nos. 1600, 1603).

Apart from Ravenscroft's perfection of lead-crystal, England's most important contribution to glass-making was the development of the thick dark-green or -brown glass bottle, for the safe transport and storage of wine and beer. Begun probably some years before the middle of the 17th century, this technological innovation in due course drove all competitors from the field. Innumerable sealed or excavated examples have made possible a complete typology of the English bottle (Hume 1961, 91–117) between 1650 and 1800, when the cylindrical, often mould-blown, bottle was standardised. Three stages of its development may be seen at Exeter (**G.174–5**, **177–9**), which also produced a number of the bottle-seals (**G.169–73**).

This period also saw the appearance on the English scene of a smaller thin green bottle of high quality, decorated with mould-blown ribs, both vertical and 'wrythen'. Its quality and style, and its apparent sudden emergence at this time, suggest that it may be an import from the continent of Europe, perhaps from France. Other examples have been found in Poole (unpublished).

One further innovation of this period deserves mention — the finial **G.168** in the form of a female head wearing a tricorn hat. Surviving intact examples, sometimes with a male head, demonstrate that these finials come from bird-fountains made as conical flasks with a projecting trough giving the bird access to the water (Palmer 1974, 89, Fig. 7).

2. DOCUMENTARY EVIDENCE by J.P. Allan

No documentary evidence has been found regarding the domestic use of medieval glass at Exeter. From the late 15th century, however, the Exeter customs accounts regularly record the importation of window glass, and by the early 16th century this was arriving in quite large quantities: for example a total of 47 cases was imported in 1508–9 and 25 in 1509–10 (PRO E.122.41/2; 201/4), and almost every roll or book of the early 16th century records shipments of this kind. Normandy was certainly the principal source of these cargoes, for many came in Norman ships or with typical Norman goods, but in many instances their source is unknown. Webs of glass were arriving in Exeter as early as the reign of Edward IV (TCA 17–18 Edward IV); since Rhenish glass was normally counted by the web whilst Normandy glass was counted by the case, this suggests that Rhenish window glass was arriving here by that time. The early 16th-century accounts also mention the trade in glass vessels, but their sources are normally uncertain; an exception is the listing of four barrels of drinking glasses in the *George of Kingswear* amongst typical Norman cargoes in 1550–1 (PRO E.122.201/13).

With the inauguration of the Port Book series in the 1560s, the trade in glassware can be seen more clearly. The most common arrivals in the reign of Elizabeth were again cases of Normandy window glass, now valued at £1 per case, and in most years the Town Customs Accounts list between 15 and 40 cases of these; in view of the demonstrable deficiencies of the documents (MF 36–40) the true volume of the trade may have been considerably larger. Drinking glasses were also sent from Rouen: two or three puncheons are listed in the accounts of 1572–3, 1575–6 and 1580–1, and others in 1598–9 (TCA). In addition, glass bottles formed a minor aspect of the trade and these are recorded in five years between 1571 and 1624. The accounts sometimes state that they were covered with wicker (e.g. PRO E.190.945/8), and their importation was evidently closely connected with that of the earthenware flasks, presumably those made at Martincamp, which likewise often had wicker covers; the two types are often listed together. The valuation of the glass bottles was four times greater than that of the earthenwares.

The London trade seems to have been of similar size, with rather fewer shipments recorded in the Town Customs Accounts of the 1570s and 1580s, and larger totals in the 1590s. In several years of the 1590s more than 50 cases of glass were recorded, and there are further references to chests, maunds and firkins of drinking glasses. Some of the goods sent from London were evidently continental products: in 1573 four cases of Normandy glass were sent from the capital, and in 1575–6 two cases of Burgundy glass were brought to Exeter (TCA). (The port of origin is not stated in the last instance, but it seems probable from adjacent cargoes that they had come via London).

The Port Books and city inventories mention three further sources of late 16th-century glass. In 1577, 34 cases of English drinking glasses were sent from Southampton (PRO E.190.930/26); perhaps these were Wealden glasses, since Southampton seems hardly ever to have served as a redistribution centre of foreign or London goods sent to Exeter. Second, in 1593, 60 dozen French drinking glasses were sent from Bordeaux (TCA). Third, 'Vennes' glasses, whether truly Venetian or *façon de Venise*, begin to appear in the inventories of the wealthy by the end of the century. John Anthonye had several in a cupboard in his hall in 1598 (OC 72). Alderman Thomas Martin had a case of 'vennis glasses' in a cupboard in his parlour in 1620 (OC 132), and single examples of Venice glass, valued respectively at 1s. and 6d. are recorded in 1620 and 1629 (OC 131, 171). True Venetian glasses were expensive: in the Book of Rates of the Customs of 1610, glasses 'of Venice making' were valued at £1 per dozen, compared with fine Flemish glasses at 6s. 8d. the dozen and coarse Flemish glasses at £1 per gross. English drinking glasses were far cheaper, listed at 4s. per dozen for fine glasses and only 8d. the dozen for coarse ones.

Most cargoes of glass recorded in the Port Books of the early 17th century came from London; these must have been a mixture of London and continental products. The trade in Normandy glass vessels does not receive mention in these accounts, whilst from this period at least, Exeter was receiving glass from the Low Countries. The inventory of Thomas Macumber of 1622 lists the following items in his warehouse:

7 dozen and three London glasses	13s. 0d.
14 doz 9 Flemish glasses	7s. 0d.
3 doz 9 drinking glasses	3s. 0d.

(OC139).

Contemporaries evidently thought they could distinguish London products from Flemish ones. Macumber's stock also included conserve glasses, square water glasses, 'voyall glasses', hourglasses, 'pspectine' (perspective) glasses, small checker glasses, 'Truncke' glasses and urinals. Other inventories of this period are rather uninformative, but cases of glass bottles are fairly common and sometimes a dozen or more bottles are listed. One wine merchant listed 52 bottles, perhaps glass, amongst his goods in 1612 (OC 109). There is a scatter of references in Exeter inventories to drinking glasses, water glasses and glass bowls or dishes. A few glass stills are also recorded: for example, two stills owned by the apothecary Charles Eveleigh were valued at 6s. 8d. in 1661 (OC 193) and glasses for distilled waters are listed in 1620 (OC 135).

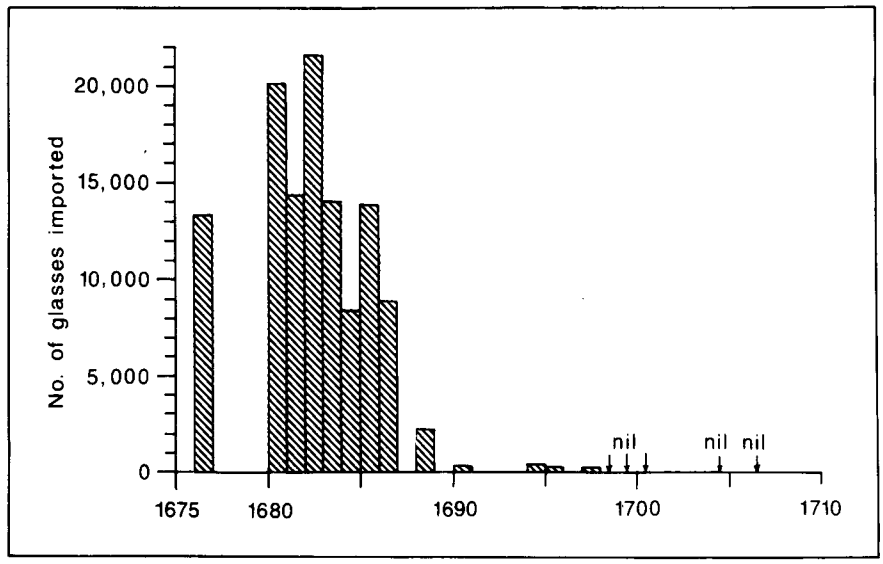


Fig. 145. The importation of Flemish drinking glasses at Exeter, 1675–1710 (source: PRO E.190. Exeter Foreign Port Books). Note: Foreign Port Books do not survive from those years where no total is indicated.

During the 1670s and 1680s the growth of the Low Countries trade brought a rapid expansion in the importation of Flemish drinking glasses. None are recorded in the Port Book of 1666, but the trade must have arisen soon afterwards, and the number recorded in the 1670s and 80s is remarkably large, as the above figure shows.

Despite the rising fortunes of the city's Dutch trade, this trade declined sharply in the late 1680s and was extinct by the end of the century; this must reflect the success of English competitors in the Exeter market. The other sources of glass in the late 17th century are surprisingly varied. Rouen continued to send white Normandy window glass; a total of 80 cases was recorded in eight years between 1678 and 1690. In the same years, 34 cases of window glass were sent from Oporto, a further 37½ webs from Lübeck, and nine from Rotterdam. Drinking glasses were also sent from Rouen in small quantities: a few are recorded in 1681 (PRO E.190.959/8).

From the late 1670s, Bristol begins to feature strongly amongst the ports sending glass to the city. The most important aspect of this trade was that in glass bottles, huge numbers of which were imported here. Bristol evidently monopolised this trade to Exeter, since the Port Books record no imports of such bottles from other ports. Table 22 shows the annual recorded totals:

	Annual average per decade	No. of years examined
1670–9	12,500	5½
1680–9	36,300	4
1690–9	Not recorded	–
1700–9	29,600	6
1710–19	51,300	3
1720–9	134,000	2
1730–9	116,000	3½
1740–9	103,500	1
1750–9	90,450	3

Table 22: Imports of glass bottles from Bristol to Exeter, 1670–1759. (Source: PRO E.190. Exeter Coastal Port Books).

After the collapse of the trade in Flemish drinking glasses in the 1680s, the Port Books contain hardly any references to the arrival of foreign glassware in the city. Only Pyrmont water bottles receive mention as a regular item of trade; there is a scatter of references to them in the 1720s and 1730s. They came principally via Amsterdam and Rotterdam, but occasionally arrived from Bremen and Hamburg. In the 18th century, London and Bristol were the only important suppliers of glassware to Exeter; unfortunately the imprecision of the Coastal Port Books precludes any calculation of the relative successes of these centres in marketing in the city, but glass from the capital is listed about two or three times more commonly in the years around

1700. By the 1730s at least, Bristol had evidently become the major supplier of window glass, although London's trade in glass vessels continued to be the more important; by the 1750s however Bristol was sending large quantities of drinking glasses, glass phials and hourglasses, so may also have become the major supplier of glass vessels to the city.

3. THE CATALOGUE

Note: In the illustrations the sections of clear glass vessels are shown in outline; those of coloured glass are black.

A. MEDIEVAL GLASS (Figs. 146–7)

Goldsmith Street 135

G.1 GS L.35 and 135, associated with pottery **1305–51**, and with Saintonge polychrome sherds in GS L.35, *c.* 1300. Two fragments of a bowl of clear colourless glass with blue and self-coloured prunts and self-coloured horizontal trail. These fragments are very similar to those of a bowl from the Dominican friary, Boston, Lincolnshire (Charleston 1972a, Fig. 9, No. 1), likewise associated with Saintonge polychrome sherds; probably Italian, late 13th- or early 14th-century. Small fragments from a second vessel of this type were found in GS 164, a group containing only fabrics 20 and 60 with much Roman residual pottery probably 13th-century.

Goldsmith Street 228

Fragments **G.2–25** come from GS 228, L.13–17, associated with pottery **1446–50**, *c.* 1300.

G.2 Rim and handle fragments of a jug of totally denatured glass, probably originally green, now brown; cylindrical neck and vertical handle with thumbpiece. The shape resembles that of the Penhallam vessel (Beresford 1974, Fig. 42, No. 35). Probably English, 14th-century.

G.3 Bowl and stem fragments of a goblet of totally denatured, probably originally green, glass, the base of the bowl with faint wrythen mould-blown ribbing and stem with originally central disc-shaped knop (? with applied decoration). English, 14th-century.

G.4 Rod-like fragment of denatured glass, now brown, perhaps part of the stem of a goblet. English or north French, 14th-century.

G.5–8 A series of handle fragments and decorative devices of denatured glass; **G.7** may be part of an attached device from the stem of a goblet. English or north French, 14th-century.

G.9 Base of the bowl of a goblet of denatured, originally probably green, glass with pronounced vertical mould-blown ribbing. English or north French, 14th-century.

G.10 Fragments from the rim and wall of a goblet or beaker of denatured glass, now brown but probably originally green, with vertical mould-blown ribbing and a thick thread at the rim. Possibly from the same vessel as **G.9**. English or north French, 14th-century.

G.11 Rim fragment of a ?beaker of denatured glass with mould-blown raised ribbing. Perhaps English, 14th-century.

G.12 Three fragments of a beaker of totally denatured glass, now showing brown, drawn in at the rim, the body decorated with wrythen mould-blown ribbing. Perhaps English, 14th-century.

G.13 Rim fragment of a urinal of pale green glass with pronounced brown enamel-like weathering. Perhaps English, 14th-century.

G.14 Rim fragments, probably of a flask of green glass with heavy encrusted brown weathering, with traces of wrythen mould-blown ribbing. English, 14th-century or later.

G.15 Rim fragments, probably of a urinal, with wrythen mould-blown ribbing. Partly denatured glass now brown, originally probably green. English, 14th-century or later.

G.16–20 Rims of urinals in heavily weathered brown glass, probably originally green. English, 14th-century or later.

G.21–3 Three examples of at least twelve urinal bases of green glass with heavy brown encrusted weathering. English, 14th-century or later.

G.24 Fragment of the base of a bottle, originally of green glass, with heavy enamel-like weathering, the underside showing traces of vertical mould-blown ribbing. Similar vessels are present at Winchester. Probably English, 14th-century or later.

G.25 Base of a bottle, originally of green glass, now largely denatured and with enamel-like weathering. Probably English, 14th-century or later.

G.26 GS 228, layer uncertain, possibly from 16th-century fill of pit. Base fragment of a bottle, originally of green glass, now blackish with enamel-like weathering. The edges of the fragment show traces of mould-blown ribbing. Probably English, 14th-century or later.

G.27 GS 228, layer uncertain. Base of a small bottle of pale green glass with heavy brown encrusted weathering. Probably English, 14th-century or later.

G.28 GS 228, layer uncertain. Base of a lamp of green glass with heavy brown encrusted weathering. English, 14th- or 15th-century.

Other medieval glass

G.29 GS 146, *c.* 1250–1350. Base of a lamp, originally of green glass, now brown. Probably English.

G.30 PP 1573, late 15th-century. Rim fragment from a vessel of pale green glass with heavy enamel-like weathering. Probably English.

G.31 PP 1724, *c.* 1300. Rim sherd of beaker of yellow glass with light iridescent surface weathering. Source uncertain, date indicated by context.

G.32 PP 1525, late 15th-century. Fragment of a vessel of uncertain form, possibly a cover, once green, now black, with light iridescent surface weathering. Source uncertain.

G.33 MA 1, large cesspit of medieval type containing only a few sherds of fabric 20; probably 12th-, 13th- or early 14th-century. Fragments of a linen-smoother, originally of green glass, now heavily weathered with denatured surfaces. Probably English.

G.34 GS 276, *c.*1250–1300. Foot fragment of a vessel in grey-brown glass, once green, now denatured, with enamel-like surface weathering and applied foot-ring.

G.35 GS 153, *c.* 1250–1350. Rim of a urinal as **G.16–20**. Probably English.

G.36 Exeter Museum Acc. No. 99.9.9, associated with pottery **1380–7**, late 13th-century. Rim of a wide-necked urinal of heavily bubbled green glass with enamel-like weathering. Urinals of this form are known from Nottingham, Ipswich, Battle and Bayham in later medieval contexts; the type is discussed in the report on the glass from Bayham (Charleston 1983).

G.37 PP 1317, late 14th- or 15th-century. Fragment from a vessel of totally denatured brown glass, probably once green, with applied self-coloured trails. Probably English, late medieval.

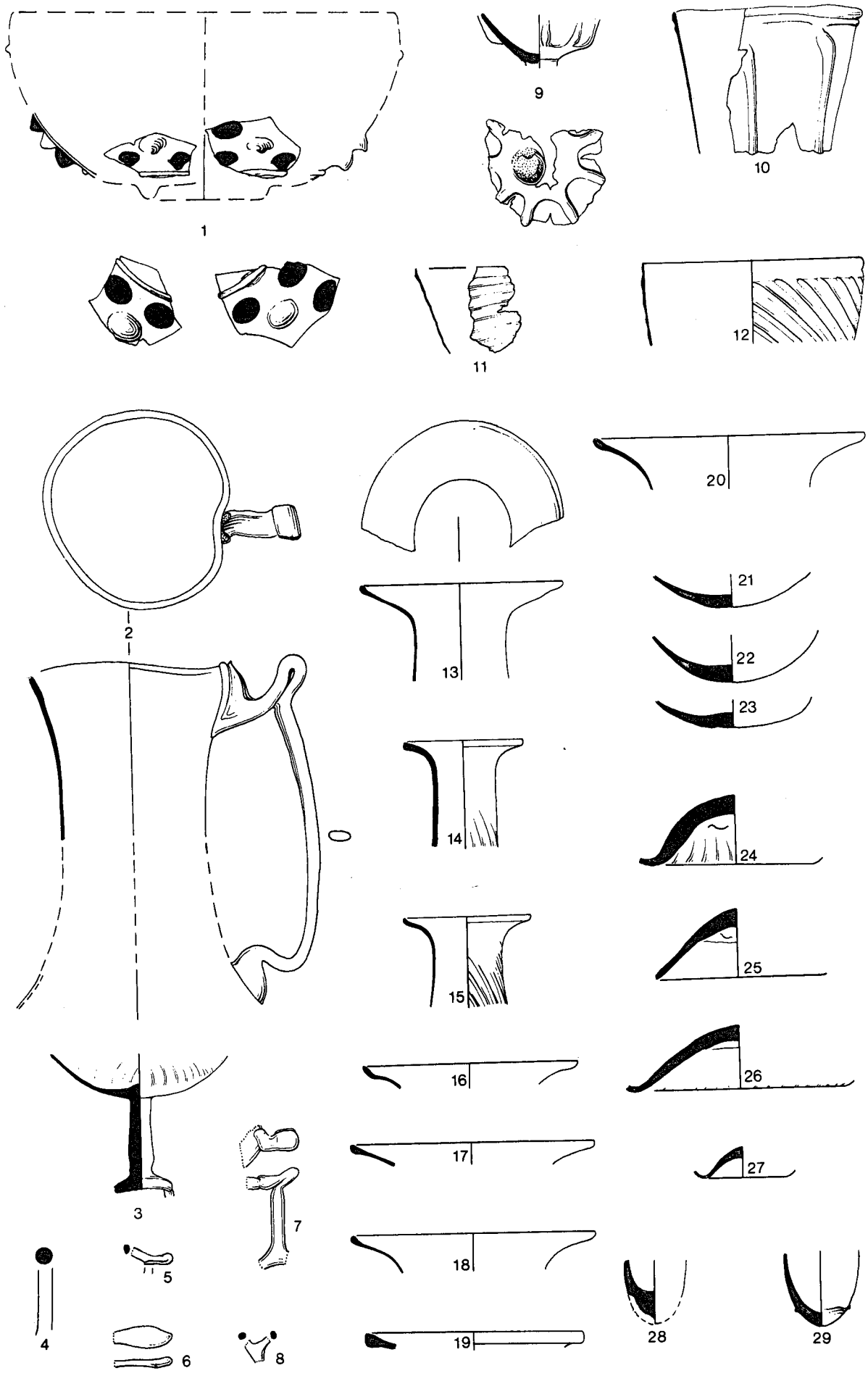


Fig. 146. Thirteenth- and 14th-century glass from Goldsmith Street (scale 1:2).

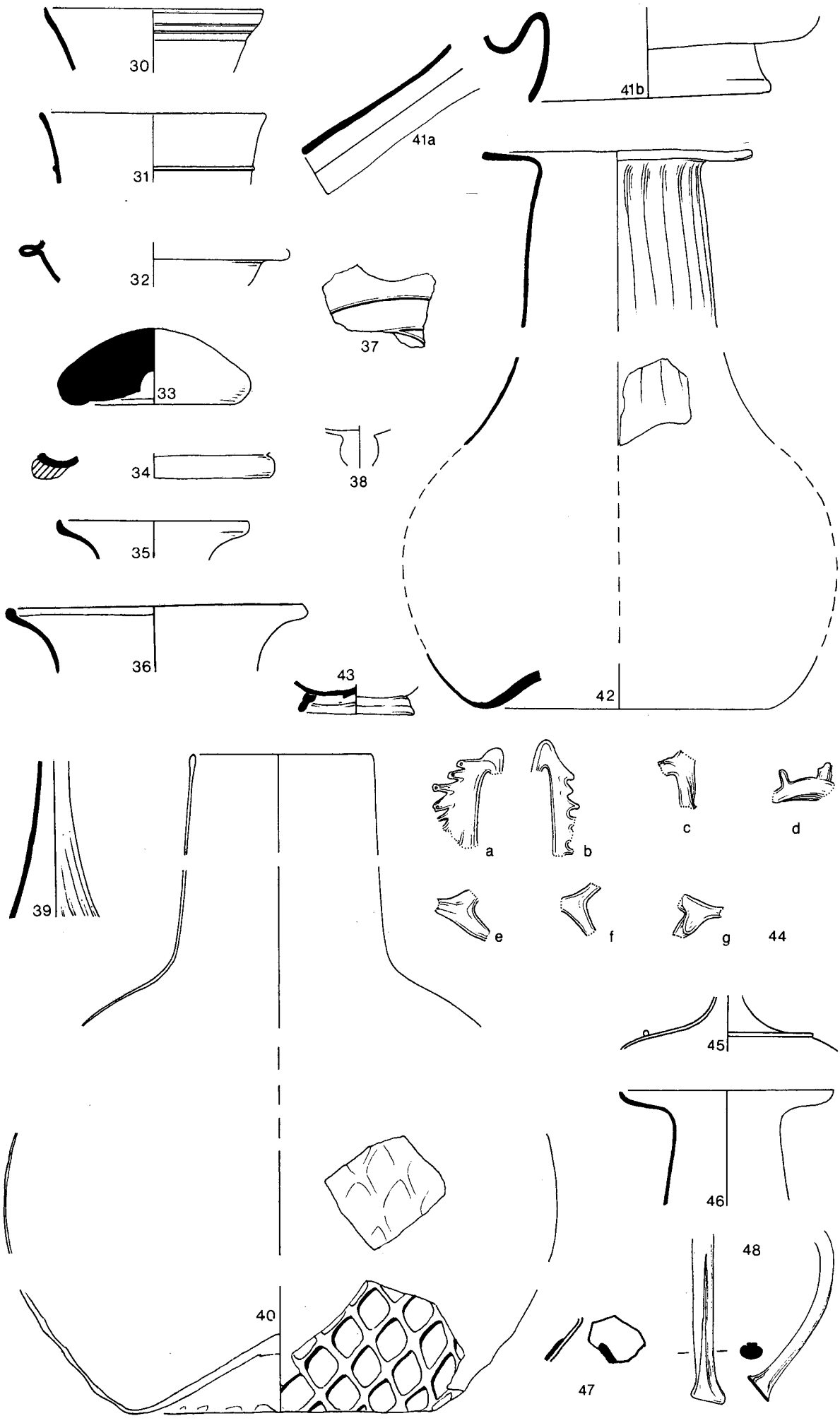


Fig. 147. Late medieval glass (scale 1:2).

G.38 GS 256, associated with pottery **1352–79**, late 13th-century. Stem fragment of a goblet of colourless glass. Probably Italian.

G.39 GS 221, late 13th- or early 14th-century. Fragment, probably of a flask, with vertical mould-blown ribbing. Pale green glass with heavy brown and enamel-like weathering. Probably English.

G.40 GS 256, as **G.38**, late 13th-century. Fragments of a large bottle of greenish-colourless glass with milky surfaces, blown in a mesh-mould. Origin uncertain, date indicated by context.

G.41 TS 316, L.19; cf. pottery **2100–73**, possibly 15th-century. Fragments from the spout and base of an alembic in brown denatured glass, once green. English, late medieval, probably 15th-century.

G.42 TS 316, L.19; cf. pottery **2100–73**. Fragments of a large bottle of pale green glass with brown encrusted weathering, the neck with vertical mould-blown ribbing. English, late medieval.

G.43 CC, unstrat. Base of a ?bowl or bottle of opaque red glass with greenish-cream weathering. The foot is formed from two applied coils. This type of glass was made in Italy from the 12th and 13th centuries (Harden 1966, 70–9); several English finds of this type are known in contexts of the 13th and 14th centuries (Charleston 1981a, 69). Possibly Italian or English, 13th- or 14th-century.

G.44 TS 316, L.23; cf. pottery **2100–73**; found together and presumably all from one vessel. Fragments of fronds and rods of brown denatured glass, probably once green. **G.44a** and **b** display circular depressions on the tips of their fronds; **44d** was once attached to another part of a glass vessel; the remaining fragments show no signs of attachments and appear to be parts of applied openwork. There are similar fragments amongst unpublished material from Nottingham. English, late medieval.

G.45 GS L.34, garden soil with 13th- and 14th-century finds including Saintonge polychrome finds of *c.* 1300. Foot fragment of a tall-stemmed goblet of brownish-colourless glass with light iridescent weathering and an applied self-coloured horizontal trail. There is a similar vessel, but with a blue trail, in the Museum of London. Probably Italian, 14th-century.

G.46 TS 316, L.23, as **G.44**. Fragments from the rim and neck of a urinal in brown denatured glass, probably once green. English, late medieval.

G.47 GS L.10, garden soil with predominantly 13th- and 14th-century finds. Scrap of pale yellow-green bubbly glass with a blue prunt or thread. Fragments of vessels of comparable metal decorated with trailed blue threads have been found at Chichester. Probably Italian, probably 14th-century.

G.48 TS, unstrat. Handle sherd in opal glass with thin beige and black weathering, with adjoining body fragment of opaque white glass with enamel-like weathering; on the outside, a 'tail' is drawn back from the lower 'sticking point'. Probably Venetian, late 15th-century.

Not ill: PP 1583, associated with pottery **1531–45**, *c.* 1500. Small fragment of an emerald glass without surface weathering. Probably Venetian, *c.* 1500.

B. POST-MEDIEVAL GLASS (Figs. 148–54)

Sixteenth-century glass from Goldsmith Street 228

G.49–57 are stratified in GS 228 L.1–8, associated with pottery **1729–83**, *c.* 1500–50.

G.49 Fragment of the ?neck of a vessel of clear colourless glass with marvered-in opaque white bands — a plain band alternating with a composite band of six stripes. Probably Venetian, 16th-century.

G.50 Scrap of a vessel of clear colourless glass, blown in a mesh-mould. Probably Venetian.

G.51 Fragments from the ?neck of a vessel of amber glass with light iridescent surface weathering. Origin uncertain, perhaps Spanish.

G.52 Rim fragments of clear colourless glass, lightly bubbled, with six fine horizontal white threads on rim. Probably Venetian.

G.53 Bowl fragments of a wine glass; clear colourless, lightly bubbled metal and two fine white threads below rim, and top edge of mesh-mould on body. Probably Venetian.

G.54 Base of a flask; pale green glass with surface pitting and patches of encrusted weathering. Probably English, 16th-century or earlier.

G.55 Base of a ?bottle; greenish-colourless glass with heavy brown encrusted weathering. Probably English, 16th-century or earlier.

G.56–7 Bases of small bottles; pale green glass with iridescent surface weathering. **G.57** heavily bubbled.

Not ill: From GS 228: sherds of clear window glass; bases of three urinals, two of them with metal as **G.57**, one with metal as **G.63**.

Other 16th-century glass

G.58 QS 20, associated with pottery **1847–8**, *c.* 1500–50. One rim fragment and three raised mould-blow rims from a beaker or goblet. None of the fragments join, so the relation between rim and ribs is uncertain. Greyish-colourless glass with brown surface weathering. Venetian, early 16th-century.

G.59 HS 89, associated with a complete Raeren mug and local wares of *c.* 1500–50. Base of a flask; metal as **G.54**. English.

G.60 GS 201, associated with pottery **1717–28**, *c.* 1500–50. Foot of a beaker; heavily bubbled pale green glass with light surface weathering. English.

G.61 GS 201, as **G.60**. Rim fragment of a wine glass; clear colourless metal, markedly bubbled, with iridescent surface weathering. Probably Venetian.

G.62 GS 201, as **G.60**. Bottle neck in pale green glass with spots of pitted brown weathering and with wrythen mould-blown ribbing. English.

G.63 QS 3, associated with pottery **1842–6**, *c.* 1500–50. Base of a urinal of pale green glass with heavy brown encrusted weathering. English.

G.64 QS 16, associated with pottery of *c.* 1500–50 (p. 169). Base of a urinal; metal as **G.63**. English.

G.65 LL 8, Dissolution deposit, *c.* 1538–50. Base of a large ?bottle or largely denatured green glass with blackish surfaces. English.

G.66 NP 1, Dissolution deposit, associated with pottery **1784–1809**, *c.* 1536–50. Neck (**a**) and base (**b**) fragments of a flask; pale green glass with encrusted brown weathering, the neck decorated with faint wrythen mould-blown ribbing. English.

G.67 QS 20, associated with pottery **1847–8**, *c.* 1500–50. Fragments of a flask; pale green glass with patchy light brown surface weathering and pitting. English.

G.68 GS 291, associated with pottery **1862–9**, *c.* 1550–80. Fragment of the neck and shoulder of a flask. Green glass with enamel-like weathering decorated with wrythen mould-blown ribbing, probably on a second gather. A similar vessel was excavated at Nonsuch. This German type was made on English sites, for example at Hutton and Rosedale, Yorkshire (Crossley and Aberg 1972, Fig. 60, No. 11); *c.* 1550–1600. GS 291 also contained the base of a urinal of bubbly light green glass with denatured brown surfaces.

G.69 GS 291, as **G.68**. Bowl fragment of a wine glass; clear colourless glass with light iridescent surface weathering. Probably Venetian.

G.70 GS 291, as **G.68**. Bowl fragment of a wine glass; clear colourless glass with light iridescent surface weathering. Probably Venetian.

G.71 RS 36, associated with pottery **1705–12**, *c.* 1500–50. Glass tube, possibly a fragment of the spout of an alembic; pale green glass with slight pitting and patchy

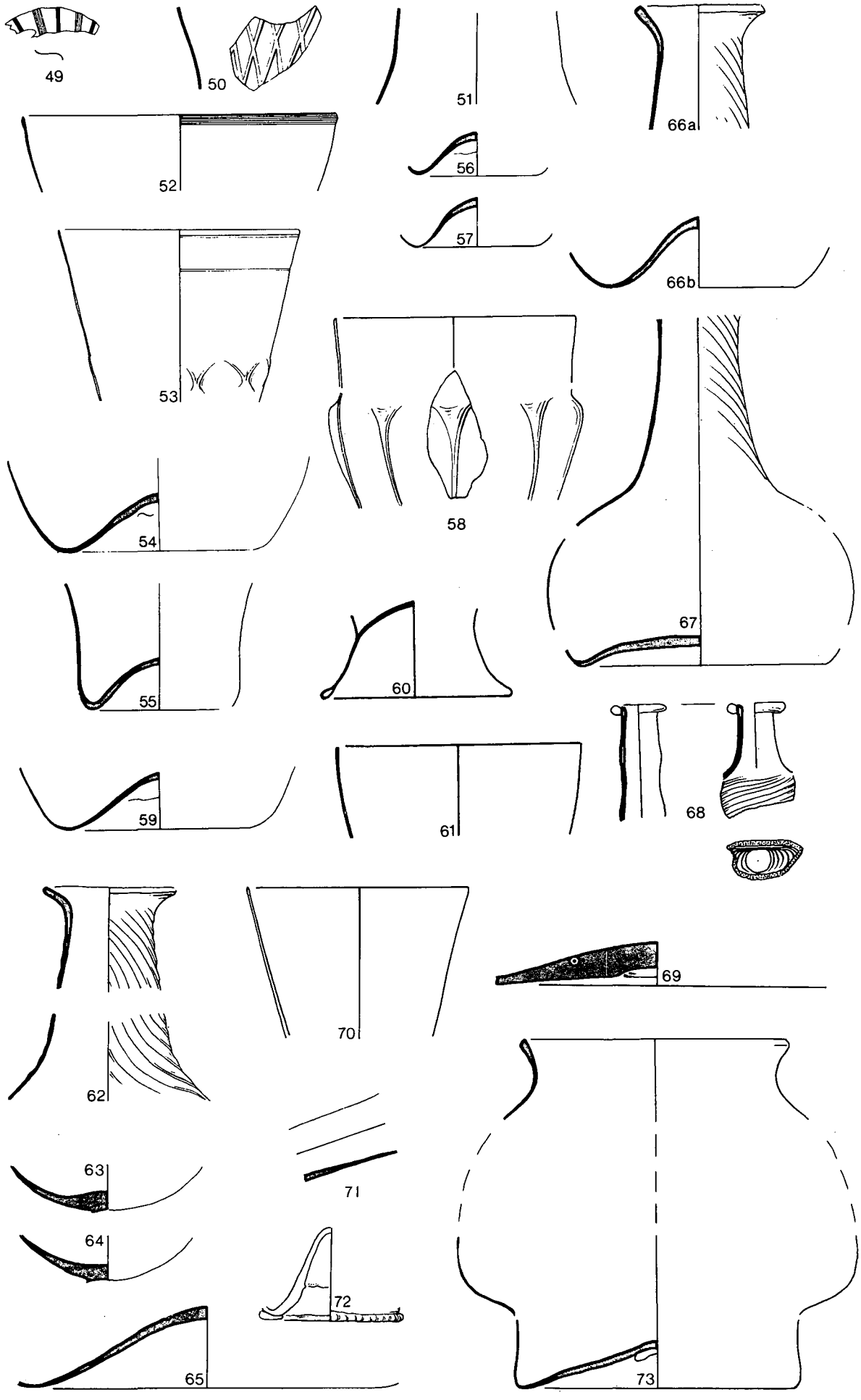


Fig. 148. Sixteenth-century glass (scale 1:2).

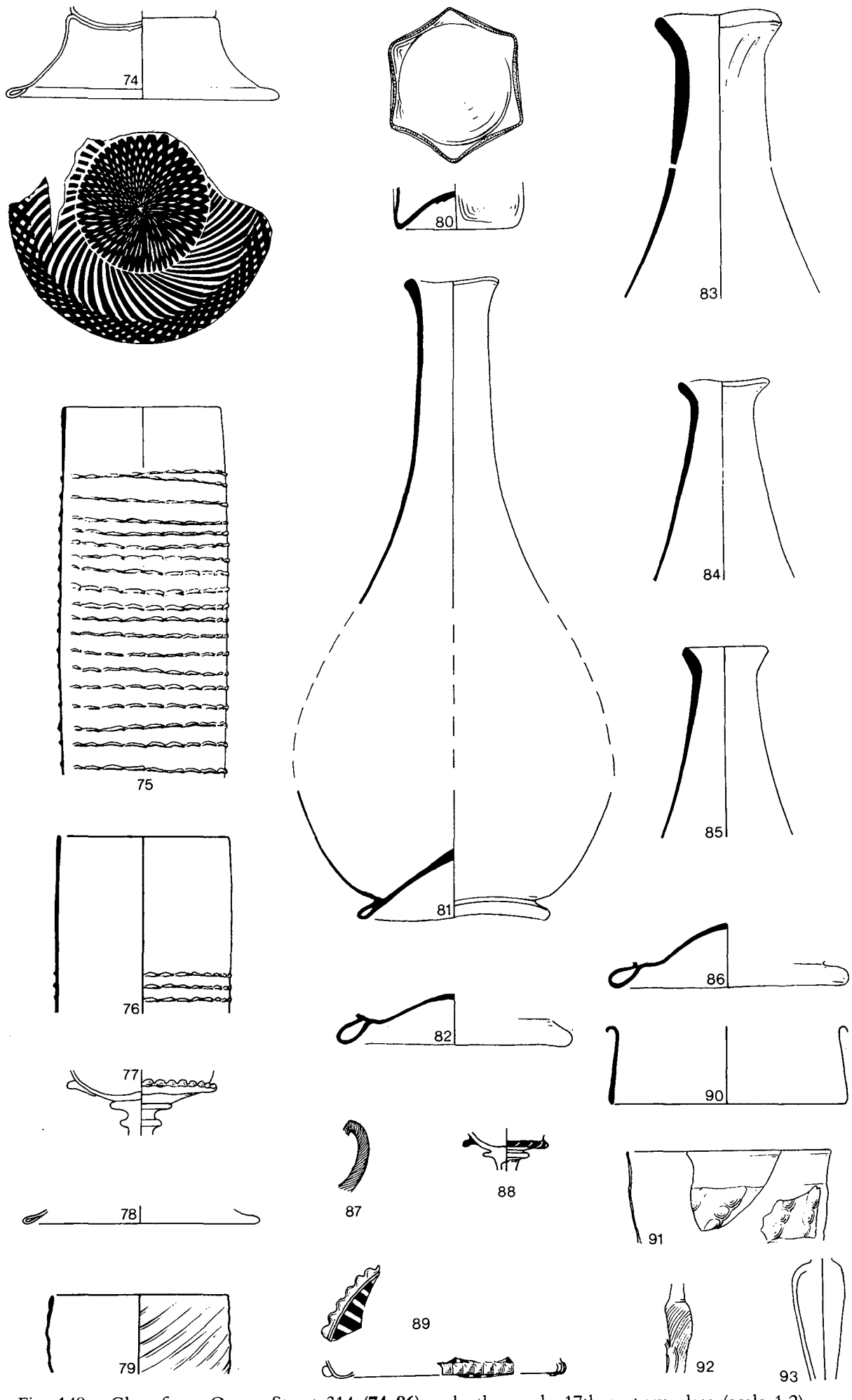


Fig. 149. Glass from Queen Street 314 (**74–86**) and other early 17th-century glass (scale 1:2).

iridescent surface weathering. The group also contains a flask base with light brown denatured surfaces. Probably English.

G.72 GS 37, associated with pottery **1882–1920**, *c.* 1556–65. Foot fragment of a beaker; clear colourless glass with light iridescent surface weathering, slight mould-blown ribbing and an applied notched cordon. *Façon de Venise*, perhaps Venetian, late 16th-century.

G.73 QS 1, associated with pottery **1849–61**, *c.* 1550–1600. Fragments of a jar of greenish-colourless glass with brown and enamel-like surface weathering. English.

Queen Street 314

G.74–86 are associated with pottery **1984–2031** and clay pipe **CP.109**. The glass is entirely consistent with a date of *c.* 1600; **G.74** could be a little earlier, but need not necessarily be so.

G.74 Foot fragment of a cylindrical beaker with bands of opaque white glass marvered in, and slight iridescent weathering. The beaker is made in two parts, the pedestal foot having a folded rim. *Façon de Venise*, probably Venetian.

G.75 Fragmentary cylindrical beaker. Clear greyish-colourless glass with 'chequered spiral trail' decoration and iridescent weathering. *Façon de Venise*, Netherlandish or English; cf. Tait 1967, 96–7, Figs. 4–8.

G.76 Fragments of a vessel of the same type and metal as **G.75**.

G.77 Fragments of the bowl and stem of a wine glass. Clear greyish-colourless glass with an applied notched cordon. *Façon de Venise*, possibly English. Similar fragments, but without the cordon, are known from Basing House (Moorhouse 1971b, Fig. 27, Nos. 11 and 12).

G.78 Foot fragment of a ?wine glass. Greyish colourless glass with matt weathering; folded rim. *Façon de Venise*. Perhaps part of **G.77**.

G.79 Rim of a tall beaker of a pale green glass with wrythen mould-blown ribbing and encrusted brown and iridescent weathering. Probably English; cf. Charleston 1980, 291, No. 5.

G.80 Base of a hexagonal flask. Pale green glass with encrusted weathering, blown in a hexagonal mould. English; cf. Daniels 1950, Pl. 5, No. 28.

G.81 Fragmentary flask of pale green glass with patchy encrusted weathering; cut-out base. Perhaps English.

G.82 Foot of a ?flask; pale green glass with heavy beige and black encrusted weathering; made by the cut-out technique. Perhaps English; cf. **G.86**.

G.83–4 Neck fragments of flasks; pale green glass with heavy brown weathering. English.

G.85 Rim fragment from a flask; pale bluish-green glass with encrusted brown weathering; roughly formed and showing oblique tool marks. English.

G.86 Foot of a ?flask; pale green glass with heavy black encrusted weathering; made by the cut-out technique. Perhaps English; cf. **G.82**.

Other early 17th-century glass

G.87 PP 193, associated with one clay pipe bowl of *c.* 1640 and mid or late 17th-century pottery. Fragment of ribbed tube from the stem of a wine glass of 'extraordinary fashions'; colourless crystal glass with white weathering. Fragments of similar vessels are present in the 'hoard' from Gracechurch Street, London (Oswald and Phillips 1949, 32, Nos. VII and VIII). *Façon de Venise*, perhaps English, early or mid 17th-century.

G.88 41–2 HS, unassociated. Fragment from the bowl and stem of a drinking glass; clear colourless body with applied notched cordon in blue glass; cf. **G.77**. *Façon de Venise*, perhaps Netherlandish, early or mid 17th-century.

G.89 GS 99, associated with pottery **2359–85**, *c.* 1670–1700. Foot fragment of a beaker. Clear colourless glass with iridescent weathering, decorated with opaque white bands marvered into the surface and with an applied milled cordon. *Façon de Venise*, perhaps Netherlandish, early or mid 17th-century.

G.90 GSH 6, small group probably contemporary with GSH 20, of *c.* 1620–50 (cf. pottery **2039–52**). Fragment from the collar of an alembic; pale green glass with enamel-like silvery weathering. Probably English.

G.91 EB 173, associated with clay pipe **CP.116**, *c.* 1620–50. Fragments of a beaker; clear greenish-colourless glass with mould-blown spirals. *Façon de Venise*, perhaps English, early 17th-century.

G.92 EB 173 as **G.91**, *c.* 1620–50. Rod fragment from the 'serpent stem' of a drinking glass; clear, rather bubbly metal with opaque white surface weathering; cf. **G.87**. *Façon de Venise*, perhaps English, early or mid 17th-century.

G.93 EB 173 as **G.91**, *c.* 1620–50. Cigar-shaped stem from a drinking glass of greyish-colourless metal; cf. Charleston 1980, 286, Fig. 1. English, early 17th-century.

Trichay Street 316

G.94–108 are associated with pottery **2100–73**. Those in L.1–19 were deposited *c.* 1660, but, like the pottery, include several pieces which must have been old when discarded; L.20–3 may be late 16th- or early 17th-century, but contain earlier finds.

G.94 L.22 and 23. Fragmentary large flask of lightly bubbled pale green glass with a little iridescent surface weathering. Double-gourd shaped neck with stubs of two handles, internal fold in body, base made in a single piece continuous with the body. The form is reminiscent of Islamic vessels. Origin uncertain, possibly Spanish.

G.95 L.14. Rim fragments of a wine glass; clear colourless metal with broad white bands alternating with white twisted cables, both marvered into body. *Façon de Venise*, Venetian or perhaps Netherlandish, late 16th- or early 17th-century.

G.96 L.20. Fragments from the bowl of a wine glass with a cut-out bowl base. Clear colourless glass with light iridescent weathering. Applied flattened tubes of white glass alternate with cables of six white threads, both applied to the surface and not marvered into it. *Façon de Venise*, Venetian or Netherlandish, late 16th- or early 17th-century.

G.97 L.14. Rim of a beaker or wine glass; colourless glass with light surface weathering; applied blue trails (shown black) alternating with opaque white trails (shown in outline). *Façon de Venise*, Netherlands type, early 17th-century.

G.98 L.13. Base of a urinal; pale green glass with light iridescent surface weathering. Probably English, 17th-century.

G.99 L.3. Foot of a beaker; rather poor heavily bubbled clear glass with patches of light brown surface weathering and surface pitting. Possibly English, *c.* 1600–50.

G.100 L.7. Rim and neck of a bottle with wrythen mould-blown ribbing. Pale green glass with heavy brown encrusted weathering. English, late 16th- or beginning of the 17th century. The group also contains a bottle neck as **G.84–5**.

G.101–2 L.3. Rims of two bottles; pale green glass with iridescent surface weathering. English, probably 17th-century.

G.103 L.13 and 17. Fragmentary case bottle, blown in a square mould; pale green glass with thick iridescent surface weathering. The drawing shows only the minimum height. Probably English, 17th-century.

G.104 L.17. Fragmentary wine glass of greyish-colourless metal, lightly bubbled, with light surface weathering; cigar-shaped stem and folded foot. This is a common type in London, where this example was probably made. Early 17th-century (Charleston 1969, 285–6).

G.105 L.14. Fragments of bowl and stem from a wine glass; found together and probably from the same vessel; greyish-colourless glass, lightly bubbled, with broad 'inverted baluster' knop. *Façon de Venise*, English or perhaps Netherlandish; mid 17th-century.

G.106 L.14. Rim fragment from a broad-mouthed jar; pale green glass with light surface weathering. English, 17th-century.

G.107 L.7. Rim fragment from a jar; pale green glass with

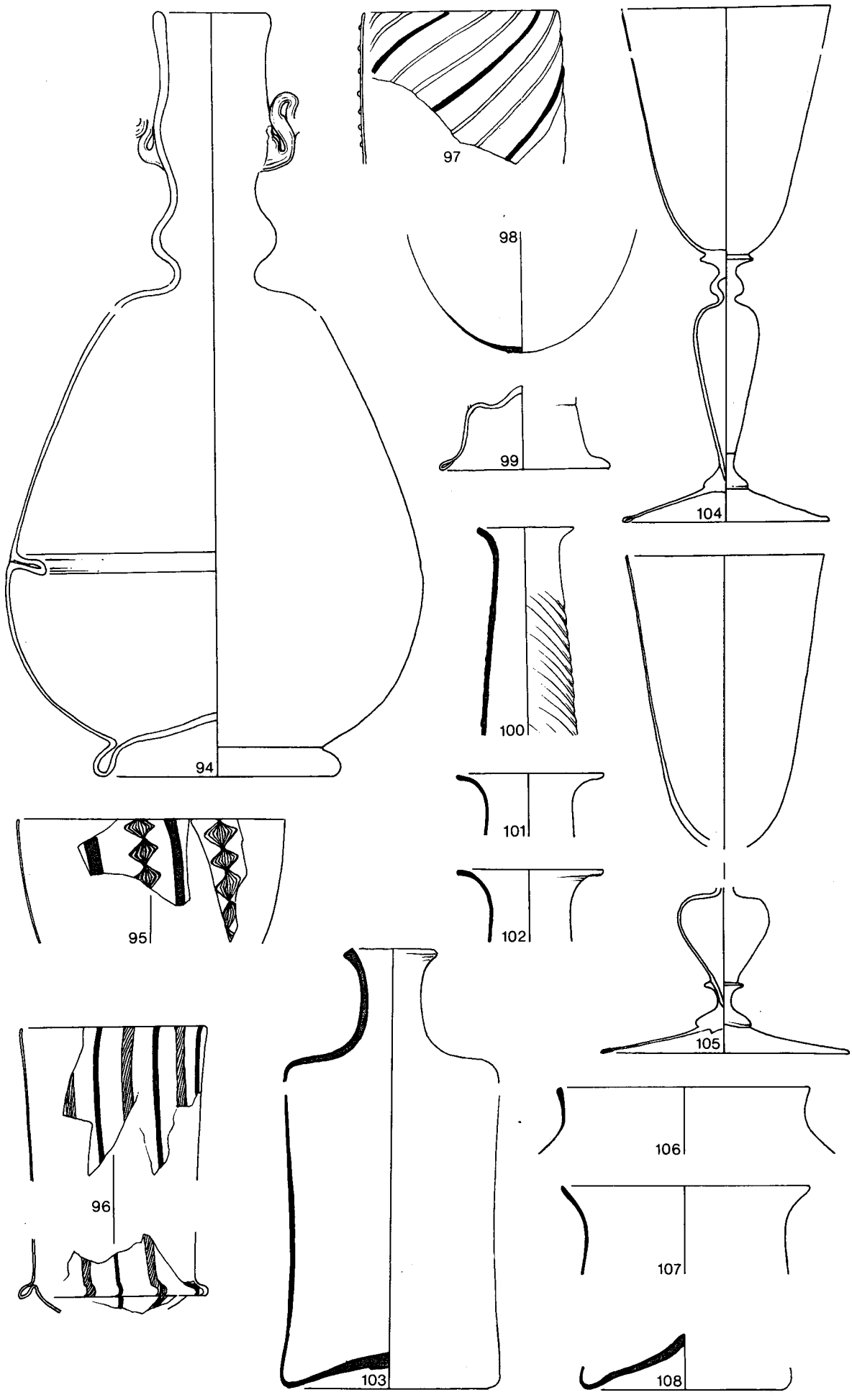


Fig. 150. Late 16th-century and early 17th-century glass from Trichay Street 316 (scale 1:2).

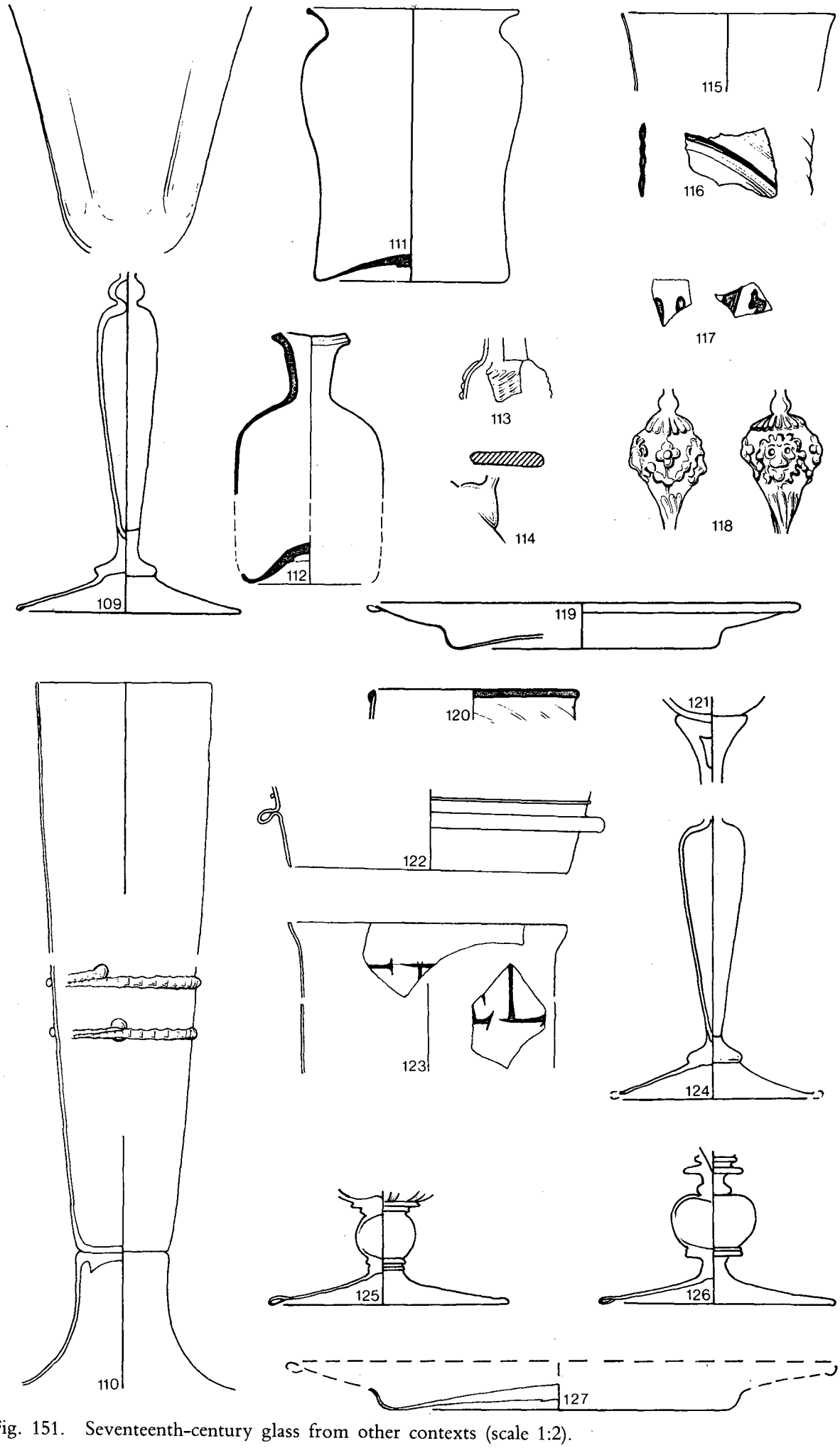


Fig. 151. Seventeenth-century glass from other contexts (scale 1:2).

iridescent brown surface weathering. English, 17th-century.

G.108 L.13. Base, metal and weathering identical to **G.102** and probably from the same vessel.

Trichay Street 220

G.109–111 are associated with pottery **2893** and local coarse pottery of the 17th century. The group contains no green bottle glass and probably belongs to the period 1600–50.

G.109 Fragments of a wine glass of greyish-colourless glass with dull light grey surface weathering; octagonal bowl, cigar-shaped stem and folded foot; cf. **G.93** and **G.104**. English, early 17th-century.

G.110 Fragmentary tall beaker of greyish-colourless glass, lightly bubbled, with very light surface weathering; made in two parts, the upper one with two applied notched trails. Similar vessels were present in the 'hoard' from Gracechurch Street, London (Oswald and Phillips 1949, 35, No. XIV). Probably English, early 17th-century.

G.111 Fragments of a small jar with waisted sides; green glass with encrusted brown weathering. English.

Goldsmith Street 96

G.112–14 are associated with pottery **2179–2268**, deposited shortly after 1660.

G.112 Small circular glass bottle; bubbled green glass with enamel-like weathering. English, mid 17th-century.

G.113 Fragment from the neck and body of a small bottle; green glass with enamel-like weathering, with mould-blown ribbing applied on a second gather; cf. **G.68**. Late 16th- or early 17th-century.

G.114 Stub of a broad flat handle of blue glass with enamel-like weathering. Origin uncertain.

Not ill: Base of a hexagonal bottle 60 mm wide; green glass with iridescent weathering, cf. those from Waltham Abbey (Charleston 1969, Fig. 39, Nos. 3–4). English, late 16th- to mid 17th-century.

Other 16th- and 17th-century glass

G.115 TS, unstrat. Rim of a wine glass or beaker; lightly bubbled clear colourless glass with iridescent surface weathering. *Façon de Venise*, perhaps Venetian, 16th- or 17th-century.

G.116 TS, unstrat. Bodysherd of green glass with enamel-like weathering; wrythen mould-blown ribbing and single white trail. This is a rather curious item; this green glass has been treated in the Venetian manner. Perhaps English, possibly late 16th- or 17th-century.

G.117 TS 2, 19th-century feature. Scraps of opaque white glass with random blotches of blue glass marvered into external surface, and with white surface weathering. Vessels of this type were imported from Venice by John Greene between 1667 and 1672; they are described in his papers as 'speck'd enamel' and included elaborate vases (BM Sloane MS 857 fo. 33v.).

G.118 EB 162, unassociated. Mould-blown lion-mask stem of a wine glass; clear colourless glass with iridescent bluish-pink weathering. Similar vessels are known from the Gracechurch Street 'hoard' (Oswald and Phillips 1949, 33, No. IX, right) and Basing House (Moorhouse 1971b, Fig. 27, Nos. 1–3). *Façon de Venise*, possibly Venetian, late 16th- or early 17th-century.

G.119 TS 271, associated with clay pipes of type L1, *c.* 1690–1720. Fragments of a dish of clear colourless glass with iridescent surface weathering. Similar vessels are known from Nonsuch Palace in a pre-1682 context (unpublished), from Waltham Abbey in a mid 17th-century context (Charleston 1969, Fig. 31, No. 2), and from Basing House (Moorhouse 1971b, Fig. 27, No. 18). *Façon de Venise*, probably Venetian, 17th-century.

G.120 TS 271, as **G.119**, *c.* 1690–1720. Fragment, possibly from a bowl, of clear colourless glass with wrythen mould-blown ribbing and light iridescent surface weathering. On the rim, a band of blue glass is marvered into the surface. *Façon de Venise*, Venetian or Netherlandish, 17th-century.

G.121 TS 271, as **G.191**, *c.* 1690–1720. Fragment from the stem and bowl of a wine glass of heavily crizzled (?lead) crystal glass. English, *c.* 1680.

TS 271 also includes fragments of medicine bottles like **G.152, 162–3** of the end of the 17th or early 18th century, and a scrap, apparently from a foot, with very fine mould-blown horizontal ribbing.

G.122 GS 157, medieval. Fragments forming the rim of a ?cover of clear colourless glass with iridescent surface weathering and one applied thread of clear glass. This does not have the character of a medieval vessel, and it seems probable that it is a 17th-century piece. *Façon de Venise*, origin uncertain.

G.123 TS, unstrat. Fragments of rim and body, probably of a beaker; colourless metal with opaque surface weathering with engraved letters probably once forming an inscription decorated with enamel; no trace of enamel survives. Probably French, 16th-century.

G.124 Exeter Museum Acc. No. 1021/1910. From College extensions, Gandy Street. Base and cigar-shaped stem of a wine glass; greyish-colourless metal without surface weathering; cf. **G.93, 104, 109**. English, early 17th-century.

G.125 Exeter Museum Acc. No. 120/31. From Smythen Street excavations of 1931. Base and stem of a wine glass with stub of bowl with vertical mould-blown ribbing; clear colourless metal with iridescent surface weathering; cf. **G.128–33**. *Façon de Venise*, Venetian or English, *c.* 1670.

G.126 Exeter Museum Acc. No. 1023/1910. From College extensions, Gandy Street. Base and stem of a wine glass with stub of a conical bowl, as **G.125**. *Façon de Venise*, probably Venetian, mid 17th-century.

North Street 1501

G.127–46 are associated with pottery **2269–2358**, deposited shortly after 1680.

G.127 Base of a dish; metal and type as **G.119**.

G.128–33 are of clear colourless lightly bubbled glass with very light blue or mauve-tinged surface weathering. They belong to the class of vessels ordered by John Greene in Venice in the years 1667–72, although no precise parallels to these vessels are present amongst those patterns. Similar finds are known from Nottingham (Alvey 1973, 68–9, Nos. 1–8) and other English sites (Charleston 1980, 293). *Façon de Venise*, Venetian or English, *c.* 1670.

G.128 Fragments of stem and bowl of a wine glass with vertical mould-blown ribbing on the knop and bowl and an applied vermicular cordon. The folded foot fragment may not come from this vessel.

G.129 Fragments of stem and foot of a wine glass, with bowl fragments probably from this vessel; mould-blown ribbing on foot, plain globular knop and plain bowl.

G.130 Stem fragment of a wine glass with the stub of a conical bowl showing vertical mould-blown ribbing, the knop with mould-blown ribbing and folded foot.

G.131 Foot and stem fragment of a wine glass with vertical mould-blown ribbing on the foot and knop and the stub of a plain bowl, perhaps conical.

G.132 Folded foot fragment.

G.133 Plain bowl fragment, perhaps from **G.129–32**.

G.134 Rim of a ?jug with a pulled spout; opaque white glass with patchy brown surface weathering. Probably Venetian.

G.135 Base of a urinal; bubbled pale green glass with iridescent surface weathering. English.

G.136 Rim of a wide-mouthed jar; pale green glass with patchy iridescent surface weathering. English.

G.137 Base made by the cut-out technique; metal as **G.136**. English.

G.138 Bottle base; metal as **G.136**. English.

G.139 Bottle base; heavily bubbled pale green glass with surface pitting and brown surface weathering. English.

G.140 Fragments of a case bottle blown in a square mould; metal as **G.136**. The drawing shows the minimum height only. Probably English.

G.141 Neck of a bottle with an applied vermicular band

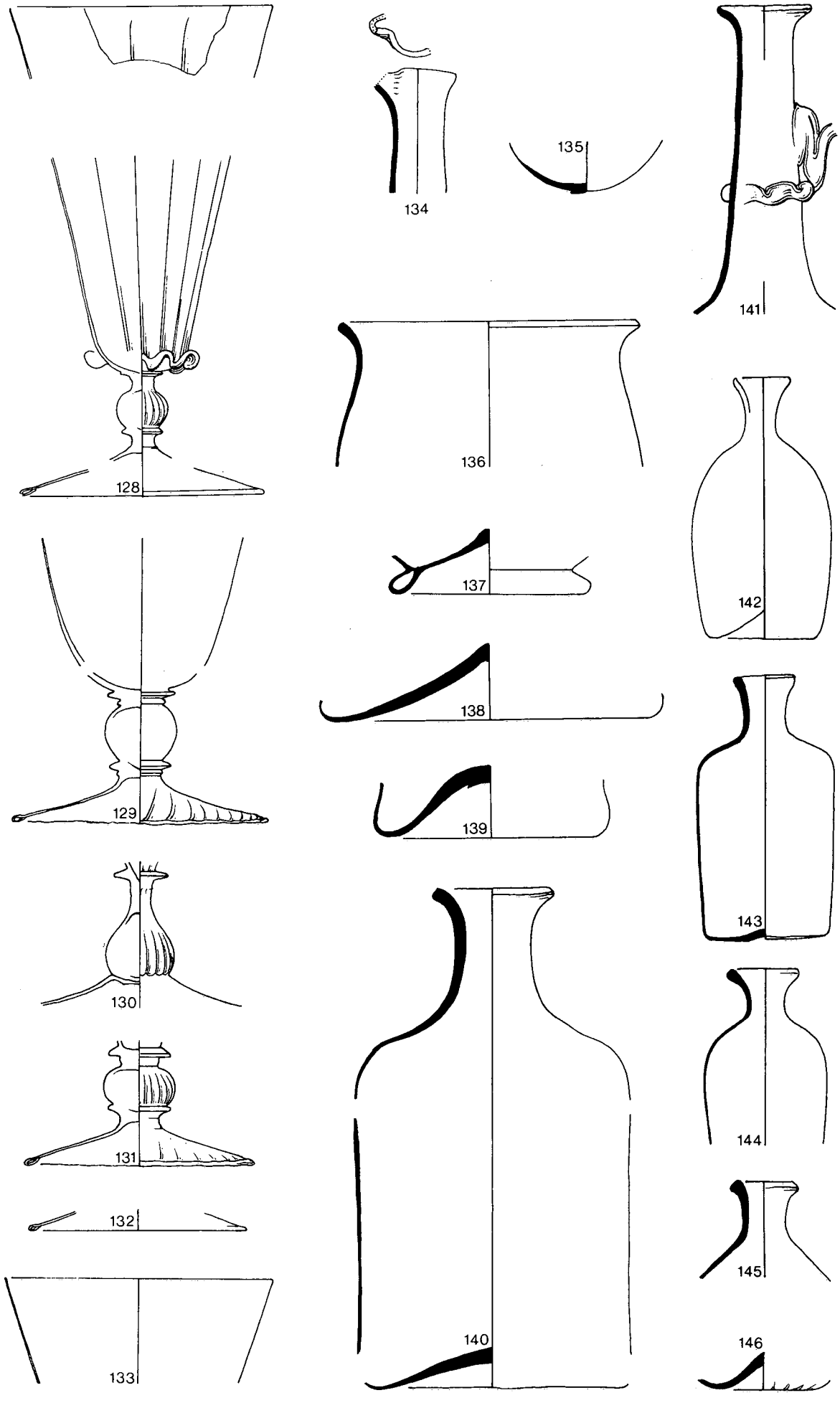


Fig. 152. Glass from North Street 1501, *c.* 1680–90 (scale 1:2).

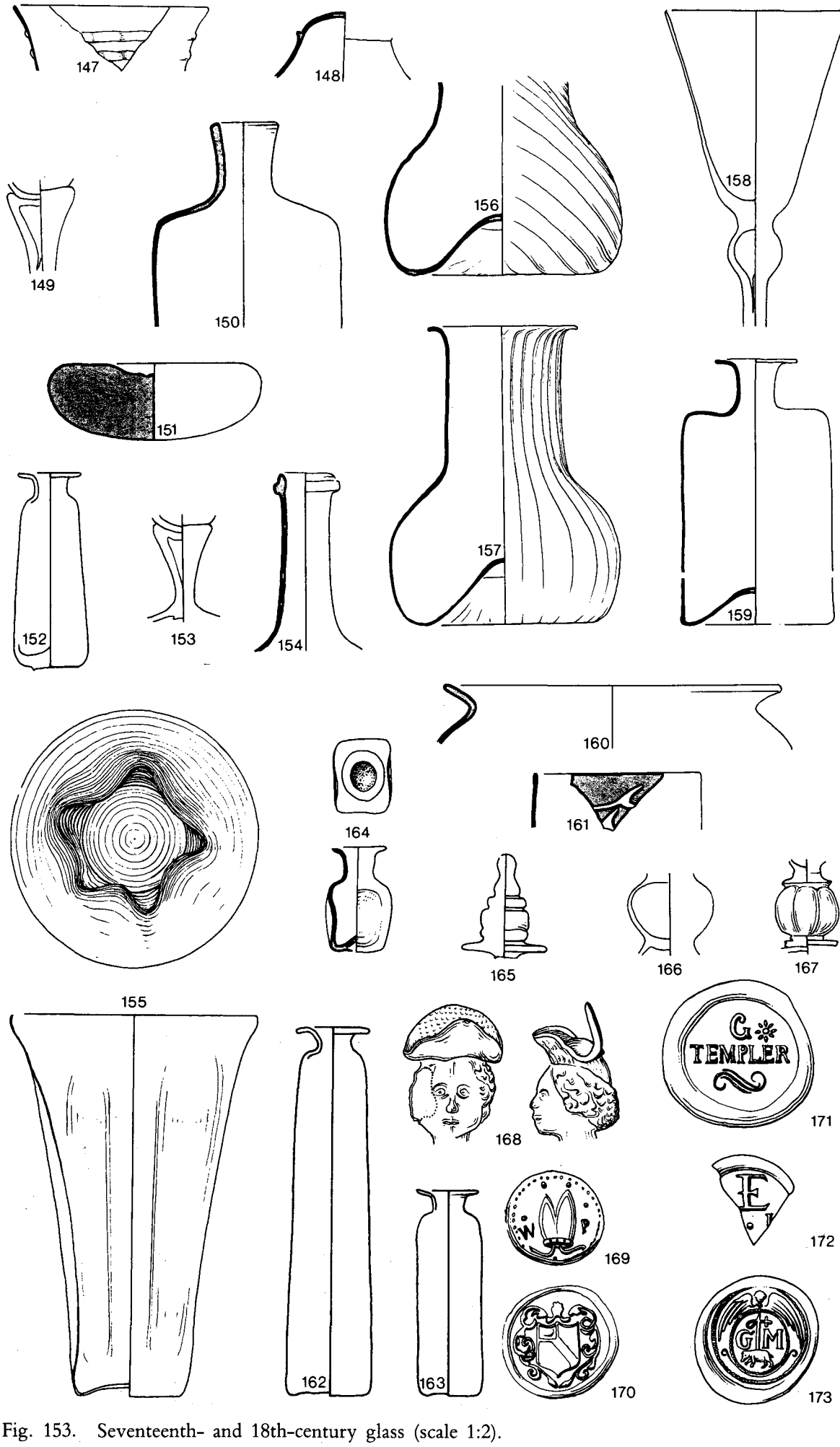


Fig. 153. Seventeenth- and 18th-century glass (scale 1:2).

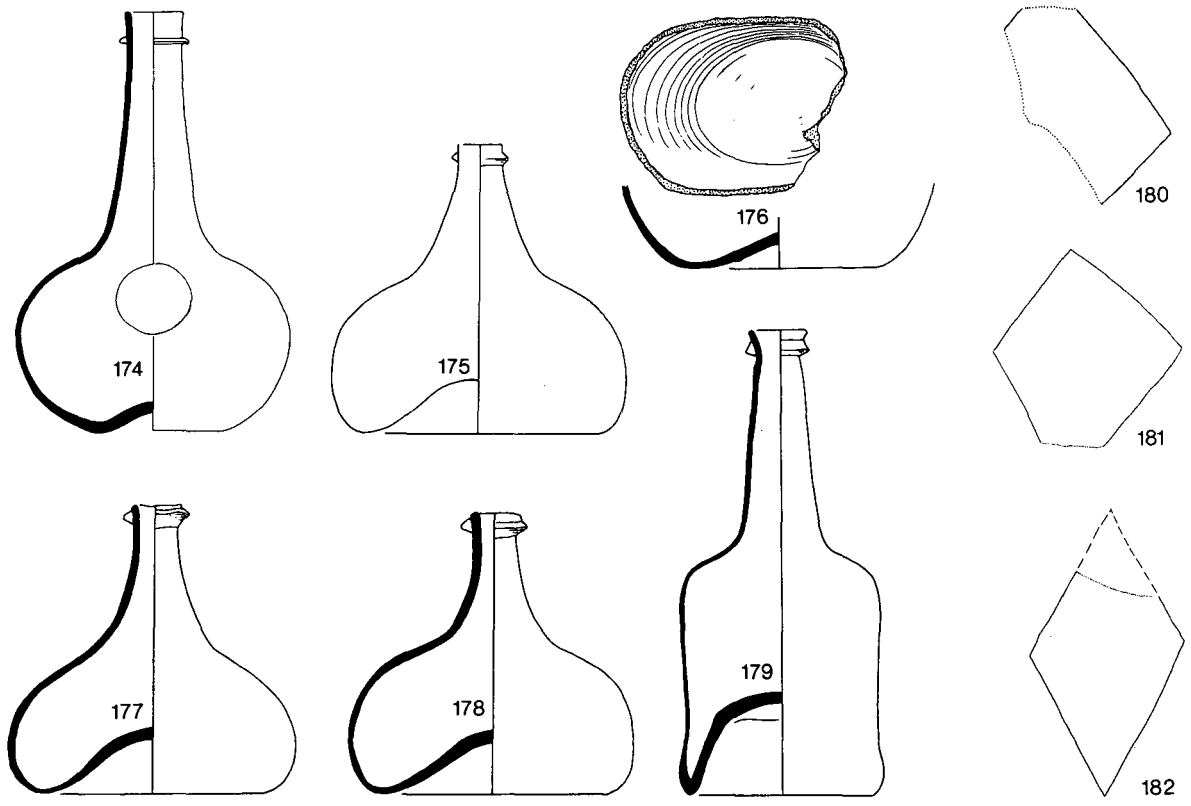


Fig. 154. Green glass bottles and window glass (scale 1:4).

supporting the stub of a handle; metal as **G.139**. A similar vessel is known from Basing House in a pre-1645 context (Moorhouse 1971b, 64–5, where the type is discussed, and Fig. 27, No. 16). English, perhaps *c.* 1625–50.

G.142–5 Apothecary bottles; metal as **G.136**. The globular form of **G.142** and **144** is typical of mid 17th-century examples, the more angular form, **G.143**, of later types. English.

G.146 Bottle base with mould-blown ribbing, metal as **G.136**. English.

Glass stratified in late 17th- or early 18th-century contexts

G.147 GS 80, associated with pottery **2386–2421**, *c.* 1670–1700. Rim fragment of a beaker of clear colourless glass with iridescent surface weathering, decorated with a 'chequered spiral trail'. *Façon de Venise*, perhaps English; early or mid 17th-century; several comparable vessels were present in the 'hoard' from Gracechurch Street, London (Oswald and Phillips 1949, 36).

G.148 GS 80, as **G.147**, *c.* 1670–1700. Base of a beaker; metal as **G.139**.

G.149 RS 141, associated with pottery **2448–60**, *c.* 1690–1720. Stem of a wine glass; ?lead-crystal glass (not tested chemically); not crizzled. English, *c.* 1690.

G.150 RS 86, associated with clay pipes of type L1, *c.* 1690–1720. Neck and shoulder of a bottle, blown in a square mould; pale green glass with iridescent and brown surface weathering. Probably English, 17th-century.

G.151 RS 20, associated with pottery **2496–2503**, *c.* 1690–1720. Linen smoother; dark green bottle glass. English.

G.152 EB 521, small group of *c.* 1720–50. Small apothecary bottle; pale green glass with iridescent weathering. English.

G.153 GS L.6, with mixed 16th- and 17th-century finds. Stem of a wine glass; heavily crizzled glass with sugary weathering. English, *c.* 1680.

G.154 GS 77, associated with pottery **2555–88**, *c.* 1680–1720. Neck of a bottle of pale green glass with light surface weathering. English.

Trichay Street 322

G.155–9 are associated with pottery **2686–92**, *c.* 1740–60.

G.155 Fragmentary beaker with indented sides; clear colourless glass with opaque surface weathering (upper drawing shows top view). *Façon de Venise*, perhaps Venetian, 17th-century; old vessel when discarded.

G.156–7 Flasks of pale green glass, with light surface weathering, **G.156** with wrythen mould-blown ribbing, **G.157** with vertical mould-blown ribbing. A rim fragment from another vessel of this type, identical to **G.157**, comes from GS 15, associated with clay pipes of *c.* 1700–30. Further examples are known from unstratified contexts at Poole. English; date rather uncertain, but probably late 17th- or early 18th-century.

G.158 Bowl and stem fragments of a wine glass; lead-crystal with a slender inverted baluster stem enclosing an air bubble, now filled with liquid. English. *c.* 1725–50.

G.159 Fragments of an apothecary bottle; pale green glass with iridescent weathering. English, late 17th- or early 18th-century.

Goldsmith Street 214

G.160–1 are associated with pottery **2650–71**, *c.* 1740–60.

G.160 Rim of a wide-mouthed jar; pale green glass with iridescent surface weathering. English.

G.161 Rim fragment of a ?tankard. Amber glass with applied opaque white threads, combed and marvered into the surface. A vessel of this type is known from Southampton (Platt and Coleman-Smith 1975, **2**, Fig. 226, No. 1600) in a group of the beginning of the 18th century (*ibid.*, 46). Spanish or perhaps English, possibly late 17th-century.

Further glass of the late 17th and 18th centuries

G.162–3 BSE 191, associated with clay pipes **CP.119–21**, *c.* 1730–50. Apothecary bottles; metal as **G.152**. English.

G.164 GS 108, small pit group of *c.* 1720–40. Small apothecary bottle; metal as **G.152**. Bottles of this form were made in the Weald on one of the later Wealden sites (Kenyon 1967, Pl. XVI, No. 3). English, late 16th-century or later.

G.165 GS site 1, unstrat. Small finial, perhaps from a cover, apparently complete. Clear colourless glass with

iridescent weathering. Possibly English, lead-crystal, *c.* 1675–1700.

G.166 GM, unstrat. Knop of a wine glass; English crystal glass, *c.* 1670.

G.167 CC, unstrat. Quatrefoil knop from the stem of a wine glass. English crystal glass, *c.* 1676–80.

G.168 Exeter Museum Acc. No. 1024/1910. From College extensions, Gandy Street. Mould-blown finial of bird fountain with tricorn hat; brownish-colourless glass; cf. Thorpe 1929, **1**, Pl. LXXXII. English, early 18th-century.

Seals from bottles of thick green glass

G.169 TS 316, L.1, from **G.174**, *c.* 1650–60. Mitre between initials W.P. This seal is believed to represent William Piers (1580–1670) bishop of Peterborough, then of Bath and Wells (Ruggles-Brice 1949, 131). There is a bottle of very similar form, with the same seal, in Worthing Museum.

G.170 Exeter Museum collection, from the excavations of A.W. Everett at Polsloe Priory. Arms of Ailworth, the family who owned the priory in the late 17th century.

G.171 PP, unstrat. G. TEMPLER possibly one of the Templer family of the Stover estate, Bovey Tracey, Devon.

G.172 High Street Topsham 1977, associated with pottery **2628–37**, *c.* 1700–30. Not identified.

G.173 GS 77, associated with pottery **2555–88**, *c.* 1680–1720. GM and ?boar below angel's wings. Not identified.

Thick green glass bottles

All have a thick dark green metal with some iridescent surface weathering. The typology of Hume (1961) is used here.

G.174 TS 316, L.1, as **G.94–108**, Type 1; *c.* 1650–60. This bears the seal **G.169**.

G.175 BSE 4, associated with pottery **2696–8**; type 9, *c.* 1685–1715.

G.176 High Street Topsham 1977, as **G.172**, *c.* 1700–20. Bottle with flattened sides.

G.177 BSE 191, associated with pottery **2693–5**, *c.* 1730–50.

G.178 BSE 191, as **G.177**; cf. type 11, *c.* 1710–30.

G.179 TS 322, associated with pottery **2686–92** and **G.155–9**. Type 14, *c.* 1740–60.

Window glass

G.180–2 TS 316, L.17; cf. **G.94–108**, *c.* 1660. Fragmentary diamond-shaped quarries of pale green glass, *c.* 9 mm thick, lightly weathered, with cut edges.

The layer produced fragments of *c.* 20 quarries, many of them surprisingly irregular. (Further quarries of this type were found in QS 314.) The pit also produced a large bundle of window cames which could have been used with these quarries.

Richmond,
March 1982.

4. A NOTE ON THE GREEN BOTTLE GLASS by J.P. Allan

The glass collection of the late 17th and 18th centuries is dominated by fragments of thick green glass bottles. There are only a few complete vessels, and examples of each complete form are illustrated above (**G.174–9**). The vessel forms identifiable among the fragments have been listed in the pottery groups by using the type-series of Hume (1961).

The quantity of bottle glass in use

There is surprisingly little green bottle glass in groups of the late 17th century; for example there is none at all in NS 1501 with its fine collection of imported and English glasses, and hardly any in TS 316, GS 80 or 97–99 which contain many hundreds of pottery sherds. The growth in the usage of these vessels in the early 18th century may be illustrated by comparing the number of glass and pottery fragments in the major pit groups of the years between the mid 17th and mid 18th centuries.

	No. of pottery sherds	No. of glass fragments	Glass as a % of pottery
1640–70	2115	10	0.5
1670–1700	3135	11	0.4
1690–1720	4319	356	8.2
1720–40	964	167	17.3
1740–70	2424	410	16.9

Table 23: Comparison of quantities of pottery and bottle glass fragments at Exeter, *c.* 1640–1770.

The picture suggested by the table is potentially misleading, since cullet was regularly returned by coast to Bristol (PRO Exeter Port Books.) However, the volume of glass bottles imported at Exeter (p. 264) shows a similar increase in the early 18th century, and, taken in conjunction with the rise of local bottle production at Topsham by the early 1690s (Tapley-Soper 1918; Rippon 1919), this suggests that glass bottles were indeed in use in much larger numbers. Their popularity may perhaps explain the decline in the use of the smaller Bellarmines; these became less common in Exeter in the early 18th century and no definite examples are known in contexts dating after *c.* 1720.

VII THE CLAY PIPES

by Adrian Oswald with contributions by J.P. Allan and S. Hunt

1. INTRODUCTION

The surprising feature of the very large quantity of pipes from the excavations was their parochial nature. More than 90% were made locally in the century between *c.* 1640 and 1740. The number which can be attributed to Bristol is small and London pipes are rare. Dutch pipes, so common at Plymouth, are confined to about ten examples. There is nothing from the North or the Midlands or even from the Central Southern area with its clearly distinguishable stem marks. There are a few from Taunton, Chard and Topsham, but none from Dorset or Barnstaple.

Only a few pipes belong to the years before *c.* 1640; this reflects the comparative scarcity of early 17th-century pit groups from Exeter. At Plymouth there are many early imports from London and Bristol as well as evidence of local production at an early date; there are few comparable pipes from the Exeter excavations, although the Museum collection possesses what is probably the earliest spur pipe in Britain, together with a multitude of gauntlets and spur pipes of *c.* 1640 from Ida Cottage[1] (Oswald 1980). The near-absence of early 17th-century pipes should not be taken as evidence of their rarity in the city at this time; Thomas Baskerville already had tobacco pipes valued at 12d. and coarse tobacco in his apothecary's shop in 1596 (Rowe and Trease 1970, 20). Thomas Macumber had four gross of tobacco pipes valued at 8s. in his ironmonger's shop on his death in 1622, and he also stocked three tobacco pipe cases valued at 1s. (OC 139). There are in fact suggestions that Devon adopted the habit of tobacco smoking more quickly than most counties (Beresford 1955).[2]

Local production at Exeter seems to have started by *c.* 1640 (**CP.76**, Type LA) and from then until *c.* 1730 local products dominated the market. The pipes from a kiln at Bartholomew Street West are of particular interest. Stem-bore tests and, more important, local stratigraphic evidence and comparisons with similar pipes from Plymouth, suggest manufacture within the period *c.* 1690–1720. These pipes are entirely West Country in character and are rather sturdier than those made at Plymouth; it seems likely that they come from a kiln of the Burges family (below).

The other probable local types (**CP.77–9**: LB, LC and LD respectively) seem from their shapes to be earlier, but the Museum Collection contains a pipe of type LB with a note saying it was found in 1880 in a cellar at 17 Smythen Street, Exeter, in a tin box with a paper dated 1737, so perhaps types LB and LC were sometimes used later than is usual, or the makers were loath to pay for new moulds. This instance is, however, unusual and the stratified groups of the period *c.* 1700–40 contain different types. A local characteristic not common elsewhere is the use of dots on the sides of the spur; at Plymouth patterns of lines were similarly noticed. These marks must have been cut in the moulds and were presumably made to allow the products of each workman to be recognised. At Exeter the practice seems to start *c.* 1640 but at Plymouth not until the 18th century.

Among the 18th-century pipes are a number of Bristol and Southern types carrying a gauntlet and a rayed sun in relief on the sides of the bowls. These types of marking were of Bristol origin but the particular marks found at Exeter do not seem to occur there and, with the exception of one example from London of the rayed sun, not elsewhere; perhaps they were manufactured locally (**CP.58–9, 69–70**). The same is true of the pipes with K dotted in relief on the bowls (**CP.71–2**). Even the armorial pipes (**CP.88**), although purely London in character, may well by reason of their numbers be local, and the 19th-century pipes (**CP.89–101**) are entirely so.

An examination of the documentary evidence regarding the industry has recently been published (Arnold and Allan 1980). This shows that local pipes were regularly exported to America, Portugal and Spain, with occasional shipments to North France, Ireland, the Low Countries and Scandinavia. Foreign export had begun by the 1660s, reached a peak in the late 1690s and had ceased by the 1720s. The local types of pipe of this period should therefore be found in excavations abroad.

Typology

Illustrations **CP.1–7** represent the types found in the Bartholomew Street kiln and are referred to throughout

this volume as types L1–L7. Other pipes which have profiles differing from Western or Bristol types and which from their quantity are judged to be local are figured under LA–LD (**CP.76–9**). Types given a figure, e.g. 4B, refer to the typologies evolved in *Clay Pipes for the Archaeologist* (Oswald 1975). G is the general typology for the whole country; regions are indicated by W for Western areas, S for Southern areas, B for Bristol, N.E. for Yorkshire and the North-East, *etc.*

2. KILN WASTE (Fig. 155)

A. THE BARTHOLOMEW STREET KILN WASTE

The excavation in 1974 of 19–20 Bartholomew Street West (Fig. 1, site 12) produced large quantities of pipe-kiln waste, most of which came from the garden of No. 20 (SX 9162 9242). The debris was so plentiful that it must have come from an adjacent but unlocated kiln close to the site. It comprised:

(i) About 17 kg of pipe fragments, including distorted and over-fired examples.
(ii) About 400 fragments of kiln muffle strengthened longitudinally with pipe stems. Most were small: of the largest fragments, three were *c.* 70–80 mm thick with rectangular sides and the longest measured 170 mm.
(iii) A few lumps of fired pipeclay including two slabs *c.* 3–5 mm thick which bore the impression of coarse cloth or sacking.

A few fragments of coal were scattered amongst this debris, but not in sufficient quantities to prove that the kiln was coal-fired.

The bowl types

The differences between bowls **CP.1–7** are of size and to a lesser extent of the angle of the foot. Their shape is a West Country type found in quantities at Castle Street, Plymouth in dated deposits of *c.* 1690–1720, and at Woolster Street, Plymouth in a deposit of *c.* 1700–30/40 (Oswald 1969, 132–4; 142). The bowls and stems are thick and heavy; their clay is smooth, well levigated and fairly white.

Stem-bore test[3]

No. of samples from kiln debris: 557. There are 7 of 8/64, 489 of 7/64, 60 of 6/64 and 1 of 5/64. These produced the following result in the Hanson Formula (*idem* 1975, 93): Time range of deposit: 1650–1750 = 1704; 1680–1750 = 1713. On the Binford Formula the date would be 1668 and on Harrington's projection it would lie between 1670 and 1680. On the Plymouth and Exeter evidence the latter dates are unacceptable and it seems probable that this kiln operated between *c.* 1690 and 1720.

Local dating evidence

The associated pottery (**2461–73**) and glass date to *c.* 1690–1730 (p. 204). The absence of kiln types amongst 12 bowls from NS 1501 with its delftwares of the 1680s and from GS 95, 96, and 98 with their late 17th-century finds, strongly suggests that they were not in widespread circulation before *c.* 1690. The best-dated groups containing these bowls in large numbers are the Goldsmith Street sugar-refining deposits, RS 47 and 141, FG 107 and CC 19 (**2448–2569**). In these groups they are associated with pottery and glass of the beginning of the 18th century. The presence of only one bowl of the types made in the kiln amongst eight bowls in MS 7 with its finds of *c.* 1720–40 is notable, and the type evidently had ceased to be in widespread use by the time this group was deposited.

Documentary evidence (by J.P. Allan)

The Bartholomew Street West site lies within the small parish of Allhallows-on-the-Walls. The only pipe manufactory known in this parish was that of the Burges family.[4] Since no pipes from the site were stamped and the early deeds of these tenements do not survive, it cannot be demonstrated that the kiln waste comes from the Burges manufactory. It does, however, seem probable that it did so, in view of the correspondence of the family's known period of manufacture with the date of the pipes suggested by Mr. Oswald (above).

No members of the Burges family are listed in the parish in the Poll Tax of 1660 or the Hearth Tax of 1671 (Hoskins 1957). The earliest reference found so far which refers to their pipemaking dates to 1691 when Anthony Tayler, a pipemaker and apprentice to William Burges, became a Freeman of the City (Rowe and Jackson 1973, 187). In 1695 James Parker was similarly listed as apprentice to William Burges (*ibid.*, 196). In

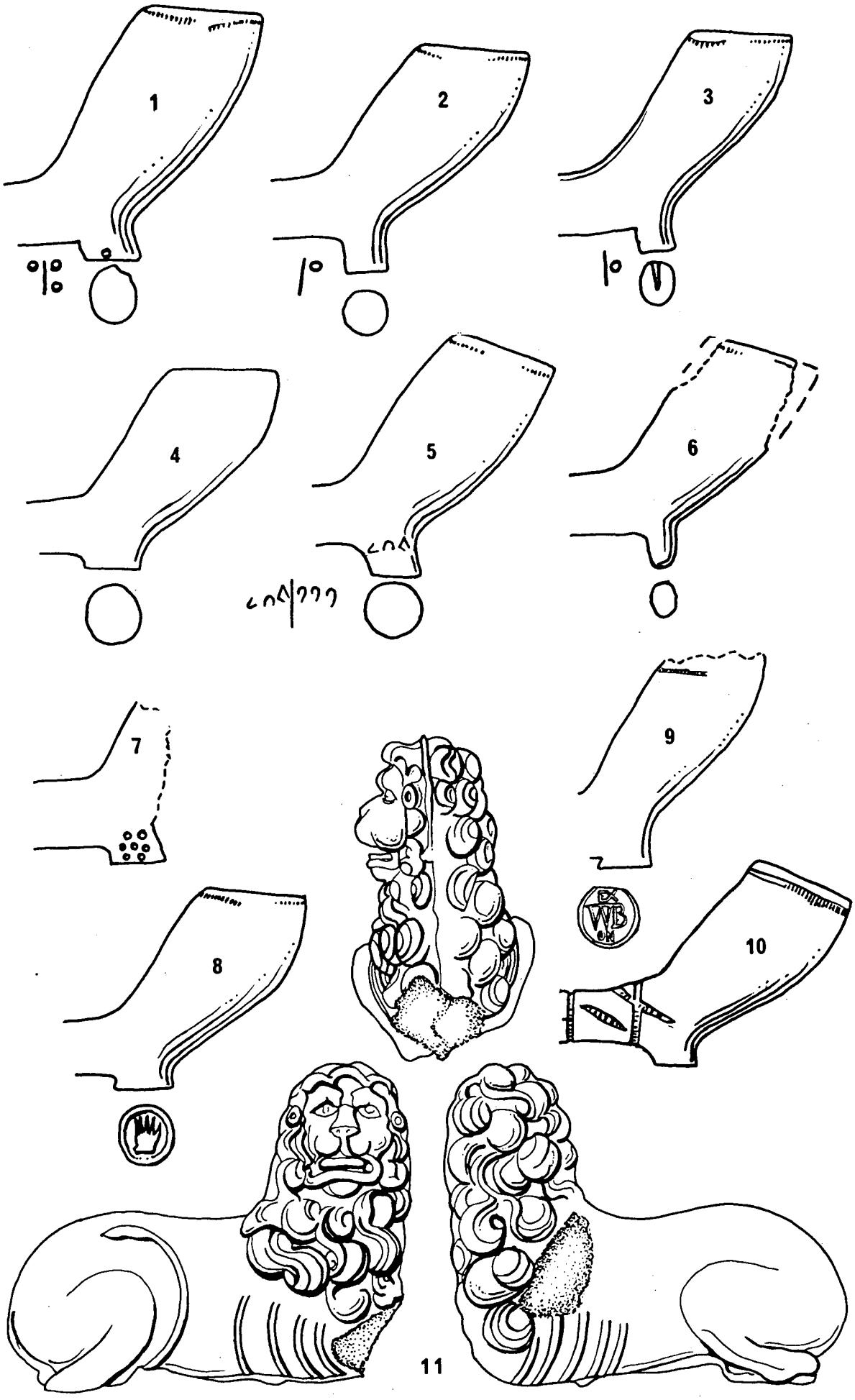


Fig. 155. Waste from clay-pipe kilns at Bartholomew Street West and Shilhay (scale 1:1).

the same year William Burges junior, also a pipemaker and apprentice to William senior, became a Freeman (*ibid.*, 194) and in the following year married Anne Hooper (PR Allhallows-on-the-Walls). It is clear that by the late 1690s the Burges manufactory was one of the largest in Exeter. In 1697 a Richard Burges sent 60 gross of pipes on the *Traveller*, the destination of which is not stated (PRO E.190.971/4). He was presumably a member of the family, but he is not listed as a Freeman. The foreign export of pipes from the city reached its height in 1698 (Arnold and Allan 1980, 311). In that year the Port Books record that members of the Burges family were acting as merchants of their own pipes (PRO E.190.972/9; 972/18). In March William Burges sent 60 gross on the *William and Mary* to Newfoundland. In July he sent 452 gross on the *America* to Cadiz, and Peter Burges sent 40 gross on the same ship. William also sent 40 gross to 'Higera' (i.e. Figueria in Portugal) in July. These shipments made up 17% of Exeter's total export for that year. At 144 pipes per gross, the total Burges export was about 77,000 pipes. Appraised by the Customs at 10d. per gross their value was £23; their real value was probably higher, perhaps *c.* £30–40. It is therefore rather surprising that in the Poor Rate of 1699 William Burges paid the low sum of 1d. weekly (Hoskins 1957, 97) and continued to live in Allhallows parish, a predominantly poor area.

Four apprentices to William Burges subsequently became Freemen of the City: Peter Burges in 1701, Richard Strickman in 1715, Peter Gale in 1722, and Stephen Hooper in 1734 (Rowe and Jackson 1973, 206, 229, 232, 254). The apprenticeship indenture between William Burges and Peter Gale survives (DRO Apprenticeship Indentures, First Series, No. 70). Drawn up in 1711, it states that Mary Gale, mother of Peter, paid 40s. to William Burges and his wife Emlin. In return Burges was to teach the 'art, trade, mistery or occupation' of the tobacco-pipe maker and was to provide Gale with meat, drink, washing and lodging in sickness and health. He was also to procure Gale's Freedom of the City after seven years and his membership of the Company of Tobacco-Pipe Makers;[5] Gale eventually became a Freeman in 1722.

The years after *c.* 1720 brought a decline in the fortunes of Exeter pipemakers, with a loss of their overseas markets and increasing importation into the city of pipes from elsewhere (Arnold and Allan 1980, *passim*). The Burges manufactory survived later than some of its rivals. Gale took an apprentice in 1738 (Rowe and Jackson 1973, 259), but he was one of the last pipemakers to be recorded as a Freeman; one suspects that his factory closed in the late 1730s or the 1740s. Subsequent entries of Burges names in Exeter refer to men of other occupations; several were tallow chandlers.

The kiln products

CP.1–7 Forms of pipe in the kiln waste (details of quantities of each type in MF 126).

CP.11 Pipeclay lion with pronounced join between back and front moulds. Circular scar at centre of base where clay was injected into the mould. Legs and part of rear of mane broken.

Comparative material

CP.8 BSW 116. Smoked pipe, 6/64, with left hand gauntlet mark in relief on base; cf. Plymouth No. 65 (Oswald 1969, Fig. 57, 65). This was not stratified in the kiln debris but may be a kiln product.

CP.9 RS 773. Cf. Bartholomew Street **CP.4**. Incuse mark EX/WB/ON. Polished white clay, 7/64. Probably made by William Burges, senior or junior, active 1691–1734 (above). This mark, the only 17th/18th-century one bearing a name of Exeter, is from an exceptionally sharp die suggesting a metal matrix. The identification with Burges seems very probable and the pipe is useful in confirming the date-range suggested for the pipes from the kiln.

B. SHILHAY KILN WASTE

In 1975 observation of builders' trenches at Commercial Road (Fig. 1, site 36: SX 9181 9212) produced fired lumps of pipeclay, muffle fragments with embedded pipe stems and over-fired pipes. The kiln waste is indicative of nearby pipe production, either in the extramural area of Shilhay and Exe Island or in the adjacent parishes of St Mary Steps or St Mary Major. The bowl forms were of types **L.1–5** and date to *c.* 1690–1730.

CP.10 Shilhay kiln waste; cf. types **L.4–5**, *c.* 1690–1730. Rouletted stem.

C. KILN WASTE FROM OTHER SITES

A few fragments of muffle were found in an unstratified context in the burial ground of St Mary Major (SX 9200 9257) with **CP.64** (*c.* 1700–1730), and in a back-filled gravel quarry at Southernhay Gardens (SX 9240 9256) associated with finds of *c.* 1720–60. A handful of fired pipeclay was excavated in 1977 from an undated context at Mermaid Yard (SX 9193 9234). None of these sites produced sufficient quantities to demonstrate that clay pipes were manufactured there.

3. CLAY PIPES AND FIGURINES FROM OTHER SITES

A. SELECTED GROUPS OF PIPES (Figs. 156–8)

Trichay Street 316

For the stratigraphy within this pit see Fig. 91 (p. 180). The pipes were associated with pottery **2100–73** and glass **G.94–108**.
Clay pipes **CP.12–16** all come from L.1.

CP.12 This type is similar to those from Plymouth which have a terminal date of *c.* 1630 (Oswald 1969, Fig. 53, Nos. 3 and 8). The clay is yellow-white with black grits. 9/64, cf. type LA.

CP.13 In outline this pipe is like type 7B of *c.* 1670–90 but it has a flat foot with a rouletted cross. Very white clay, two examples, 8/64, *c.* 1650–70.

CP.14 This resembles type 22W. Flat foot, heart-shaped base. Three examples, one 9/64, two 8/64, *c.* 1650–70.

CP.15–16 Local type LB. Four examples, 7/64, 8/64 and 9/64. *c.* 1660–90.

Not ill: Type 6W, 8/64, *c.* 1630–50; type LC small, 9/64, *c.* 1660–80, three bowls; type 4/7B, 8/64, *c.* 1650–70, three bowls; type resembling 6G but very thick bowl, 9/64, *c.* 1670.

CP.17–18 come from L.3

CP.17 Type LA. Buff-white softish clay, 8/64, *c.* 1640–60.

CP.18 Type LB medium. 8/64, *c.* 1660–80.

Not ill: Type LC small. 8/64, *c.* 1660–70.

CP.19–20 come from L.8.

CP.19 Cf. type LC. 8/64, *c.* 1660–70.

CP.20 Cf. **CP.14**. 9/64, *c.* 1660–70.

CP.21–2 come from L.12.

CP.21 Greyish very soft clay; the fabric coupled with a slight polish and the overhanging bowl suggest this could be Dutch. 7/64, *c.* 1640–60.

CP.22 Cf. **CP.19**. 8/64, *c.* 1660–70.

CP.23–4 come from L.13.

CP.23 Type 4G. 8/64, *c.* 1620–40.

CP.24 Type 16G. 8/64, *c.* 1610–40.

CP.25–6 come from L.17.

CP.25 In shape cf. **CP.21**, but harder clay. Perhaps type 7B. 8/64, *c.* 1660–80.

CP.26 Type 12W. 9/64, *c.* 1660–80.

Holloway Street 9

Finds from the large ditch cut outside the South Gate during the Civil War, probably in 1642 (Andriette 1971, 72–5), and back-filled by 1659.

CP.27–8 Type LA. *c.* 1620–50.

Goldsmith Street 96

Associated with pottery **2179–2268**, shortly after 1660.

CP.29 Type IS. Yellowish clay. 9/64, *c.* 1620–40.

CP.30 Type 2/4B. White clay. 8/64, *c.* 1640–50.

CP.31 Type 3B; cf. **CP.19** and **22**. 9/64, *c.* 1640–60.

CP.32 Type 22W or LC small. White clay with some black grits. 7/64, *c.* 1650–70. Three examples.

CP.33 Type resembles 22W but see **CP.18**. Very thick bowl, white and smooth pinched stem. 7/64, *c.* 1660–80.

CP.34 Type LC. 7/64, *c.* 1660–90.

CP.35 Type LB small. 7/64, *c.* 1660–90. Three examples.

Valiant Soldier 10

A group with a date range of *c.* 1640–80.

CP.36 This is unique in my experience. It is made of grey-white clay with a slightly burnished surface moulded by hand (a finger-print remains) apparently round a stem of ordinary clay. Bore 8/64. In shape and rim roulette it copies American Indian pipes found at Jamestown, Virginia (Harrington 1951, Figs. 3–4) and is restored accordingly. The decoration is impressed with metallic stamps and consists of a bull's head three times repeated above a cross *stellata* or *bottonnée* formed by two types of metal stamp. The bull's head stamp resembles that on a decorated stem from Chester of *c.* 1700–20 (Webster and Barton 1957, Fig. 1.5).

CP.37 Type 4G. 9/64, *c.* 1640–50.

CP.38 Type LC. 9/64, *c.* 1660–80.

CP.39 Type 6G. 9/64, *c.* 1660–80.

Holloway Street 7

Pit cutting fill of Civil War ditch, after *c.* 1660.

CP.40 Type LA. *c.* 1640–60.

CP.41 Type LB. *c.* 1650–90.

Not ill: Type LA. *c.* 1640–50; types L1 and LB, *c.* 1650–90.

North Street 1501

Associated with pottery **2269–2358** and glass **G.127–46**, shortly after *c.* 1680.

CP.42 Type 7B. GW in relief. 7/64, *c.* 1660–80. Two bowls.

CP.43 Type 4/5G. IR or possibly IB incuse. London type. There are duplicates in the Museum of London and at Doncaster. For their distribution see Oswald 1975, Fig. 18, Map 1. Attributed to John Rosse, Master of the Company in 1619 and 1634 (*ibid.*, Fig. 2, 13). Three bowls, 8/64. Presumably old stock.

Not ill: Types 5S, 8/64, *c.* 1660–90, four bowls; type LB, 8/64, *c.* 1660–90; type LC, 8/64, *c.* 1680–1770, three bowls.

Goldsmith Street 80

Associated with pottery **2386–2421**.

CP.44 Type 7B. 1 of 7/64, 1 of 9/64, *c.* 1670–1700.

CP.45 Type 12W. 2 of 7/64, 1 of 8/64, *c.* 1670–90. Dutch influence.

CP.46 Type 8B. 1 of 7/64, 2 of 8/64, *c.* 1670–1700.

CP.47 Type LC. 4 of 7/64, 5 of 8/64, *c.* 1670–1700.

CP.48 Cf. type LB. 5 of 8/64, *c.* 1670–1700.

CP.49 Type L4. 2 of 7/64, 6 of 8/64, *c.* 1690–1720.

Goldsmith Street 98

Associated with pottery **2359–85**.

CP.50 Type between 7B and 10W. 9/64, *c.* 1670.

CP.51 Three heavy bulbous bowls of greyish clay. 8/64. Three resemble on the one hand type 21W of *c.* 1660–70 of Cornish make, and curiously, the Yorkshire bulbous type 7NE of *c.* 1670–90. The clay colour makes the Cornish the more likely.

CP.52 Type 8B/LB, very white, *c.* 1670–90.

Valiant Soldier 45

CP.53 Type 12B. L in relief at right side of bowl. 5/64, *c.* 1710–40.

CP.54 Type 4B. On its base a ?heart in relief surrounded by dots. No parallels are known. 8/64, *c.* 1640–60. Presumably residual.

CP.55–6 Bristol and Southern spur-type bowls of type 4B with gauntlets in relief. This mark on the side of the bowl seems unknown in other collections. It is not in the Exeter Museum Collection, nor at Taunton, Bristol or Plymouth, nor in the Central South. Presumably a maker (or makers) in the Western area was using Bristol traditions and selling his pipes on the strength of the gauntlet as a mark of excellence. 6/64, *c.* 1720–50.

The group also contained **CP.76–7** and **79**.

Magdalen Street 7

Associated with pottery **2589–2627**.

CP.57 Type 12B, polished, R in relief in cartouche. There is a similar mark on a pipe from the Isle of Wight. See also **CP.71** and **72**, *c.* 1700–40.

CP.58–9 Rayed sun on side of bowl. These are Bristol types of

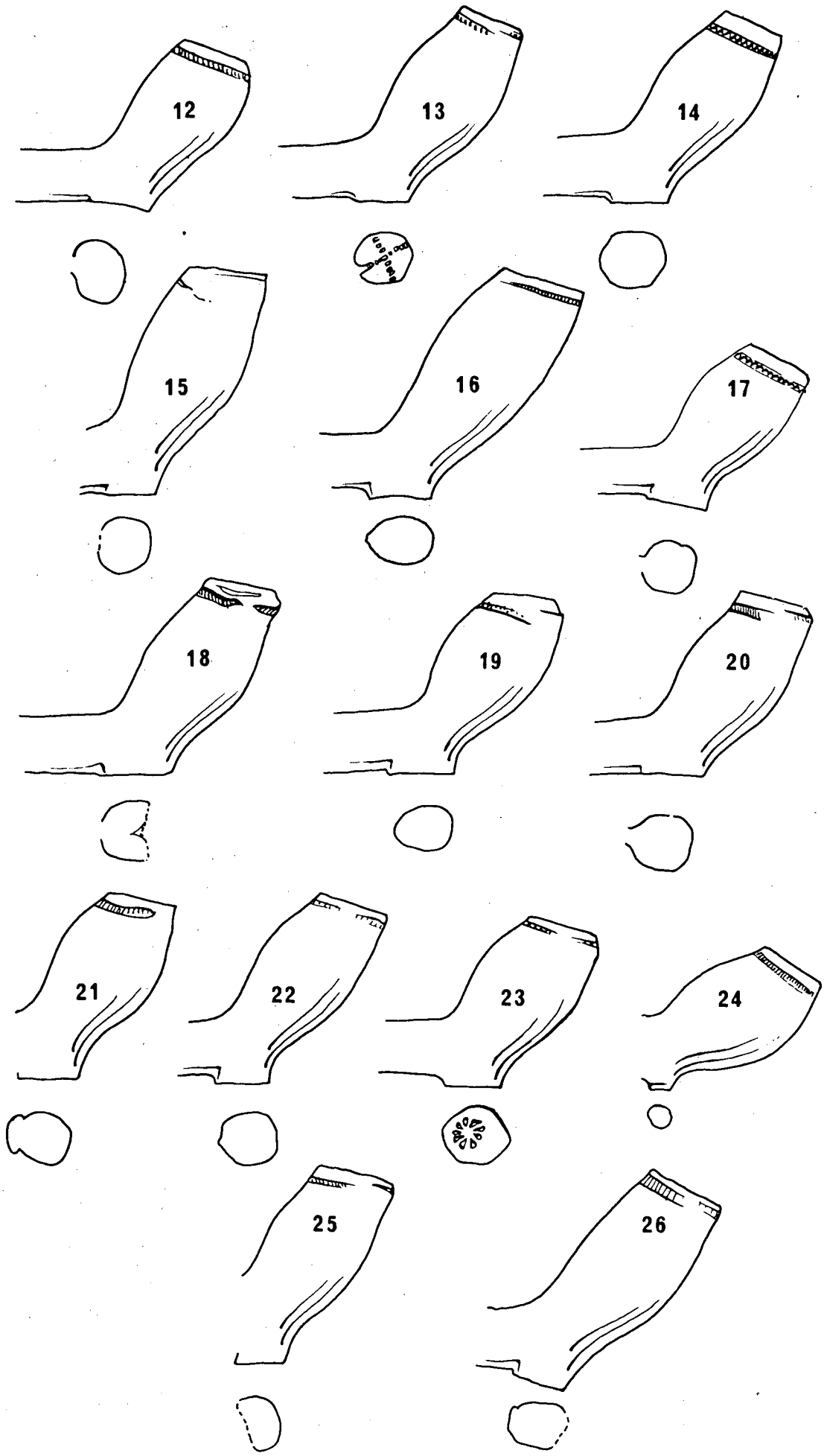


Fig. 156. Group of clay pipes from Trichay Street 316 (scale 1:1).

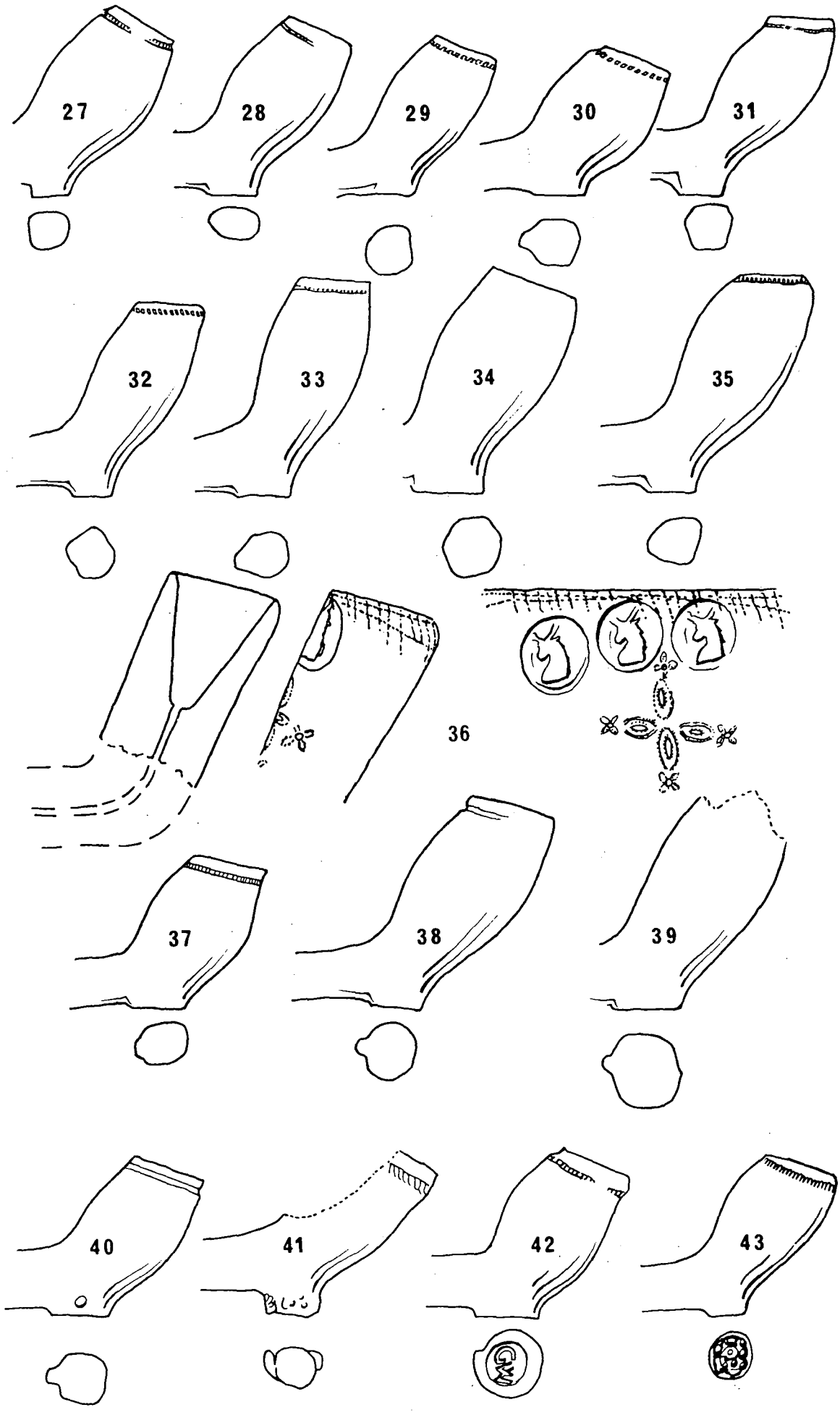


Fig. 157. Groups of 17th-century clay pipes (scale 1:1).

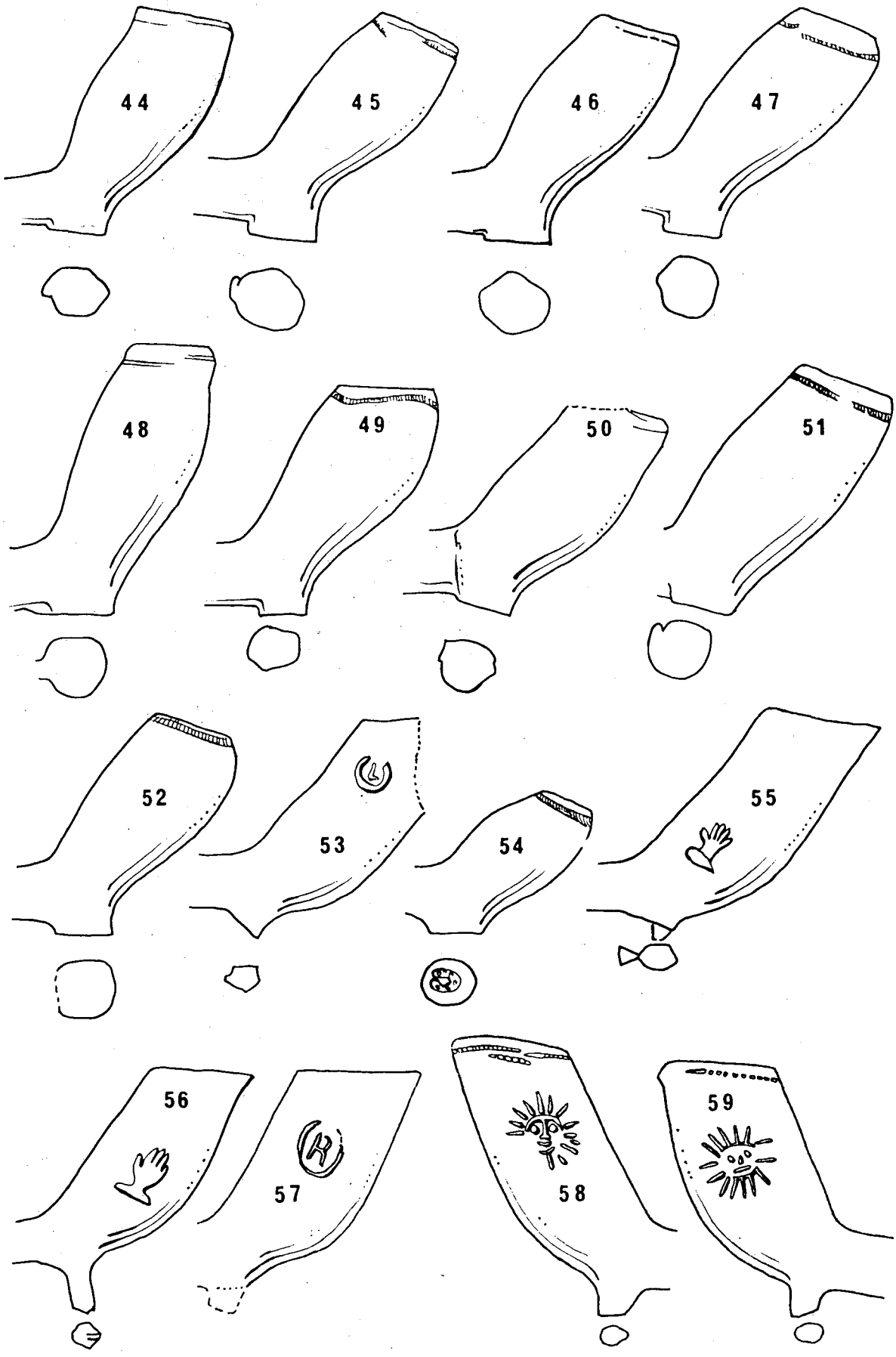


Fig. 158. Groups of 17th- and 18th-century clay pipes (scale 1:1).

c. 1720–50, or a little earlier. Their numbers make local manufacture probable. There are several moulds and dies and the marks do not appear at Bristol. One has been found at Queenhithe, London. Stem-bore mainly 7/64. Thick bowls, white clay. See also **CP.69** and **70**. These four examples give a fair idea of the range.

B. PIPES FROM OTHER CONTEXTS (Figs. 159–61)

Dutch pipes

CP.60 FG, unstrat. Stem in soft clay, unpolished. Stamps drawn at twice actual size. 8/64; cf. Friederich 1975, 71; date suggested, *c.* 1630.

CP.61 PS 71. Stem with fragment of base mark, possibly ID. 7/64. Yellowish clay, polished stem. The pattern is Dutch; cf. example in the collection of Don Duco of *c.* 1650. Stamp showing at twice actual size.

CP.62 CC 19. *c.* 1680–1700. Marked with a basket; maker uncertain.

CP.63–4 FG, unstrat. Decorated stems. 6/64. The styles of decoration are both Dutch, occurring on stems of *c.* 1700 and *c.* 1730 (Friederich 1975, 68).

CP.65 FG 101. 6/64. Mark 96 crowned. This mark was used by Gijbart de Munich (1728–46), Jacob Stomman (1748–68), and Pieter Stomman (*c.* 1700). The style of this pipe is of *c.* 1770.

CP.66 TS 682. Mark ISE. Grey clay, polished bowl, and stem which has remnants of decoration. 7/64, *c.* 1670–80.

Bristol-style pipes

CP.67 FW 14. IE in relief on right side of bowl. Three dots in relief on left side. Mark occurs at Bristol (type 10B). Perhaps by Jonas Edwards senior (1722–40).

CP.68 FG, unstrat. Bristol type 11. In relief L or I in cartouche. 5/64, *c.* 1700–30.

CP.69 GS 31. Type 12B. Rayed moon in relief. White clay. 6/64, *c.* 1710–40.

CP.70 GS, unstrat. Type 14S. Rayed moon on right side of bowl. White clay, slight polish. 6/64, *c.* 1700–40. See also **CP.58–9**. I have no parallels for these marks but they are Bristol in style and the name Moon occurs among makers there from 1669 onwards. They may perhaps be products of the family but appear to be too early for Charles Moon (1770–1812) and too late for Thomas, apprenticed in 1669.

CP.71 RS, unstrat. Type 15B. K dotted in relief, semi-polished. 7/64, *c.* 1740–70. Dotted relief decoration occurs on Bristol pipes at this time. A similar pipe was found at Ferrylands House, Newfoundland. This is a common type at Exeter.

CP.72 FG, unstrat. Type 15B. Polished. 7/64, *c.* 1740–70.

West Country types

CP.73 VS 28. Cf. type L1 but slimmer. 1/PRAT/TAVN incuse. Very white smooth clay. Pipes with this mark range from *c.* 1660 until well into the 18th century and probably represent several generations of makers. 6/64, *c.* 1690–1720.

CP.74 VS 316. Type 17W. GE/ORGE/WEB incuse. Semi-polished bowl. 8/64. Signed bowls by Webb are known from Donyatt, Somerset (Coleman-Smith and Pearson 1970); Stockland, Devon (Allan and Jarvis 1974, 174); Lyme Regis, Dorset; and in Taunton Museum Collection (Oswald 1975, Fig. 60, No. 5). His earliest pipes are of *c.* 1650–60 and his latest *c.* 1690–1700. This is one of his latest.

London type

CP.75 HS 2. London type 12G. Thin bowl and stem. Spur trimmed on both sides forming a flat surface, an unusual feature. 5/64, *c.* 1770–90.

Local types

Bowl profiles **CP.76–9** have affinities with Bristol and West Country types but do not match them precisely. They are so common in Exeter deposits that they are likely to be local.

CP.76 HL 7 and VS 45. *Type LA* (See also **CP.17**, **27–8** and **40**). The shape is like type 4B of Bristol (*ibid.*, Fig. 9, No. 4) but the clay is often yellow with cracked surfaces, and bowls are sometimes askew to the stem (cf. *ibid.*, Fig. 12). 8/64, *c.* 1640–60.

CP.77 VS 45. *Type LB* (as **CP.15–6**, **18** and **35**). This occurs in large and small sizes. Their shape resembles type 22W (*ibid.*, Fig. 10). *c.* 1660–90.

CP.78 GS 80. *Type LC* (see also **CP.34**, **38** and **47**). The splayed bowl resembles type 9B (*idem* 1969, Fig. 9) and Plymouth Nos. 65–8 (*idem* 1975, Fig. 57). *c.* 1660–90.

CP.79 VS 45. *Type LD*. This is very much a local type related to the spurred pipes of the second half of the 17th century (*ibid.*, Fig. 4, type 17).

CP.80–3 are pipes with dots on each side of the base. They are presumably local products since this type of marking does not occur elsewhere. At Plymouth lines were used in place of dots (*idem* 1969, Fig. 54, 17). It is suggested that these dots, which must have been cut in the mould, identified their maker and perhaps enabled a tally of his output to be kept.

CP.80 CC 19, *c.* 1690–1720; **CP.81** GS 24, *c.* 1690–1720; **CP.82** GS, unstrat, *c.* 1690–1720; **CP.83** EB 521, *c.* 1700–30.

CP.84 GS 19. Type 17W. TOP/SAM incuse. There is a duplicate in the Rippon Collection at Exeter Museum (*idem* 1980, Fig. 2, No. 19). *c.* 1690–1720.

CP.85 VS 10 and 28. This is variety of Plymouth No. 15 (*idem* 1969, Fig. 54). Wheel in relief. 9/64, *c.* 1650–70.

CP.86 VS 25. Base-fragment, type uncertain. Mark probably IW in relief. 8/64, *c.* 1640–50.

CP.87 CC 19. Marked IP incuse. *c.* 1690–1720. Perhaps James Parker who became a Freeman in 1695 (Rowe and Jackson 1975, 206) or Isaac Prance of Topsham (cf. Oswald 1980, Nos. 17–20).

CP.88 VS 15 and GS 218. Two heraldic pipes from the same mould. The arms are probably of Hanover. The front mould line is trimmed, and has leaves and flowers with a pattern found on armorial pipes of *c.* 1800–20. The narrow spur bears the mark ?B/B. 6/64, *c.* 1780–1820. (GS 218 contained a pot bearing the date 1815.) A spur with this mark was found in VS 29, and in the Exeter Museum collection there is a bowl of type 12/14 of *c.* 1780 with B/B upright on the spur.

These four finds of pipes by the maker B.B. suggest he was a local man; at this time royal armorial pipes were increasingly being made outside London.

CP.89 TS 100. Mark JC. Crude rear leaves and untrimmed mould line suggest a date of *c.* 1820–40. Perhaps by James Chapple, active 1803–22 (Arnold and Allan 1980, 319).

CP.90 GS 68. Mark RR. Trimmed mould line. 5/64. Probably by Robert Reynolds, active 1822–53 (*ibid.*, 321).

CP.91 TS 100. Mark RR. Crude front leaves, untrimmed mould line, thin bowl and thin pointed spur. 5/64. Probably by Robert Reynolds.

CP.92 PP, unstrat. Mark T GRAN [. . ./. . .] ETER on stem, RC or RG on spur. No mould line on base. Thomas Granger was working in 1822 (*ibid.*). Since Granger's name is cut in the mould and not stamped it may imply a partnership between him and RC.

CP.93–5 are pipes by Thomas Granger. Three different moulds were employed; the mould lines have been trimmed from their spurs, which have a fleur-de-lys within a semicircle. 5/64. *c.* 1800–20.

CP.93–5 **CP.93** VS 6. Mark T GR [. . . on left side of stem; **CP.94** VS 41; **CP.95** VS 41. Mark T [. . . on left side of stem.

CP.96 NS 1. Mark I L. Arms with male supporter to right.

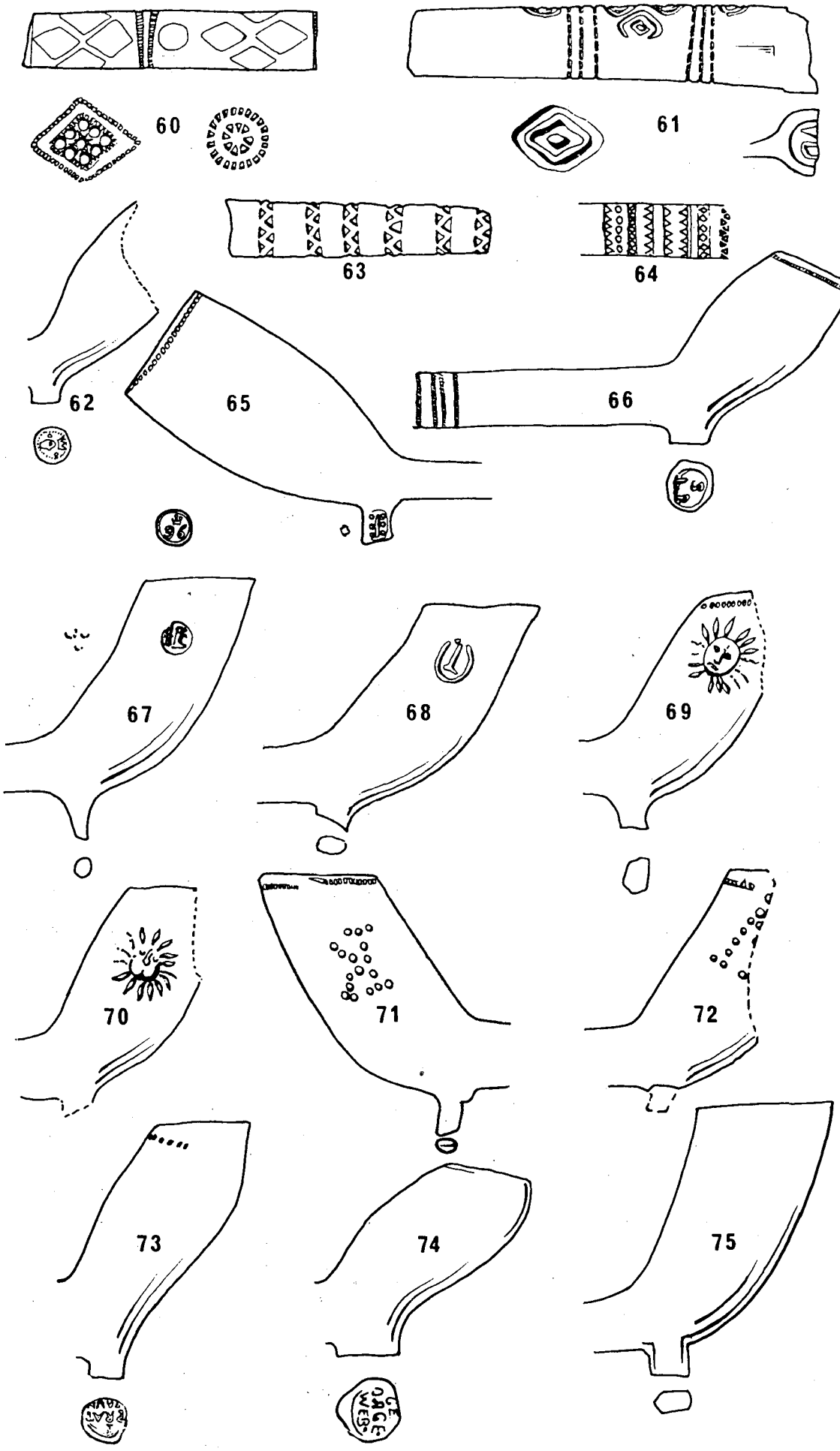


Fig. 159. Dutch (**60–6**), Bristol-style (**67–72**), West Country (**73–4**) and London (**75**) clay pipes (scale 1:1, except stamps of **60–1**, 2:1).

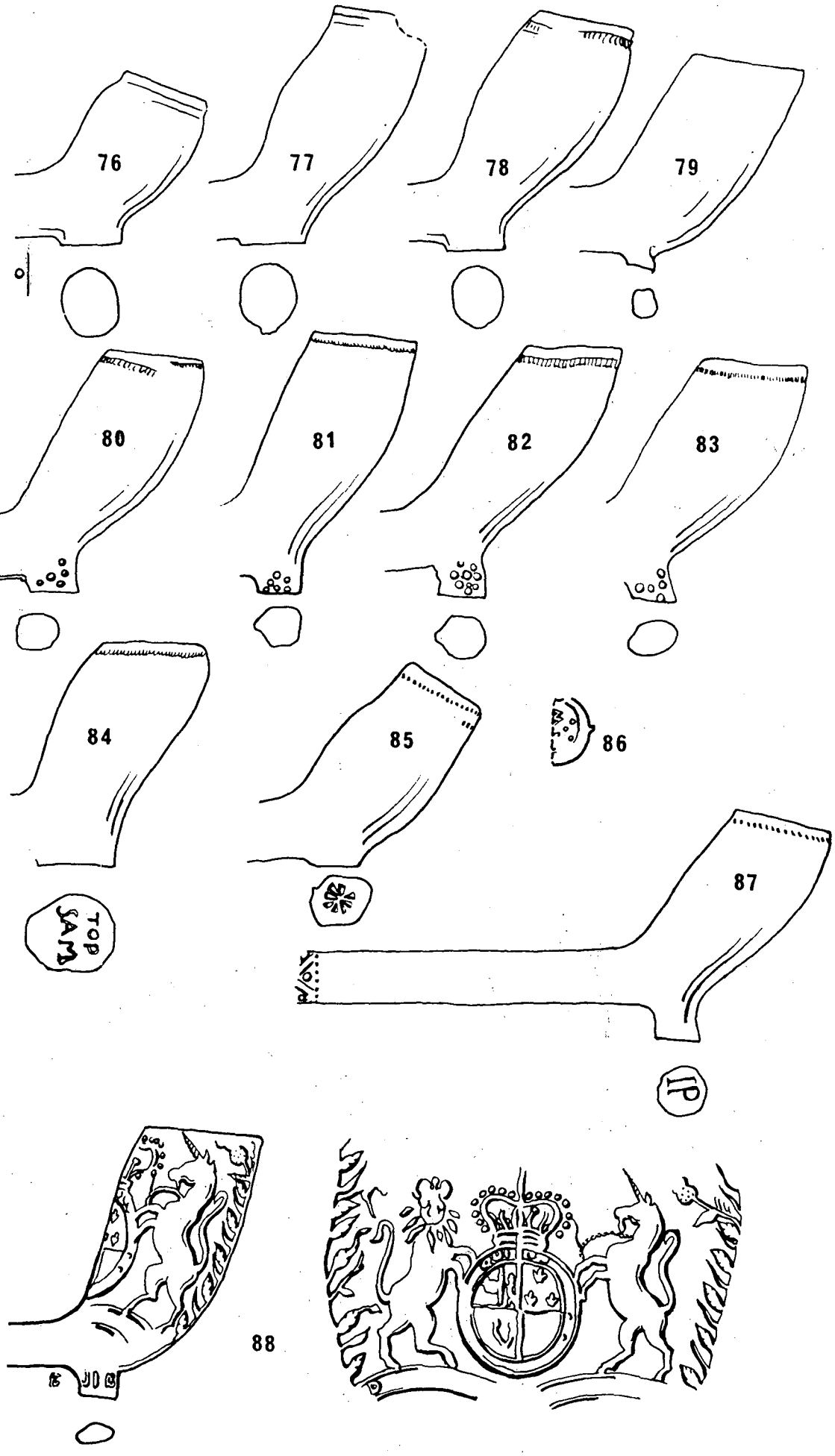


Fig. 160. Local clay pipes (scale 1:1).

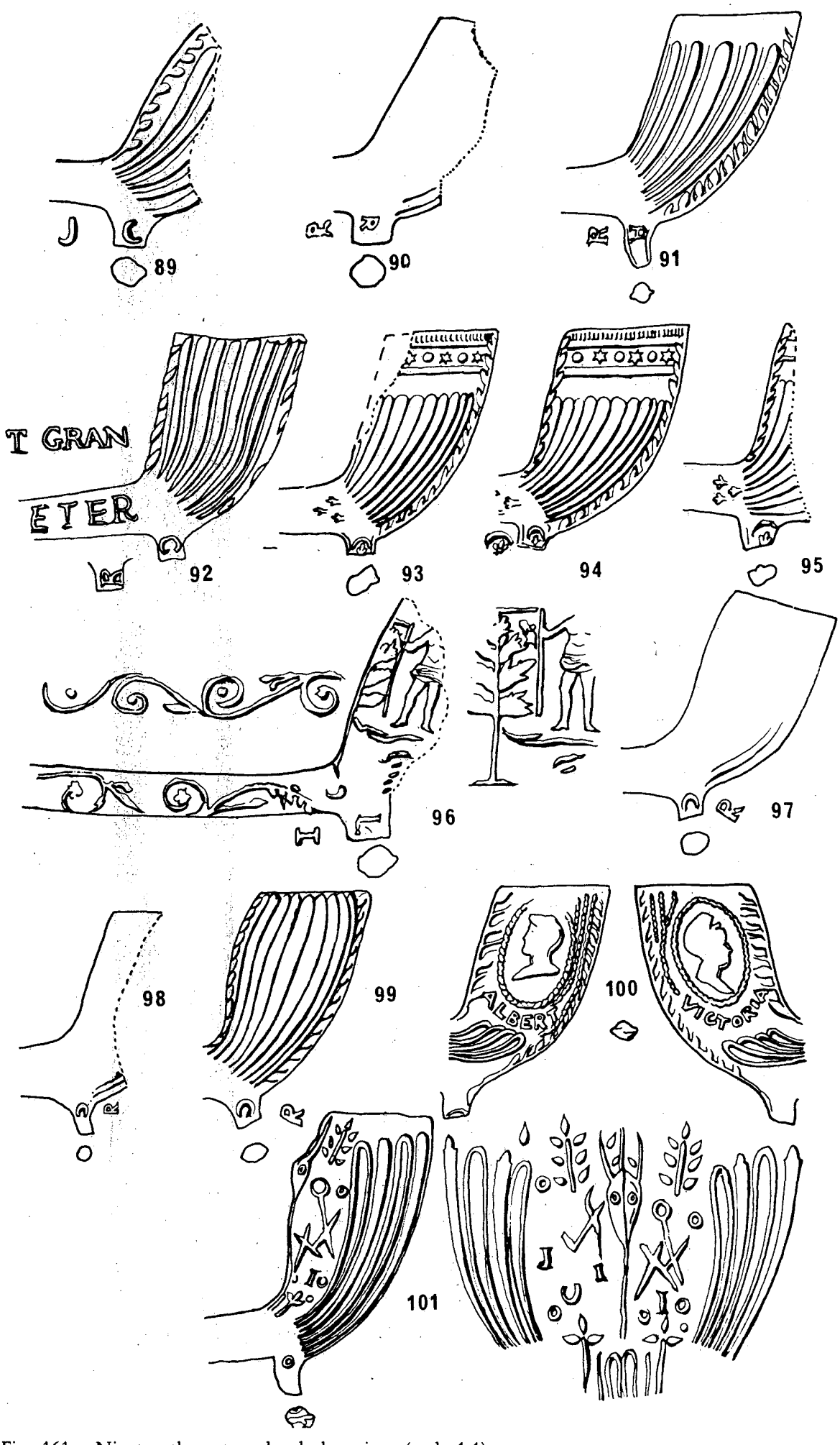
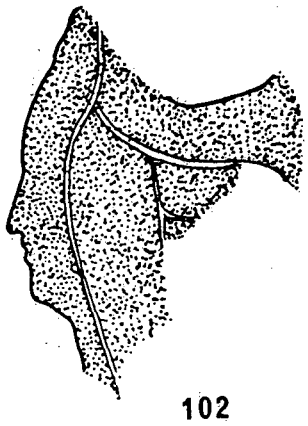


Fig. 161. Nineteenth-century local clay pipes (scale 1:1).



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103

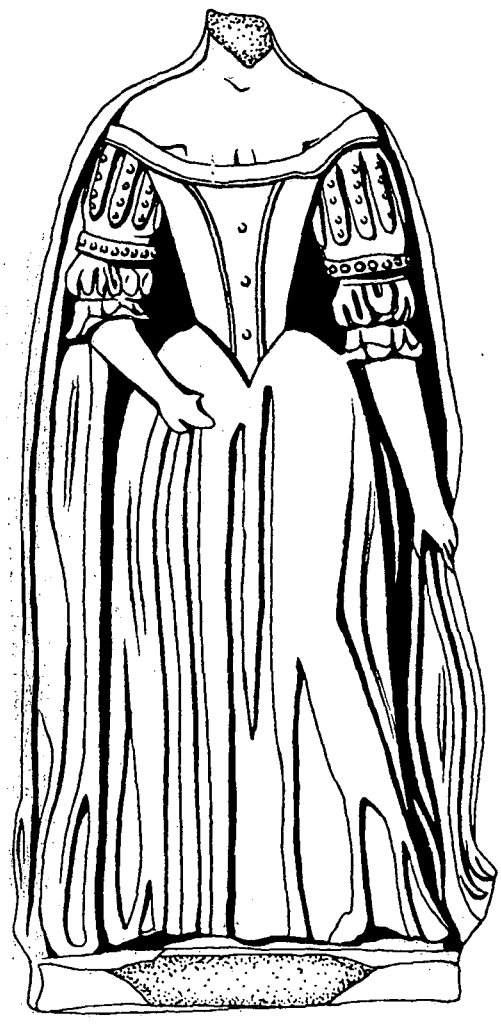

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Fig. 162. Pipe-clay figurines (scale 1:1).

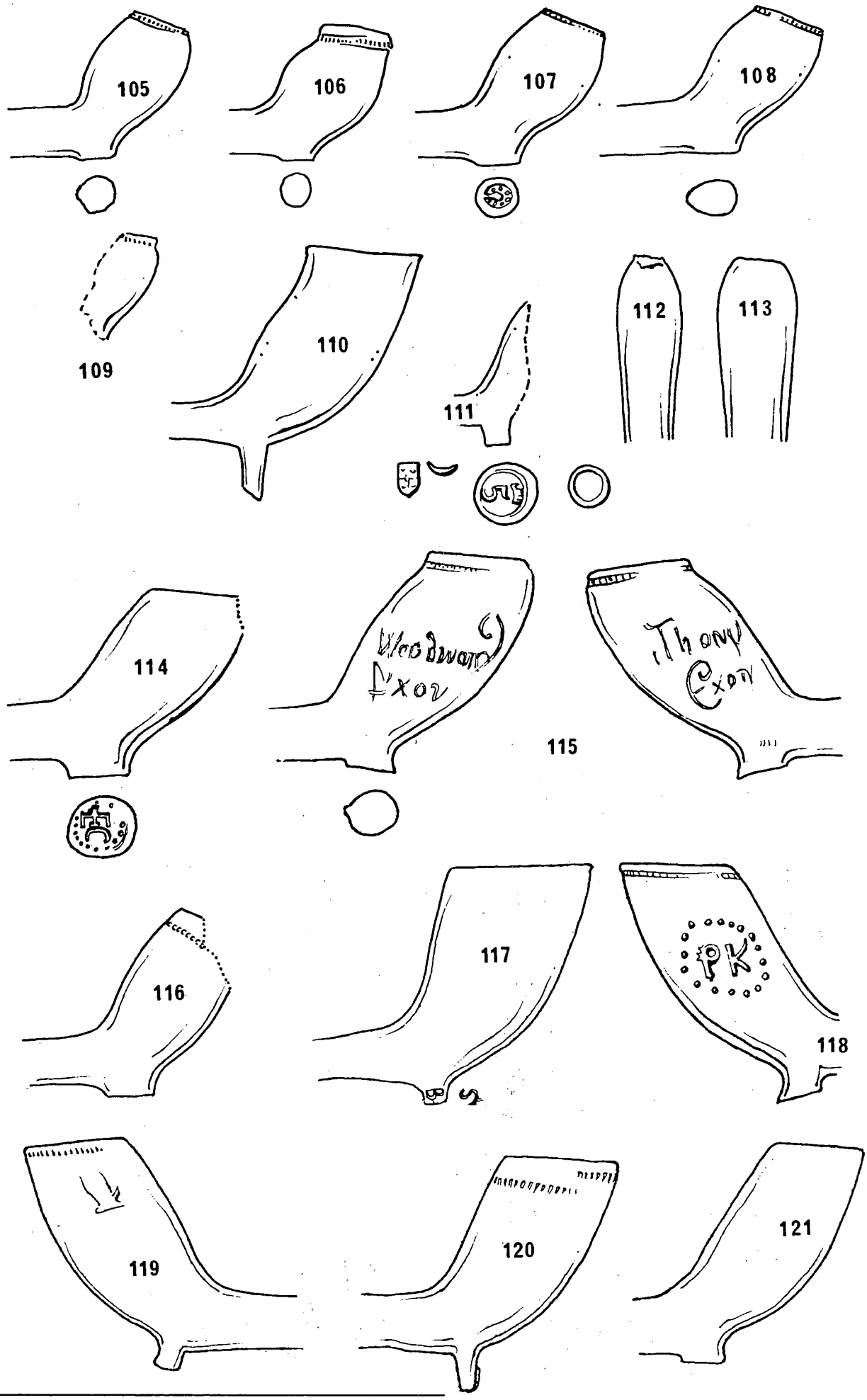

Fig. 163. Clay pipes: addenda (scale 1:1).

The upper portion of the shield could be the Exeter Castle which appears on silver marks. The scroll on the stem and trimmed mould line suggest a date of *c.* 1800–20. 5/64.

CP.97–9 VS 41. Pipes marked RC. R. Chapple was working at Newton Abbot in 1866–73, but these look earlier. Their mould lines have been removed from the base, a practice which generally ceased *c.* 1820; and they were stratified with **CP. 94–5** of *c.* 1800–20.

C. PIPECLAY FIGURINES (Fig. 162)

CP.102 Found in Exeter Cathedral; circumstances of discovery unknown. Figurine head in pipeclay, formed from a series of separate clay lumps. Traces of gold — possibly gold leaf — survive on headdress. At the top of the head there is a small depression with red pigment. Probably 15th-century.

CP.103 Unprovenanced, in Exeter Museum collection, probably found in Exeter. Male figurine fragment. One of a pair of figures: the fan and part of the dress of a female survives. This figure is very worn, particularly the face and hair locks, perhaps through use as a toy. S. Hunt writes,

'The man wears a coat, a waistcoat and possibly a cape also. The coat has deep cuffs. At his neck is a cravat. This style of dress replaced the doublet after *c.* 1660 and was falling from fashion by *c.* 1690'.

CP.104 Exeter Museum Acc. No. 88/1929. Found embedded in a house wall in Queen Street. Traces of red pigment on back and front of dress.
Mr. Hunt writes,
'The woman wears a skirt and bodice with a cape over the shoulders. The sleeve puffs at the elbow are the most diagnostic feature of the dress, indicating a date of *c.* 1660–75'.

D. ADDENDUM (Fig. 163)

The following pipes have been excavated since the completion of the clay pipe report in 1978. The group from GSH 20 is currently the best early group from the city, and **CP.109** is almost certainly the earliest stratified pipe from the excavations.

CP.105–8 A group of pipes from GSH 20, associated with pottery **2039–52**. Bowl types 2–4G (Oswald 1975, 39), *c.* 1610–40 or perhaps a little earlier. The excavated evidence at Carter's Grove, Colonial Williamsburg, suggests that bowls of these types may be of somewhat earlier date than previously believed. 9/64 and 10/64.

CP.109 QS 314, associated with pottery **1984–2031**. Fragment from a very small bowl, possibly type 3G, *c.* 1580–1610. Only four clay pipe fragments are present in a group containing 710 pottery sherds, fragments of 12 glasses and over 1,000 animal bones. This may date to the period when pipe smoking was not widely established in Exeter. 8/64 and 9/64.

CP.110 RS 1420. Spurred type. 4/63. *c.* 1720–50.

CP.111 Unstrat., from Topsham. Dutch pipe with incuse crowned 5 on base, arms of Gouda and O in relief on spur; either by Ary van Vliet (*ob.* 1746) or Jacob Schultes (1759–82).

CP.112–13 Unstrat., from Topsham. Wig curlers. *c.* 1730–50.

CP.114 GS 108. Type L3. Cut top. Incuse mark E C. Maker uncertain. Duplicates in Taunton Museum. *c.* 1720–40.

CP.115 GS 80. Type L1. White clay; button top. Bowl thickness 15 mm; in low relief on the bowl in script;

Woodward Thom [as]
Exon Exon

Thomas Woodward became a freeman in 1708 (Arnold and Allan 1980, 318). This type of mark is so far unique in being in script, incorporated in the mould. The relief is so low that similar marks may have been missed on Exeter pipes. Bowls with full name marks in relief are known from other areas e.g. Taunton and Bedfordshire, but there the names are in much higher relief and in capitals (Oswald 1975, Pl. IV, Nos. 13–4; Fig. 14, Nos. 1, 4).

CP.116 EB 173, associated with glass **G.91–3**. Yellowish clay. 7/64. *c.* 1640–50. The group also includes repeats of **CP.105** and **107** plain, *c.* 1610–40.

CP.117 BSE 105. Type 13G. Red deposit on white clay with a deformed waster stem. Mark S/B; untraced. The oval bowl and trimmed base of the spur indicate a date of *c.* 1800–20.

CP.118 GS 734. Type L2. Smooth white clay. Button top; bowl thickness 1.5–2 mm. Initials PK in relief on left side of bowl. These must surely be those of Peter Knight senior, 1716–41 (Arnold and Allan 1980, 319). The button top suggests a date earlier than *c.* 1720 since it was at about this date that pipe makers in London and Oxford abandoned the use of the mushroom or button for trimming the top of the bowl in favour of trimming it with a knife, hence not employing the roulette at the top of the pipe. The mark is on the left side of the bowl, incorporated in the mould after the Bristol fashion, although most Bristol marks are on the right side.

CP.119–21 Group of near-complete pipes from BSE 191, associated with pottery **2693–5**. The mixture of the two methods of trimming the top of the bowl suggests a date of *c.* 1730–50.

CP.119 Cut top, gauntlet in relief. Stem broken at 230 mm. White clay with black grits.

CP.120 Cut top, slightly elliptical bowl. Stem broken at 300 mm. Fabric as **CP.119**.

CP.121 Button top. Fabric as **CP.119**.

NOTES

1. An examination of 19th-century directories shows that this site lay in St Sidwell's parish, Exeter.
2. Licences granted to tobacco retailers between 1633 and 1637 were concentrated very markedly in the London area and the south-western counties of Devon, Cornwall and Somerset. Similarly the payments of excise on tobacco in the year ending in March 1655 were particularly high in Devon and Somerset. The totals paid by London and the leading counties were as follows: London £26,234, Somerset £3,418, Devon £3,069, Norfolk £162, Kent £123, Hampshire £97, Dorset £93, Lincolnshire £81, Newcastle, Berwick and Northumberland £37. (BM Landsdowne MS. 1215, fo.8).
3. Measurements of stem bores in imperial units have been retained here. The units are in fractions of one inch. For a summary of these methods, see Oswald 1975, 92–5.
4. Most of the known manufacturers lived in the parishes of St Sidwell and St Mary Major (Arnold and Allan 1980, *passim*).
5. This reference to the Exeter Company of Tobacco-Pipe Makers is incidentally only the second reference to that company noted (cf. *ibid.*, 308).

Ringwood,
December 1980.

VIII THE STONE

Geological identifications by M. Hart (some limestones), D. T. Moore (hones and querns), R. G. Scrivener and B. Selwood.

A. LAMPS (Fig. 164)

S.1 GS 258, associated with pottery **302–34**. Lamp in Beer stone with very smooth surfaces. Probably chisel-dressed, then smoothed, again perhaps using a chisel.[1] *Int* of bowl shows scoops in base attributable to the use of a punch, and sooting. The shallow scoop on the underside may also have served as a bowl. The fine dressing indicates a date after *c.* 1100; associated finds indicate a 12th-century date.

S.2 Found in 1978 by builders at the White Hart Inn, South Street, in an early post-medieval wall. Lamp in Beer stone, once rectangular with chamfered corners; surfaces now rather worn. Hole in base of bowl probably cut with a punch. Traces of red colouring present on *ext*, but these run over broken edges, and therefore do not seem to be red pigment. The upper parts of the bowl *int* show sooting. One loop handle survives. Shallowly incised heater-shaped shields visible on three sides. Probably late medieval.[2]

B. MORTARS (Figs. 164–6)

All stones show horizontal bedding.

S.3 PP 1556, incorporated in a late 15th-century rubble deposit. Rib fragment with adjoining wall piece, in Purbeck marble. Chisel-dressed rib, with vertical dressing on sides. Zone of chisel-dressing on rim, with rough pecking below. Chisel width *c.* 13 mm. *Int* smooth.

S.4 EB, unstrat. Base with stubs of two opposing ribs, in Purbeck marble. Roughly pecked underside, probably worked with a punch; smooth moulding below vertical chisel-dressing on *ext*; smooth *int*.

S.5 PP 1580, 15th-century robber trench. Rim fragment with spout in dense pale grey limestone, source uncertain.

S.6 EB 462, early 15th-century. Wall fragment with pierced handle and adjoining rectangular base piece in Beer stone. Traces of vertical tooling on lower parts of body; base of *int* worn by pounding. Surfaces heavily abraded.

S.7 PP 1504, late 15th-century. Salcombe stone. Wall fragment with edge of a curving rim or handle. *Ext* vertical chisel-dressing, smooth *int*.

S.8 GS 288, incorporated in a post-medieval wall. Fine sandy limestone, source uncertain. Rim piece with *ext* vertical chisel-dressing; *int* smooth and markedly undercut by grinding.

S.9 GS 215, associated with pottery **1196–1231**, mid or late 13th-century. Broken-shell limestone, from the Upper Purbeck beds, Swanage.[3] Upper parts of bowl, with one surviving rib at right-angles to spout. Shallow channel in spout; rough *ext* without clear tool-marks. *Int* ground smooth, especially lower parts of walls.

S.10 FG 105, early 16th-century. Broken-shell limestone from Swanage, as above. Rim fragment with rib. Traces of vertical dressing on rib, lower parts of *int* smoothed.

S.11 PS 316, 15th-century street make-up. Broken-shell limestone from Swanage, as above. Rim fragment with rough surfaces, showing neither tooling nor wear.

S.12 EB 451, associated with pottery **1463–1511**, early 15th-century. Broken-shell limestone from Swanage, as above. Body fragment with handle. Possible signs of near-vertical chisel-dressing on *ext*; *int* markedly undercut by grinding and heavily pitted.

S.13 PP, from the excavations of A.W. Everett, precise provenance unknown. Broken-shell limestone from Swanage, as above. Square base, curving rib below spout. No dressing visible. *Int* heavily worn, with undercutting at base of wall.

S.14 PP 1581, drain fill, *c.* 1250–1300. Broken-shell limestone from Swanage, as above. One base piece with a rib fragment, one rim fragment with rather battered lug. No dressing visible. *Int* of base very smooth.

S.15 PP 942, wall trench, *c.* 1300. Purbeck marble; two pieces forming a full profile with one rib. Smooth polished *ext*, base worn by pounding.

Not ill: GS 34, late 16th-century. Bodysherd in Purbeck marble with diagonal chisel-dressing on *ext*, edge of a rib also with diagonal chisel-dressing, and smooth *int*. Max. wall thickness 33 mm.

The total number of mortars, including unpublished fragments, is as follows:

Broken-shell limestone from Swanage	8
Purbeck marble	4
Salcombe stone	1
Beer stone	1
Limestone, not identified	3
	17

Exeter's mortars were supplied largely by the production centres on the southern English coast which also supplied most of those at Southampton (Platt and Coleman-Smith 1975, 2, 307–11) and Winchester (D. Smith, pers. comm.). In view of the widespread use of Caen stone mortars on English sites (Dunning 1977, 311–44), Exeter's regular trade with Normandy, and the importation of building stone from Caen to the city (Erskine 1981, 9, 16, 51), the absence of Caen stone mortars is surprising. It is far from clear why ports with major commercial interests in northern France should have so few Caen stone mortars whilst King's Lynn with its North Sea trade has so many (Dunning 1977, 323).

C. QUERNS, GRINDSTONES, *ETC.* (Figs. 166–7)

S.16 PP 1134, late 13th-century, priory kitchen. Polyphant stone from East Cornwall. Fragment of a handle with roughly dressed surfaces, and patches of probable sooting. This may be compared to the series of post-medieval stone vessels of polyphant known, for example, from Launceston Castle (Cornwall). No vessel with a handle comparable to the present example is known from Launceston or elsewhere (*ex inf.* T. J. Miles) so the type of vessel from which this comes is uncertain.

S.17 EB 301, mid 13th-century. Quartz porphyry, precise origin uncertain. Lower stone of a rotary quern with pronounced concentric grooves on grinding (upper) surface.

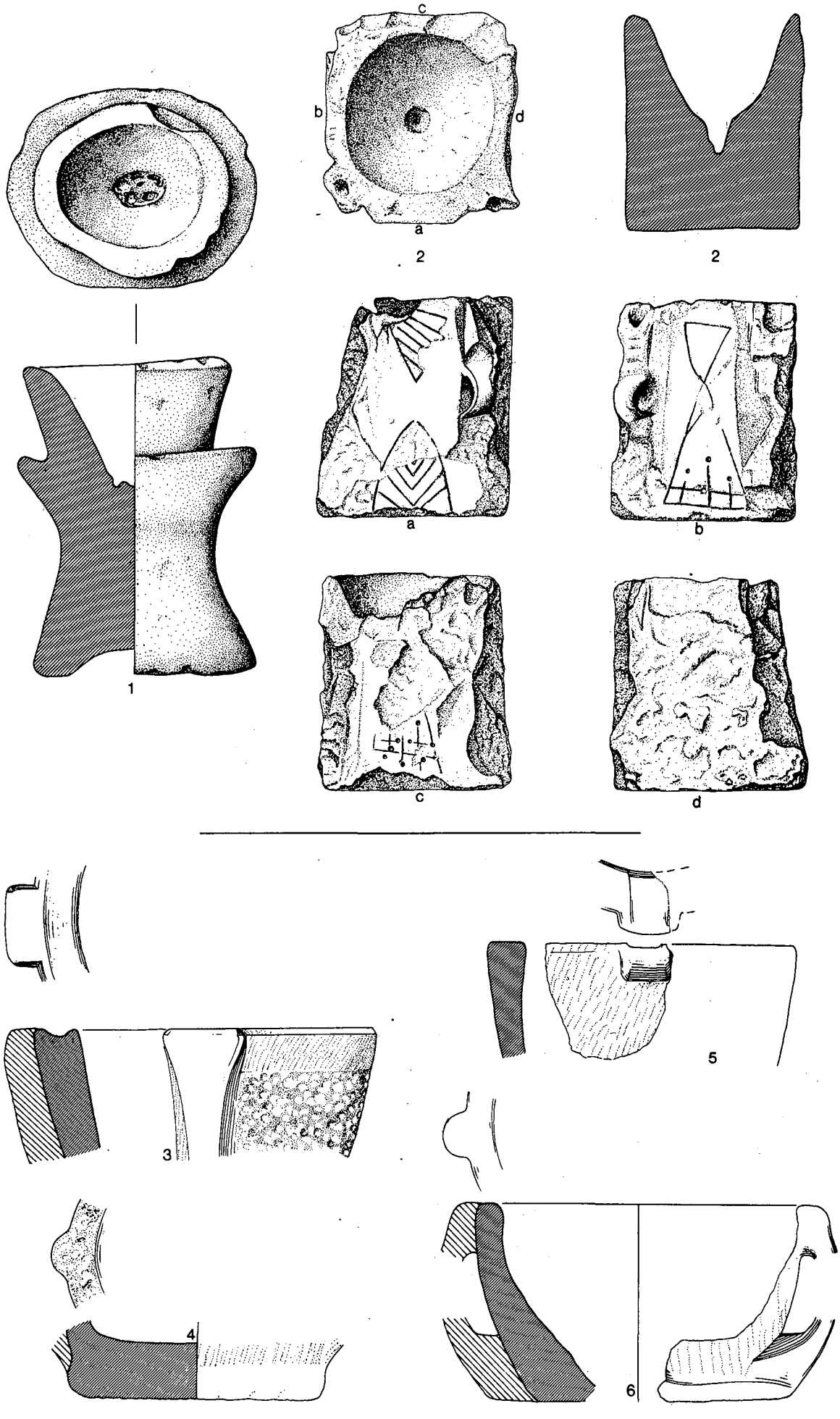

Fig. 164. Medieval stone lamps (**1, 2**) and mortars (**3–6**) (scale 1:4).

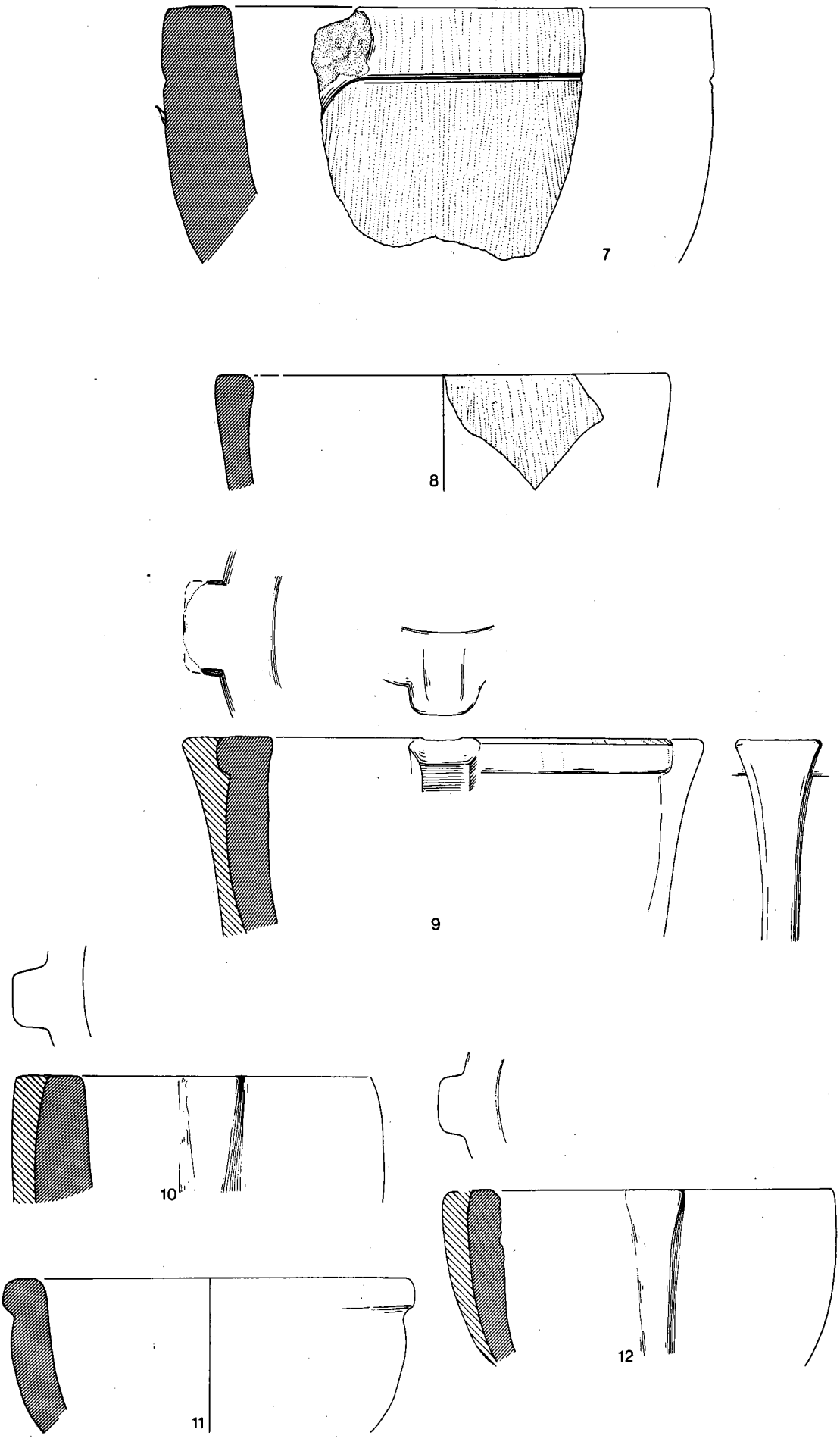

Fig. 165. Medieval mortars (scale 1:4).

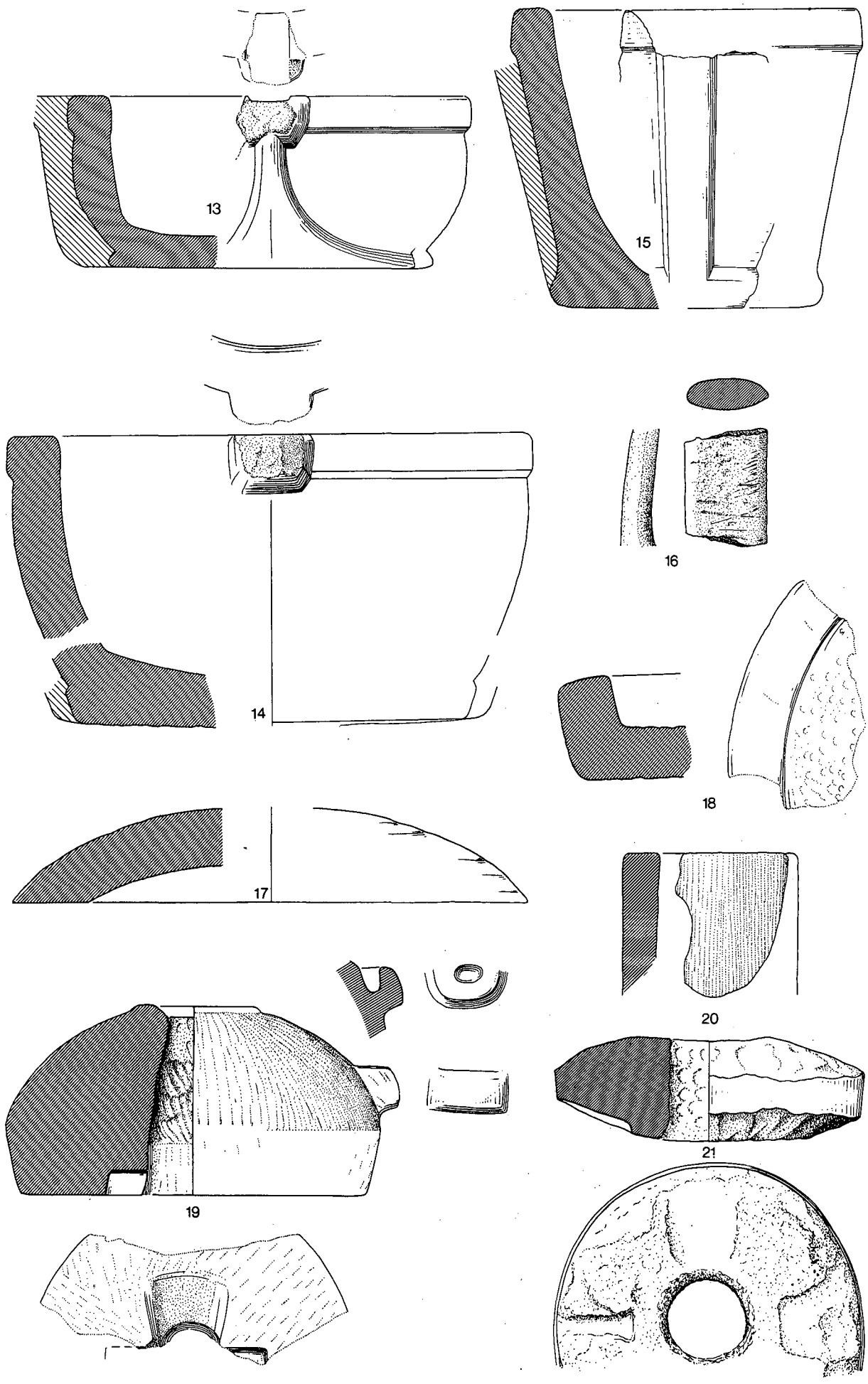

Fig. 166. Medieval mortars (**13–15**) querns (**17–19**) and other stone objects (**16, 20, 21**) (scale 1:4).

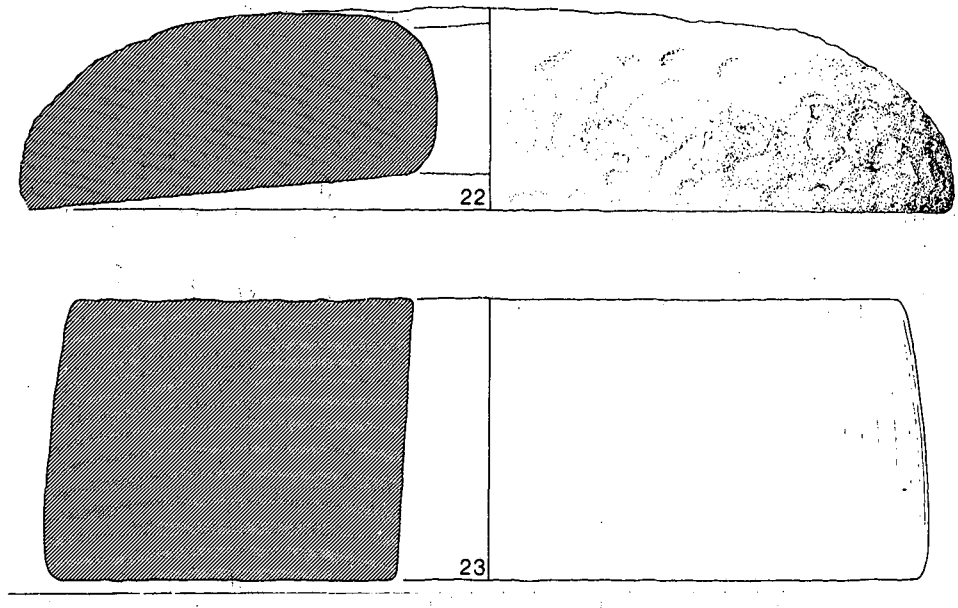

Fig. 167. Medieval quern (**22**) and crushing stone (**23**) (scale 1:4).

S.18 QS 45, 14th-century. Quartz-muscovite-sericite greywacke remarkably similar to the Pennant Grit of the Bristol Coalfield.[4] Lower stone of a pot quern, the grinding surface pecked, then polished by use. Other surfaces roughly hewn.

S.19 PP 1681, late 13th-century, priory kitchen. Geology as **S.18**. Fragment forming rather less than half of an upper quern stone. This evidently comes from a pot quern since the near-vertical face of the stone, like the base, has been polished by use as a grinding surface. Upper surface probably chisel-dressed, with raised lug for insertion of stick for rotation. Central hole with one splayed opening at base, probably the survivor of a pair allowing grain to be spread onto grinding surface. Small slots of rectangular section on both sides of central hole. These formerly held a horizontal iron bar, recessed into the grinding surface and running across the central hole of the stone. This would have sat upon the projecting pivot of the lower stone. Rust survives on the surfaces formerly touching the bar.

For further evidence of the export of querns of Pennant grit from the Bristol area to the South-West, see Beresford 1974, 143.

S.20 PP 621, 14th- or 15th-century. Fragment of a vessel of uncertain function (possibly a lamp), of Salcombe limestone. Vertical *ext* dressing, slight surface blackening (probably sooting).

S.21 HS 218, associated with pottery **46–9**, 12th-century. Possible grindstone; very calcareous sandstone, from South-East Devon. Smooth consistently worn vertical edge; irregular upper and lower surfaces, the latter with depressions, possibly deliberately cut. The function of this stone is uncertain; it is considerably smaller than most medieval querns, but could perhaps be the trimmed-down remnant of the upper stone of a pot quern. It seems more probable that it served as a rotary grindstone mounted vertically in a frame.

S.22 VS 87, medieval pit; unassociated but underlying VS 133 of *c.* 1250–1350. Upper stone of a quern with a circular hole. Coarse-grained granite, presumably from Dartmoor. Rough *ext* surface without visible dressing, smoother grinding surface.

S.23 MY 862, *c.* 1250–1350. Triassic sandstone, probably from the Exe Estuary. Upper and lower surfaces roughly chisel-dressed and unworn. Vertical edges worn smooth. Perhaps the vertical wheel in a mill, such as an apple crusher used in the production of cider.

D. HONES (Fig. 168)

Thin-sections and petrological identifications by D.T. Moore, British Museum (Natural History).

S.24 GS 229, associated with pottery **190–206**, probably 11th-century. Micaceous siltstone, from the Culm Measures; surface pebbles of this stone can be collected locally. Suspension hole in top; hole bored from opposing face abandoned before completion; edges of at least one suspension hole visible on top edge. Pronounced wear and shallow scratches on two opposing faces. The stone is so fine-grained that it is likely to have served only as a finishing hone.

S.25 RS 331, late 13th- or early 14th-century. Norwegian Ragstone from Eidsborg, Telemark, Norway (Ellis 1969; Moore 1978). Two shallow point-sharpening grooves in one face; other faces unworked.

S.26 NS 26, *c.* 1250–1350 with residual sherds. Microfossiliferous, sandy, glauconite-bearing limestone. D. Moore comments, 'The specimen is a remarkable match with the Kentish Ragstone. I am a little inhibited about saying that is what it is because of its medieval context; I had always associated Kentish Rag with Roman hones. An alternative source consistent with the mineralogy could be the Purbeck-Portland coast of Dorset'. Three sides show possible signs of slight use; shallow point-sharpening grooves run down the stone on three corners. Perhaps Roman residual.

S.27 GS 695, *c.* 1250–1350 with residual sherds. Quartz-muscovite greywacke from the Culm Measures. Stones of this type occur in surface deposits at Exeter. Clear chamfers on both sides of bottom edge and on one narrow vertical face; possible dishing on one broad vertical face.

S.28 NWB 19, 11th- or 12th-century. Quartz-muscovite-biotite-plagioclase schist, probably a local surface pebble. One broad and one narrow vertical face are smooth and flat, very probably from use.

S.29 RS 36, associated with pottery **1705–12**, *c.* 1500–50. Geology as **S.27**, probably local. All four vertical faces are flat and smooth.

S.30 HL 8, *c.* 1660–1700. Greywacke, from the Culm Measures; probably local. Sharpening stone with shallow scratches on one surface.

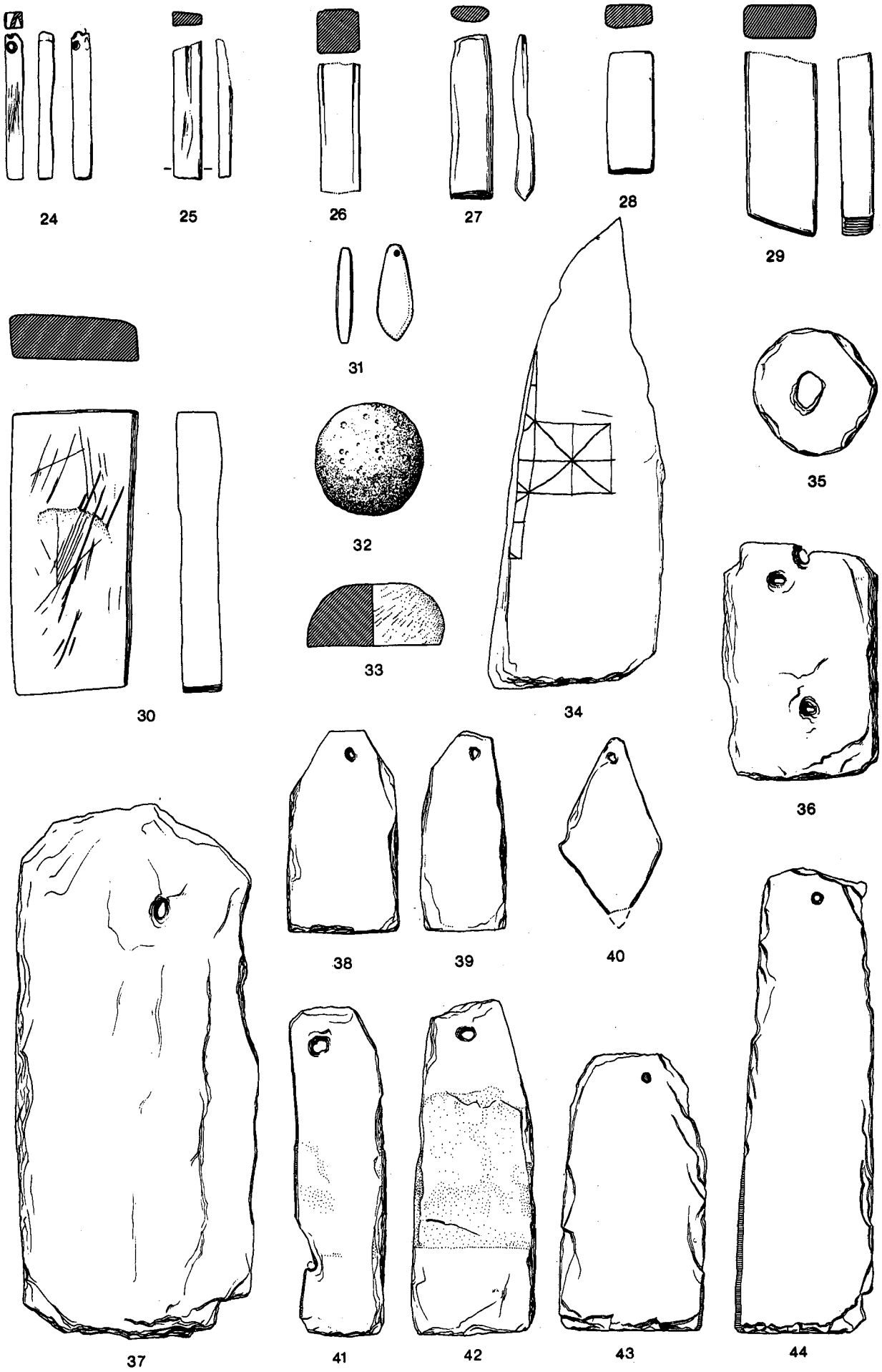

Fig. 168. Hones (**24–30**), miscellaneous stone objects (**31–3**) and slates (**34–44**) (scale 1:4).

E. MISCELLANEOUS STONE OBJECTS (Fig. 168)

S.31 TS 393, associated with potter **961–97**, early 13th-century. Smooth black stone with hole bored in top. Mr. Moore has identified this as a possible touchstone, although no trace of gold survives, so the identification is not certain. He writes, 'the specimen matches well with a fine-grained silicified tuff and is comparable with several known touchstones of similar petrography. Such indications as there are, suggest a possible provenance in the English Lake District'.

S.32 MY 654, associated with leather **L.33–7**, *c.* 1520–50. Stone ball with rough surfaces. Dr. Scrivener comments, 'this object appears to have been heated sufficiently to fuse much of its surface, although it retains prominent quartz inclusions'. *Wt*: 0.698 kg. Probably a stone shot.

S.33 EB 177, in foundation of early 14th-century wall. Small roughly hemispherical stone. Fine-grained mauve sandstone with mica inclusions; precise origin uncertain. Chisel-dressed upper surfaces, flat smooth base. Perhaps used as a polishing stone or rubber.

F. SLATES (Figs. 169–71)

Devon slates of the sort discussed by Jope and Dunning (1954) and Holden (1965) are very common finds at Exeter.

Geology (identifications by B. Selwood)

About 450 complete roof slates were examined; these came from a wide variety of contexts ranging in date between the early 12th century and *c.* 1720. The following seven geological types are present:
(1) Middle Devonian slates of the Nordon series, some rich in fossils.
(2) Upper Devonian slates of the Gurrington series, some with traces of ostracods.
(3) Tredorn Phyllite from the north Cornish coast.
(4) Kate Brook slate.
(5) Metamorphosed Kate Brook slate from the areas adjacent to the granite aureole.
(6) Stone slates from the Meadfoot Beds of the South Hams.
(7) Tufaceous slates.
The source of the various types are shown in Fig. 169.[5]

The first two series are by far the most common, together accounting for about 95% of all samples. Of the two, Nordon slates are rather more common at all periods; the early finds from the Cathedral south tower and CC trench F (below) are all of this type as were at least 60% of all the late medieval and early post-medieval slates from the excavations. Quarries exploiting the Gurrington series were supplying the city at least by *c.* 1200 (MY 805) and *c.* 35% of the late medieval slates examined were of this type. Most of the examples of Tredorn Phyllite were found in the roof-space of 44–6 Magdalen Street, built in 1659 (**S.43–4**), but such slates were already arriving in the city by the end of the 13th century, as the large examples from NS 11 (associated with pottery **1232–86**) indicate. Kate Brook slates are represented by samples from five sites and in each case there were only a few pieces. Several stratified examples (e.g. in GS 164, associated 11th/12th-century pottery and TS 393, associated with pottery **961–97**, indicate that quarries were working these beds by the 12th century. Further examples are present in Dissolution deposits at Polsloe Priory and Friars Gate; the latest are a few examples among more than 100 complete slates from TS 316 L.1–3 of *c.* 1660 (cf. pottery **2100–73**). This assemblage also produced the only examples recognised so far of slates from the Meadfoot Beds or tufaceous slates. Both these types were quite frequently used in the Roman town, but neither cleaves well; this probably explains their unpopularity in the medieval period. No examples of slates from the inland quarries, such as those which supplied Okehampton Castle (Higham *et al.* 1982, 85–6), have been found.

Date

No Saxo-Norman pits containing Bedford Garage ware have yet produced slates of medieval form, although many contain slate fragments, possibly residual from Roman deposits. However several 12th-century pits contain slates of typical medieval form (GS 164, 710, TS 323, 403) and a probable early 12th-century robber trench on the Cathedral Close site (trench F) contained a large number of examples, perhaps derived from a late Saxon building in the minster area. The earliest firmly dated examples are the few slates used as 'levelling pebbles' in the early 12th-century fabric of the cellarer's range of St Nicholas' Priory; there is a chance that these also are residual Roman examples, but this can hardly be true of the many slates embedded in the undisturbed core of the bell-chamber wall of the south transeptal tower of Exeter Cathedral, dating to *c.* 1150–70. These are, to the writer's knowledge, the earliest known examples of the use of this type of building material (cf. Colvin *et al.* 1963, II, 855), but many of the 12th-century finds from the excavations could have been used at an earlier date. There are several large groups of early 13th-century slates (TS 360, 393; MY 805)

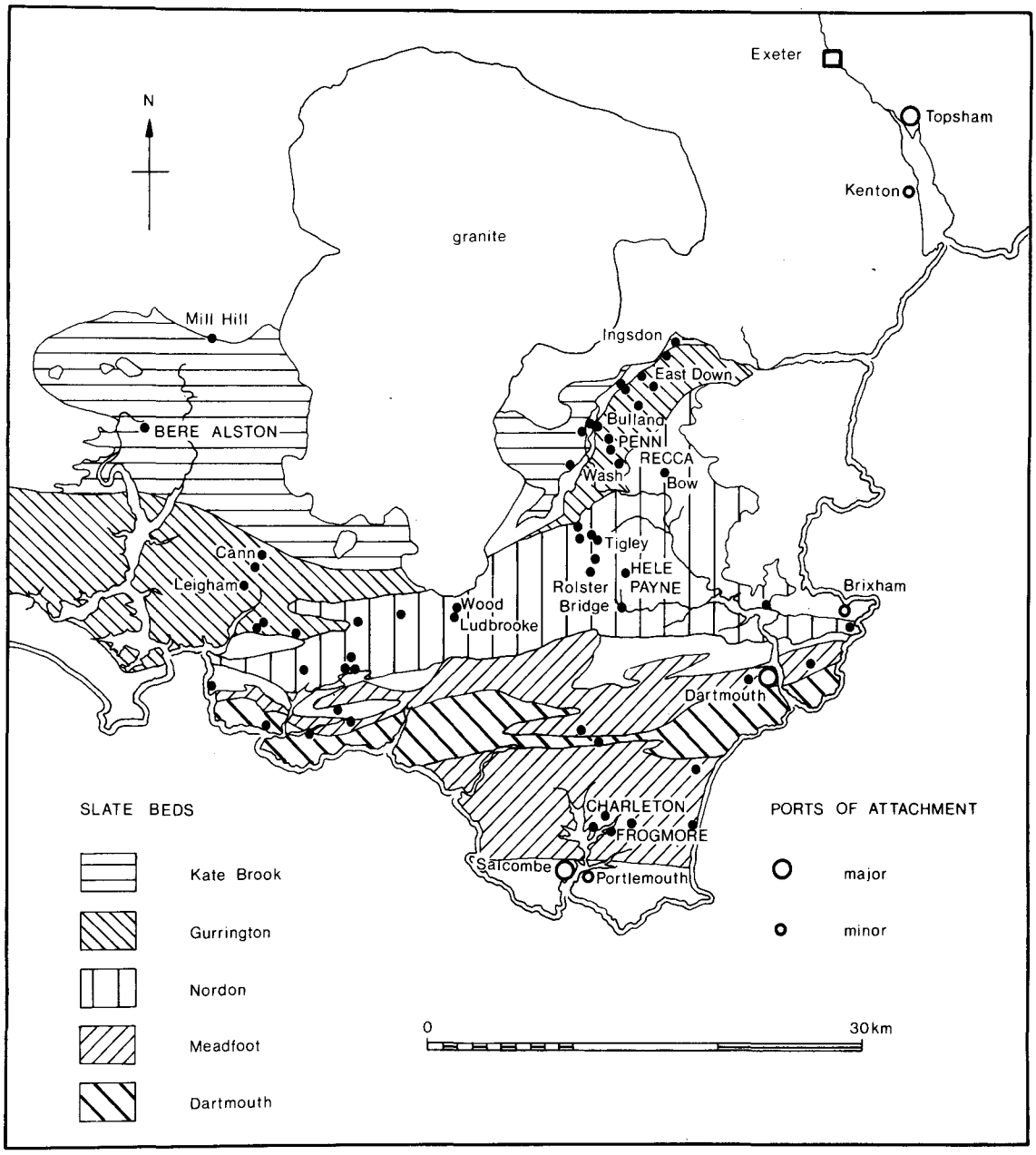

Fig. 169. Slate beds and quarries in South Devon. N.B. Quarries shown in capitals are documented before 1600; those shown in lower case were recorded by de la Beche (1839, 503) as quarries for roof slates. The ports of attachment are those of boats bringing slate by coast to Exeter, listed in Exeter Town Customs Accounts of the 15th century (DRO).

and in later medieval and early post-medieval contexts they are ubiquitous, being used in the roofing of monastic and town buildings alike.

Forms

Slates **S.36–44** show the range of forms in the collection (cf. Jope and Dunning 1954, 211–2; Holden 1965, 71; Platt and Coleman-Smith 1975, **2**, 313). The Exeter collection is sufficiently large to examine the possibilities that slates were cut in graded sizes and that there were changes in their form. The results are shown in Fig. 170. The pre- *c.* 1300 slates show much more variety of form than those of later date, with more large thick slates, although the number of complete examples in the earlier contexts is quite small. The products of the late medieval period are more standardised but, as the scatter diagrams show, there is no clear sign of the employment of a graded series of uniform sizes. Early post-medieval examples are very similar, but on average marginally thinner (Fig. 170).[6]

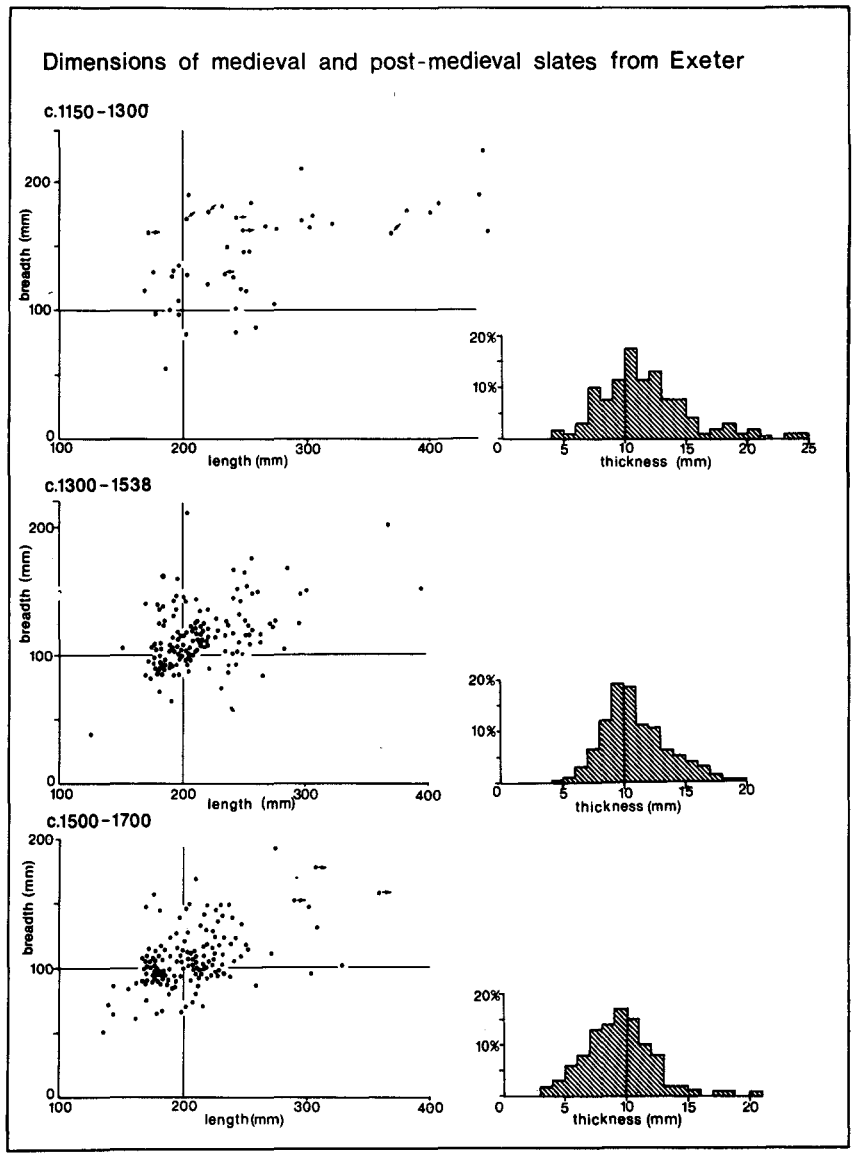

Fig. 170. Dimensions of medieval and post-medieval slates.

Catalogue

S.34 AR 32, without useful associations. Gurrington series. Max thickness 9mm. Slate with incised gaming board and faint inscription in Tudor Secretary hand reading . . . deoc . . . iii . . . Johes Joce . . . iii, perhaps jottings of payments or debts.[7]

S.35 QS 51, associated with pottery of horizon F, *c.* 1200–50. Circular Gurrington slate with central hole, perhaps once used as a lid. Possible slate or stone lids are very rare in the city.

S.36 EB 824, mid 13th-century. Poor quality Nordon slate with irregular cleavage. *Wt*: 405 gm.

S.37 QS 51, as **S.35**, *c.* 1200–50. Nordon slate. *Wt*: 1.622 kg.

S.38–9 GS 107, associated with pottery **2431–40**, *c.* 1670–1700. Small Gurrington slates, probably hung on walls rather than used in roofs. *Wt*: 145 and 125 gm.

S.40 RS 811, *c.* 1690–1730. Small Gurrington slate of diamond form. This is the only example amongst many thousands of slates from the excavations which is likely to have come from an ornamented slate facade like that of the Tudor House, Exe Island, Exeter (Portman 1966, Pl. 32). *Wt*: 73 gm.

S.41 EB 898, 15th-century. Gurrington slate. *Wt*: 221 gm.

S.42 EB 898. as above. Gurrington slate. *Wt*: 314 gm. Band of mortar across centre; on rear, mortar extends from base to 145 mm above base.

S.43–4 Found in the roof-space of 44–6 Magdalen Street, built in 1659; probably from the original roof; light and thin (6–7 mm) slates of Tredorn Phyllite.

S.45–6 BSE 48, early or mid 13th-century. Slate with shallowly inscribed surfaces showing (**S.45**) horse and rider and (**S.46**) horse amidst miscellaneous stratches, possibly including rider.

S.47–8 QS 112, associated with pottery **1423–45**, *c.* 1300. ?Doodles.

S.49–50 (Detail **S.50a** shown at 1:1) 37 NS, unstrat. Two sides of a slate, **S.50** with deeply scored divisions marking out a gaming board. These lines cut through earlier, lighter scratchings including a female face (**S.50a**) which appears to display a braided head-dress of late 14th- or early 15th-century type.

S.51–2 Two examples of small perforated slate discs of uncertain function. They are too light to have served as spindle whorls. **S.51** HL 48, 14th- or 15th-century. **S.52** QS 49, 12th-century. *Not ill*: one from BSE 511, late 13th- or early 14th-century. *Wts*: **S.51** 3.40 gm; **S.52** 1.41 gm; BSE 511 2.90 gm.

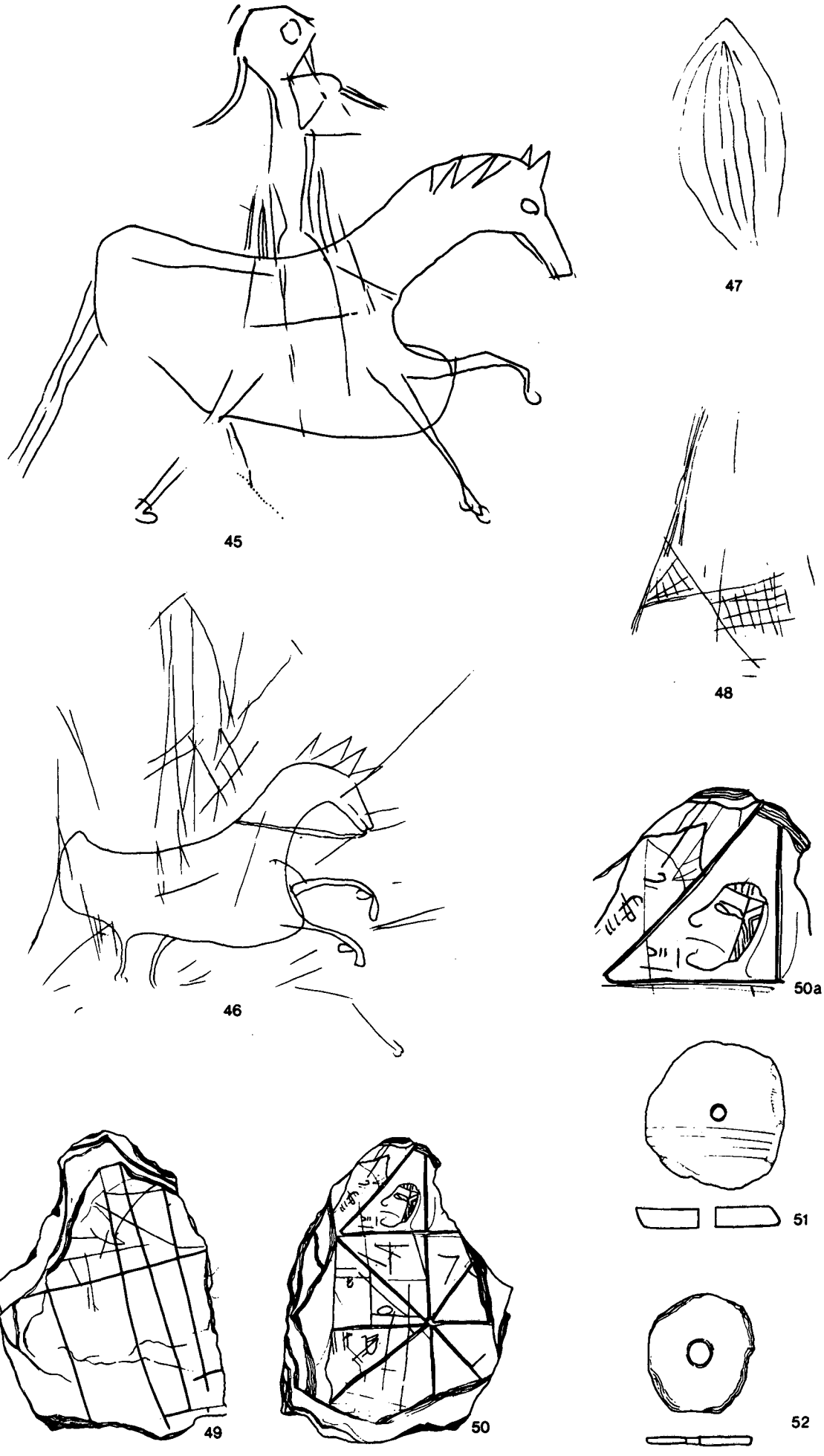

Fig. 171. Graffiti on slates (**45–50**); slate counters (**51–2**) (scale 1:2 except **50a** 1:1).

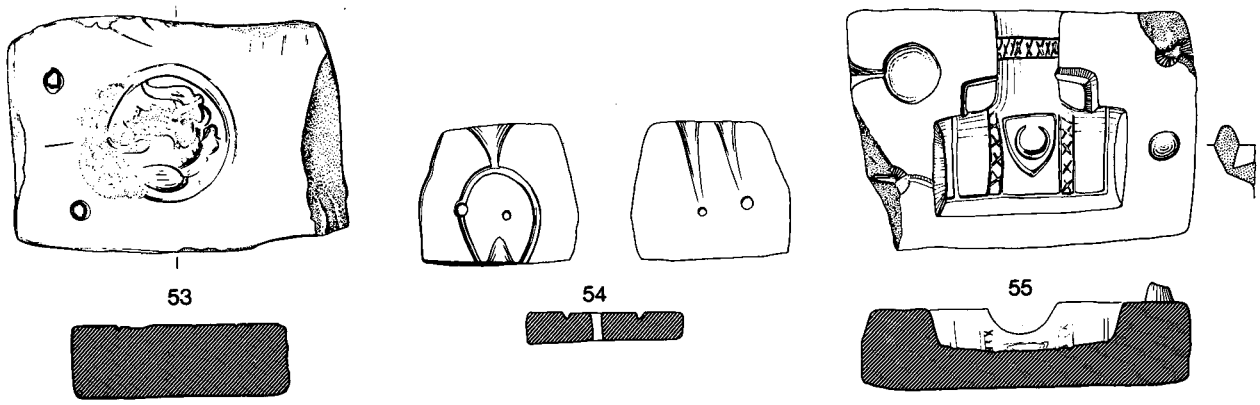

Fig. 172. Stone moulds (scale 1:2).

G. STONE MOULDS (Fig. 172)

S.53 TS 677, 12th-century. Partially manufactured valve of a two-piece mould. Hard grey limestone, probably of Devonian or Carboniferous age, probably from South Devon. Flat upper surface with finely inscribed circle and outlines of internal curvilinear pattern. Part of central area carved; circle and some of its interior cut by rough surface tooling (shown stippled). Two V-sectioned holes at side for reception of nipples from pair mould.

S.54 QS 49, associated with pottery **553–94**, 12th-century. One valve of a two-piece mould. Lightly metamorphosed grey limestone, probably of Devonian or Carboniferous age, probably from South Devon. The lower edge of the stone may be broken. Inner face (left) with funnel leading to curving, probably once circular, channel. Outer face (right) with two grooves, leading to holes, drilled through the stone from this side. The holes were probably intended for bindings which secured the two valves during casting, and these could have sat in the grooves on the outer face. Since one hole pierces the *int* channel, the mould is unusable.

S.55 Exeter Museums, not acc. From excavations at F.W. Woolworth's, High Street, 1933. One valve of a mould for casting ?pilgrims' badges in the form of costrels. Fine calcareous stone of soapy texture, origin uncertain. One raised lead nipple survives; the holes in which two further nipples were positioned are visible on the edge of the stone. These were cast *in situ* (section to right). The central design shows a costrel with cross-bindings at each end and at the neck, presumably imitating leather or wooden prototypes. At the centre of the costrel is a shield with crescent (?spurious arms). A separate funnel (top left) supplies a small circular void in which a lid for the costrel could have been made.

It may tentatively be suggested that the costrels produced in this mould were intended to hold holy water from the local St Sidwell's well, but no evidence for the attribution of spurious arms to St Sidwell has been found. This object was illustrated and briefly described when first excavated (Montgomerie – Neilson 1933–6, 67, Pl. 1. and 66).

NOTES

1. I am grateful to Mr. P. Dare, chief mason of Exeter Cathedral, for advice regarding the tools used in dressing the stones. Mr. Dare has also helped in identifying Salcombe and Beer stone, of which he has considerable practical experience.
2. This lamp has been retained by the owners of the White Hart Inn and is currently (1983) on display there. I am grateful to Mrs. S. Wilkinson for bringing this lamp to our attention.
3. In the exterior wall of the chapel of St Paul in Exeter Cathedral there is a single course of this stone (*ex inf.* P. Dare). Its vesicular nature, which would prevent a smooth surface, presumably made it much more suitable for use in mortars than in building.
4. I am grateful to Mr. D. Moore for thin-sectioning this piece and providing the description.
5. I am grateful to Dr. B. Selwood for making available unpublished research on the classification and mapping of the slate beds, used in Fig. 169; and Mr. M. Laithwaite for drawing attention to a lease of 1576 which mentions the Hele Payne quarries (DRO, uncat., John Weston to John Norris).
6. The sample of slates used in measuring thicknesses were as follows: *c.* 1150–1300, 131 slates; *c.* 1300–1538, 192 slates; *c.* 1500–1700, 243 slates. Only complete or near-complete examples are suitable as thickness varies greatly in each sample. Since all the geological sources represented except Tredorn Phyllite are present in Roman deposits in the city, residual slate fragments cannot be distinguished. Much of the sample of *c.* 1300–1538 comes from Dissolution deposits of the Franciscan friary at Friars Gate and from buildings erected *c.* 1300 at Polsloe Priory.
7. I am grateful to the staff of the DRO for their combined endeavours to read this inscription.

IX THE WOOD

Wood normally survives only in waterlogged pits in those parts of the city which have a clay subsoil. Most of the collection comes from Goldsmith Street and Trichay Street.

1. WOODEN OBJECTS

by J.P. Allan and Carole Morris; botanical identifications by R.C. Thomas.

A. LATHE-TURNED BOWLS AND DISHES (Fig. 173)

All vessels have round bases.

W.1 GS 228, L.13, associated with pottery **1446–50**, *c.* 1300 or later. Dish; *int* surfaces blackened by use. Elm (*Ulmus* sp.).

W.2 QS 112, associated with pottery **1423–45**, *c.* 1300. Dish fragments. Maple (*Acer* sp.).

W.3 TS 169, L.4, associated with pottery **1451–62**, late 14th or early 15th-century. Small plate with shallow incised cross on base; this is by far the commonest medieval turner's mark. Ash (*Fraxinus excelsior*).

W.4 TS 169, L.4, as above. Bowl. Elm.

W.5 GS site 3. Label lost in conservation, but believed to have come from GS 228. Very finely turned bowl with foot-ring; grain runs straight across vessel. Maple.

W.6 GS 228, L.8, associated with pottery **1729–83**, *c.* 1500–50. Bowl with lathe-turned grooves. Elm.

W.7 GS 228, L.8 as above. Bowl with blackened surfaces, and very knotty grain. Maple.

W.8 GS 228, L.8 as above. Bowl with blackened *int* surface. Lime (*Tilia* sp.).

W.9 GS 228, L.8 as above. Bowl. Maple. Pattern of grain as **W.11**.

W.10 GS 201, L.2, associated with pottery **1717–28**, *c.* 1500–1550. Bowl fragments. Maple.

W.11 GS 228, L.8, as **W.6–9** above. Complete bowl with *ext* turned groove. Elm.

W.12 TS 316, L.20, ?16th-century. Bowl. Maple.

W.13 TS 169, L.4, as **W.4**. Complete bowl. Elm.

W.14 TS 316, L.13, associated with pottery **2100–73**, *c.* 1660. Bowl. Maple.

W.15 TS 316, L.17, associated with pottery **2100–73**, *c.* 1660 or earlier. Complete bowl, pattern of grain similar to **W.11**. Probably maple.

Not ill: TS 191, *c.* 1200–50. Rim fragment of a bowl. Maple. TS 316, L.13, as **W.14**. Fragments of a bowl, profile probably once similar to **W.10**, now too distorted to be drawn. Maple.

With the exception of **W.5**, these vessels all appear to have been face-turned, usually with the sapwood rings towards their bases. The complete examples display grain patterns very similar to those of vessels found in other English excavations.

B. OTHER MEDIEVAL WOODEN OBJECTS (Figs. 174–5)

W.16 GS 229, associated with pottery **190–206**, late 10th/11th-century. Lid from a stave-built vessel such as a vertical keg or tub. The two notches cut into opposing sides of the circumference would have fitted round raised, perhaps perforated, handle staves. It is unlikely that the holes are vent holes; they probably served to fix a rope-handle whose ends were knotted under the lid. Shallow incised pentacle and cross, probably cooper's marks. Oak (*Quercus* sp.), cleft radially.

W.17 GS 217, associated with pottery **295–8**, late 11th- or 12th-century. Complete blade of a spade of asymmetrical profile, with peg holes and one surviving peg for attachment to the handle or shaft. The cutting edge is slightly trimmed, and there is no sign of an iron shoe. This spade is probably of a kind similar to that which has recently received discussion (Morris 1980). Oak, cleft radially.

W.18 GS 217, as **W.17**. Large oak object of uncertain function, possibly part of a sluice gate or drain gate. Two dome-headed nails on right-hand edge; no sign of nails on opposing edge. Oak, perhaps sawn.

W.19 GS 258, associated with pottery **302–34**, 12th-century. Possibly a pot-lid for a small vessel. Flat disc with central hole and small adjacent hole bored to a depth of 10 mm. Oak, probably sawn, 19 mm thick.

W.20 GS 258, as **W.19**. Barrel or tub stave fragment. Oak, cleft radially.

W.21 GS 258, as **W.19**. Bucket base or caskhead of rather irregular plan, with two dowels in edge. Oak, cleft radially, 10 mm thick.

Not ill: GS 258. Fragments of one or two staves of a piece-built barrel-end or caskhead, 15 mm thick with chamfered edges and a dowel hole on straight *int* edge. Fast-grown oak, cleft radially.

W.22 GS 280, associated with pottery **235–9**, 12th-century. Bucket base or caskhead up to 10 mm thick with flat edges and single dowel hole. Oak, cleft radially.

W.23 TS 162, associated with a small pottery group of horizon E, late 12th- or early 13th-century. Bucket base or caskhead with at least two dowel holes in its edge. Oak, cleft radially, 8 mm thick.

W.24–30 come from GS 228, L.13–17, associated with pottery **1446–50**, *c.* 1300 or later.

W.24 Caskhead with large vent hole and chamfered edge. Slow-grown mature oak, cleft radially, *c.* 12 mm thick.

W.25 Caskhead fragments with vent hole; edge decayed but probably not chamfered. Two shallowly incised circles on surface. Oak, cleft radially, *c.* 12 mm thick. This piece has extensive woodworm.

W.26 One of several branches with grooves along their lengths, possibly used in a timber frame, the grooves accommodating laths. Hazel (*Corylus avellana*).

W.27 Rough peg. Radially split from mature slow-grown oak.

W.28 Small knife-shaped item, *ill* at actual size. Shallowly incised design. 'Handle' end thinned. Used in a scabbard, forming a lining between knife and leather (cf. **L.62**, p. 331). Small fragments of a second piece of wood, probably a pair to this one, with a similar incised design, were found in the same layer. Crataegus type, possibly apple (*Malus* sp.).

W.29 Possible knop of a wooden spoon, *ill* at actual size.

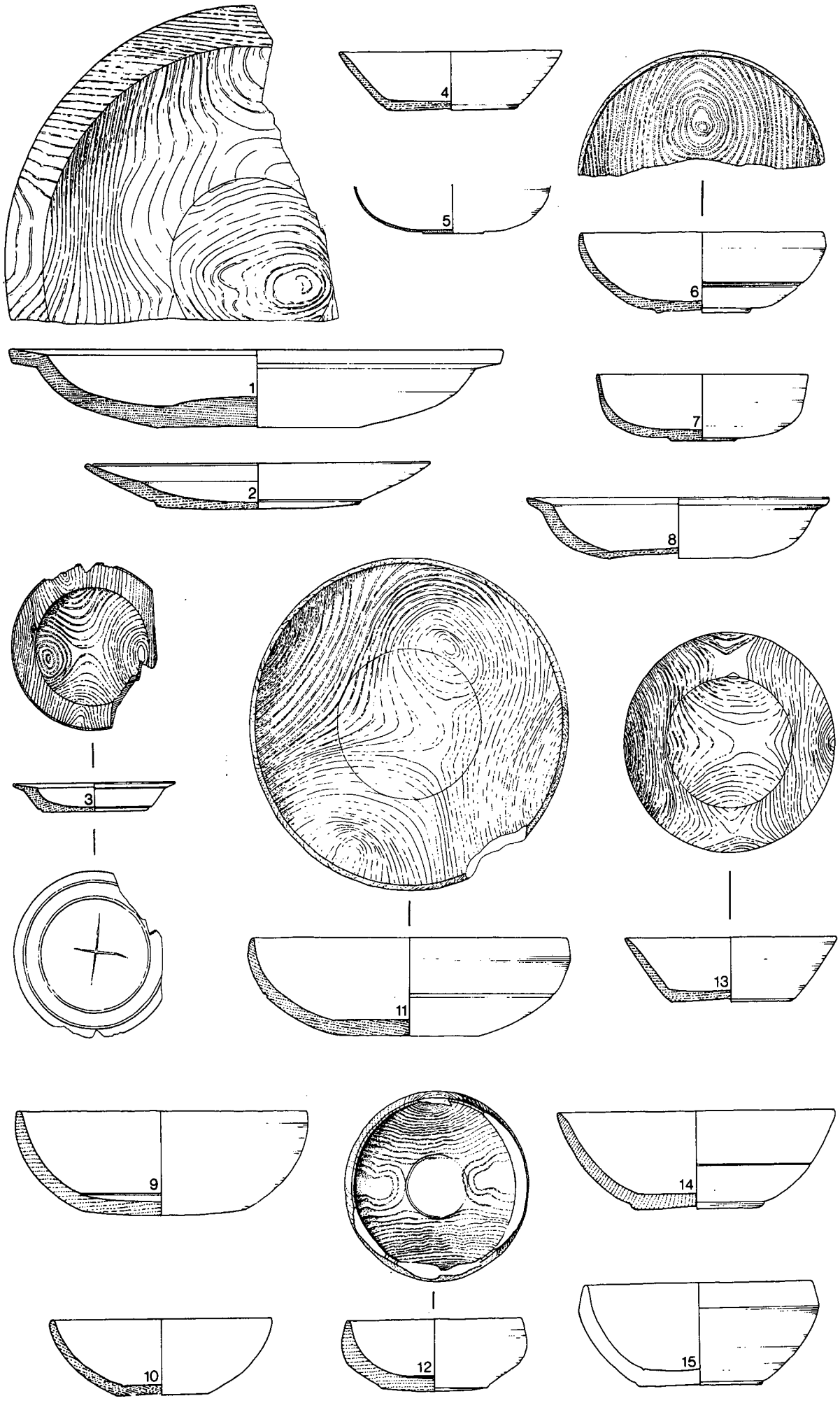

Fig. 173. Lathe-turned wooden bowls (scale 1:4).

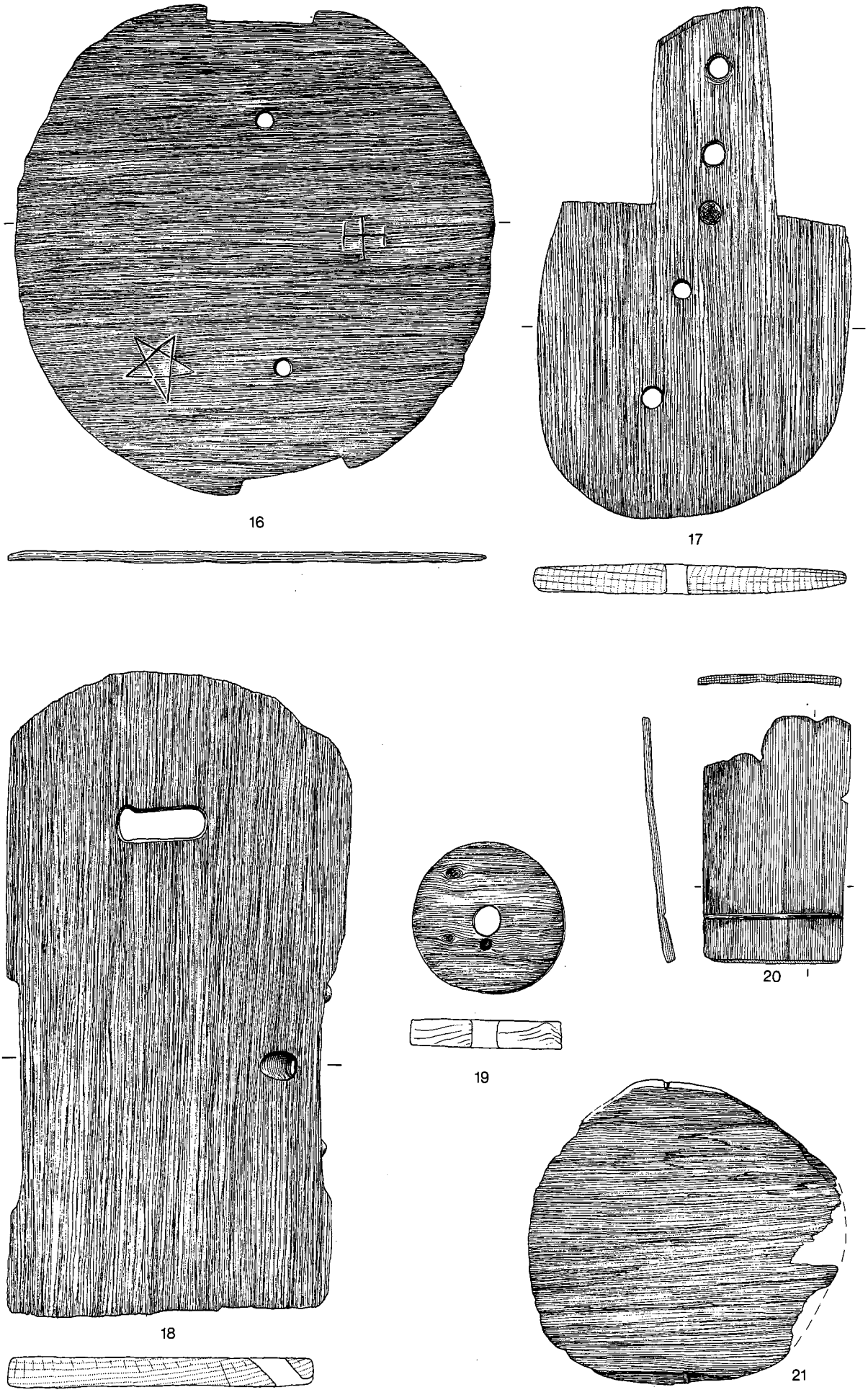

Fig. 174. Eleventh- and 12th-century wooden objects from Goldsmith Street (scale 1:4).

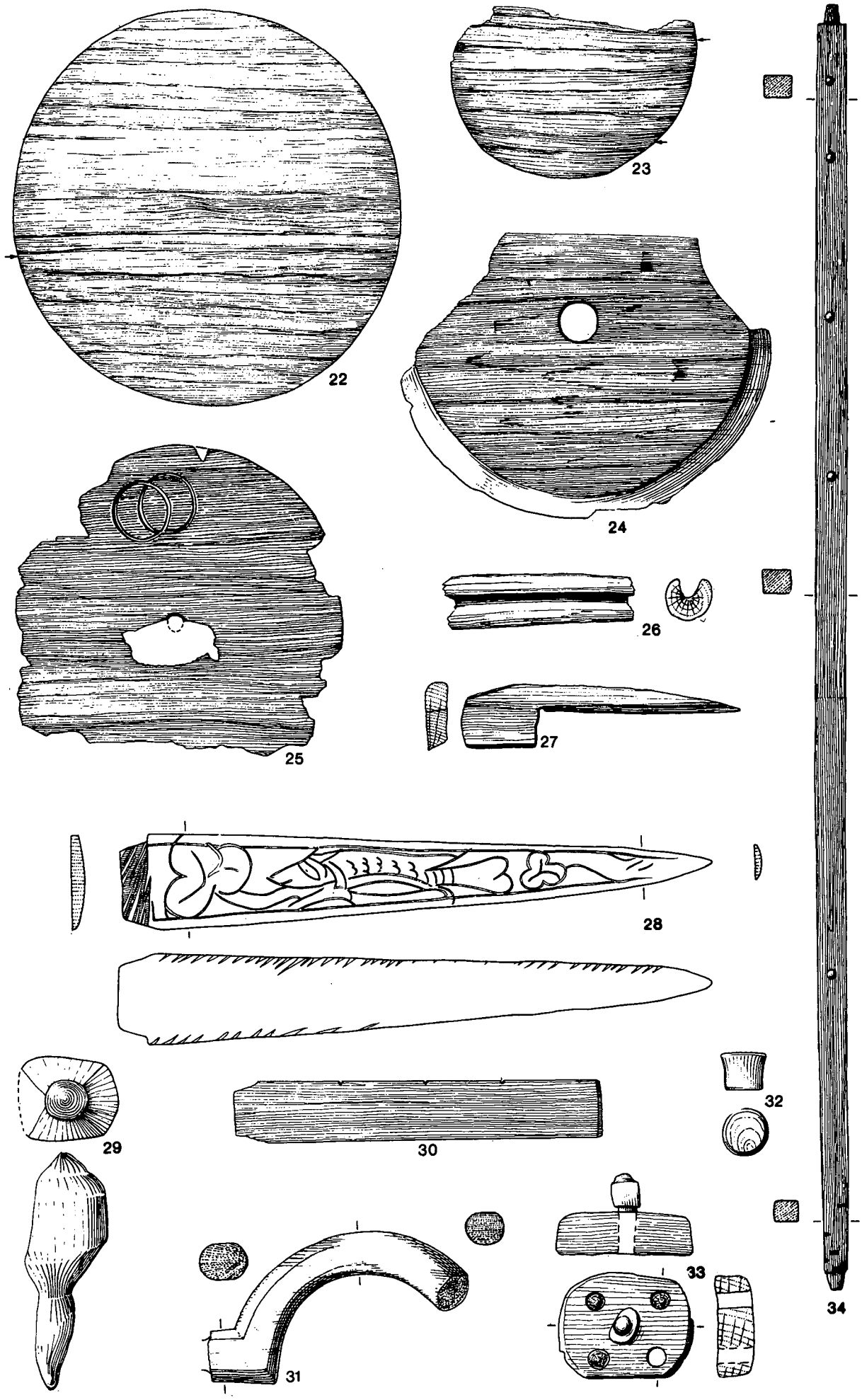

Fig. 175. Medieval wooden objects from Goldsmith Street and Trichay Street (scale 1:4 except **28–9** 1:1).

Possibly maple.

W.30 Thin (8 mm) flat strip with one chamfered end and notches on upper edge at intervals of 57 mm (*c.* 2.25 inches). Conifer, not pine; possibly European spruce (*Picea abies*).

W.31 QS 112, associated with pottery **1423–45**, *c.* 1300. Handle of a carpenter's brace-and-bit, its top (left) shaped to an oval. Holly, cut from a large block; grain runs across the curve. The hardness and density of this wood make it very suitable for this purpose.

W.32 GS 218, late 13th-century. Bung, probably used in a cask. Maple, cut from the core of the wood.

W.33 TS 365, early 13th-century. Oak block with four oak pegs at corners and central whittled peg of hazel. Function uncertain.

C. OTHER POST-MEDIEVAL WOODEN OBJECTS (Fig. 176–7)

W.34 GS 228, L.8, associated with pottery **1729–83**, early 16th-century. Length of furniture with five nails on one face, probably once fixing a thin material, perhaps of cloth or leather. Very fine-grained and dense wood, apparently cedar (*Cedrus* sp.).

W.35 GS 228, L.8 as above. Mirror comprising a wooden back and a convex glass. Circular back, a transverse slice of a maple log, turned on a lathe (i.e. spindle-turned). Glass 0.8 mm thick with silvered back, found attached to its wooden back but crushed. No evidence of the bonding between the glass and wood was found.

W.36 GS 228, L.8, as above. Function uncertain, possibly a wrist guard? Thin, carefully smoothed strip of conifer, species not determined.

W.37 GS 201, associated with pottery **1717–28**, early 16th-century. Smooth circular shaft, tapered and split at one end, with the impression of two binding strips. Possibly a spindle or arrow shaft. Conifer; species not determined.

W.38 197 HS, putlog hole in E. wall, associated with jetton **J.20**, late 16th-century. Comb. Boxwood (*Buxus sempervirens*).

W.39 GS 228, L.7, as **W.6**, early 16th-century. Comb. Crataegus type, possibly apple.

Trichay Street 316

In view of the difficulties in dating this feature the layer numbers within it have been included, but those from L.1–17 seem to have been discarded *c.* 1660; those from L.18–23 are probably of 15th- and 16th-century date (cf. pottery **2100–73**).

W.40 L.23. Comb. Crataegus type, possibly apple.

W.41 L.17. Large peg. Oak.

W.42 L.3. Carefully shaped handle of a knife with stub of an iron tang. Maple (*Acer* sp.), possibly field maple (*Acer campestre*).

W.43 L.10. Flat disc 10 mm thick, sawn obliquely to radius of tree, with large iron dome-headed nails on rim and smaller nails forming two crosses on one surface. One nail head on this surface had a decayed bronze cap and there are stains of bronze around other nails. A central hole holds a small wood bung. The nailheads are very close to the surface, so must have held a thin material, probably of leather or cloth. Function uncertain. Pine (*Pinus* sp.).

W.44 L.17. T-shaped handle. *Int* surface around peghole compressed where attached to a tub. Oak.

W.45 L.20. Spade or shovel blade, originally with all-in-one piece handle. Shoulders for an iron shoe, but neither ironstain nor nailholes are apparent. Perhaps a baker's shovel or a paddle for stirring liquid. Oak, cleft radially, 14 mm thick.

W.46–50 L.11, 13 and 17. Set of flat discs 2–3 mm thick, with smooth surfaces; cleft radially, possibly planed. Similar pieces of wood were once used in the manufacture and mending of nets; whether these were so used is unknown. Conifer, not pine; imported. Possibly European spruce.

W.51 L.13. Fragment of a flat object up to 9 mm thick. Oak, cleft radially.

W.52–3 L.13. Flat disc fragments up to 4mm thick, probably cleft radially. (Single dowel hole in **W.52**.) Conifer, possibly European spruce.

W.54–5 L.11. Flat discs 2–3 mm thick, as **W.46–50**.

W.56 L.13. Complete lathe-turned object, with hole at right-hand end where held in lathe. Spindle-turned. ?Part of a piece of furniture.

W.57–64 L.3–12. Fragments of tub bases or caskheads, all of oak cleft radially. **W.57–8** middle staves of piece-built caskheads, the former pierced by a hole containing a peg, the latter with dowel-holes (arrowed) in its edges. **W.59, 61–3** cant staves of piece-built caskheads. **W.60** half of originally circular one-piece caskhead with central venthole. **W.64** cant stave, pierced by hole containing peg.

W.65 L.23. Ball for bowls or similar game. Lathe-turned, roughly circular in plan. A similar ball was recently found at Coppergate, York, in a context of *c.* 1300 (unpublished).

W.66 L.13. Flat wood block with shallow incised lines on surface. Oak, cleft radially.

W.67 L.17. Object of uncertain function with rounded edges. Oak.

W.68 L.14. Complete tub or bucket stave. Conifer, not pine, imported.

W.69 L.20. Barrel or bucket stave. Two grooves to hold the base suggest re-use of the stave. Oak, cleft radially.

W.70 L.19. Bucket or tub stave, one of two of this form. Oak, cleft radially, with chamfered top and base.

Not ill: 2 middle staves and 4 cant staves, probably from caskheads, similar to those *ill*; other probable vessel fragments.

D. STAVE-BUILT CASKS (Fig. 178)

W.71 GS 281. Cask constructed after *c.* 1185, but incorporating at least one late 10th-century stave (p. 322). After the removal of its head, it was used as the lining of a pit (GS 281) which was backfilled in the late 13th century (pottery **1568, 1589**). **W.71a** shows an extended view of the *int* of the pit with the 24 staves *in situ* in its lower part and the impressions of some of them visible above. Some withies adhered to the upper parts of the pit edge where the staves had decayed; their *int* surfaces had been shaved to a concave profile where they adjoined the head. All staves have a sloping chime and a V-sectioned croze groove. Two opposing staves display a row of three holes below the croze groove. These might have held wooden pegs on which the cask head sat, but are more likely to have fixed a batten at right-angles to the cask head staves (as **W.72**). **W.71b** shows the *ext* face of one stave with a ?cooper's mark. **W.71c** shows a reconstructed section of the cask with an *ext* view showing surviving hoops. Most hoops were coppiced rods of hazel roundwood 6–12 years old and 20–5 mm thick. These had been cut during winter and split into halves and quarters. The hoop at the surviving head was more substantial: a halved hazel rod *c.* 40–50 mm thick. The two ends of each hoop were bound by fine (*c.* 2–4 × 20–50 mm) strands of split elder or hazel. Unfortunately the positions of these bindings were not noted during excavation. All staves are of oak. The view **71c** may well exaggerate the sinuosities in the cask hoops; they appeared upon excavation to be irregular but may have slumped after

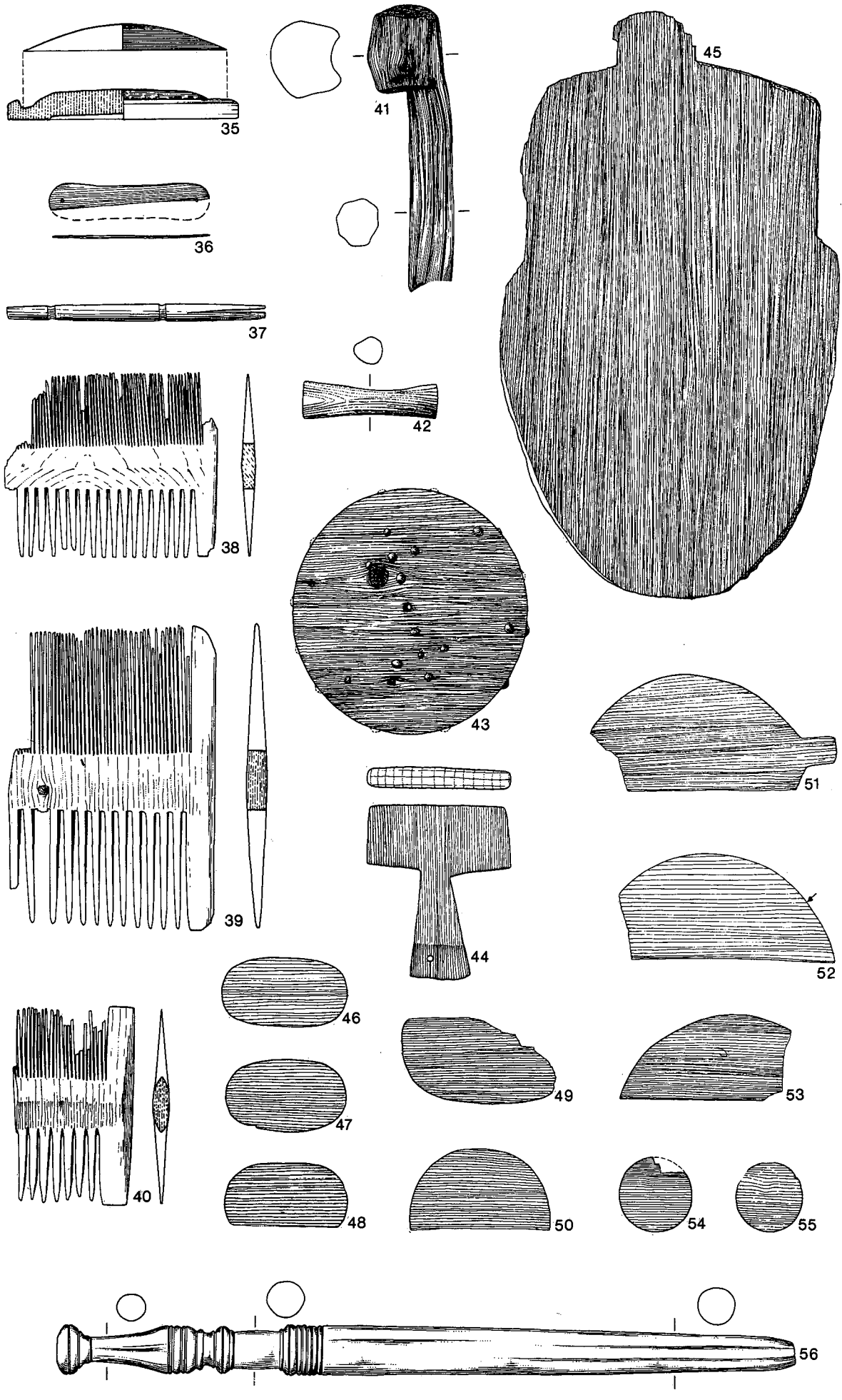

Fig. 176. Sixteenth and 17th-century wooden objects from Goldsmith Street and Trichay Street (scale 1:4).

except 38-40 1:2).

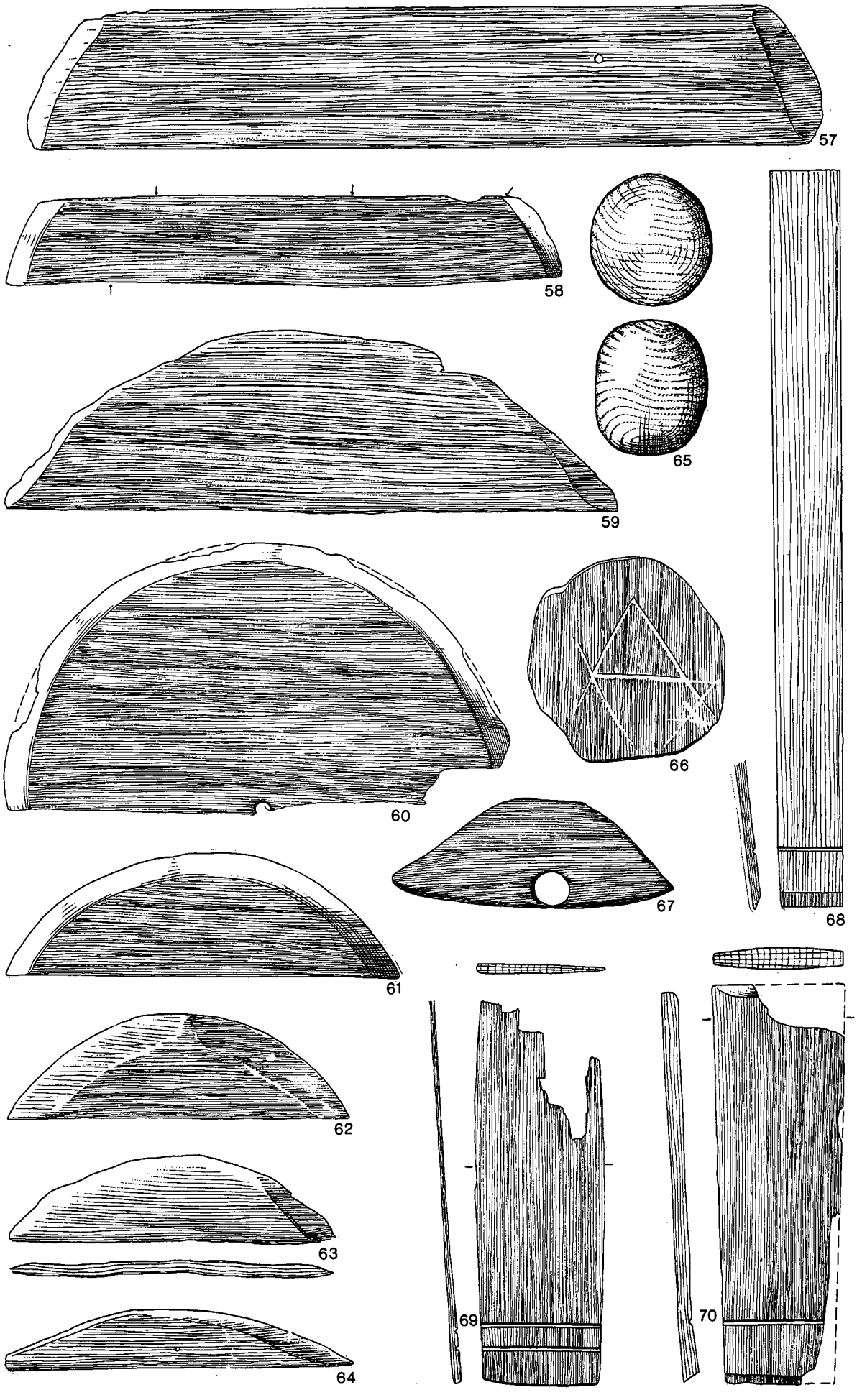

Fig. 177. Wooden objects from Trichay Street 316 (scale 1:4).

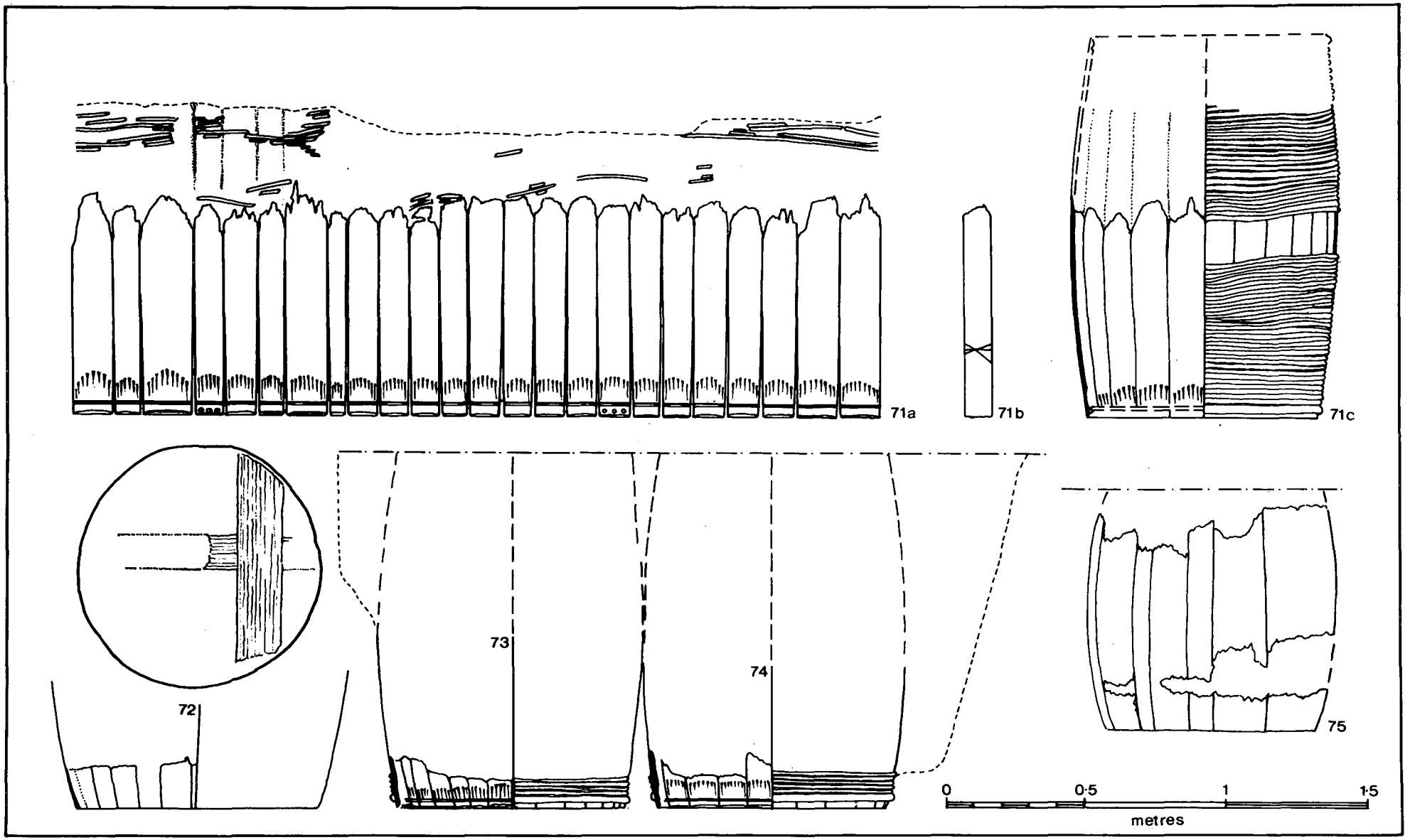

Fig. 178. Stave-built casks

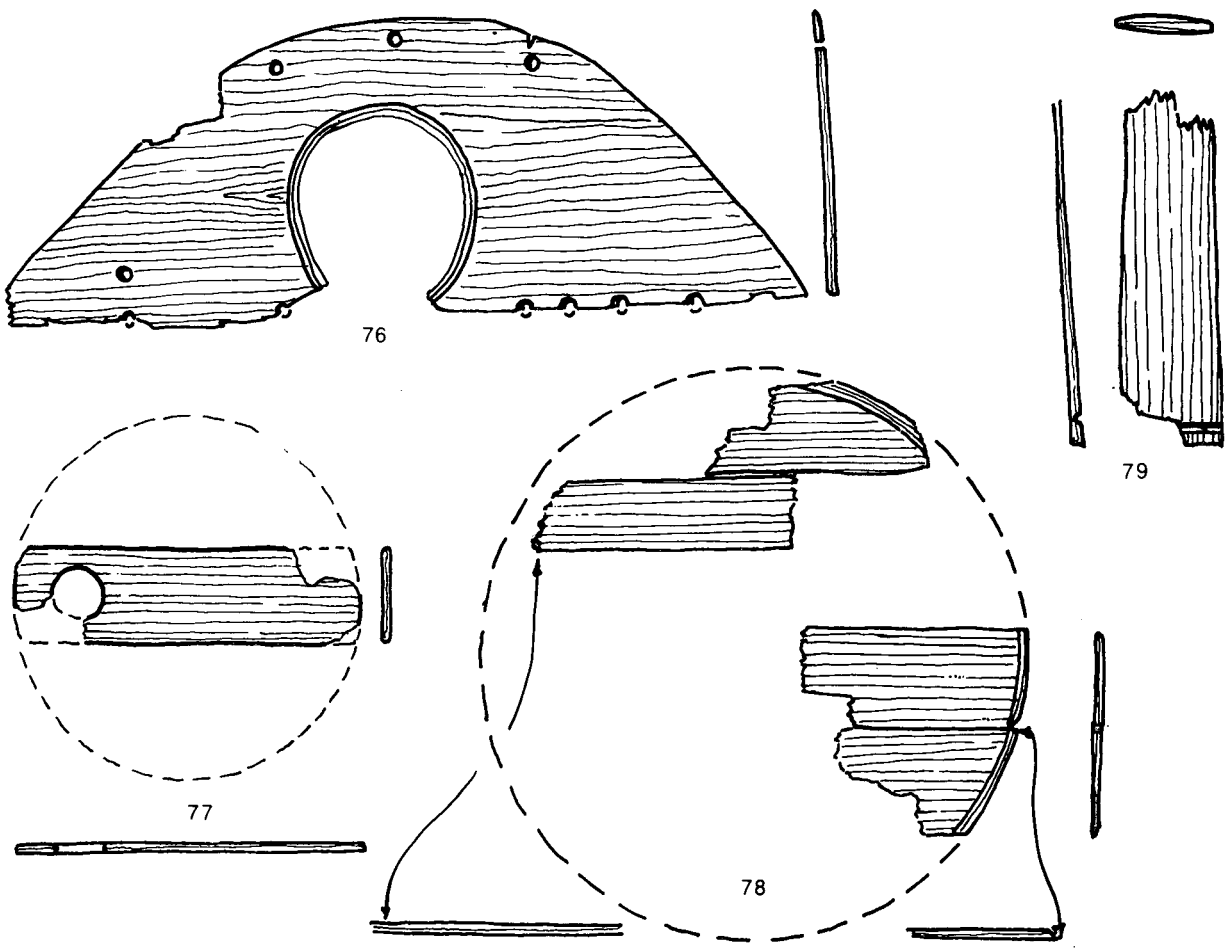

Fig. 179. Fragments of casks and garderobe seat (scale 1:10).

burial. Approximate capacity *c.* 179 Imperial, 215 customary or 230 Winchester gallons.

W.72 EB 268, inserted in the mid 13th century, backfilled in the late 13th or early 14th century. Impression of part of the *ext* surface of one of a pair of casks preserved by lime which had percolated through the timber. One stave of a piece-built caskhead visible on the base of pit, with the impression of a single batten at right-angles to the staves, added to the *ext* of the cask head to counteract bulging. No timber or evidence of hoops survived.

W.73–4 HS 89, filled in the early 16th century. Pair of cask-lined pits cut below the floor of a cellar. The heads of both casks were removed before they were placed in the pits. The hoops of **W.74** consisted of halved withies; the form of those on **W.73** was not recorded. **W.73** survived to a maximum height of 0.23 m; the impression of its *ext* was visible to a height of 0.65 m. **W.74** survived to a similar extent. It is clear that they were touching when in use. This enables the reconstruction of their lower halves to be suggested. If their top edges were flush with the surface of the cellar (shown as a dashed and dotted line), their full profiles can be reconstructed by inverting the profiles of their lower halves. This gives heights of *c.*1.31 m. and approximate capacities of 143 Imperial, 172 customary and 184 Winchester gallons (**W.73**) and 160 Imperial, 191 customary and 205 Winchester gallons (**W.74**).

W.75 EB 1131, 18th- or 19th-century. Impression of the *int* of a cask, preserved lime stored within it. No evidence of binding hoops which were presumably wooden. Height of cellar floor below which it was set indicated by dashed and dotted line.

W.76 TS 321; dendrochronology sample TS 27, felled 949±9. Fragment of a probable garderobe seat, re-used as part of a pit revetment. The circular holes along the straight edge could have been used for hinges. Similar garderobe seats have been found at King's Lynn (Clarke and Carter 1977, Fig. 174, 88), York and Perth.

W.77 GS 228, L.13, as **W.1**, *c.* 1300. Central stave of a piece-built caskhead. *Diam*: *c.* 0.43 m. The head was probably originally of three or five staves. Circular venthole cut at one end. Oak, cleft radially.

W.78 QS 112, as **W.2**, *c.* 1300. Fragments of a very large piece-built caskhead with a chamfered edge (reconstruction very tentative). *Diam*: *c.* 0.74 m. Submitted for dendrochronology: not dated. Oak, cleft radially.

W.79 QS 112, as above, *c.* 1300. Vertical stave, perhaps from **W.78**. V-sectioned groove. Oak, cleft radially.

A problem encountered when trying to reconstruct the capacity of excavated medieval casks is the lack of knowledge about early standardisation of capacities over the whole range of vessels manufactured and also (when considering 'wet' casks) the lack of a standardised gallon. Although tuns, pipes, barrels, kilderkins, firkins *etc.* were descending orders of cask sizes, we do not know what a tun or pipe held in England until 1707 (when the capacities of these were legalised at 252 and 126 customary gallons respectively). A 'barrel' in 1413 held 30 customary gallons, but by 1707 it held 63 customary gallons. Such variation must have been common and depended on period and commodity carried. To add to the archaeologist's problem, in at least 1267, a wine gallon held 216 cubic inches. In the early 15th century, a customary gallon held 231 cubic inches.

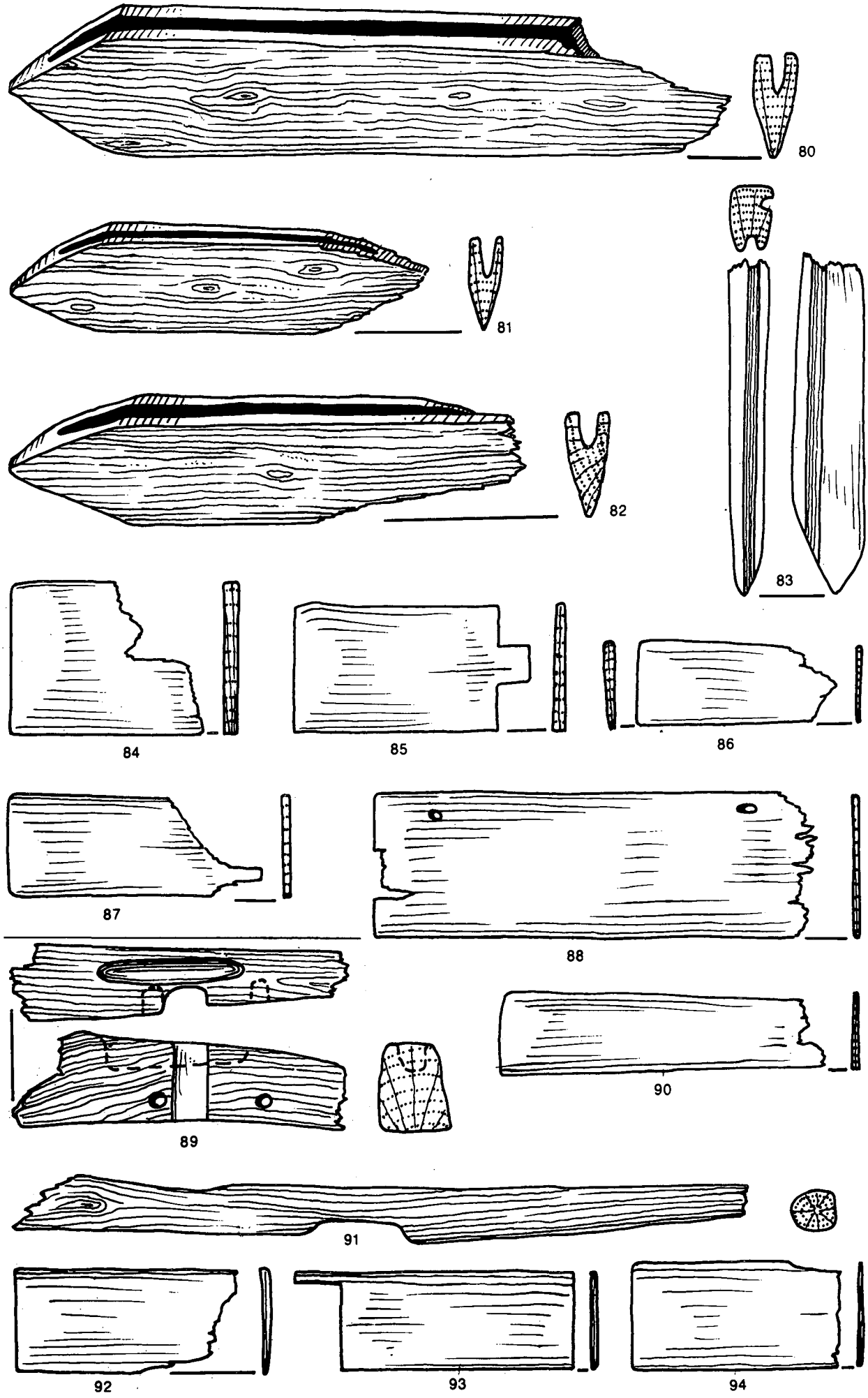

Fig. 180. Large medieval wooden objects (scale 1:10).

A measure known as a Winchester gallon (used at least in 1467) held 268 cubic inches, whereas a modern Imperial gallon holds 277 cubic inches. We cannot, therefore, use Imperial gallons when estimating the capacity of medieval casks. At approximately 215, 172 and 191 customary gallons, however, **W.71**, **W.73**, and **W.74** are probably all between the 1707 pipe and tun sizes of cask. Measuring and calculating the actual capacity of an excavated cask is a *very* difficult process. An increase in the head and girth diameters of a vessel by fractions of inches can alter the capacity by tens of gallons. The capacities of the Exeter casks, therefore, must be seen as tentative estimates. There is no firm evidence that any of them stored liquid before being placed in the ground; casks carried many dry commodities.

E. STRUCTURAL AND MISCELLANEOUS TIMBERS (Figs. 180–1)

W.80–3 TS 347, dendro. samples TS 28–30. (**W.82** not sampled). Radially cut oak. **W.80–2** are three notched planks with sharpened ends. None of the sharpened ends show any signs of decay, suggesting they were probably not buried. They may come from a framed timber structure. Either the planks could have been laid horizontally, held in place by corner posts, or be set vertically, with the pointed end held in a slot in the upper face of a foundation beam (for the latter see Addyman 1979, 70). The former arrangement seems the more probable, since the timber **W.83** with two notched faces could hold the ends of horizontal planks in a rectangular structure.

W.84–7 TS 347. Boards, cut radially from slow-growing oak. **W.84**. Dendro. sample TS 29, felled 1040±9; **W.86–7** samples TS 31–2, felled 1056±9.

W.88 TS 162, horizon D, 12th-century. Radially cut board with two holes, possibly one side of a box. Oak.

W.89 TS 365, associated with pottery **922–60**, late 12th/early 13th-century. ?Structural fragment, with two dowel holes at right-angles to mortice hole. Oak.

W.90 TS 365, as above. Radially split oak board.

W.91 TS 365, as **W.89**. Oak branch with notch in one face.

W.92 TS 320. Dendro. sample TS 20, felled 1056±9. Radially split oak board.

W.93–4 TS 169, as **W.3**, late 14th- or early 15th-century. Thin oak boards.

W.95–101 come from TS 169, associated with pottery **1451–62**, late 14th/early 15th-century.

W.95–9 Radially split oak boards. **W.95** with chamfered edge and nails; **W.96–7** with nails and sawn edges, the latter felled in 1197±9 (dendro. sample TS 34); **W.98** felled in *c.* 1249 (dendro. sample TS 35); **W.99** with nails and dowel hole, felled in 1205±9 (dendro. sample TS 33).

W.100 Radially split oak timber with nails.

W.101 Radially split oak board with dowel holes and nail, felled in 1114±9 (dendro. sample TS 38).

W.102 TS 321, small group of horizon C, 10th/12th-century. Sawn oak two-seater garderobe or cess pit seat.

The report on the other miscellaneous medieval timbers and the large post-medieval timbers has been stored in the archive.

2. TREE-RING ANALYSIS OF TRICHAY STREET TIMBER, EXETER

by Jennifer Hillam

Trichay Street, excavated in 1972–4, produced a large amount of wood derived from medieval and post-medieval pits. The study of this collection produced details of relative and absolute dating for many of the medieval timbers. All the material examined was oak except a board and a post which were of elm.

Method

The method used in preparing and analysing these samples has been described elsewhere (Hillam 1980, 16–17).

The medieval timbers

All the medieval samples were measured except 18, 22 and 28 which had fewer than 50 rings. The timbers are mostly good-quality radially split planks of between 100 and 250 years growth (MF 127–9). Their rings are narrow (on average 0.5–2.0 mm) and sensitive, showing marked variations in width, so the material was ideal for dendrochronological dating. Only one sample, 27, had an average width of much greater than 2.0 mm; this gave the lowest *t*-value and was the hardest to cross-match. Samples 23–6 differed from the others in that they were whole or halved trunks coming from trees of about 240 mm diameter and of less than 100 years old. The significance of this will be discussed below.

A few of the timbers seem to have come from the same tree: 23 and 24 from one and 20, 31 and 32 from another. There are no set criteria for determining whether samples are from a single tree, as no experimental work has yet been done on this aspect of dendrochronology. However if the tree-ring graphs are almost identical and the timber shows great similarities, it usually indicates that this is the case.

The processing of tree-ring data is not as simple as the method implies and no attempt will be made here to describe all the steps which resulted in the dating of the medieval samples. Instead, a summary is given in the form of a block diagram (Fig. 182). The timbers fell into two groups: four samples (23–6) from the basal timbers of a wattle-lined pit (TS 191) in one group, and the remainder in another; samples 23–6 matched each other but showed no similarity to any of the other timbers. The latter were eventually found to match each

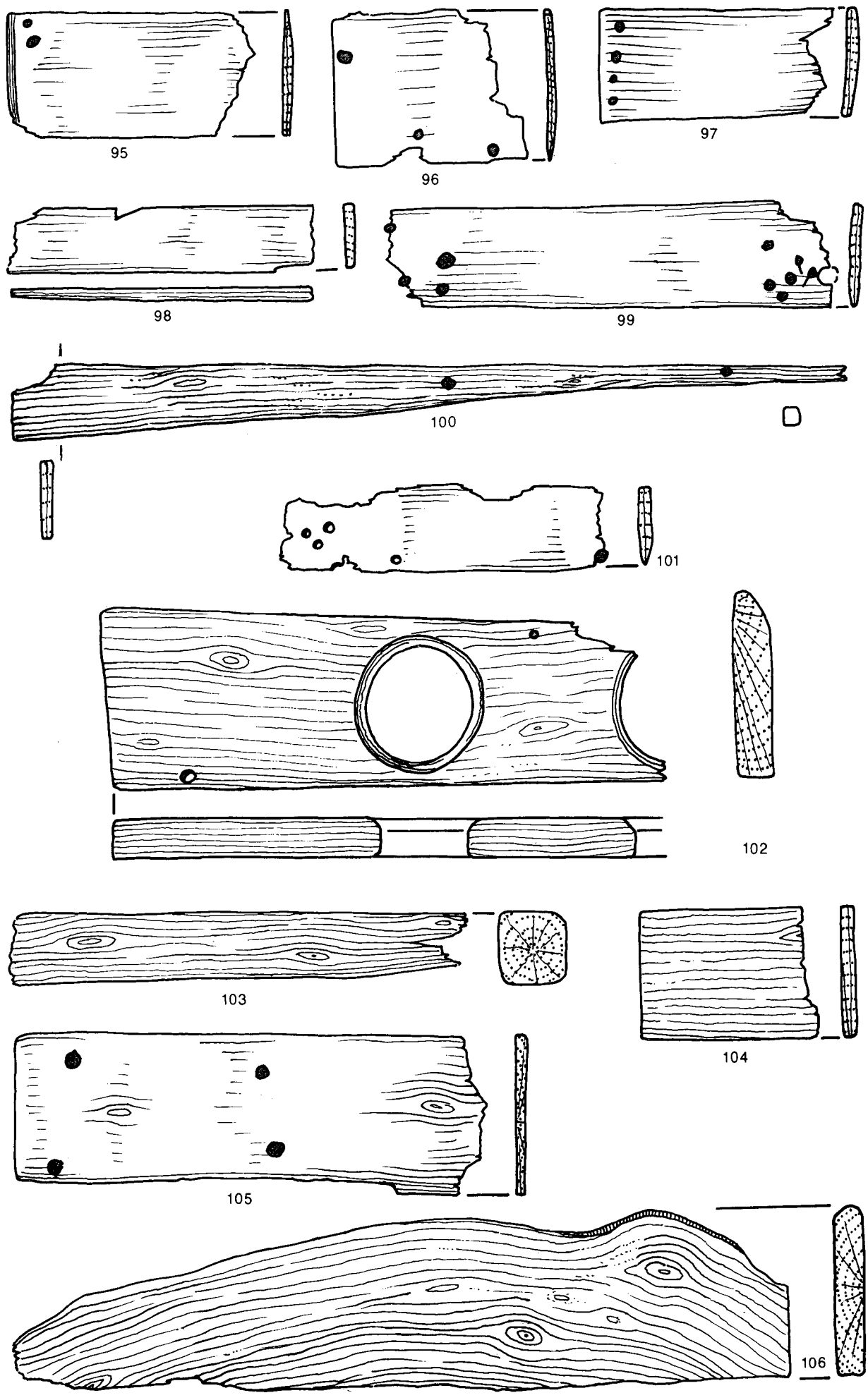

Fig. 181. Large medieval wooden objects (scale 1:10).

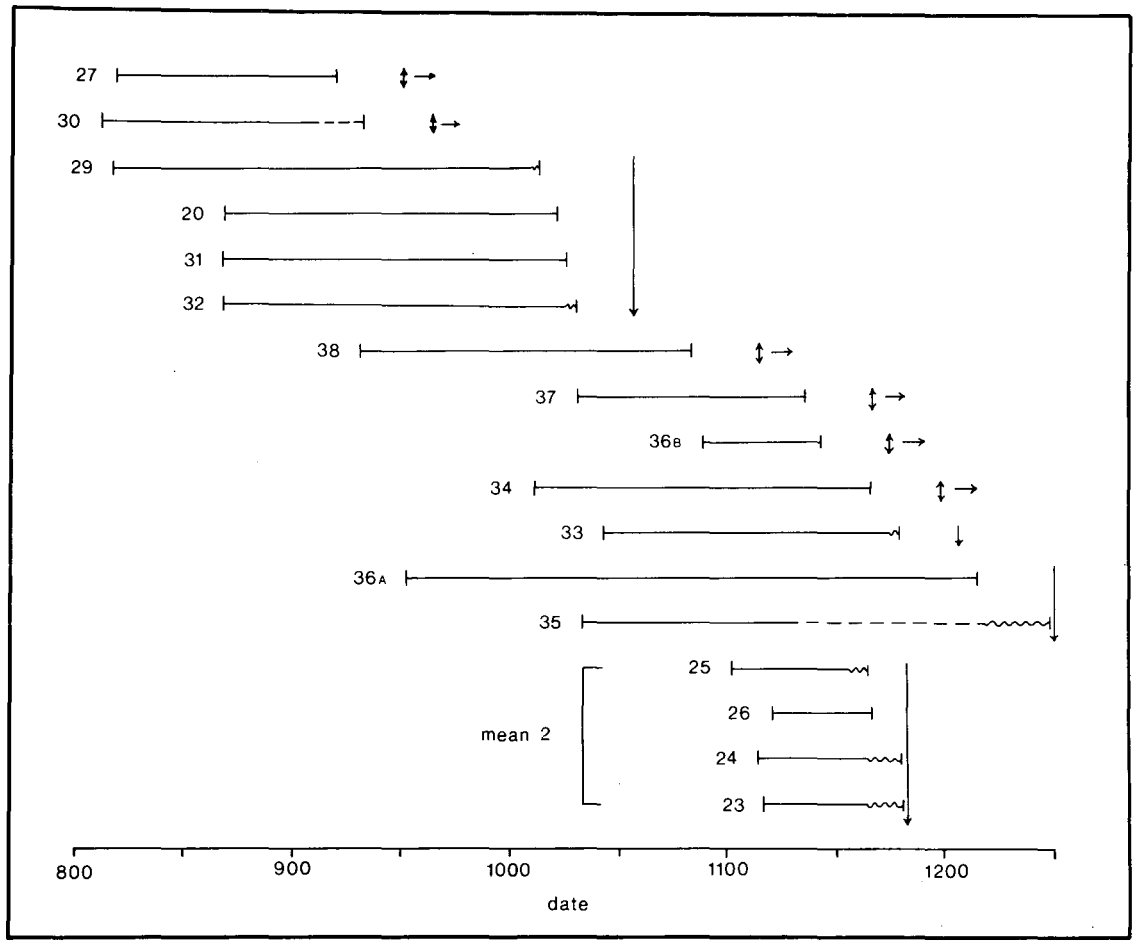

Fig. 182. Trichay Street dendrochronology: block diagram showing the relative positions of the dated medieval timbers. Note: All samples are from Mean 1 except samples 23–6 which belong to Mean 2. Dashed lines symbolise rings which were narrow or indistinct. Wavy lines represent sapwood years. ↓ estimated felling date. ↕→ earliest approximate felling date.

other. This was done by making two working mean curves of matching samples above and below 36A and 38, and then linking these to 36A and 38 (Fig. 182). Thus two site masters were obtained: Mean TS 1, containing 13 samples and 406 years in length (the outer years of 35 were not included as the rings were difficult to resolve and this could have introduced an error into the measurements) and Mean TS 2, made up of four samples and 79 years in length. The ring-widths for the two means are given for reference in MF 131 and 132. The two masters did not appear to cross-match.

Computer comparisons were made with reference chronologies from England and Germany. The English curve Ref. 6 is made up of timbers from the London area and covers the period AD 780–1193 (Fletcher 1977). The two German chronologies extend from the present day back to *c.* AD 800 (Hollstein 1965; Huber and Giertz-Siebenlist 1969). Mean TS 2 gave significant *t*-values with all three for the period AD 1101–79 (MF 130). Visual comparison confirmed the results. Since samples 23 and 24 had their full complement of sapwood rings, the trees must have been felled in 1180. It is unlikely that the timber would have been stored for any length of time (see for example Hollstein 1965; Rackham 1975) and so the timbers would probably have been used in 1180 or very shortly afterwards.

No convincing results were obtained for Mean TS 1 using the above-mentioned reference curves. The trees in the two masters were obviously grown under different regimes. Further comparisons were made with two Irish sequences and it was found that a chronology from the Dublin excavations (Baillie 1977b, 1978) gave a startlingly good match, both visually and with computer, for Mean TS 1 with a *t*-value of 13.12, although Mean TS 2 did not match at all. MF 130 shows the *t*-values between Dublin and the individual Exeter samples, varying between 2.61 and 9.98, along with their date range. This high level of correlation is often not attained between samples from a single site and this at first suggested that the Trichay Street timber was of Irish origin. An unpublished medieval sequence from north-east Ireland also gave a high *t*-value: 6.49, although the *t*-value between the two Irish curves was only 3.75.

However, the possibility of the Exeter wood being Irish was ruled out for several reasons. There is some evidence for links with Ireland at this period (p. 15) and 'Irish boards' were used in Exeter Cathedral on two occasions in the early 14th century (Erskine 1981, 89, 138), but it is surely unlikely that most domestic timber used at Exeter over a period of at least 300 years was imported, as the felling dates (MF 130) would necessitate. Recent work on other Exeter timbers from the Guildhall sites by Ruth Morgan (below) showed that some matched extremely well with the Trichay Street master but poorly with Dublin. Finally, when the final version of the Exeter mean, containing all the 13 matching timbers, was compared with Fletcher's Ref. 6, a *t*-value of 4.88 was obtained. Thus it is more likely that local English timber was employed at Trichay Street, but that the wood contributing to Means TS 1 and 2 came from different sources. The close similarity between Mean TS 1 and the Dublin material must indicate that the trees grew under very similar conditions in the two areas.

Dendrochronologically, the long mean is important in providing a dating framework for use with future wood samples from the Exeter region. It also helps in the understanding of tree-ring dating in the British Isles for it was once thought that many regional chronologies would have to be constructed before dating was possible. The quality of the matching between Exeter and the curves from Ireland and London (Ref. 6) points instead to the idea of Britain as a single unit throughout which timber can be cross-dated. However, the existence of Mean TS 2 shows that more work needs to be done in this direction.

Since many of the timbers had no sapwood, it was only possible to estimate the earliest felling date, i.e. by assuming that no heartwood had been removed in trimming. A figure of 32±9 has been given for the number of sapwood years in a mature oak (Baillie 1973), where ±9 represents one standard deviation from the mean. The felling date is then calculated by adding this value on to the date of the outer ring or to the last heartwood ring, if there is any sapwood remaining (MF 130). Hence those containing sapwood are more accurate; for example 35 had most of its sapwood present, giving a felling date of *c.* 1249. No. 36 probably has the same felling date (Fig. 182). Since they came from the same tree, samples 20, 31 and 32 must share the date of *c.* 1056.

MF 133 summarises the felling dates for the samples from each of the features. Apart from 23–6, which formed the basal timbers of the wattle lining in a pit, the timbers had probably all been discarded after a period of use, making it impossible to relate the felling date of the timber to the date of the pit fills. TS 320 and 347 may have been in use simultaneously as they contain wood from the same tree.

The post-medieval timbers

Samples 1–14 were plank-like timbers from pit TS 316, which was filled *c.* 1660. Samples 7 and 13 were of elm; the other timbers were of oak. Sample 44, a post-medieval roof timber, was discarded *c.* 1800. The cutting techniques varied from whole trimmed trunks (e.g. 1) to radially cut boards (e.g. 8) and plain sawn boards (e.g. 5) (MF 127). The radially split timbers are the most useful to the dendrochronologist as they tend to have more rings, but none of these samples had more than 80 rings.

Only those with more than 50 rings were measured, since no reliable dating can be obtained with fewer unless the samples derive from the same tree. None of the measured timbers cross-matched, so no dating, relative or absolute, was found for the post-medieval period — nor is it likely that these timbers will be dated in the future.

Acknowledgement

I am grateful to Dr. M.G.L. Baillie for making available unpublished data from his work on Dublin timbers.

NOTE

Since the completion of this report, one further sample (39, from pit TS 365) has been dated. It spans the period 895–1046, giving a felling date of 1074±9.

Sheffield University
September 1978.

3. TREE-RING ANALYSIS OF GOLDSMITH STREET TIMBER, EXETER

by Ruth A. Morgan

Several of the medieval and 16th-century pits excavated in 1971 at Goldsmith Street contained waterlogged

timbers. Sections of the most suitable of these were submitted for dendrochronological analysis in 1973. At that time, ring-width measurement and attempts at cross-matching produced few significant results and no dating, despite the good quality of much of the material; re-examination of the oak boards and matching of their patterns in 1978 has now enabled some of them to be dated by means of reference to tree-ring material which has become available only in the last few years. This includes chronologies from Exeter itself (above), from Northern Ireland (Baillie 1977a) and Dublin (Baillie 1977b), and from South-East England (Fletcher 1977); in addition there are curves for several regions of Germany which are sometimes applicable in Britain (e.g. Hollstein 1965; Huber and Giertz-Siebenlist 1969). The work by Jennifer Hillam on oak timbers from Trichay Street in Exeter (above) proved that accurate dating was possible by excellent cross-matching with, in particular, the Dublin chronology. Hitherto, no tree-ring work had been done in the South-West, and the relationships between growth patterns were unknown. Thus the Goldsmith Street timbers offered an opportunity to compare the growth patterns from the two sites, as well as to place an absolute time-scale on some archaeological deposits of the Goldsmith Street site. A certain amount of dating has been possible and is described here; in addition tree-ring analysis of beech wood from the site has suggested the dendrochronological potential of this relatively unknown timber in England.

The Goldsmith Street timber

Details of most of the sampled timbers from the site are given in MF 134–6, which include both those with sufficient rings for measurement and those that were too young. Not included are a number of small radial boards, all of similar dimensions, which had extremely narrow or very few growth rings. Many of the boards appeared to have split longitudinally into smaller pieces since their use, resulting in useless disjointed tree-ring sequences. Most of the samples proved to be from good-quality radial boards of oak (*Quercus* sp.) up to 270 mm in width. Quality is shown in the quite narrow (1–2 mm) but variable growth rings, indicating an origin in mature straight-grown oaks. A large group of such boards came from a wood-lined well (GS 315). A few timbers were quartered trunks hewn to a square cross-section from less mature trees, e.g. GS 201 B and C, while another group from GS 228 resembled half a thick tangential board. Microfiche 145 illustrates the structure of oak and the different conversion methods. Eight timbers retained some outer sapwood, the significance of which will be discussed later.

As well as the oak, there was one radial board of hazel (*Corylus*) and three thin boards of beech (*Fagus*), the ring-widths of which were measured in a first attempt to assess the potential of this species for tree-ring dating in Britain. They came from a stone-lined pit (GS 228) which also contained a number of oak boards.

Methods of tree-ring analysis

Sample numbers refer to the context of the timbers. The samples were prepared and analysed in the manner described by Jennifer Hillam (1980, 16–17).

Results on the oak boards

Attempts to cross-match the oak ring-width curves soon revealed several probable single tree groups, i.e. several boards which were split from the same tree and thus have almost identical growth patterns. It is usual to average these initially into a mean curve representing one tree, so as not to bias further averages by their greater numbers. This applied to six boards (A–F) from context GS 217, the fill of a deep pit. These could be dated (Fig. 183), but six boards (A, E, F, H, J, S) forming the lining of a well (GS 315), and represented by mean curve GS 2, could not be dated (MF 140). One tree could produce many such boards, some of them only 10 mm thick; MF 145 gives some indication of how they were split from the tree along the rays. The boards from GS 217 vary considerably in thickness, while those from GS 315 were all very thin. Mean curves were calculated from each of the tree groups; these could then be compared with the other individuals. Many of the timbers produced rather short curves for potential dating, with fewer than 100 rings, and indeed many of these still remain undated; it is essential however that they be examined. Such immature timber forms a large proportion of archaeological material, and has on a number of occasions proved extremely informative (e.g. Hillam and Morgan 1979).

The presence within one excavated feature both of boards from the same tree and of unmatched boards with different growth rates suggests either a variation in the original sources of material or the re-use of some timbers. Sufficient semples were examined from GS 217 to illustrate this point (MF 137). The group already mentioned, of six boards, came from a slow-grown tree probably over 250 years old and more than 300 mm in diameter (based on board width). Boards B and P come from a very slow-grown but more sensitive tree over 350 mm in diameter. The very narrow rings of both these trees are indicative of the stress conditions

under which they grew, perhaps on higher altitude hill slopes or in dense forest. In addition, there are nine other boards of varying types in this feature, of which two have been dated; four include large amounts of sapwood and suggest trees of the order of 100–120 years of age, perhaps 250 mm in diameter, and with greater average ring-widths.

Resulting from the examination of the oak boards are three mean curves (formed by simple arithmetic averages of the individuals), one of which has been dated absolutely, and numerous short undated individual curves which do not match each other or any reference material available. The reasons for this lack of correspondence in the growth patterns are not clear, although such problems occur regularly on urban sites where extensive tree-ring work is being carried out on medieval samples — e.g. from York and London (Hillam and Morgan 1979).

Possibilities include:

1) Varied topography, leading to differing micro-environmental conditions and thus considerable variations in tree growth even within a small area.

2) The importation of timber from other parts of Britain or eastern and northern Europe, which became widespread by the medieval period.

3) The re-use of timber taken from dismantled structures. This is clearly the case with the 11th-century timbers in mean curve GS 1 which were discovered in much later contexts.

Timbers from a number of Devon vernacular buildings are also currently being examined (Morgan unpub.), and these too are extremely varied in growth rate and are as yet undated. The area is otherwise unknown dendrochronologically — no modern growth curves have even been studied to ascertain over how wide an area cross-matching might be possible.

A description of the three main curves is accompanied by block diagrams illustrating the relationship of their components (MF 142) and tables listing the ring-width values (MF 138–41).

Mean curve GS 1: this is based on 10 boards. It extends over 248 years and details of the boards included in it are given in MF 138–9 and Fig. 183. The curve was dated absolutely by excellent matches with curves for Trichay Street in Exeter, Dublin and South-East England, for which the *t*-values are given in MF 143. It spans the period AD 775–1022. The MF also lists *t*-values for matches between Trichay Street and the reference material, which introduces different relationships. Trichay Street shows an exceptional match with Dublin, particularly when its length is taken into consideration. It also shows a much better match with York than Goldsmith Street. It therefore seems likely that the timbers on each site came from different sources.

Compared to the other two mean curves, curve GS 1 has a very variable growth rate and thus relatively high mean sensitivity (MF 137).

Fig. 183 illustrates how the felling dates of the individual timbers are ascertained. The amount of preserved sapwood is shown by hatching. Oak sapwood maintains a fairly regular width of about 20–30 years, depending on tree age and average ring-width, and so the presence of only one sapwood ring allows an estimate of the approximate year of felling to be made. The dotted lines on Fig. 183 indicate the estimated amount of sapwood.

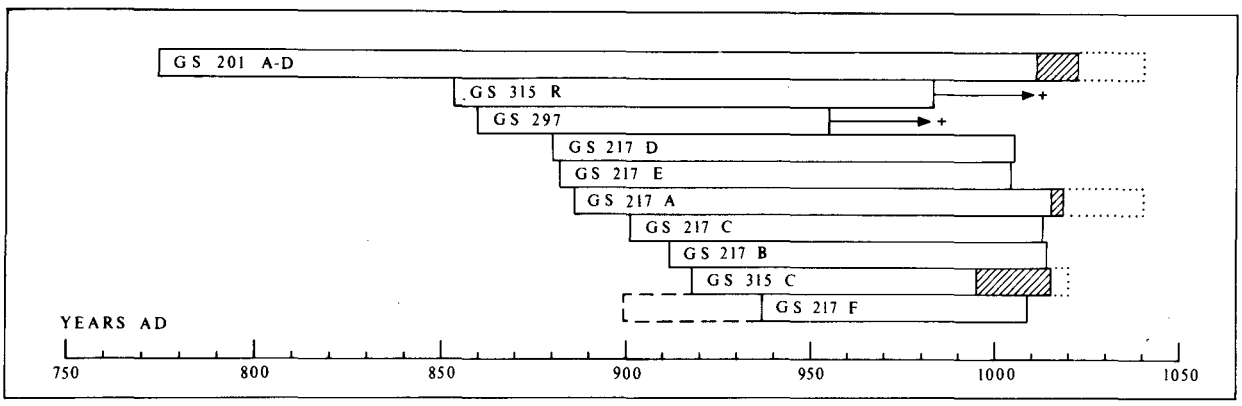

Fig. 183. Goldsmith Street dendrochronology: block diagram showing individual timbers included in Curve 1, which extends from AD 775 to 1022 (Sapwood shaded).

Boards GS 201 A–D retained 11 sapwood rings, and the very mature tree in which they originated was probably felled *c.* AD 1040. The pottery associated with these timbers indicates a date of deposition in the early 16th century (**1717–28**). Of the GS 217 group, only board A has a trace of sapwood, which dates the felling of the tree also to *c.* AD 1040. The wood in these two features is thus contemporary almost to the year. It should also be noted that AD 1040 was the estimated felling date for timbers from TS 320 and TS 347 at Trichay Street (Hillam, above).

Board GS 315 C has 19 sapwood rings and an estimated felling date of *c.* AD 1020. Board R from the same context was probably felled after *c.* AD 1010; the minimum amount of missing wood is indicated by an arrow in Fig. 183.

Board GS 297 also lacked sapwood and the tree must have been cut after *c.* AD 980 — it is impossible to estimate the amount of missing heartwood and to determine how soon after.

Mean curve GS 1 thus comprises a series of timbers all from trees felled in the first half of the 11th century; some were found in a much later context, the implications of which will be further discussed below.

Mean curve GS 2: this curve of 167 years is calculated from the ring-widths of six boards from context GS 315, all of which probably originated in the same tree (MF 140). The curve has a much lower average ring-width and mean sensitivity than curves GS 1 and GS 3 (MF 137); its less variable growth pattern is of the misleading type which appears to match in several positions, none of which can be proved with certainty. As a result the curve has not yet been dated.

Mean curve GS 3: this curve is based on six boards, probably from four trees, which were found in GS 228, GS 256 and GS 315 (MF 141). Boards from GS 256 and GS 228 came from the same tree, as did two further samples from GS 228. The two boards from GS 315 retain most of their sapwood, suggesting felling dates some 10–15 years apart. Several other curves from this same context demonstrated very similar growth trends suggesting contemporaneity, but certain cross-matching based on year to year variations was not possible. Several possible matches of this mean curve with mean curve GS 1 could not be confirmed by reference back to the individuals, and it has thus proved impossible as yet to date mean curve GS 3.

The remaining curves which are not included in the three mean curves consist mainly of shorter series of less than 100 years from contexts GS 315 and GS 228. No cross-matching could be found between them or with reference data. Boards GS 315 B/P (from the same tree) provided a lengthy curve of over 200 years, but the extremely narrow rings could not be resolved in places. Two 17th-century timbers, GS 620 A and B, produced very suitable curves but gave only inconclusive matches with reference data.

Hillam (above) also found at Trichay Street that two distinct groups of material were apparent — mean curve TS 1 closely resembles the mean curve GS 1 and the Dublin chronology, while mean curve TS 2, based on a group of younger timbers, is more closely linked to the German reference chronologies. The explanation would again seem to be a variety of sources for the timber.

Results on the beech boards

The three beech boards from GS 228 proved on examination to show very clear growth rings which could be measured without difficulty. The only problem, noted also in Germany (Hollstein 1973a), was the occasional extremely narrow ring, barely present, which could not be followed round on the thin boards as on a complete trunk section. The two examples here were located by reference to the other sections.

The almost identical growth patterns suggest that all three boards originated in the same tree; board widths of 80–120 mm indicate a tree of over 250 mm in diameter and probably in excess of 100 years old. A mean curve of 76 years was calculated, the values for which are given in MF 146.

Beech is not widely used as a building timber in England; Salzman (1952) records its use as laths for plaster walls and boards for fittings and arches, and several 13th- and 14th-century documents mention beech wood. The natural distribution of beech in Britain is confined to the South (Rackham 1976), although today the planting of beech is widespread. A beech plank recently examined dendrochronologically from Monkgate in Hull (Hillam unpublished) may have been imported.

Beech wood has been studied dendrochronologically in Germany where it has proved possible to establish a reference chronology back to 1684/1654 in the Spessart/Black Forest (Jazewitsch 1953), and back to 1320 in the Saar and Moselle areas (Hollstein 1973a). The wood had been used for roofing shingles, as cleft boards and as piles. The German beech was found to be suitable for cross-dating over wide geographical areas. It has a much higher mean sensitivity than oak, i.e. its growth rate is much more responsive to climatic and environmental change. In MF 147 the Exeter beech curve is compared to the two published German sections. The rings are wider on average and the mean sensitivity is high in the Exeter sample. Mean sensitivity of oak rarely exceeds 0.25. Partly for this reason, beech may prove difficult to cross-date by the techniques used for oak; the CROS computer program (Baillie and Pilcher 1973) may not be suited to the high mean sensitivity. Nor is any information based on the study of modern trees available on the quality of cross-matching to be expected within and between regions.

As a result, no certain dating was possible for the Exeter mean curve, compared to the German reference data and the Hull curve; however the floating curve may be useful for comparison with further beech material from the Exeter area and its establishment has provided valuable experience in analysing this wood species and assessing its potential for the future.

Discussion

The results of tree-ring examination of the oak and beech boards from Goldsmith Street in Exeter have added further evidence to the information from Trichay Street (Hillam, above) that timber was being used from a variety of sources. This is perhaps not surprising in view of Exeter's importance as a port; timber may have been brought in from around the British coast, or carried from western Europe. Such transport would result in considerable difficulties in cross-matching and dating the timbers from a site.

The dated mean curve GS 1 varied in the degree of similarity to reference chronologies, contrasting with Trichay Street mean curve 1, so closely linked to Dublin. The GS curve matches slightly better with South-East England and Germany, but hardly at all with York (MF 143). This also suggests that construction on the two sites involved the use of boards brought from unknown sources of both primary and exploited woodland, to account for the variable growth pattern and rates.

Some timber which could be absolutely dated proved to be much earlier than the contexts in which it was found, notably in GS 201. Later re-use of suitable timber is a possibility, assuming a good state of preservation after several decades or even centuries. The presence of many timbers cut *c.* AD 1040 could indicate the demolition of a building on the site. Despite the dating problems, the mean curve GS 1 has extended the Exeter tree-ring chronology by some 35 years, back into the 8th century.

Acknowledgements

The author is grateful to Jennifer Hillam and John Collis for commenting on this report.

Sheffield University,
November 1978.

Addendum

In 1981, after the completion of the report on the timber objects and vessels (pp. 305–15), samples were cut from several of the vessels which appeared to contain sufficient rings for dendrochronological dating. The samples came from five contexts of 11th- to 13th-century date. All the pieces except three barrel staves from context GS 281 had been conserved in PEG which created a hard and brittle texture. It proved impossible to surface the cross-sections of the boards adequately to determine the ring-width boundaries with certainty, except in one case from GS 228 L.14 (*not ill.*). The wax fills up the cells of the wood, so that conventional techniques of planing, sanding or cutting with a knife often fail to expose the wood structure. Exposure to heat and other experimental methods were also ineffectual. The still wet samples from context GS 281 were prepared in the usual way by freezing and planing.

Details of the samples are given in MF 148. The four resulting ring-width curves were compared with the established chronologies for Exeter Goldsmith Street and Trichay Street (Hillam 1980), as well as all other available reference curves for England and Germany. The dating is given in MF 148; it suggests that the barrel from context GS 281 was constructed after 1185, with one re-used late 10th-century stave (sample C). Such re-use is quite common and is still practised today (Kilby 1971).

Sheffield University,
September 1981

X THE LEATHER

by D.E. Friendship-Taylor with illustrations by R.M. Friendship-Taylor

1. INTRODUCTION

Rather more than 200 leather items or groups of items were preserved in waterlogged deposits excavated in the city. They come from some 30 contexts ranging in date from the 10th/11th centuries to the 18th; material of the 14th to early 16th century is particularly plentiful. As with the other organic finds, the bulk of the collection comes from the Goldsmith Street and Trichay Street excavations.

Footwear forms the largest class of material, particularly in deposits of the 14th to 16th centuries, but a variety of other items are represented, and objects other than shoes predominate in the earliest deposits. These include purses, pouches and belts in 11th/12th-century contexts and a 13th-century horse harness. Items of these types are also present in the later medieval pits, which in addition contain fragments of jerkins or similar clothing.

All the leather is vegetable-tanned cattle skin, except where stated otherwise. There are eight examples of the use of kid and goatskin, the earliest of the 11th/12th centuries, the latest of the 16th century; they include a goatskin purse or pouch and an alum-tawed kid artefact, possibly a glove or purse fragment or a piece of vamp lining. In three instances goatskin is used in footwear, once as a repair. Eight items are possibly dyed red-brown or blue (unless the fugitive colouring matter observed during conservation is attributable to the tanning process or the buried environment). Of these, seven come from GS 228, one of the 1460s, three of the first half of the 16th century. The other example is from an 11th- or 12th-century context, TS 66.

The degree of preservation varies considerably, owing to a variety of factors, such as the efficiency of the tanning, the degree of wear of the artefacts and the localised environment within the deposits, including the degree of absorption of calcareous material, which has resulted in the serious embrittlement or fragmentation of some items.

The shoes

Most adults' shoes are very worn and many were repaired; they were only discarded when utterly beyond repair. By contrast only five of the certain children's shoes were repaired at all, the rest apparently being discarded when outgrown or worn out, rather than handed down to younger members of a family. The styles of children's shoes are similar to those worn by adults, with some very fashionable examples. A number of the shoes reflect fashion-consciousness, but none displays excesses of fashion such as the very long poulaines. Everyday working attire is well represented.

There is a wide range of sizes at all periods, but, even allowing for a small degree of shrinkage since excavation, the footwear is on average smaller than modern shoes. For this reason, size 13, a modern children's size, has been considered in this report to be a youth's or woman's size. The largest shoe (**L.3**), of modern size 8–9, occurs in a late 12th- or early 13th-century context and the two examples of 13th-century date whose sizes can be determined (**L.5** and in QS 51) are both of modern size 5. There is a predominance of modern sizes children's 13 to adults' 1 amongst the shoes of 14th/15th-century date, with one example of an adults' size 6. Of the 16th-century shoes, there is a greater proportion of children's in relation to adults' shoes, but an even spread of sizes from the first child's size to two adult size 6 and one size 7. Of the four 17th/18th-century examples, three are children's shoes and one a youth's or small adult's.

The majority of the turnshoes of the 14th and 15th centuries are front-lacing, with uppers made of one main piece of leather, joined at the inside by a butted seam, usually with one triangular, but occasionally a quadrilateral, insert. Most examples of this period have rands. There is one very early example of a rand (**L.3**) from TS 403, a feature dated to the late 12th or early 13th century. Shoe buckles of iron appear from the 12th to the 13th centuries and one tinned iron example survives attached to its strap, but most buckles have become detached; they might have had a longer life than the shoe leather and could have been re-used. Shoe laces occur from the 10th/11th century (e.g. in GS 297); their wearers did not always use all the lace holes provided.

Ten tongues, of which nine are bellows tongues, are represented in the collection; they date from the 14th/15th century onwards. Of the 16th-century shoes, there are three with strap and buckle fastenings at the instep and one which is laced at the instep. There are a few instances of textile shoe linings, with a date-range of 1350–1450 to the late 17th or early 18th century.

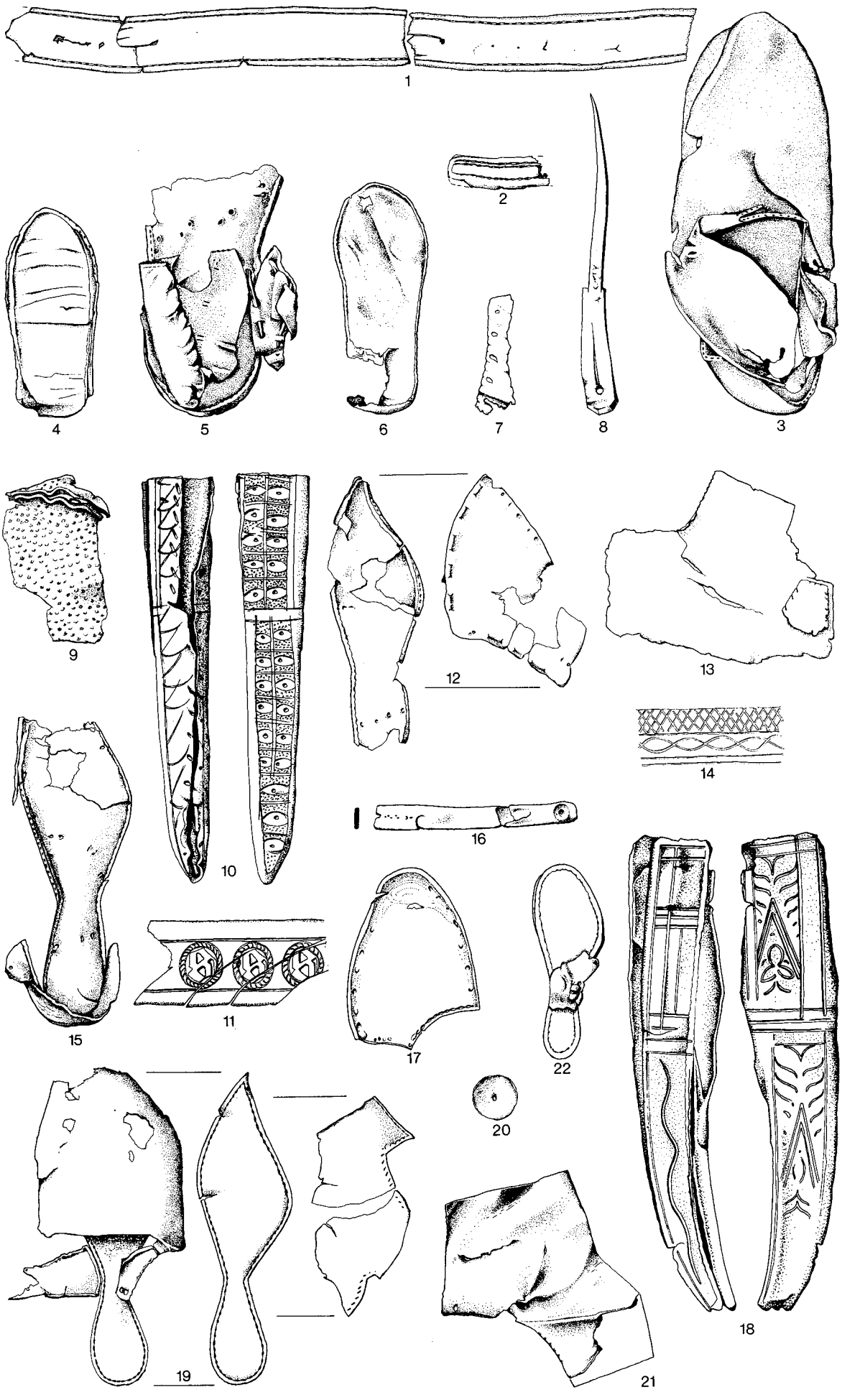

Fig. 184. Medieval leather (scale 1:4 except **10**, **18** 1:2; **11** 1:1).

Interpretation

Much of the material can be interpreted as waste from cobbling; that is, worn-out or damaged artefacts collected for salvage of the good parts for re-use in repairs. Off-cuts were present in most contexts, and it is sometimes possible to discern from the form of the waste the type of object from which they were cut; there are, for example, several sole repairs. Some shoe parts were discarded together; for example six heel stiffeners removed from their shoes were found together in TS 316, L.23. They probably reflect the breaking-up of old shoes in order to re-use the salvageable parts. A shoemaker's hand-leather (**L.43**) probably of the 15th century, found at Trichay Street, similarly provides evidence of the activities of a cobbler.

There is no clear evidence that any of the leather represents the manufacture of leather goods on the sites excavated. There are two instances of new skins in 12th/13th-century deposits (TS 402, QS 112), and a large piece of folded new leather in a 16th-century context (GS 233). These might indicate that cordwainers' material is present, but cobblers must also have required new leather for the substantial repairs which were made to some shoes. However the excavations have found probable evidence of leather processing in the city. Pairs of probable tanning pits, one of each pair containing lime, have been excavated in a late 13th-century context at the extra-mural site of Exe Bridge (**W.72**), and in the cellar of a High Street tenement (**W.73–4**). The five massive stone-lined pits which were such a striking feature of the Goldsmith Street and Trichay Street excavations were evidently used for storage of liquid. They seem to have been in use between *c.* 1300 and the early 17th century. The suggestion has been made that they were used in the tanning of leather (Collis 1972, 12), and indeed no convincing alternative to this explanation has yet been proposed. It is to be hoped that documentary research or chemical analysis will enable the function of these features to be identified.

Presentation

The leather has been arranged chronologically according to the dating evidence of the associated finds. Many of the groups come from deep cesspits and rubbish pits which must have been in use for quite brief periods and the leather in these features may be assumed to be contemporary with the pottery. The large stone-lined pits, so rich in finds of leather, present particular problems, since it is clear that in two of these (GS 228, TS 316) the objects in the lower layers differ radically in date from those of the upper fills. For this reason the finds from the stone-lined pits have been presented layer by layer within each feature. Even so, some groups of leather from individual layers have wide date spans. For example, TS 316 layer 23 contains leather of the 14th and early 16th centuries (**L.39–51**) and the late 16th-century pottery (**2123–4**) is stratified in the overlying deposit. A few items with unusual or interesting features have not been drawn owing to their poor state of preservation, which precludes accurate representation. The finds are so numerous that detailed descriptions of each piece cannot be published here; brief mention of the principal finds in each context has been listed. The full report on each item in the Exeter collection, including all unpublished pieces, is presented in MF 149–85. This includes full verbal descriptions of each piece with its dimensions; equivalent modern sizes of the shoes; and measurements of the spacing of stitch-holes. A quarter of the objects have been illustrated. Unless otherwise stated, the measurements are those taken after conservation and a little shrinkage should be allowed for. The terminology used in this report follows that of the 'Textbook of Footwear Manufacture' (Thornton 1964).

Acknowledgements

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2. THE CATALOGUE

Eleventh- and twelfth-century

GS 217, associated with pottery **295–8**, after *c.* 1040.

L.1 Incomplete leather belt. Well worn: the irregularly-placed buckle prong holes are degraded. The parts have been both cut and torn from each other.

L.2 End of a strap or belt. The three thicknesses were achieved by folding one piece of leather in half, lengthways, over another piece, with one line of stitching along one side and with two rows along the other. Possibly associated with **L.1**. Circular indentation and additional stitch holes at end, probably where a decorative stud was fixed (cf. Armstrong 1977, Fig. 24, Nos. 34–6).

TS 403, associated with pottery **624–48**, late 12th- or early 13th-century.

L.3 Large man's left randed turnshoe, of 12th/early 13th-century type. Outside forepart and outside heel seat moulded deeply, almost giving appearance of a 'straight'. Considerable wear: heel seat patched. Upper constructed in one main piece, joined at the inside heel seat by butted seams, with a small insert. Throat cut round, with short slit at throat edge, overseamed (a modest decorative feature). Fastening was by a strap and buckle, which have not survived.

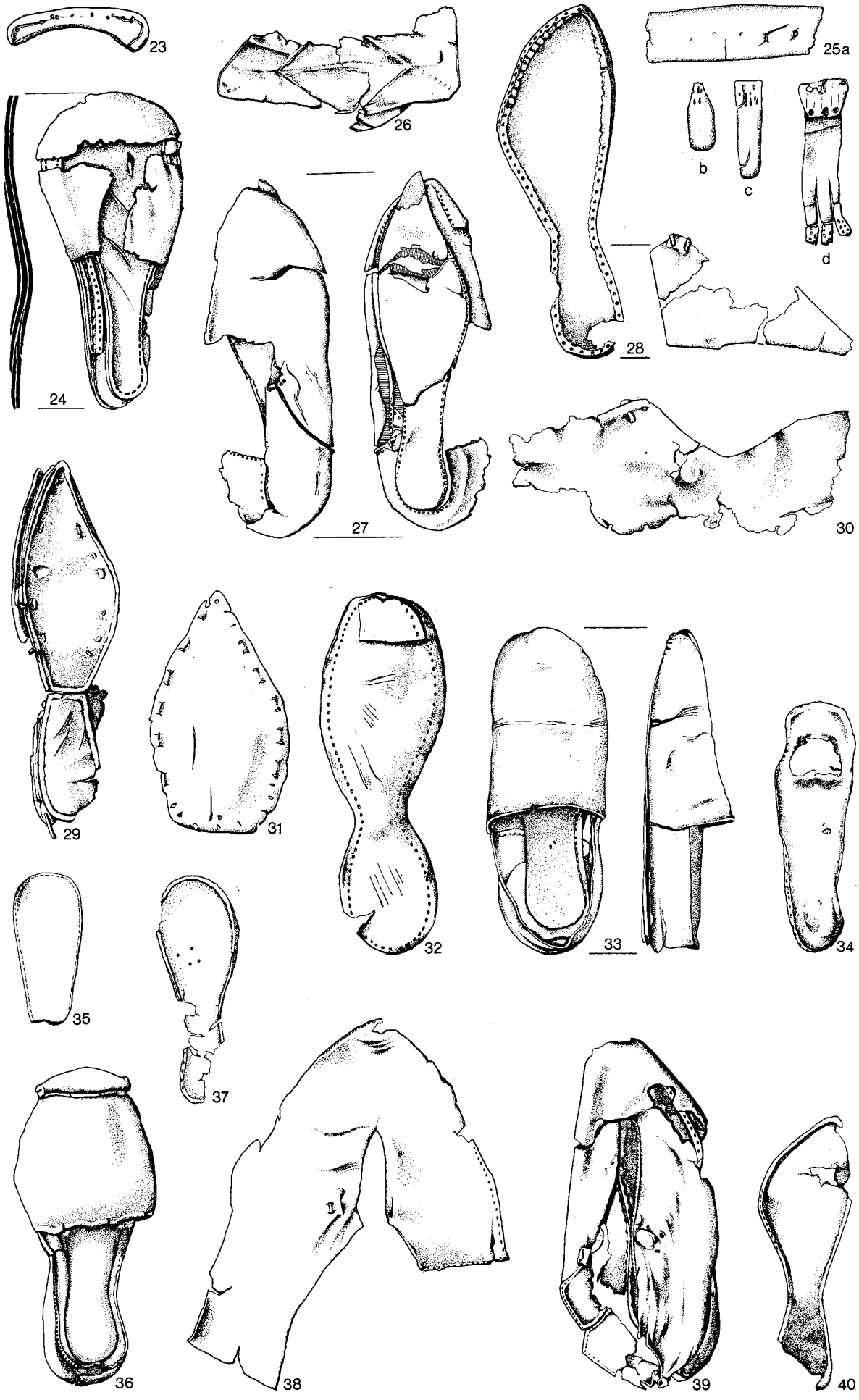

Fig. 185. Fourteenth- to 16th-century leather (scale 1:4).

Not ill: Fragments of lace from GS 297 and TS 26; off-cuts and cobblers' waste from GS 217, GS 297, TS 26, TS 382; ?belt fragments, possibly dyed red or brown, from TS 66. All 11th/12th-century. Piece of ?belt and grain-side lamella from GS 282; kid leather from GS 217; fragment of indeterminate fine-quality artefact with whipped edge and engraved lines from TS 136; ?bowl-shaped button from GS 708; remains of goatskin purse or pouch from TS 403. All 12th-century.

Thirteenth-century

L.4 TS 365, associated with pottery **922–60**, early 13th-century. Forepart of right turnshoe sole, torn from heel seat. Well worn. The surface on which the foot rests has been scored, perhaps used as a working surface or, less likely, creased by wear causing delamination.

L.5 TS 357, associated with pottery **961–67**, *c.* 1200–50. Heel seat, waist portion and rear portion of the forepart, and parts of the upper, of a man's large right turnshoe of 13th-century type. Rear of heel seat slightly moulded. A clump sole and a heel seat repair (both absent) were once tunnel-stitched to sole. The strange surviving upper components must represent repairs to the sole and upper, in view of the normal turnshoe seam holes, probably after the more conventional repairs. Two surviving pieces thonged through heel seat at widely-spaced intervals. These large holes continue towards the toe, near the margin and in an oblique line across the remaining forepart. The larger piece, at the inside, is thonged to the sole with a wide rand between, about 25 mm from a thonged edge, which would have been sewn to the flesh *int* side of the inside quarter. This piece covered the large hole in the heel seat but is itself worn through. It is re-used from the quarters of an ankle-boot with three pairs of thong loops to draw the boot around the ankle, and a fine whipped seam edge. The smaller repair, of goatskin, is a patch to the outside quarter, thonged to sole and upper.

L.6 TS 402, unassociated, but in a pit cutting TS 403 of late 12th or early 13th century (see **L.3**), and cut by TS 386 of mid or late 13th century. Badly worn right turnshoe sole.

Not ill: Turnshoe sole fragment from QS 51; belt (?horse harness) from TS 191; vamp fragment and shoe quarters from TS 357, all *c.* 1200–50. Incomplete knife sheath, possibly with smaller sheaths attached (cf. *LMMC* 1967, Fig. 62, 38–319), and ?purse fragment from GS 315, mid 13th-century. Quantity of waste unused cattle hide, discarded by a cobbler or cordwainer (unusable areas of the skins, edges with some hair present from the region of the udders *etc.* and off-cuts) including two heel seat shapes from QS 112, *c.* 1300.

Goldsmith Street 228 Layers 13–20

GS 228 Layers 15–20. Group associated with pottery **1446–50** including Saintonge polychrome jugs of *c.* 1300.

L.7 Facing fragment from lace holes of an ankle boot, stitched by overseaming to flesh side (cf. Thornton 1968–9, Fig. 13, Pl. 3, No. 2).

L.8 Unused strap and lace 2–3.5 mm thick, a ?chatelaine holder.

L.9 Part of side of a pigskin bag or pouch, joined by leather thong to fragment of another component.

L.10 Knife sheath with incised and stamped design of repeated lozenges geometrically arranged in two main zones and with a punched dot background. Oversewn back seam, the wider area of the back accommodating a cruder incised design. Two pairs of holes near the top, front and back respectively, to attach a thong to a belt. A slit down one edge is an accidental cut made when the knife was inserted; hence it was discarded after little use. 14th/15th-century.

L.11 Part of a leather strap, deliberately slashed, one of three. Decorated with series of stamped S's within roundels; 14th/15th-century. Four holes may be for attachments (cf. *LMMC* 1967, Fig. 60, 4, Pl. XLVI).

L.12 Incomplete right shoe: sole, made up from odd pieces, of turnshoe construction, with trace of fabric at tip of toe. Clump sole and heel seat repair attached by tunnel-stitching. Part of the vamp survives. *c.* 1460–70.

L.13 Large section of one-piece quarter of a man's side-laced high ankle-boot. Part of triangular heel stiffener in position, with extant overseaming, the tip cut off. Lasting margin and other seam edges broken away. A fragment of 'facing' for the lace-holes, which would have been overseamed to the flesh side, accompanied the quarter. (For ankle boot quarter, cf. Gould 1973, Fig. 2, A9). 14th/15th-century type; probably belongs to **L.12** of *c.* 1460–70.

L.14 Two large pieces of leather, probably from a jerkin or other garment, very degraded, but some hemmed seam and oversewn edges are discernible. A decorated incised border pattern presumably formed the bottom edge of the garment. Two pieces with oversewn edges may be gussets. One has a series of holes along the edge, probably for fastening. Decorated border *ill.*

L.15 Most of sole of a 16th-century much worn right welted shoe. Holes on both sides indicate forepart and seat repairs, fragments of which are present. Part of one-piece quarters and welt survives. Sole and quarters *ill.*

Not ill: Fragment of ankle-boot; shoe quarter of very thick cattle hide, cut about for re-use; shoe laces; part of a ?pouch or small bag; part of attached sole and insole.

GS 228 Layer 13

L.16 Two joining pieces of strap with hole showing iron stud impression around it; torn and with small irregular stitch holes.

Trichay Street 169 Layers 4 and 5

Finds associated with pottery **1451–62**

L.17 Well-worn left clump sole, once tunnel-stitched to a sole. Inside waist cut round, with butted seam holes at 5 mm for attachment to a missing piece. Knife-cut at toe suggests the sole, too worn for re-use, served for cutting another piece on.

L.18 Knife sheath engraved with blunt tool in two zones. The design repeated in each zone: trefoil motif with appendages (? devolved fleurs-de-lys), beneath an inverted 'V' and short wavy lines. Butted back seam; back with simpler decoration. A pair of holes at back served to attach it to a belt with thongs. Tip worn. Style of late 14th/early 15th century.

Goldsmith Street 228 Layers 8–12

GS 228 Layer 12

L.19 Right turnshoe of *c.* 1450–1500, toe pointed but not extended. The shoe was apparently too narrow for the wearer's comfort. The quarters, originally lined, are incomplete, but were presumably one-piece. Front end of the inside quarter joined to rear end of vamp by a triangular insert, lasted in at waist. The divided end formed two laces, present but detached, to fasten over the instep to the two lace-holes in the latchet, which is an extension of the outside vamp wing.

Not ill: Parts of ?bag without a frame, of kid leather and cattle hide. Some edges bound with an oversewn seam. Two triangular pieces may be gussets at each end of bag. The number of seam edges suggests high quality decorative objects of many components.

GS 228 Layer 11

L.20 Leather disc with a central hole: probably a button or surround (cf. Armstrong 1977, Fig. 25, 45).

Not ill: Probable 15th-century turnshoe sole.

GS 228 Layer 10

Not ill: Welted shoe fragments; leather belt fittings with parts of a loosely-woven cloth belt adhering.

GS 228 Layer 9

L.21 Left quarter of ankle-boot, with butted seams down centre back and for attachment to the vamp. Plain top edge, but front opening edge at throat has whipped edge for a binding, with lace-hole at corner of vamp edge for a lace across instep (possibly with hole in each vamp wing at corner of throat, and quarter edge to complete fastening). Lasting margin worn away. No heel stiffener. Probably 15th-century; cf. **L.47**.

L.22 Sole of child's right turnshoe. It does not bear the characteristic wear marks of a welted insole, which would have coarser and more irregular stitch holes. Typical late 15th-century narrow waist; the pointed toe of *c.* 1460–80 has become rounded, suggesting a date of *c.* 1480–1500. An

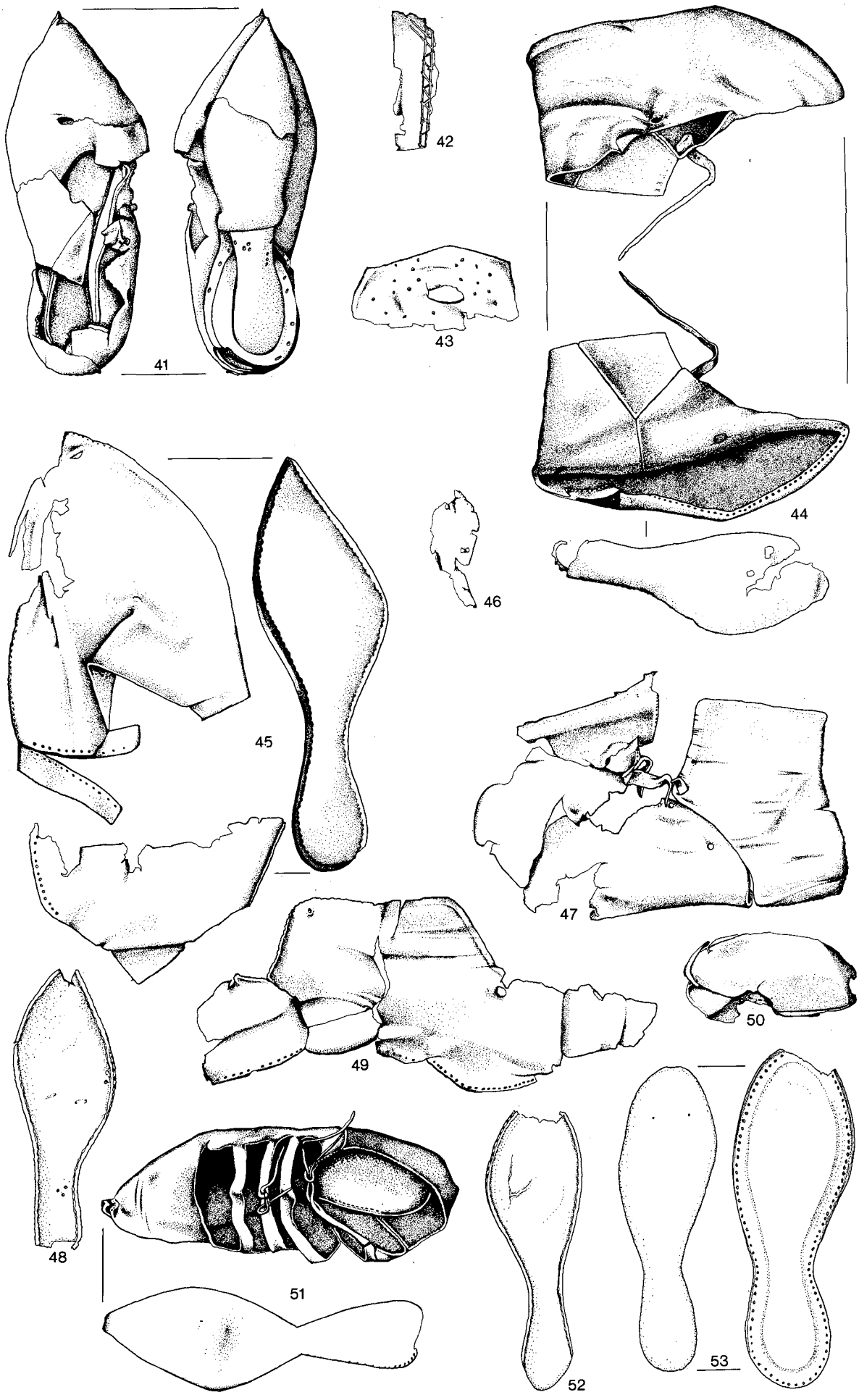

Fig. 186. Leather from Trichay Street 316 (scale 1:4).

upper fragment with section of the lasting margin from *int* has a double-looped fastening over instep. One of the two adjacent lace-holes may have torn, and the loops have been inserted to replace these.

L.23 Cut-off toe end of a welted 'eared' shoe sole of 1520–50.

L.24 Substantial part of a woman's right welted shoe; characteristic wide style of 1530–50. Much worn heel seat completely rebuilt and worn through again. One of the heel seat inserts may be a seat lift and part of the original conception of this fashionable shoe. Slit at vamp throat cut slightly round, with traces of holes for a lace or buckle fastening at corner of right vamp wing throat and quarter edge. Edge/flesh seam holes indicate that a decorative trim was once present at throat.

L.25 Fragmentary leather belt, part *ill* (**a**). The unused buckle prong holes appear as crude nicks made with a knife point. Several straps could have hung vertically to hold a purse, pouch, knife or dagger. The largest of these (**d**) was secured to the belt by two trapezium-shaped silver plates (debased with copper), one at each side of belt, secured with iron rivets; the strap branches into three and each end has stitch holes. Other strap ends (**b, c**) have a similar abundance of holes. The extant parts of the belt do not show where straps were fitted.

L.26 Part of a Tudor purse, which would probably have hung full in gathers from a bar. *Ill* flattened out.

L.27 Almost complete much worn left turnshoe, *c.* 1350–1450. Part of rand *in situ*, grafted near inside waist. The outside extended vamp wing joined to front end of one-piece quarters by butted seam; on the inside, the vamp wing projects obliquely, joined to front end of inside quarter by a short butted seam, allowing the elongated quarter to form an instep strap, with a tie-hole at corner of throat and quarter edge. The complementary fastening on the outside does not survive. The thin strap has a whipped edge where it was reinforced with a lining. Upper parts of quarters damaged; quarters may have been totally lined (cf. Tatton-Brown 1975, Fig. 28, 77–8).

Not ill: Parts of a randed turnshoe of *c.* mid 15th century; fragmented ankle boot, late 15th-century; parts of welted shoe, *c.* 1500–50.

GS 228 Layer 8

L.28 Sole, rand and upper insert of man's left turnshoe, *c.* 1360–90, or *c.* 1440–70. Rand formed of grafted lengths, joined each side at waist. *Int* rear of seat worn away, without repairs; two additional stitch holes in rand at toe (small repair?). The large fragmented triangular insert, with butted seams along every edge, has remains of a thong fastening, with broad end at flesh side to prevent it being pulled through. Sole and insert *ill*.

L.29 Substantial part of a right pointed turned side-laced ankle-boot of *c.* 1460–70. Toe very pointed, but not exaggerated. Clump sole and a heel seat repair attached by thonging through sole and insole. Repairs much worn; insole constructed in two parts, joined at waist by transverse butted seam. It is probable that the 'insole' was the original sole and that at least two repairs added to the bottom of the shoe have effectively converted it to an insole. For parallel turnshoe soles constructed in two parts, with a transverse butted seam at the waist, see Thomas 1980, Fig. 10: 56/42/1 and for examples of turnshoe soles from Coventry made in this way, see *ibid.*, Fig. 2, 56/53/2. Pieces of vamp and quarters are present, with lace-holes and facings, now detached, once stitched by overseaming to the flesh side, at the rear end of the inside quarter. The shoe may be dyed blue or red/brown. Bottom parts *ill*.

L.30 Single-piece quarters of a man's leg boot. Only the top oversewn seam survives, for an edge binding. No heel stiffener is evident. A creased fragment may be part of a vamp. *Ill* flattened out.

L.31 Right-foot pointed forepart repair clump, tunnel-stitched around margin. There are two knife scores on inner surface. Probably of *c.* 1450; not later than 1500. (cf. Armstrong 1977, Fig. 21, 11).

Not ill: Fragments of 15th-century ankle-boots; pieces of 15th-century turnshoe; part of kid leather quarters of a boot; part of a bag with whipped top edge; parts of worn welted shoe, probably of *c.* 1520–50.

37–8 North Street 1556

Shoes found together in a stone-lined pit, salvaged during observation of building work.

L.32 Bottom parts of a man's left welted shoe: a complete repair sole, a middle sole and an insole. Thick additional repair sole. Patched and worn toe. Heel seat almost completely worn away. Very worn middle sole with two sole seams. Very damaged insole with welt seam. 16th-century. Additional sole and patch *ill*.

Not ill: Turnshoe sole of *c.* 1350–1450.

Mermaid Yard 654

Finds associated with small group of local 16th-century pottery.

L.33 Youth's complete right welted shoe of *c.* 1500–50. Plain vamp, much worn. Small token slit along straight throat edge. Single-piece quarters, cut fairly low, joining vamp with butted seams to within 10 mm of the top edge, where the front ends of the quarters become reinforcing tabs, overlapping and blind-stitched to the inside of the vamp. A heel stiffener, whipped in, lines much of the quarters. The sole is in an advanced state of disrepair. A number of repairs were made, especially to the heel seat, mostly tunnel-stitched to the sole. Two pairs of holes along the centre line of the insole from toe to heel where it was fixed to wooden last during manufacture. The shoe was discarded when beyond repair.

L.34 Long, narrow insole from a youth's much worn right welted shoe, made as a 'straight', except for inturned edge at inside toe, producing a virtually square-shaped toe, probably a fashion feature of an 'eared' shoe. The shape, the impression of the foot and the spacing and the irregular nature of the seam holes, are consistent with a welted shoe of *c.* 1500–50, probably *c.* 1520–50. Three holes in heel seat and two along the centre line from heel to toe are nail holes for attachment to the last.

L.35 Sole of very small child's rounded-toe welted shoe, made as a 'straight'. The sole is thick (5 mm) and, as would be expected, shows little sign of wear. The marginal grain/flesh stitch holes are very fine, protected in a cut-out channel on the grain (under) side. Broad toe of *c.* 1520–40. A piece of welt is also present.

L.36 Lady's or adolescent's welted 'eared' shoe, made as a 'straight', worn on right foot. Vamp with horizontal slit across toe, stopping just short of the lasting margin each side, enabling the 'ears' of the toe to be formed by pulling in the corners around a toe puff. The two slit edges were rejoined by a closed seam, including the rear edge of the toe puff and an inserted decorative piping. Two nicks were made in the piping to achieve flexibility. Edge of throat turned under and oversewn with a blind seam to the underside of vamp. Five small decorative slashes along the straight edge of throat. Worn vamp. The front ends of the low-cut quarters are joined to the vamp wings with butted seams. The back seam appears to be off-centre, at the inside heel seat. The outside quarter lasting margin turns outwards as in *veldtschoen* construction, a modification in repairing this edge, which was very degraded by wear. The quarter lining surviving on the inside, same height as quarters. Top edge scalloped where oversewn to top edge of quarters, with an edge binding. A fragment of heel stiffener extant on inside, inserted between quarter and its lining; its top edge was also oversewn in with the edge binding. The insole has a squared-off toe, to which overhanging toe and toe puff was attached by the welt seam. Few pieces of welt survive and these are very frail owing to repairs. An extra 'rand', in four parts, inserted across toe and along inside edge, with gap at waist and at back of heel seat, between the sole and welt, attached by the sole seam. Wear at the outside sole edge would have obliterated any impressions of such insets if present. The sole is modestly 'eared'. Much worn; tunnel-stitched repairs were added to toe and heel seat. The 'eared' toe, the welted construction and the slashed throat date the shoe to *c.* 1535–55. For a shoe of *c.* 1535–55 with many of these characteristics, cf. Thornton 1972, Fig. 43; the piping is paralleled in an 'eared' shoe from London in the Museum of Leathercraft collection (Cat. No. 251–52). There are also examples

from Moorfields, London, dated to the 1530s, in the Northampton Museum Boot and Shoe Collection (D. 41/47.31).

L.37 Parts of a child's left welted shoe of *c.* 1500–50, made almost as a 'straight'. Impressions of bracing thread on the insole. Much worn; missing repair, once attached by tunnel-stitching. Fragments of the upper and quarters (*not ill*) suggest a typical early 16th-century vamp, with a trim invisibly butt-seamed to the throat.

Not ill: Several worn welted shoe fragments, all *c.* 1500–50; probably contemporary pieces of thin skived leather; strap fragment with rivet impression; length of flax or hemp thread; off-cuts.

Goldsmith Street 201

Finds associated with pottery **1717–28**, *c.* 1500–50.

Not ill: Pieces of textile adhering to or backing leather, one with a close weave, producing a *bouclé* effect, others loosely woven. Also shoe or boot fragments.

Trichay Street 316

The large group of finds from this pit includes 15th-, 16th- and 17th-century material (p. 180).

TS 316 Layer 24

L.38 Left turnshoe, one-piece type, with inside side seam; space for small triangular inset at top. Scalloped top edge indicates position of edge binding, of which a small detached strip survives. Slots for an instep strap, with remains of left knot, stitched in place. Parts of lasting margin survive, corresponding to holes of waist portion of a sole; parts of rand accompany upper. Position of peaked stiffener indicated by the oversewn seam holes at the inside back of the quarters; toe is fairly rounded. 13th/early 14th-century. Upper considerably worn. *Ill* shows upper laid flat.

TS 316 Layer 23

L.39 Boy's or adolescent's randed turned right ankle-shoe, virtually complete but damaged by wear and burial. Rand of *c.* six grafted lengths. Upper of three-piece construction without back seam but with two small inserts (one extant) between the square-cut ends of the upper, within the inside quarter. Heavily worn. Four-sided heel stiffener, placed eccentrically to avoid the inside quarter insets, with normal oversewn seam. Deep slit down centre of vamp, continuing line of top edge of quarters, with oversewn edge binding round top edge. Strap and buckle fastening degraded. Early 14th-century or *c.* 1400–80.

The pair to this shoe, of identical dimensions, shows slight constructional differences, probably to make best use of the leather. Upper of two-piece construction, rear end of inside vamp wing joined by oblique butted seam to front end of inside quarter. Rounded heel stiffener.

L.40 Lady's or youth's left much worn turnshoe sole, *c.* 1350–1450.

L.41 Right randed turnshoe of *c.* 1350–1450, virtually complete. Fashion toe extension; rand of two lengths with forepart and heel seat rands grafted at waist. Upper of one main piece construction, without a back seam, joined at the inside waist by a butted seam, with a triangular insert attached by butted seams. There is a wide opening at instep, with strap sewn to flesh side of its inside edge, passing over the instep and presumably divided into two parts, which would have passed through the two holes in the outside quarter, to be tied together on the outside. Edge of instep opening and top edge of quarters scalloped where they were finished off with a binding. Peak heel stiffener *in situ*, whipped in. Much worn clump repair. A second row of stitch holes across waist indicates heel seat repair. The outside of shoe and inside quarter strengthened by insertion of wide (11–23 mm) 'rand' between original rand and sole, contemporary with heel and forepart repairs. Repair tunnel-stitching passed through the clump sole and heel seat repair, the sole, the new and original rands and upper. (For the method of fastening, cf. Thornton 1968–9, Fig. 14 and p. 1.4: 6, of *c.* 1350–1450.)

L.42 Piece of skived leather, with burnished linear decoration, possibly from a book binding.

L.43 Shoemaker's hand-leather, to protect the palm. One edge is oversewn where an edge binding was attached. The opposite edge is torn where creased in use. The other two edges are cut. Random holes are pierced through the thick leather.

L.44 Complete left randed turned ankle-boot, the upper of one main piece economy construction. Small heel seat. Sole much worn; part of sole margin cut away at the outside forepart. The upper joins at the outside waist with a butted seam. Quadrangular insert butted to top of front end of inside quarter and rear end of vamp to complete the upper. Bellows tongue overstitched on flesh side to each side of a slit at throat. There is an instep tie: two laces secured by broad T-shaped ends to prevent them pulling through the single holes. No heel stiffener. *c.* 1350–1450; probably *c.* 1450.

L.45 Almost complete man's right randed turned side-laced ankle-boot. Fashion toe. Wear at the outside back of the heel seat. Two lengths of rand extant. The upper is of two, or more probably three, pieces: long vamp, high throat cut round, to which was probably attached an instep or tongue portion, with a blind oversewn seam. The outside vamp wing extends to a butted seam with the outside quarter. The rear end of the inside vamp wing and the front end of the quarter each have lace-holes: eight on the vamp (and four would have been on the absent tongue) and 11 on the quarter, reinforced by inside 'facings', stitched by oversewing each of the vertical edges to inside of shoe, with flesh side against foot and incorporated with the lasting margin. The one-piece quarters are cut to a high peak at the centre back, but relatively low at the lacing and outside seam. The lasting margin has eroded away through extensive wear, as has the inside margin of the vamp from the toe to the tread. A fashionable item of footwear of the 1460s.

L.46 Possible jerkin fragment with large holes round a curved cut edge and one short length of oversewing. Flesh side *ill.*

L.47 Near-complete front-laced ?right ankle-boot, sole absent. Upper of three pieces; damaged vamp probably had rounded toe. Deep slit at throat; missing bellows tongue overseamed to flesh side edges. Another oversewn seam of unknown purpose runs parallel to the throat slit. The vamp wings are butt-jointed to the quarters. Quarters with centre back seam. Heel stiffener whipped into back of quarters, the third side lasted in. Top edges of quarters are plain, as is the front edge of the inside quarter, but corresponding edge of the outside quarter has a scalloped edge where an edge binding was attached. Fastening was with two sets of laces across the instep: a pair of laces on the outside, formed by slotting one end through a slit in itself, at the corner of the throat and quarter edge and two laces slotted individually through the outside quarter, at the corner of the front oversewn edge and butted seam, with single holes in corresponding positions on the inside, one holding a single lace. Late 15th/early 16th-century. *Ill* with vamp shown flat and the inside quarter placed to show the inside butted seam joining the vamp and quarter. Outside quarter not shown.

L.48 Pointed right randed turnshoe of *c.* 1450, almost complete but very worn and patched, with a V-shaped piece cut out of the tip. Rand of several pieces, of varying width, with long overlaps at grafts. Upper of one-piece construction, joined with a butted seam at inside waist; vamp probably came fairly high over the instep. One broad-ended detached thong present. Triangular heel stiffener originally secured with an oversewn seam. The top edge of the quarters scalloped, with an applied edge binding. Sole only *ill.*

L.49 Upper of child's right randed ankle-shoe of one- or two-piece construction. Piece of rand; toe of indeterminate shape. The upper joined at inside waist with a fine butted seam. The quarters cut high at the back, the sides cut low. A heel stiffener was sewn into the quarters with coarse overstitching. The top edge was finished with an absent edge binding, finely overstitched to the shoe. Fastening was with a missing buckle, attached by thongs, the strap slotted through the inside upper at the angle between the inside edge of the throat slit and the butted seam, prevented from pulling through by a T-shaped end, passing

over the instep to the buckle with its prong. Not much worn; 14th/15th-century. *Ill* flat.

L.50 Toe and other pieces of a welted 'eared' shoe of *c.* 1520–50. It *appears* that the sole is constructed in two parts, joined by a transverse butted seam, with inserted piping, which passes around the end of the toe, between the sole and welt, but logically this should be the vamp, albeit of unusual construction. What appears to be the vamp, but is more likely to be a sole fragment, has grain/flesh stitch holes. Details of the construction of this shoe part were difficult to determine, owing to the remains of heavy calcareous deposits, the removal of which would have damaged already fragile leather.

L.51 A very fashionable shoe of 1450–70: youth's or small woman's right, possibly randed, turnshoe. Exaggerated toe. Some wear. The foot- and wear-impressions of the forepart suggest that the toes were well down from the constricting toe. The upper, of fine quality leather, is constructed of four pieces; the vamp has four alternately-lacing straps across the instep. The end of the second from the toe, at the inside, is butt-jointed and divided into two to form the laces, which pass through a hole in the second outside strap (cf. Thomas 1980, Fig. 1, 55/75/6). The fourth strap, at the throat, is formed on the inside by an insert, butt-jointed between the rear end of vamp and a wider insert; both these inserts lasted in. A missing rectangular reinforcement was overstitched to the flesh side of the vamp quarter edge and the inserts, to secure this weak area. As with the second strap, the fourth strap is completed by a butt-jointed section, which divides to form two laces to attach to the corresponding outside strap through a hole in its end. Overseams on flesh side outside second, third and fourth and inside third and fourth straps suggest that stiff threads were laid to give extra strength to parts of the straps. One-piece quarters, low-cut and butt-jointed on the inside to the wide insert, and at the outside to the rear end of the vamp and fourth strap, the latter join reinforced by a rectangle overstitched to the flesh side. A small, almost rectangular, heel stiffener was overstitched to inside surface at back of quarters. The outside lasting margin has worn away, consistent with the wear at the sole heel seat.

Not ill: Left shoe, possibly the pair to **L.41** but less worn; most elements of a pointed randed turned ankle-boot of *c.* 1450; toe end of a 14th-century poulaine; pieces of an ankle-boot strap with tinned iron D-shaped buckle secured to throat, 14th/15th-century; inserts from medieval shoes; vamp fragments; 4 heel stiffeners; parts of ankle-shoe; possible horse harness 15–20 mm wide; 6 heel stiffeners, one from an ankle-boot; vamp fragments from a 16th-century shoe; parts of 16th-century welted shoe; fine alum-tawed kid artefact with scalloped edges; shoe similar to **L.47**; strap fragments; clump repair; ?bellows tongue.

TS 316 Layer 20

L.52 Left turnshoe sole. Slight heel seat and sole shape, form of ?*c.* 1480–1500.

L.53 Sole and insole of a worn left round-toed welted shoe. Insole shows row of nail holes where fixed to last. The welt is of at least two parts. Remnants of vamp show a heavily pleated toe end but there is no indication of the style. Fragments of one-piece quarters which joined the vamp with butted seams at waist.

TS 316 Layer 19

Not ill: Fragment of small knife sheath; fragments of 16th-century welted shoes.

TS 316 Layer 17

L.54 Complete leather belt with tinned copper alloy buckle, a strap end retaining loop and a zoomorphic mount at end. Decorative needle pricks along both edges, to simulate stitching. No buckle prong holes, so buckle fastened to another strap or was unfinished. A small cluster of stitch holes, near the buckle end, indicates a small attachment. The retaining loop is not fastened to the leather, but bent around the strap end mount to pass under. Strap end mount secured by two integral pins which pass through to the flesh side and are bent over. Possibly a horse harness strap.

L.55 Child's almost complete but worn welted shoe of *c.* 1500–50. The vamp attached to quarters by butted seams. Two pieces of decorative trim are butt-seamed to the vamp throat edge, each with a tie-hole, stretched through wear. The square quarters are joined by a centre-back seam; the heel stiffener is *in situ*. The tops of the quarters divide to form ties at the instep; one has a hole, the other bears the impression of a stud fastener.

L.56 Woman's/youth's left welted shoe, almost complete, of *c.* 1500–50. The welt is made in at least three sections. The insole has five or more nail holes down the centre line for lasting. The plain vamp comes high over the instep, with a straight throat. The one-piece quarters are joined to the vamp at the waist by butted seams and by a reinforcing tab at the inside seam at least, sewn to the flesh side. The sole and vamp are worn and degraded. There is no evidence for a heel stiffener. This is a very plain utility shoe. Sole and insole *ill.*

L.57 Virtually complete right welted shoe, mid 16th-century. Welt of at least four butted lengths. Fragments of repaired sole. Insole with five or six small holes in a central line where nailed to last (drawn separately). Vamp comes fairly high over instep; a decorative trim with a nicked edge, in two sections, was attached by lapping the vamp throat edge over trim, with the stitching passing edge/flesh from the vamp, to grain/flesh sides of the trim. Inverted 'V' in centre, where two sides of trim meet. Trim tapers towards lasting margin each side, but not lasted in with vamp. Vamp very worn. Scored lines presumably made after shoe was discarded. One-piece quarters, butted to vamp and reinforced by tabs overstitched to flesh side of vamp. Quarters shaped to come higher up the ankle at centre back. A small hole 10 mm down from this centre top edge was probably connected with the lasting and occurs in a number of other examples. No evidence of heel stiffener.

L.58 Bottom parts and fragments of a child's left welted shoe of *c.* 1600–30. Worn sole. Heel almost complete; bottom and top pieces are complete lifts, with three part lifts between. No indications of repair. Only forepart and waist of insole remain. Two holes indicate nailing to last during making. A length of welt is present and the lower portion of the one-piece quarters, which joined the rear ends of the vamp with butted seams. It was probably fastened with a latchet tie.

L.59 Child's right welted shoe of *c.* 1620, complete except the inside latchet. Sole of two thicknesses, with remains of cork under-sole. Groove across seat may indicate position of missing heel. An insert was placed at the inside toe and forepart, incorporated into the sole seam where much worn. Seat lift was placed between the sole and insole seats, probably to repair a sagging heel. These two additions suggest that the shoe was re-built during its life, perhaps to counteract a foot imperfection: the shift of the vamp to the inside supports this view. Impressions of bracing thread on underside. Welt of three or four butted lengths. Quarters have a centre-back seam, butted, with the blind side inside. The stiffener is attached by an oversewn seam. Front ends of quarters are butted to the vamp wings. Latchets extend from the top of the quarters, tying over and through the two holes in the tongue, with a string or ribbon, leaving partly open sides. This shoe is in fair condition. For the fastening arrangement, see *ill* of a woman's shoe of *c.* 1620 in Northampton Museums and Art Gallery. 1975. Pl. 8, from Cotton Lodge, Suffolk.

L.60 Piece of a probable garment with running stitch holes along one edge; subsequently cut up and re-used. Many further fragments which appear to come from the same item were found in Layer 5, but are too poorly preserved to be illustrated.

L.61 Garment fragment, perhaps from same item as **L.60**. Overstitched seam holes on two long sides. Third side formerly sewn to another piece. A ?gusset.

L.62 Knife or dagger sheath, possibly once mounted in a metal rim. Centre-back overstitched seam (stitch holes at 3.5 mm); lined *int* with very thin wood. Minimal decoration: fine engraved lines close to edge on each side. No evidence of attachment to a belt remains.

L.63 Knife/dagger sheath in poor condition, now in two parts. One of two side seams, type uncertain, possibly oversewn. Decoration on one side only. Coarsely woven textile visible each side where surfaces are degraded, probably cloth lining. No signs of means of attachment to belt.

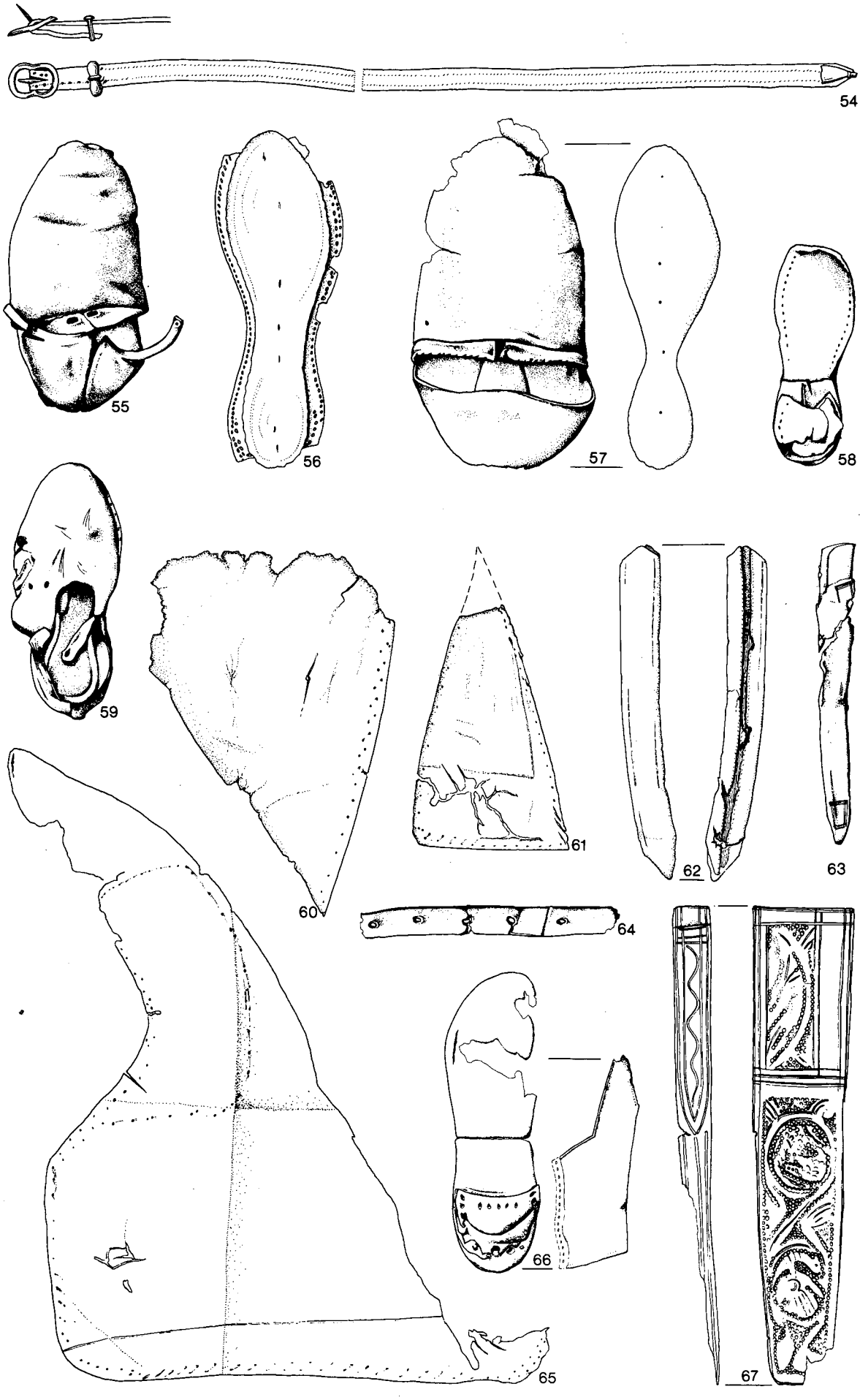

Fig. 187. Leather from Trichay Street 316 (**54–65**) and other contexts (scale 1:4).

Not ill: Quarters of a 14th/15th-century right shoe; clump sole, probably 15th-century; turnshoe sole with sharp point, *c.* 1450; complete shoe of *c.* 1500–50, very similar to **L.33**; two welted shoes, *c.* 1500–50. Insole with narrow waist, *c.* 1610; pieces of goatskin boot of medieval type.

TS 316 Layer 13

L.64 Length of strap or belt, torn at each end. Deep impression of buckle beside right prong hole. Fine incised lines along each edge. Two further lengths of strap, perhaps from the same item, may be from a horse bridle.

L.65 Right back portion of a leather jerkin for a youth or small adult. Torn from right shoulder to bottom left side seam (*int ill*). Side seam edges curved round to meet bottom edge, creating stylish slits at sides. All edges have oversewn seams for a lining or edge binding. A facing was sewn in with an oversewn seam round arm hole. The jerkin was possibly made in one piece. Neatly folded, it probably served as a cobbler's supply of leather for repairs.

Not ill: Shoes of turned welt construction, repaired with wooden pegs, style as **L.33**, *c.* 1500–50; belt fragments; strap or collar; incomplete straps.

TS 316 Layer 5

Not ill: Turnshoe of *c.* 1460–80.

Seventeenth/eighteenth-century

TS 160, unassociated.

L.66 Sole, heel and both quarters of a child's right turnshoe, much worn. Forepart and heel seat constructed in two parts, butt-seamed at waist, 'blind' side downwards. Mainly of turnshoe construction; rib around margin of sole forepart, down to heel lift attachment to underside. Heel seat of welted construction, with the normal grain/flesh seam holes; possible remains of a welt. Heel built of five lifts, attached to heel seat by wooden pegs. Two of originally four iron nails remaining from an absent repair. Only the quarters remain of the upper, with a fine centre back butted seam. Front ends of quarters are cut high and square, to join to the low-cut square rear end of the vamp extensions with butted seams. The quarters are quite flimsy compared to the substantial heel. There are oversewn seams for linings just above the lasting margins; lasting margin of inside quarter has been cut away. The heel is of late 17th/early 18th-century type.

Addendum

After completion of the leather report, two further items which presented particular difficulties in conservation have become available for publication.

L.67 GS 228 Layer 15 (cf. **L.7–15**). Fragments forming the front and parts of the sides of a knife sheath. Panels and outlines of curvilinear design impressed with blunt tool; most of detail punched, with a few fine scratched lines apparently part of original design. One slit for attachment to a belt. Remains of some kind of *int* lining, probably cloth, impregnated with metallic residues, survives in parts of *int*. Pieces of very decayed iron knife were found *in situ* along parts of length. Some of upper panel of decoration too decayed to be drawn. 14th/15th-century. For sheaths of this broad form with a square tip, cf. Clarke and Carter 1977, 364, No. 89, where it is suggested that they held hunting knives.

L.68 TS 316 Layer 5, *c.* 1660. Small ?tennis ball with a core of packed moss and an outer casing formed of four pieces of leather, joined by closed seams. Not drawn. See Pl 4.

Northampton,
November 1981.

XI THE MEDIEVAL AND POST-MEDIEVAL TEXTILES (Fig. 188)

by John W. Hedges

1. INTRODUCTION

Forty-seven samples of medieval and later textiles were submitted for examination; they came from six datable contexts, one early 13th-century (TS 365), two 14th/15th-century (GS 228, TS 169), two early 16th-century (GS 201, GS 228 L.3–4) and the sixth mid 17th-century (TS 316). The finds include not only woven cloth but yarns, cords, knitting, ribbons and a plait. From external appearances all of this important collection of tiny scraps seems to have been preserved under acidic waterlogged conditions, half naturally and half as 'dirt' replacements, and it is not surprising that only animal fibres are represented, as vegetal ones would have rapidly disintegrated.

This collection is only one of several of similar date-range which have been recovered in recent years from town sites. With the exception of some from Southampton (Crowfoot 1975) all are, however, unpublished and it would be premature to make exhaustive statements about medieval textiles in general. Detailed information about each textile, therefore, is given in MF 186–7, and discussion is confined to a few aspects. Such generalisations as do occur are taken from unpublished work by the author (Hedges forthcoming).

2. WOOLLENS

The woollen cloths

The woollen cloths are medieval in character, although all the examples which have been firmly identified come from early 16th-century contexts. They are fulled and napped and, the popularity of this process having ousted the complex, visually attractive weaves of Late Saxon/Viking times, we have typically tabby and fundamental twills, although 2/1's are under-represented. The spinning is also distinct, mixed (ZxS) being almost as common as matched (ZxZ or SxS), a trait tended towards in late Saxon material but not in Roman, early Saxon or Viking material where instances of ZxZ to ZxS are about 4:1 and SxS cloths occur only in four known instances. This indifference to main direction in the medieval period, and that just before, is probably connected with a whole host of technological innovations including the use of cards, mechanical spinning devices, and more sophisticated looms. Counts are also pretty average for everyday cloth, lying between 0.5 and 1.5 per mm for either system but the mode being around one by one.

Two of the woollens, both early 16th-century, are worthy of specific note for the peculiarity of their construction. One (Fig. 188, 2) is a 2/2 twill with inaccurate reverses but, very unusually, the heddles have been reversed after every two sheds. The other unusual specimen (Fig. 188, 3) is a plain weave which has one weft the same as the warp and another very much thicker and made of noticeably coarser fibres.

Fleece types

Samples were taken from the 16th-century pieces of woollens which had not been replaced. These were examined microscopically (MF 186–7), and the type of fleece evidenced was 'Generalised' to 'Hairy Medium' (Ryder 1969). This accords well with other early post-medieval samples (Ryder and Hedges 1975; Ryder and Hedges forthcoming) where the fleece types tend to be coarser than in the Roman and, particularly, Saxon periods (Hedges forthcoming).

The animal fibre yarns and cords

Five lengths of twisted fibre of animal origin were noted. The 16th-century example is just a piece of woollen yarn and deserves no further comment but, of the four attributable to the 17th century, three were plyed and were therefore cords rather than yarns, as plyed yarns in cloth are not common in the historic period.

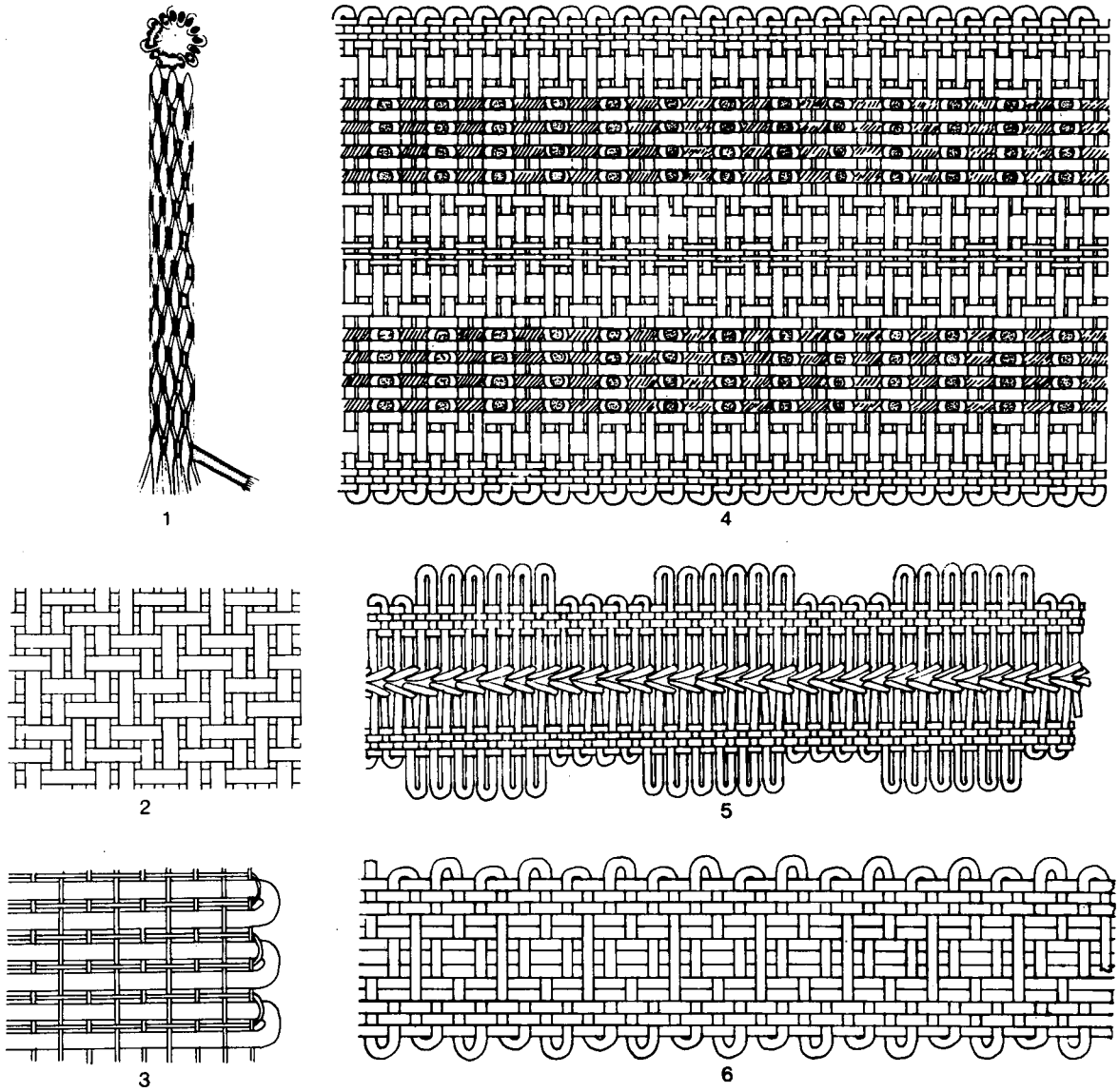

Fig. 188. Textiles **1**, 14th- or 15th-century silk shoelace.
2–3, unusually constructed 16th-century woollens.
4–6, 17th-century silk ribbons.

The knitting

The two early 16th-century fragments of knitting are, surprisingly, the earliest known in the British Isles of this currently common technic; a further example from a deposit in Southampton has a *terminus post quem* of 1594 (M.E. Hedges pers. comm.). With reference to the section above, it should be noted that in both instances plyed yarn was used and it is interesting that the gauge of the knitting was almost identical to that, for example, of a modern day jersey.

3. SILKS

The 17th-century ribbons

Although it is unfortunate that fibres of these beautiful ribbons were not analysed, their fineness and the absence of spin in some systems almost certainly means they are silk. These little luxuries have a superficial similarity to each other and are easily grouped together, but on analysis each has its own peculiar technical characteristics. The simplest (Fig. 188, No. 6) could have been produced on an ordinary band loom using three sheds; it is interesting that an additional warp has been used on the outside and has then been pulled out to give a fringed loop effect. A second example (Fig. 188, No. 5) also has this characteristic, although more

pronounced, but here the two-holed tablets threaded right and left have been used to bind the wefts centrally. Here voids without warps have either been left or the warps have been pulled out to give a pulled thread effect; in the broadest example (Fig. 188, No. 4) on the other hand, yarns of different thicknesses have been used decoratively. This last one is a really superb example of sophisticated early post-medieval weaving, having incorporated in it two strips of velvet. This consists of a pile, which has been cut, and could only be achieved using a complex loom where there was a secondary pile warp as well as the main one. A weft would be passed, the pile warp raised, a thin rod inserted, the pile warp lowered, and another pick thrown. The resultant loop might be kept intact if the rod was drawn out or could form a pile if, as in this case, it were cut out. A loom for such a fabric would require an extra beam to hold the pile warp and an extra harness to control it (Burnham 1959, 17). This is certainly the sort of thing that would be a commodity of luxurious inter-continental trades but that does not necessarily mean it was imported.

The other silks

Close parallels were not found for the silk shoelace of 14th- or 15th-century date either by Miss Crowfoot or Miss Swann of Northampton Museum. It appears to be a round plait consisting of 15 plyed 'strings' and a binder which was woven round and round (Fig. 188, No. 1).

Among the early 16th-century textiles is a small piece of velvet in remarkable condition. This was examined by Elizabeth Crowfoot who not only considered the date reasonable but thought it to be of European rather than Chinese origin on account of a tubular selvedge not having been used. Apart from the count, it was not analysed as suitable equipment was not available.

Apart from the ribbons, the mid 17th-century sample yielded two pieces of silk cloth, which were both fine and plain woven. One could be described as a repp, as the count of one system outnumbered the other by 3:1.

Acknowledgements

I am grateful to E. Crowfoot and J. Swann for their comments about the silks; to M.E. Hedges for her help with the knitting and some diagrams; and to M.L. Ryder for his assistance with fleece analyses. The textiles were conserved by L. Bacon.

North of Scotland Archaeological Services
South Ronaldsay, Orkney,
May 1977.

XII THE METALWORK

1. IRON OBJECTS (Fig. 189)

by Ian H. Goodall

This miscellaneous group of material has a wide date range and is numerically dominated by horseshoes. Among the most important objects are the tools, **M.1–4**. **M.1** is an axe with a lugged eye, **2** a tree-felling or wood-splitting wedge with burred head, **3** a sickle-blade and **4** perhaps a hoe or peel. **M.5–8** are knives, **5** and **8** of post-medieval date with bolsters between blade and tang. **M.5** has an inlaid cutler's mark, **7** a metal collar and the base of the wooden handle. **M.9** is just a scale tang, **10** are shears, **11** scissors with centrally-set finger loops. Items of building ironwork are the staples **M.12–13**, a holdfast **14** and hinge pivots and strap **15–17**. **M.18–22** are keys, **18** and **19** medieval, the others post-medieval. **M.18** has traces of white metal plating on the bit and stem tip; **19** has a rolled-in-one bit, as has **22**. **M.21**, which has an S-sectioned bit, has a bow similar to that on a key from Chingley Forge, Kent (Goodall 1975, 73, Fig. 35, No. 105). The angled stapled hasp **23** is probably from a chest, as could be the lock plate **24**, which has lost its mechanism but has holes for the key and hasp staple. **M.25** is a ring, **26** an arrowhead. **M.27–8** are two vessel handle bases; **29** resembles part of a fire-dog from Bayham Abbey, Sussex (*idem* 1983, 108, Fig. 46, Nos. 35–6). **M.30–48** are horseshoes, **30–5** with countersunk nailholes, the edges wavy or almost plain, **36** a fiddle key nail used with this type of horseshoe, **37–47** of the succeeding type with rectangular nailholes and a plain edge which continued in use into the post-medieval period. **M.48** is in turn one of its successors, having the nailholes in a fullered groove and an inner keyhole shape. **M.49** is part of the flat trapezoidal backplate of a currycomb which retains parts of two combs and a hole for the attachment of a lost handle. A similar but more complete currycomb from Ardingly, Sussex, is almost contemporary, having been found with clay pipes of 1690–1710 (*idem* 1976, 63, Fig. 9b, No. 43).

Dates of contexts

M.1 HS 331, late 10th/early 11th-century; **M.2** PS 281, 1500–50; **M.3** TS 77, 10th/12th-century; **M.4** TS 316, L.23, late 15th/16th-century; **M.5** GS, unstrat.; **M.6** GS 105, *c.* 1550–80; **M.7** QS 314, *c.* 1600; **M.8** PS 384, *c.* 1500–50; **M.9** EB 898, 1450–1500; **M.10** BSE 331, *c.* 1200–50; **M.11** MS 37, 17th/18th-century; **M.12** TS 191, early 13th-century; **M.13** GS 215, mid 13th-century; **M.14** PS 243, 1550–1600; **M.15** GS 277, 12th-century; **M.16** EB 690, late 14th-century; **M.17** PS 341, 12th-century; **M.18** TS 393, early 13th-century; **M.19** LL 103, Dissolution deposit, *c.* 1538–50 with late 17th-century contamination; **M.25** GS 298, 12th/13th-century; **M.26** BSE 10, 12th-century; **M.27** RS 346, 1250–1300; **M.28** MS 43, 1250–1300; **M.29** QS 314, *c.* 1600; **M.30** GS 237, 12th-century; **M.31** EB 810, 1250–80; **M.32** EB 814, 1250–80; **M.33** PP 689, late 13th/early 14th-century; **M.34** EB 1007, 1250–1450; **M.35** EB, unstrat.; **M.36** GS 296, mid or late 13th-century; **M.37** EB 1104, 1200–50; **M.38** EB 505, mid 15th-century; **M.39** EB 532 *c.* 1450–1500; **M.40** EB 557, *c.* 1450–1500; **M.41** EB 1023, *c.* 1500; **M.42** PS 281, 1500–50; **M.43** TS 316, L.23, late 15th/16th-century; **M.44** EB 1003, 1500–1600; **M.45–7** VS 124, 16th-century; **M.48** RS 1094, late 17th/early 18th-century; **M.49** RS 47, 1690–1720.

York,
February 1983

2. OBJECTS OF NON-FERROUS METAL (Figs. 190–4)

by Alison R. Goodall with contributions from G. Egan, Blanche Ellis, J. Pearson and B. Spencer

The non-ferrous metal objects from Exeter form a very large collection. They can be divided roughly into those which were personal and those of a more domestic nature. Personal objects include the jewellery and costume fittings and also the little toy trumpet (**M.191**), while on the domestic side there are needleworking equipment, kitchen vessels and utensils, and a number of keys. The 'hornbook' (**M.141**) is a particularly interesting and unusual item. Several finds come from the site of a Benedictine nunnery and these include the two jewelled finger rings (**M.62** and **63**) and the belt ornaments (**M.110–13**). There is no evidence among these finds for the manufacture of metal objects and so one must assume that all of them derive from domestic occupation in the city. Objects are of copper alloy unless otherwise stated.

M.50 B. Spencer writes,
'Devotional badge and amulet; a disc of copper alloy stamped in relief with the demi-figure of St Barbara, surrounded by a double border of cabled ornament; probably Flemish, *c.* 1500. St Barbara is shown with her usual emblem, the tower in which she was

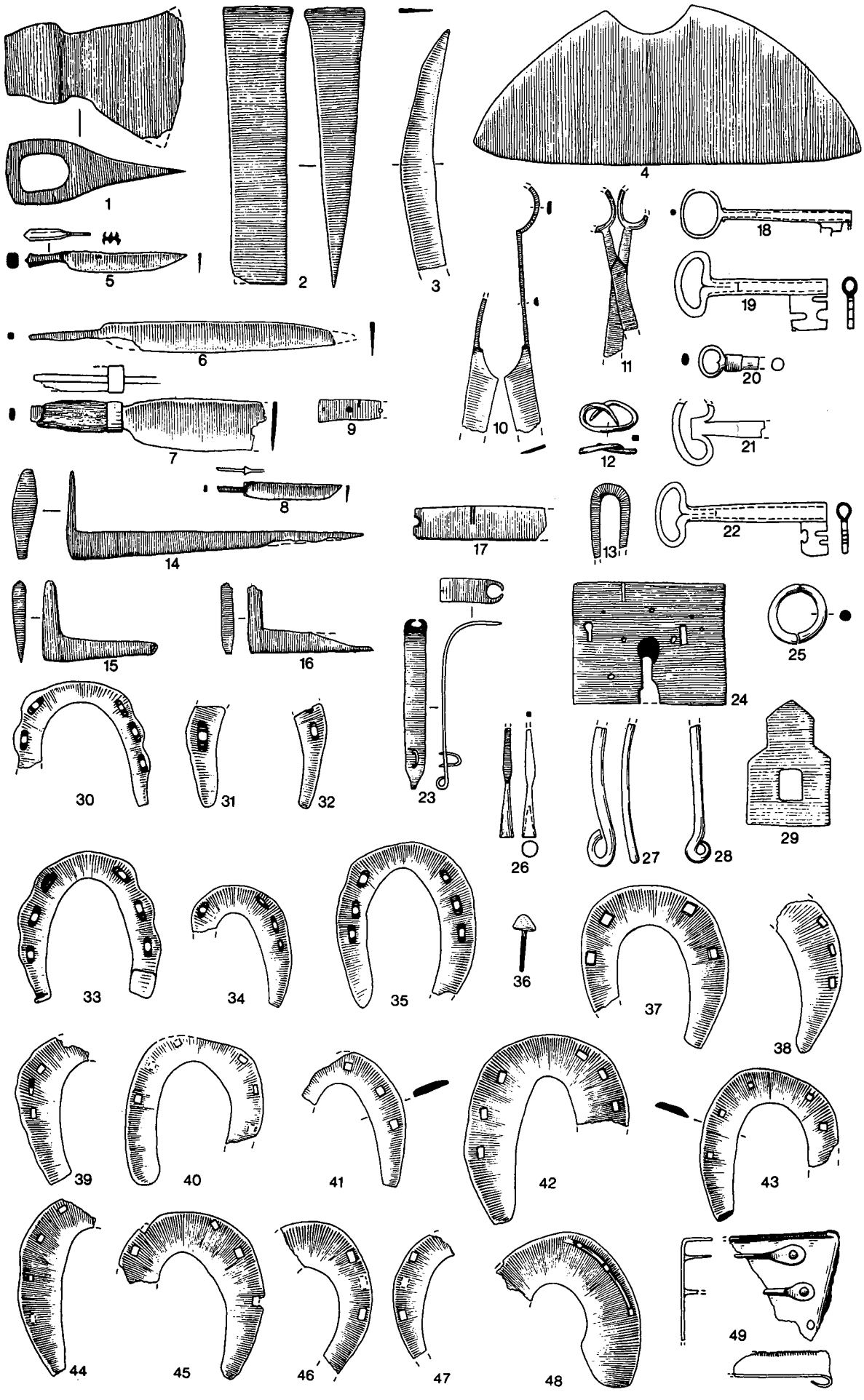

Fig. 189. Ironwork (scale 1:4).

imprisoned shortly before her martyrdom. The tower has three windows to represent the Holy Trinity. There is no historical evidence that St Barbara ever existed, but this did not prevent her cult becoming very popular in the 15th century, when she was invoked in particular by those in danger from lightning or gunfire.

'The badge exemplifies a late medieval (and largely continental) technique for mass-producing pilgrim souvenirs and devotional trinkets out of wafer-thin sheet metal, generally brass or silver. Easily perforated by a needle, such badges were usually stitched directly to the devotee's hat. But in some cases (and this specimen from Preston Street appears to be one of them), the badge was originally fitted at the back with a small stitching-ring, attached by a spot of pitch.'

Museum of London,
November 1981.

M.51–9 Brooches. **M.51** has a moulded frame with six raised settings one of which contains pale green paste or glass: the pin has a moulded collar. Similar brooches have been found at Durrance Moat, Upton Warren, Worcestershire (Oswald and Taylor 1964, 73, Fig. 4, 17), dated *c.* 1200–1300, and at Little Avebury, Wiltshire (Grant King 1969, 118, Fig. 1); the Exeter example is dated to the mid 13th century. **M.52** and **53** are the only other decorated brooches: **52** is decorated with four groups of transverse notches on the frame while **53** has traced lines. **M.57–8** are pins from annular brooches. Brooches such as these were worn at the neck, to close the tunic, or on the shoulder, to fasten a cloak; smaller examples might even be used to secure breeches or hose.

M.60–4 Finger rings. **M.60** is a late Saxon type: it is penannular with long tapering ends which are twisted round each other. **M.61** is a fragmentary penannular finger or ear ring. **M.62** and **63** have narrow hoops and single settings for stones of glass or paste which are now much deteriorated. **M.63** retains extensive gilding. The signet ring **64** is of silver; the device on the circular matrix is a Blackletter 'T' within a pelleted border.

M.65–99 Buckles. (Those not shown in elevation are flat objects.) **M.65** is probably the front part of an openwork decorated buckle frame. **M.66** is a simple double-looped buckle and **67** has incised lines on its pointed D-shaped frame. **M.68** has a pair of internally projecting lugs over which the strap would have passed; it would not have had a pin. **M.69** may originally have had a revolving tab on the side opposite the plate as on a buckle from Hambleton Moat, Lincolnshire (Butler 1963, 65, Fig. 13c). **M.71** has deeply incised scroll ornament and may be compared with a more complex buckle from Lyveden, Northamptonshire (J. Cherry in Steane and Bryant 1975, 110–11, Fig. 42, 36) and dated on stylistic grounds to the 13th century. **M.72** is decorated with incised lines and punched dots; the fragmentary pin is of iron. The mouldings on **M.74** suggest an earlier date than its late 15th-century context. **M.76** and **87** are similar double-looped buckles. **M.78** has an unusually heavy frame and a separate narrower pin bar; it was probably a harness buckle. **M.79** consists of a buckle at one end and a ring at the other separated by a perforated bar; the perforation nearest to the buckle frame would have been for a pin. A similar object was found at Linlithgow, West Lothian (Laing 1966–7, 128, Fig. 8, 1); they may have served as strap distributors, possibly on harnesses. **M.80** has a moulded frame with a perforation to take a separate pin bar. **M.81** is elaborately moulded and **85** has cast scroll ornament on its front face. **M.86** has a separate bar on the side opposite the pin with a revolving cylinder on it; this would have made it easier to tighten the strap and reduced the wear on the leather. **M.88**, although from a 19th-century context, is more likely to date from the 17th century and may be compared with buckles from Basing House, Hampshire (Moorhouse 1971b, 60, Fig. 25, 169–70) and Banbury Castle, Oxfordshire (Rodwell 1976, 134, Fig. 17, 4). **M.89–95** are fragments from shoe buckles of 18th-century type. **M.97** has traced or rouletted decoration on the frame and probably dates from the medieval period.

M.100–1 Buckle plates. **M.100** has traced linear decoration all over its surface. **M.101** has a border of stamped circles.

M.102–6 Strap ends. **M.102** has a cruciform terminal and is made from a single strip of metal split longitudinally for part of its length and then folded to make a slot for the belt end. **M.104** and **105** each consist of two plates soldered onto a forked spacer; **M.105** retains two dome-headed rivets. **M.106** is undecorated but has traces of gilding on its outer surface.

M.107–14 Strap ornaments. **M.107** has a wavy edge; one of its two rivets passes through a washer at the back. **M.108** is probably a belt slide; the two shanks would originally have been joined at the back. **M.110** and **111** are a pair of strap mounts, riveted at each end and with holes in the centre: similar mounts are shown on the effigy, in Westminster Abbey, of Edmund Crouchback who died in 1296. **M.112** and **113** are a pair of small bosses. **M.113** has a beaded border and a tiny rivet close to the edge; **112** has a central rivet. A plain stud (*not ill*) was found in PP 1617 (14th/15th-century). **M.114** is an eight-petalled rosette originally with two rivets; it is larger than the more usual six-petalled rosettes.

M.115–24 Hooked fasteners. **M.15–20** are small hooks with perforated rounded or sub-triangular plates. Most have three perforations and on **115, 117** and **120** these are surrounded by incised or stamped rings. **M.119** may have been intended to have four rivet holes: the fourth is represented by a dot on the back of the plate. On the front of some are traced zig-zag lines. These hooks are common on mid and late Saxon sites such as Thetford, Norfolk (A.R. Goodall in Rogerson and Dallas forthcoming), where there were many unfinished examples, and Whittington, Gloucestershire (O'Neil 1952, 79–80, Fig. 13, Nos. 2–5). The type may have continued into the post-Conquest period. **M.121** is a wire hook which might have been used with an eye like the fragmentary **124**. **M.122** is part of a more complex wire hook, similar perhaps to one from Southwark (Townsend and Hinton in Ferretti and Graham 1978, 165, Fig. 69, No. 59). **M.123** is the eye from a fastener; it has a single rivet- or stitching-hole.

M.125–9 Lace ends. **M.125** is made from a narrow strip of copper alloy folded in the middle to form an eye, and with the ends twisted tightly together. All the other 47 examples in the collection are made from sheet metal rolled or folded so as to enclose the lace, and all but four are of the rolled type (as **126** and **129**). Most of these have a small pin or rivet near the top to secure them onto the lace; **129** has two pins. **M.126**, from the early 16th century, retains a piece of textile of plain tabby weave. The earliest example comes from a layer (PP 1065) of the late 13th century; most of the finds are in 15th-, 16th- and 17th-century contexts. The latest securely dated examples are in deposits of *c.* 1610–50 (GM 403, GSH 20). 'Points' are known to have been used as early as 1378 (Cunnington and Cunnington 1973, 108). Four folded lace-ends including **127** all come from contexts of the first half of the 17th century. Lace ends of this type would probably have enclosed the end of a ribbon rather than a cord or thong and would have been secure without a pin or rivet; they may have come, for example, from the ribbons used to tie the breeches to the doublet in men's costume of the late 16th to early 17th centuries.

M.130–6 Buttons. **M.130** is a button-like object which is probably a residual Roman piece. At the back is a

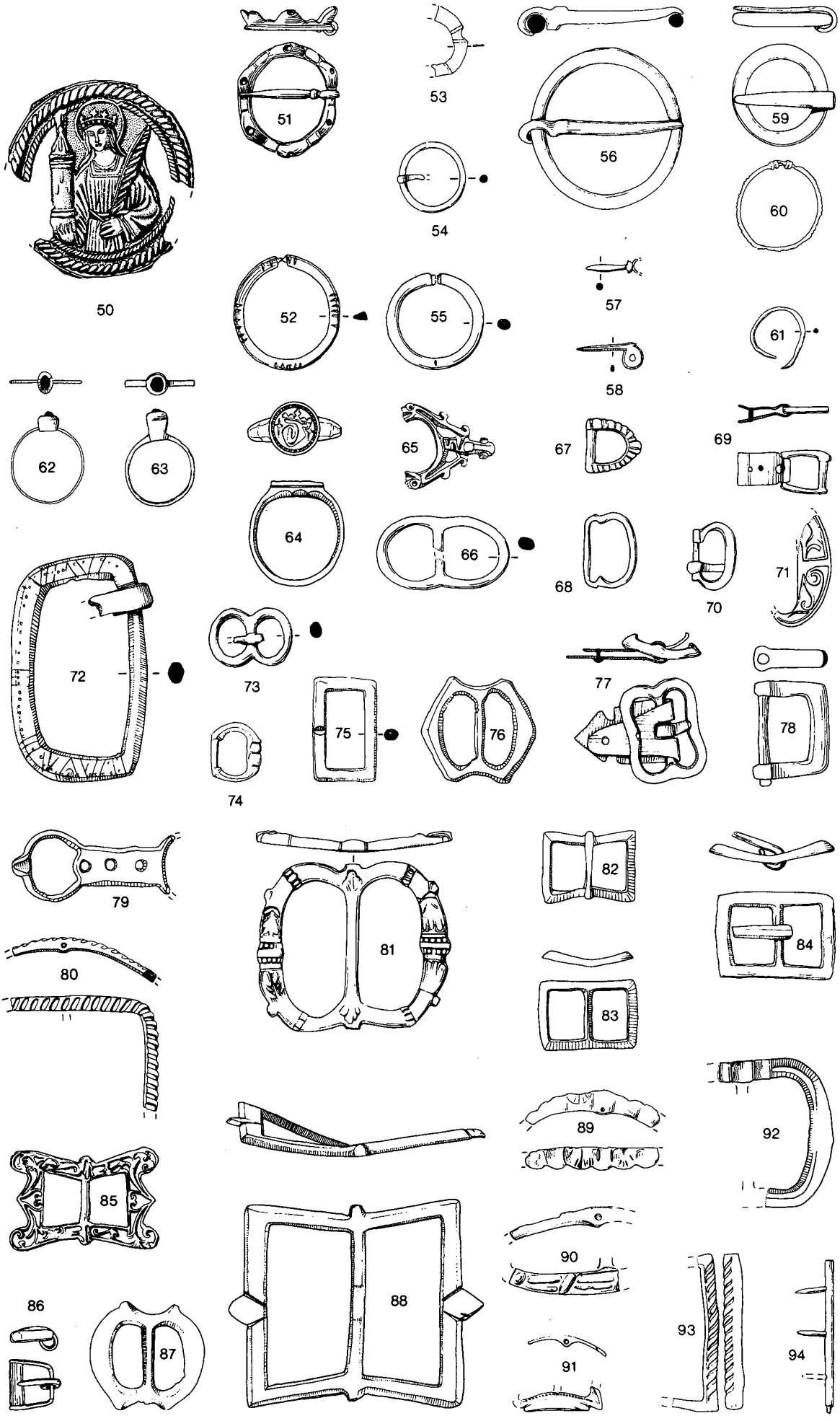

Fig. 190. Metal objects (scale 2:3).

rectangular loop and a V-shaped arrangement of loops. **M.133** and **135** have *repoussé* decoration and **134** has cast floral ornament; **135** is of white metal.

M.137 Swivel loop. Such swivels may have been from harnesses or dogs' leads.

M.138–40 Bells. **M.138** is a damaged drop-shaped bell made from sheet metal; **139** is of cast metal with an iron rumbler inside; **140** is the loop and upper hemisphere of a sheet metal rumbler bell.

M.141 Plate from a copper alloy 'hornbook'. The rectangular plate is engraved with two figures and has the alphabet in upper and lower case letters running across the top. There is a larger lower case 'a' above the man's right shoulder. The man carries a bow and arrows in his left hand and is wearing an ankle-length gown with long, tube-like hanging sleeves. He has a pointed hat with cloth wound round the lower part and wears broad shoes. The woman is carrying an infant and she wears a cloak tied on her right shoulder, leaving her right breast bare. She has a turban head dress and bare feet. The costumes incorporate elements of the eastern or 'Saracen' dress that was popular during the 15th century. The turbans certainly show this influence and the man's broad shoes may perhaps be examples of the Turkish pattens, or overshoes, recorded in the accounts of King René of Anjou (Scott 1980, 71). This oriental style of dress can also be seen in Robert Campin's painting of 'The Marriage of the Virgin' and his 'Seilern Triptych', which date from the early 15th century (*ibid.*, 65, ill. 26 and 27), and in Mantegna's 'Uffizi Triptych' of the later 15th century (Martindale and Garavaglia 1971, Pl. xxxiii). However the man's gown, with its wide lapel and hanging sleeves, is typical of European costume of the second half of the 15th century and this dating fits well with the date of deposition of the plaque of *c.* 1500. Hornbooks showing the alphabet and often also the Lord's Prayer were used to teach children to read. They were normally of paper or parchment set in a handled frame of wood or metal and protected by a sheet of transparent horn. They were most widely used between the late 16th and the early 19th centuries, although examples are known from the 15th century (British Museum 1924, 114, Fig. 68). The Exeter 'hornbook' is thus unusual in that it is made of copper alloy, and also in its early date.

M.142–3 Bookclasps. **M.142** is incomplete: it has incised ornament on the hooked end and concentric rings on the plate. **M.143** is of a similar type although more simply made from sheet metal and more highly decorated. It has concentric rings round the two end rivet holes and round a central dot, traced zig-zag lines and six stamped *fleurs-de-lys*. At 65 mm. in length it is also unusually large.

M.144 Pair of dividers. The arms are bevelled and notched on the inner faces (as shown above).

M.145 Rowel spur. Blanche Ellis writes,

'Copper alloy spur of very slender proportions. The sides become increasingly slender towards the front where terminals commence in the usual form of two round holes pierced evenly one above the other. There is no wear around these holes; instead of the usual *figure-eight* they are within a rectangle with a small projection at each corner. Each terminal is extended forwards by two converging bars with a triangular hole between them. A short vertical bar crosses their junction, supporting the base of a scallop shell decorated with incised lines and pierced with two holes, one above the other. The holes in the shells are considerably worn by the rubbing of the missing spur leather attachments. The short oval-section neck is straight but tapers into a slight droop at the rowel bosses. The rowel box divides two-thirds of the neck and has tiny vertical mouldings next to the rowel bosses. The rowel is missing but its pin remains. The rowel and attachments for the leathers were probably iron and rusted away, as the rowel pin is unbroken and rust remains on a similar spur from Reigate (noted below). Span: originally *c.* 90 mm; overall length 95mm.

'Second half of the 17th century. The elaborate shell terminals are very unusual, but two other spurs are known which are so similar to this example that despite their distant find locations all must have a common source of manufacture. One of these from London was formerly in the Guildhall Museum (*CCLA* 1908, 273, No. 156, not *ill*, later renumbered 7489). It is now in the Museum of London. Another was recently excavated by the Holmesdale Natural History Club Archaeological Group at Reigate Old Vicarage, Surrey. That example was stratified with farthings of Charles I and 17th-century pottery. Both these spurs are copper alloy, the Reigate one having the rusted remains of an iron rowel and rust in the shells of its terminals, while the one from London lacks its rowel. Overall lengths: Exeter 95 mm; London 104 mm; Reigate 101 mm. The terminals of **145** may be compared with those of the more usual form on contemporary spur **146**. Typologically the spurs are unlikely to be earlier than *c.* 1650.'

M.146 Rowel spur. Blanche Ellis writes,

'Small copper alloy spur. The front end of one side is missing. The one remaining terminal is an evenly set *figure-eight*. Part of one attachment for the leather remains but its hook or stud has corroded away. Short oval-section neck encircled by a simple moulding next to its junction with the spur sides. Part of the rowel box remains but the rowel bosses with pin and rowel are missing. Overall length now *c.* 88mm. Typologically this dates to the second half of the 17th/early 18th century, when small spurs of this type were common.'

M.147–9 Bridle bosses. **M.147** is of thin sheet metal. In the middle of the raised centre is a *repoussé* rose surrounded by a circle of small pellets; there is an outer border of pellets between raised lines. Three rivet holes survive. **M.148** is in the form of a 16-pointed star with a raised centre bearing a cast design of a horse and rider. There are raised pellets on the flange and an inner husk chain border. **M.149** is much simpler and has two perforated lugs for attachment.

M.150–3 Spoons. **M.150** is of pewter and has a narrow tapering stem. **M.152** is the handle of a brass spoon with a late 17th-century trefid end. **M.151** is a fig-shaped bowl with a maker's mark of a degenerate *?fleur-de-lys* on the inside; this form of bowl was current from about the mid 14th- to the mid 17th-century and would have had a narrow hexagonal sectioned stem (Snodin 1974, 17). **M.153** is shown in Pl. 4. Regarding this piece Mr. J. Pearson of the Royal Albert Memorial Museum, Exeter, writes,

'This handsome silver trefid spoon is in most respects very typical of its period, which from the pricked inscription on the terminal one suspects is slightly before 1680. The initials R. B. pricked in the same place are probably those of the first owner. The unusual decorative feature, which underlines the fine quality of the piece, is the well-modelled acanthus leaf pattern around the strengthening rat tail on the back of the bowl. A comparable piece with such an acanthus leaf is the spoon by Edward Nott dated 1679 in the Corfield Collection (Kent n.d., 29, No. 83).

'The maker's punch, struck four times on the back of the stem, is a crowned Roman X between two pellets and within a circle of pellets. This readily identifies the spoon as an Exeter-made piece (Kent n.d., 7), although alas one cannot with certainty attribute this fine spoon to any one of the 13 silversmiths working in the city at this period (Hunt 1978, 60–1). This X mark was first used after the 1571 search made by the Wardens of the London Company of Goldsmiths, and continued to be used in various forms until the 1690s.'

M.154–6 Strainers. These could have been used in the kitchen and in the dairy for skimming fat or cream. **M.154**

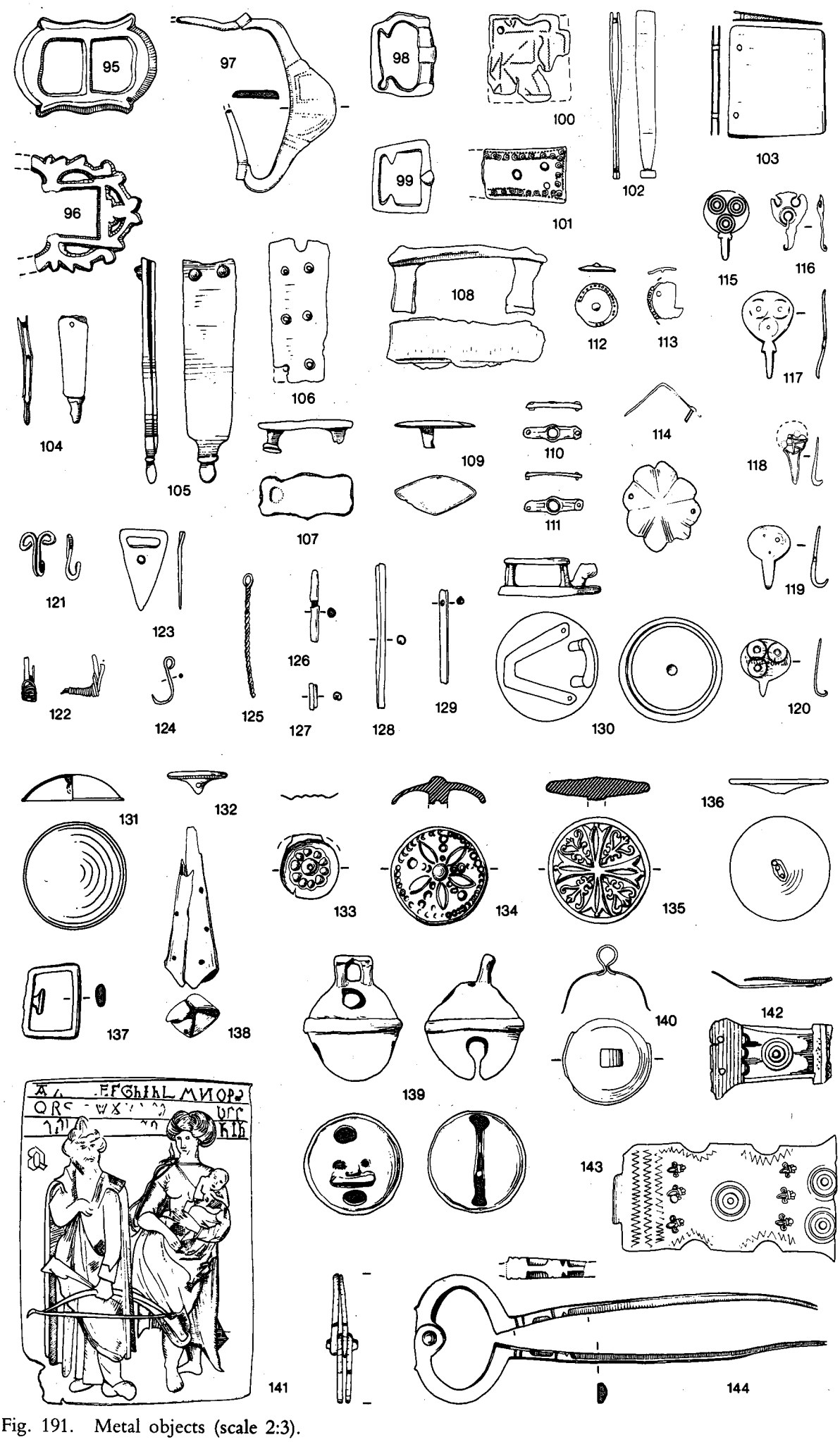

Fig. 191. Metal objects (scale 2:3).

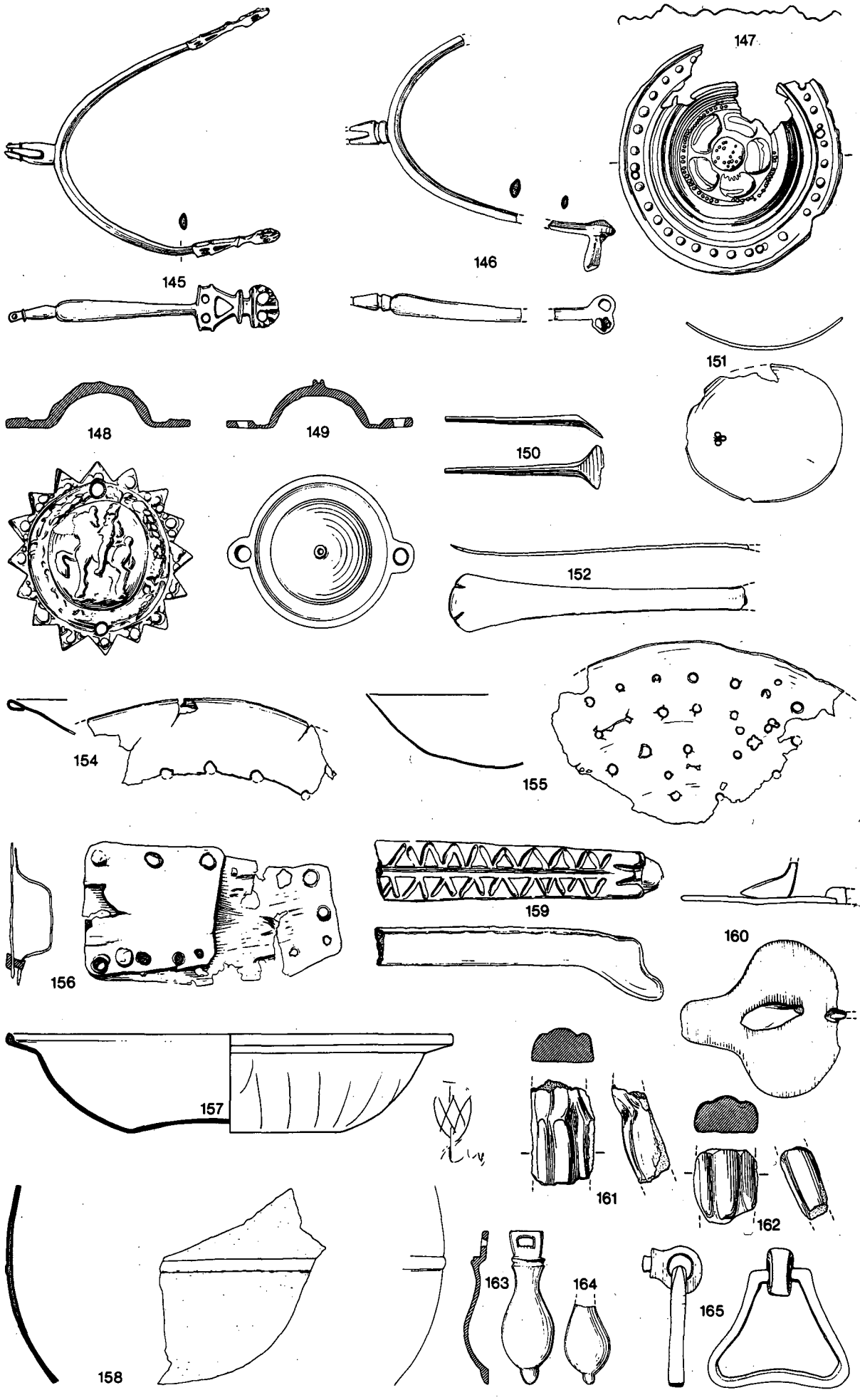

Fig. 192. Metal objects (scale 1:2).

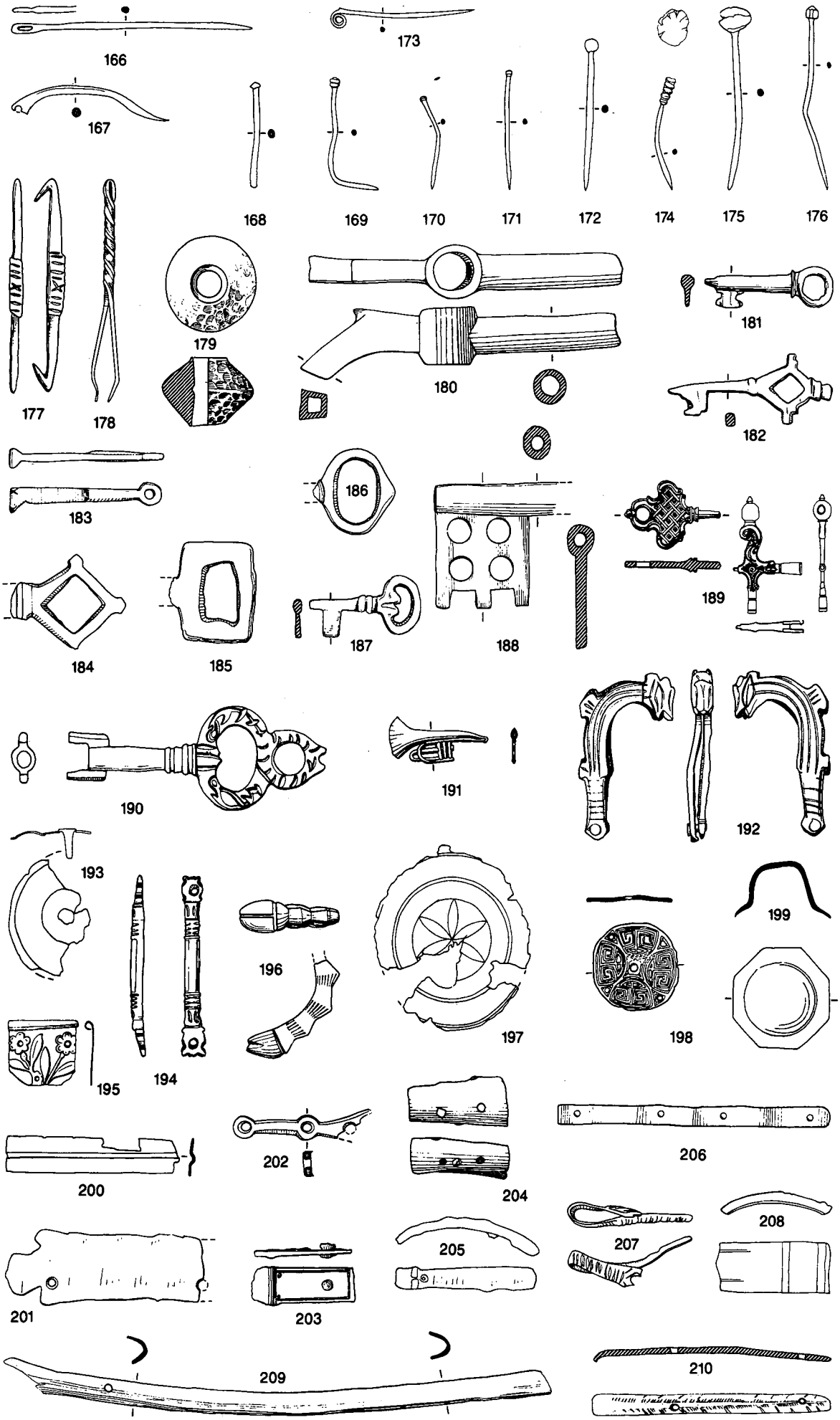

Fig. 193. Metal objects (scale 2:3).

and **155** are parts of shallow perforated bowls and **156** the socket which would have been riveted to the bowl to take a wooden handle.

M.157–65 Vessels. **M.157** is a pewter saucer with a moulding above the rim edge, similar to one from Southampton (Michaelis in Platt and Coleman-Smith 1975, **2**, 250–1). The present example has shallow incised lines on both the base and walls of the *ext.* These include one heart-shaped ?owner's mark (shown at actual size). **M.158** is from the body of a cauldron or skillet. **M.159** is the handle of a skillet like those from Stanford-in-the-Vale, Berkshire (Dunning 1962, 98–100, Fig. 1) and Sandwich (*idem* 1972, 211–12, Fig. 2.) **M.160** is the lid of a pewter flagon; **161–2** are similar feet from cauldrons. The handles **163–5** may have come from vessels such as chafing dishes or from furniture. The collection also included two patches and five small fragments from cast vessels.

M.166–7 Needles. **M.167** has a rectangular head with an elongated eye. **M.168** is incomplete and has only tentatively been identified as a needle; it has a round flattened head. Among six further examples which are not illustrated, two from late 13th/14th-century contexts (EB 270, PP 1562) have their eyes in a groove in the head. Two others, from 15th- and late 16th-century contexts (PS 237 and HS 300) have grooved heads but their tips are triangular in section.

M.168–76 Pins. More than 400 pins were excavated from contexts dating from the 12th to the 18th century. By far the majority are small 'dressmakers" pins with heads made from a small coil of wire, either attached with an adhesive substance as in **168–9** or by stamping which distorts the head to a more or less spherical shape as in **170**. Only three show definite evidence of white metal plating although it is likely that many more were originally tinned. **M.171** and **172** are amongst nine with globular heads and one from a 15th-century context (PS 297) has a bun-shaped head. **M.173–6** have ornamental heads; one dated to the 12th century (from TS 227) has a head consisting of a small sphere of greenish glass. Another pin with a bead head, probably of red jasper, was found in London in a layer dated to about the 14th century (Tatton-Brown 1975, 196, Fig. 40, 137).

M.177 Shearboard hook with ornamental moulding in the centre. Shearboard hooks (harbicks or havettes) were used to attach cloth to a bench for shearing or levelling the nap or pile. They were more commonly of iron.

M.178 Tweezers made from a strip folded in half and twisted to make the handle. Very similar tweezers have been found in medieval levels at Lyveden, Northants. (Steane and Bryant 1975, 114, Fig. 43, No. 50), and Shifnal, Salop (Barker 1964, 204, Fig. 44, M1).

M.179 Lead spindle-whorl, biconical and without decoration.

M.180 Tap with rectangular-sectioned outlet; the key is missing.

M.181–8 Keys. **M.181** has a ring bow and a tapering solid stem, moulded at the head; **182** and **184** have moulded lozenge-shaped bows. **M.183** and **185** are padlock keys. **M.186** has a scrolled bow and moulded stem; the bit is uncut.

M.189 Watch key. One of similar form hangs on a gold and jewelled chatelaine made for Queen Anne about 1705 (Evans 1970, 159, Pl. 156).

M.190 Probably a clock key. The bow consists of two unequal loops with cast decoration. The stem is hollow and moulded near the head; the bit has two prongs.

M.191 Small model trumpet of pewter.

M.192–9 Miscellaneous decorative objects and fittings. **M.192** is a riveted object with traced decoration on its surfaces. **M.193** is a circular *repoussé* boss with a central dome-headed rivet. The bar **194** has ornamental terminals with rivet holes and was probably part of the binding of a casket. **M.195** is a fragment with a rolled edge and a *repoussé* design of two flowers with elongated leaves. **M.196** is the terminal from a penannular object such as a bracelet. The thin disc **M.197** has incised concentric rings and a central compass-drawn six-petalled flower. **M.198** also has incised decoration and some gilding; it has a central perforation and four peripheral rivet holes. **M.199** has a high central boss and an eight-sided flange.

M.200–10 Strips and bindings. **M.200** is of sheet metal with a longitudinal groove; it has no rivet holes. **M.202** and **207** are pieces of ornamental D-sectioned binding strip such as might have decorated a casket; they would originally have been gilded. **M.207** has transverse grooves; **203** is also gilded and has a traced or punched border. **M.205** may be decorated; **206** is a length of plain binding strip with four rivet holes evenly spaced along its length. **M.209** is U-shaped in section and has one rivet hole. **M.204** is probably a binding: it consists of a piece of rolled sheet containing rivets and some empty holes. **M.210** has incised ornament along its edges.

M.211–17 Thimbles. **M.211** is thick in section and has a domed profile showing little distinction between sides and top; the pits are relatively large and arranged spirally from top to bottom. This is a medieval type; a similar thimble came from a 13th-century context in Oxford (Henig in Lambrick and Woods 1976, 214, Fig. 11, No. 2). **M.213** is thinner but has a similar profile and the pits are arranged spirally above an incised line round the base of the thimble. **M.212** and **215** show more distinction between the top and sides and have an area at the top which is bare of pits. **M.214** and **216** are annular tailors' thimbles. **M.217** is a post-medieval example with a maker's mark near the base.

M.218–19 Probably purse frames. **M.218** is a small hinged frame consisting of two parts, one flat and the other L-shaped in section. Each part has a series of perforations and the L-sectioned piece also has a larger hole which has been partially covered by riveting a strip of metal over it. A large headed rivet passed through the object as in the drawing (Fig. 194). The hinge may have come from a very small purse or from a box. The 11th- or 12th-century date seems rather early. **M.219** has an elaborate Cupid's bow-shaped bar with a central suspension loop. Riveted straps hang from the ends of the bar and would originally have been attached to a fabric or leather purse.

M.220–4 Lead weights.

M.225–7 Rings. There are twelve such items. Some may be from annular brooches, or may be curtain or harness rings. **M.227** and one from a pit, probably of the 13th century (NS 6) are very small (respectively 13 and 9 mm diam).

M.228 Gilded ornamental finial or pin-head.

M.229–30 Cloth seals. G. Egan writes,

'The two incomplete four-disc leaden seals are of a type attached to individual textiles from at least the early 17th to the 19th centuries, to show the origin and quality of the fabrics.[1] Both examples have been folded and somewhat flattened after use. No definite evidence that this type of seal was used for goods other than textiles has come to light.

'**M.229** comprises three discs of the original four: (1) missing; (2) device illegible; (3) partially discernible (?)lion sejant, apparently holding out a container, the letter L above this object; (4) no discernible stamp (this disc has the hole corresponding to the missing rivet for the attachment to the textile).

'No exact parallels are known for the device, though some of the late 16th-century seals for Leiden bombazines (mixed linen and cotton fabrics) depicted a lion, or the letter L.[2] Seals specifically of the four-disc form are known for textiles from the Netherlands and from towns in England from the

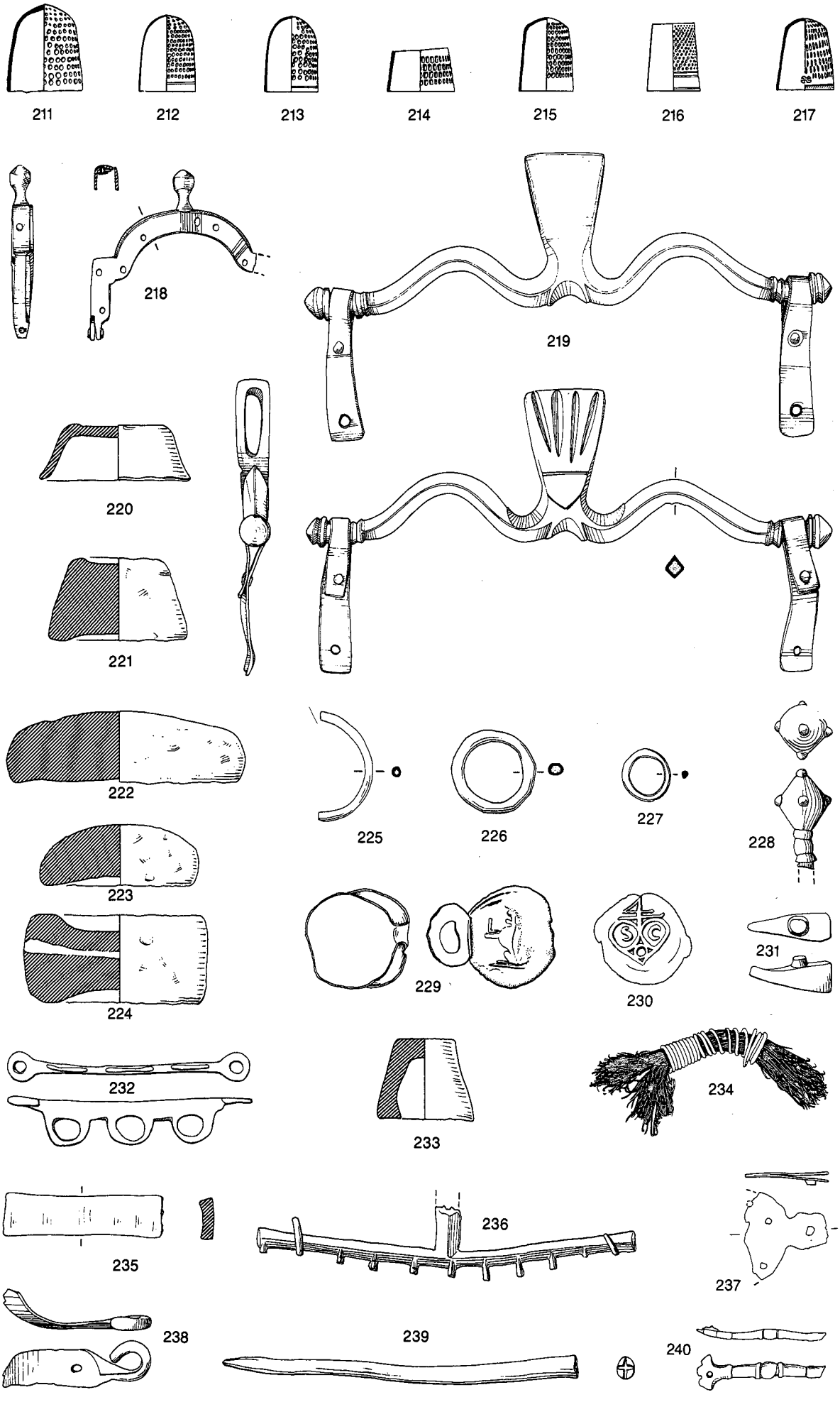

Fig. 194. Metal objects (scale 2:3).

early 17th century.[3] The present example may be of English origin, or it may be from an imported Dutch textile.

'**M.230** consists of a complete disc with an unidentified privy mark ('merchant's mark') having the initials SC in a conventional heart-shaped frame; there is a fragment of the disc with the rivet hole. Privy marks of a similar form to this, but with different initials, are known from the mid 16th century;[4] the same style may have continued over a considerable period.

'This is presumably the seal of an individual, probably of a clothier or a fulling mill owner. Privy marks in this position on four-disc seals do not seem to have been common in England until legislation in the early 18th century changed the system of quality control in the textile industry with the demise of the alnagers (Endrei and Egan 1982, 58).

NOTES

1. For a general discussion of the subject see Endrei and Egan 1982; for the method of attaching seals with rivets to textiles, see *ibid.*, 60, Fig. 8.
2. See Boot 1970, 44 and 50.
3. E.g. Baart *et al.* 1977, 120, No. 78; Egan 1980, 186, Pl.1. Like the two present seals, these have discs of slightly larger diameter than the most usual four-part type.
4. E.g. Girling 1964, 15, (left side,) fourth in top row; Ewing 1852, 212 and Pl.8, No. 25.'

Museum of London,
April 1983

Not ill: Seventeen twist loops, the earliest late 13th-century, the latest *c.* 1670–1700.

M.231–40 Miscellaneous items. **M.231** is a small anvil-shaped object on a short shank. **M.232** is an object or decorative mount with attachment holes at each end and three larger perforations through the main part of the object. **M.233** is a truncated cone with *int* traces of the wood to which it was attached. **M.234** is a brush made from a bundle of fine wires bound with thicker wire. **M.235** is an ingot cast in a rectangular-sectioned open mould. **M.236** is a lead sprue-cup and runners for casting small objects. **M.237** is a riveted fragment; **238** a loop attachment with one rivet hole, from a harness, spur, *etc.* **M.239** is of lead with a cross incised on its slightly expanded head; **M.240** is a strip with a rivet hole. In addition there are many short lengths of wire, scraps of sheet metal, *etc.*

Dates of contexts

Brooches **M.51** TS 146, mid 13th-century; **M.52** NS 9, *c.* 1250–1300; **M.53** PP 1642, late 13th/early 14th-century; **M.54** PP 1636, 14th-century; **M.55** QS 48, late 14th/early 15th-century; **M.56** EB 505, *c.* 1450–1500; an almost identical brooch pin is present in GS 85, late 13th-century; **M.57** GS L.9, *c.* 1550–70 with residual finds; **M.58** PP 1652, 14th-century; **M.59** GS 228 L.2, *c.* 1500–50.

Finger rings **M.60** HS 248, late 10th- or early 11th-century; **M.61** TS 227, 12th-century; **M.62** PP 1642, late 13th/early 14th-century; **M.63** PP 1608, late 13th/14th-century; **M.64** EB 1036, *c.* 1500.

Buckles **M.65** BSE 67, *c.* 1200–50; **M.66** BSE 54, *c.* 1200–50; **M.67** PS 183, mid 13th-century; **M.68** RS 300, *c.* 1250–1300; **M.69** EB 704, late 13th-mid 14th-century; **M.70** PP 1656, late 13th/early 14th-century; **M.71** PP 1651, late 13th/early 14th-century; **M.72** RS 330, probably early 14th-century; **M.73** PS 270, 14th/early 15th-century; **M.74** PP 1612, *c.* 1450–1500; **M.75** PP 1059, *c.* 1470–1539; **M.76** GS 228 L.3, *c.* 1500–50; **M.77** PS 153, 16th-century with residual medieval sherds; **M.78** CC 5, with mixed, predominantly 17th- and 18th-century, finds; **M.79** GS 254, 16th-century; **M.80** GM 443, *c.* 1620–40; **M.81** TS 316 L.17, *c.* 1660 with some late 16th- and early 17th-century finds; **M.82** HL 8, *c.* 1660; **M.83** GS 96, *c.* 1660–80; **M.84** VS 520, *c.* 1650–1700; **M.85** GS 98/9, *c.* 1670–1700; **M.86** BSW 133, *c.* 1690–1720; **M.87** GS 109, *c.* 1690–1720; **M.88** EB 175, 19th-century context containing a series of residual early 17th-century finds; **M.89** TS 322, *c.* 1720–50; **M.90** CC L.2, 18th-century; **M.91** GS F.1, 17th/18th-century; **M.92** NG 4, 18th-century; **M.93** EB 593, probably 18th-century; **M.94** GS 85, intrusive in a late 13th-century pit; **M.95–6** VS 45, *c.* 1720–50; **M.97** TS, unstrat.; **M.98** EB, unstrat.; **M.99** MY, unstrat.

Buckle plates **M.100** GS L.25, late 13th/early 14th-century; **M.101** PS 473, *c.* 1700 with residual medieval sherds.

Strap ends **M.102** PP 1565, *c.* 1300; **M.103** BSW 143, 14th-century; **M.104** PS 1317 (?late) 14th-century; **M.105** EB 632, late 14th-century; **M.106** GS 264, *c.* 1500–50.

Strap ornaments **M.107** GS 284, 12th-century; **M.108** QS 129, probably *c.* 1200–50; **M.109** TS 191, *c.* 1200–50; **M.110–11** PP 1618, late 13th/early 14th-century; **M.112–13** PP 1652, late 13th/early 14th-century; **M.114** GS 96, *c.* 1660–80.

Hooked fasteners **M.115** GS 56, 12th-century; **M.116** EB 406, shortly after 1200; **M.117** GS 272, *c.* 1250–1300 with much residual; **M.118–20** GS site 1, unstrat.; **M.121** RS 158, ?14th-century; **M.122** PP 1564, late 15th-century; **M.123** LL 72, *c.* 1240–1300; **M.124** GS 77, *c.* 1680–1720.

Lace ends **M.125** PP 1737, late 13th/14th-century; **M.126** GS 228, *c.* 1500–50; **M.127** QS 314, *c.* 1600; **M.128** GSH 20, *c.* 1610–40; **M.129** GS site 1, unstrat.

Buttons **M.130** TS 66, 10th/11th-century; **M.131** EB 505, *c.* 1450–1500; **M.132** GS 228, *c.* 1500–50; **M.133** RS 238, *c.* 1550–1650; **M.134** GS 98–9, *c.* 1670–1700; **M.135** CC L.2, *c.* 1690–1720; **M.136** TS 322, *c.* 1720–50.

Swivel loop **M.137** VS 520, *c.* 1650–1700.

Bells **M.138** TS 215, late 13th/early 14th-century; **M.139** PP, cloister garth, unstrat.; **M.140** GS 228, *c.* 1500–50.

Horn-book **M.141** NS 2, *c.* 1500.

Book clasps **M.142** GS 95, 19th-century with residual finds of *c.* 1660–1700; **M.143** CC grave 100, undated.

Dividers **M.144** CC 16, 17th-century.

Spurs **M.145** GS site 1, unstrat.; **M.146** RS 783, *c.* 1650–1700.

Bridle bosses **M.147** GS 228, *c.* 1500–50; **M.148** EB 173, *c.* 1620–50; **M.149** GM 526, 19th-century.

Spoons **M.150** GS 228, early 16th-century; **M.151** EB 166, 17th-century; **M.152** TS 322, *c.* 1720–50; **M.153** GS 214, *c.* 1740–60.

Strainers **M.154** GS L.17, *c.* 1550–80; **M.155** EB 505, late 15th-century; **M.156** PS 288, late 15th-century.

Vessels **M.157** GS 228, L.17, 14th-century; **M.158** PP 635, late 13th-century; **M.159** EB, unassociated, pre-18th-century; **M.160** QS, unstrat.; **M.161** EB 1015, *c.* 1450–1500; **M.162** GS 80, *c.* 1680–1710; **M.163–4** GM 467, probably 18th-century; **M.165** GS L.32, late 13th/15th-century.

Needles **M.166** GS 201, *c.* 1500–50; **M.167** GS 27, *c.* 1250–1350.

Pins **M.168** EB 259, 14th-century; **M.169** MS 6, *c.* 1650–1700; **M.170** QS 19, *c.* 1450–1500; **M.171** PS 228, late 14th/15th-century; **M.172** RS 192, *c.* 1660–1700; **M.173** NS 12, *c.* 1250–1300; **M.174** GS 135B, *c.* 1250–1300; **M.175** PS 240, *c.* 1550–1600; **M.176** CC 28, *c.* 1600.

Shear-board hook **M.177** BSW 136, undated.

Tweezers **M.178** GS 90, undated.

Spindle whorl **M.179** QS 49, 12th-century.

Tap Keys **M.180** EB 893, *c.* 1500.

M.181 EB 339, *c.* 1200–50; **M.182** PP 658, *c.* 1250–1300; **M.183** GS 36, *c.* 1550–80; **M.184** TS 215, *c.* 1270–1330; **M.185** PS 179, probably late medieval; **M.186** CC 3, undated; **M.189** GS 95 but most finds residual, of *c.* 1660–1700; **M.190** NS 1501, *c.* 1680–90.

Trumpet **M.191** FW 43, 18th-century.

Decorative fittings **M.192** GS L.26, late 13th/15th-century; **M.193** MY 559, *c.* 1250–1350; **M.194** NS 26, late 13th/early 14th-century; **M.195** PP 1591, *c.* 1500; **M.196** EB 893, *c.* 1500; **M.197** PP cemetery, unstrat. (?pre-1539); **M.198** RS 211, 16th-century; **M.199** BSE 518, undated.

Strips and bindings **M.200** CC 268, early or mid 12th-century; **M.201** QS 49, 12th-century; **M.202** EB 438, *c.* 1200–50; **M.203** PP 1335, *c.* 1250–1300; **M.204** GS 12, *c.* 1250–1300; **M.205** GS 38, *c.* 1556–80; **M.206** GS 34, *c.* 1556–80; **M.207** QS, unstrat.; **M.208** QS 63, undated; **M.209** RS 703, *c.* 1690–1720; **M.210** MY 1127, undated.

Thimbles **M.211** HL 33, *c.* 1250–1350; **M.212** PS 232, 15th-century; **M.213** EB 505, *c.* 1450–1500; **M.214** GS L.24, *c.* 1550–80, contaminated; **M.215** HS 106, late 16th/17th-century; **M.216** RS 60, *c.* 1700; **M.217** 19th-20th-century.

?Purse frames **M.218** GS 229, 11th/early 12th-century (there is no intrusive pottery); **M.219** GS 264, *c.* 1500–50.

Weights **M.220** QS 35, *c.* 1500–50; **M.221** GM 520, late 18th/early 19th-century; **M.222–4** EB 201, 16th-century.

Rings **M.225** PP 1562, late 13th/early 15th-century; **M.226** QS 16, *c.* 1500–50; **M.227** GS 96, *c.* 1660–80.

Miscellaneous **M.228** GS 9, mid 16th-century; **M.229–30** MS 6, late 17th-century; **M.231** PS 334, *c.* 1350–1450; **M.232** EB 438, *c.* 1200–50; **M.233** EB 859, mid 13th-century; **M.234** GS 8, mid 16th-century; **M.235** RS 358, mid or late 13th-century; **M.236** GS 228 L.6, *c.* 1500–50; **M.237** GS 65, 12th-century with Roman residual; **M.238** PS 84, 13th-century; **M.239** BSE 508, 1250–1350; **M.240** GS site 3, unstrat.

York,
March 1983.