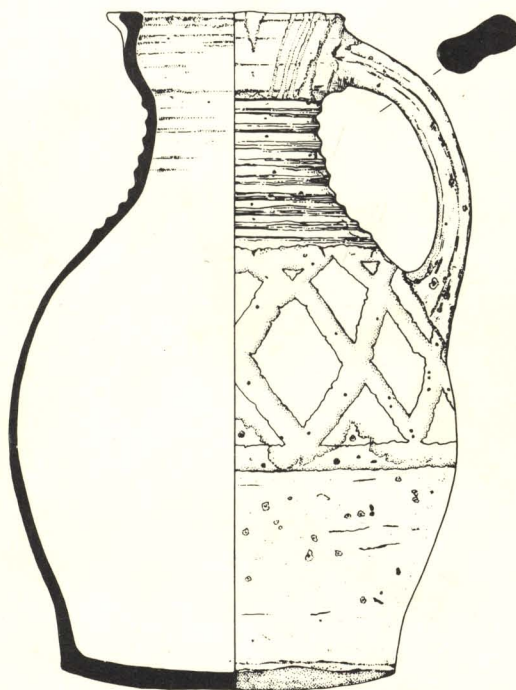


MEDIEVAL POTTERY



LONDON-TYPE WARE

J.E. PEARCE, A.G. VINCE and M.A. JENNER

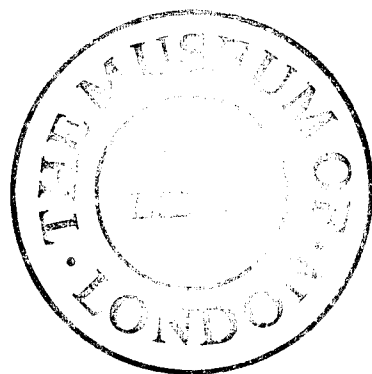
Front cover: Early rounded jug with white slip decoration. MOL Acc.No. 11216 (1/4)

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A DATED TYPE-SERIES OF LONDON MEDIEVAL POTTERY PART 2

LONDON-TYPE WARE

by
J.E. PEARCE, A.G. VINCE and M.A. JENNER
with K.H. Armitage and R.A. Rattray
Department of Urban Archaeology, Museum of London



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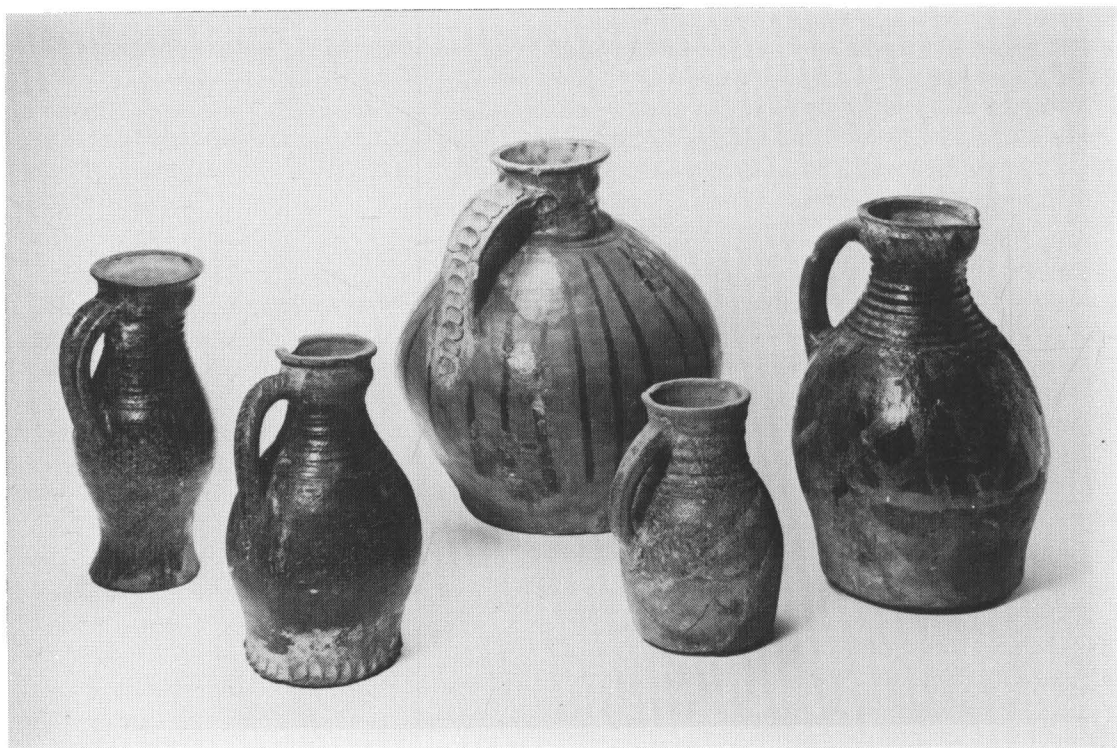


Plate 1. Late 12th-century assemblage. From left to right: Early baluster jug (Height 300mm), early rounded jug, large squat jug, early rounded jugs with white slip decoration.

A DATED TYPE-SERIES OF LONDON MEDIEVAL POTTERY PART 2, LONDON-TYPE WARE

SUMMARY

London-type ware was the major glazed pottery in London from the mid 12th to the mid 13th century, but continued to be manufactured into the 14th century. A detailed chronological framework, based on recent excavations, is presented in this paper, together with discussion of terminology, sources, fabric, techniques of manufacture, distribution, function and the origins and affinities of the ware. The various ceramic forms are described in an exhaustive type-series. Appendices dealing with thin-section and glaze analysis, drinking jug capacity and the relative frequency of London-type forms in dated assemblages are also included.

INTRODUCTION

This paper is the second of a series intended to provide a corpus, based on origin, fabric and form, of medieval pottery found in London, and dating from the mid 12th to the mid 15th century. The first type to be published was Mill Green ware, which was of minor importance in London from the late 13th to 14th century (Pearce *et al.*, 1982). The third part is concerned with a late medieval Hertfordshire glazed ware (Jenner and Vince, 1983). Further papers are planned to include Kingston-type ware (Jenner *et al.*, forthcoming) and other Surrey whitewares, S. Hertfordshire greywares and various imported wares. The subject of the present paper is London-type ware, the major glazed pottery type in London from the mid 12th to the mid 13th century.

When the series is complete, it is hoped that it will provide a basis for the description in archive form of groups of medieval pottery from the City, and will obviate the need for much illustration and lengthy verbal description. This will make it possible to process material from excavations far more quickly than hitherto, and so facilitate, for example, the detection and analysis of contemporary variations in the source and use of ceramic vessels.

The basis of the corpus is a combination of the evidence provided by two major sources. The first source is material from excavations carried out since 1973 by the Museum of London, Department of Urban Archaeology (DUA), and dated by its stratigraphical associations and by dendrochronology. The second source is the Museum of London reserve collection, which consists of a considerable number of complete or near-complete vessels and has yielded invaluable information on form, typology and manufacturing techniques. The reserve collections of other museums in the London area, particularly the British Museum, have also provided much important information. These major collections were largely built up during the late 19th and early 20th centuries, at a time when commercial excavation in the City was still carried out by manual labour. Complete medieval vessels are, however, rarely found in current archaeological excavations in the City.

Without the complete vessels supplied by the museum collections, recently excavated material would be difficult to interpret. Even at the most basic level, the association of particular rim forms with their respective base or decoration types, let alone the reconstruction of

profiles, would be both time-consuming and subject to error. Nevertheless, any attempt to publish a catalogue based purely on the unstratified museum collections would encounter further problems. The collections provide no clue as to the date of the wares and, in view of the activities of dealers in antiquities, there may be uncertainty as to whether vessels

were actually found in London, or further afield. Without the benefit of stratified collections, detailed analysis of the relative frequency of pottery types would not be possible, although research has shown that the collection of jugs in the Museum of London is similar in composition to material derived from excavation.

TERMINOLOGY

Certain types of vessels with a 'London' origin have long been recognised as distinct groups. Dunning discussed the origin of the form and decoration of the London-type Rouen style jugs (Dunning, 1964, 136), and the distinctive shape of the baluster jugs was noted by Jope (Jope, 1963). However, it was not until 1972 that the term 'London-type ware' was first used to cover all the types of pottery which form the subject of this paper (Hurst, emending Rackham, 1972). This terminology is adopted here, since it conveniently brings together pottery types whose similarities in fabric and methods of manufacture suggest either a single source, or group of sources sharing a potting tradition. The Common Names formerly comprising London-type ware in the DUA Fabric Type-series, *i.e.* 'fine splash-glazed ware', 'coarse splash-glazed ware' and 'London-type slipped

jugs' (Orton, 1978b; Orton, 1982b, 93-4; Orton and Miller, 1979), have now been abandoned in favour of the broader, source-linked terminology. Subsidiary terms, 'Coarse London-type ware' and 'Late London-type ware' are used respectively for vessels made in a coarse 12th-century fabric, and a finer, but petrologically similar, 15th-century fabric. Subgroups are based on form (for example, 'pipkins' and 'early rounded jugs'), and style of decoration (such as 'early style' and 'Rouen style'). Abbreviations of these terms are used in the DUA pottery archive together with the fabric codes and numbers (see Appendices 1 and 5). This terminology will be used in catalogues and tables in future DUA publications, in conjunction with terms used in the first paper of this series, on Mill Green ware (Pearce *et al.*, 1982).

FABRIC

Identification of ceramic types and sources in the DUA has been made primarily on the basis of fabric analysis combined with a study of manufacturing techniques and reference to the existing Fabric Type-series (Orton, 1978b). A group of fabrics with a suspected source in the London area has been isolated and given the Common Name 'London-type ware' and the code 'LOND' in the Museum of London computer records. Examples of these fabrics have been

analysed in thin-section (see Appendix 1).

At least six distinct fabric groupings have been recognised. All share the same basic characteristics, which are also found in samples of the local sands and brickearths from sites in the City. A series of experiments, conducted by Natalie Tobert, in which test-firing brickettes were made from such samples, indicates that minor variations in texture and petrology occur from area to area in

the City and even within the same site. Consequently, although a similar source either in the City or, more probably, in its immediate environs can be demonstrated, it is unlikely that petrological analysis can provide any closer identification of potential kiln sites. Nevertheless, the fabrics identified as London-type ware can readily be distinguished by texture and colour from other sand-tempered wares in south-east England (Streeten, 1982), and from such other contemporary glazed wares found in the region as Mill Green and Kingston-type wares. However, a few Kingston-type vessels, although they have a characteristically white-firing, sand-tempered body, have additional features, such as handles, made from a red-firing sandy clay similar to that used for London-type ware (Jenner *et al.*, forthcoming).

A very small number of London-type fabrics appear light-firing, probably as a result of their calcareous content which causes the clay to 'bleach' (LCALC). Whenever such light-coloured sherds can be assigned to a particular form of vessel, a mid to late 12th-century date is indicated. A separate variant, also with an uncharacteristically light-coloured body (Munsell 10YR 7/1-7/2), and again apparently of 12th-century date, is identical in petrology to the main fineware types, with an ill-sorted quartz sand matrix.

The most common late 12th-century variant is Coarse London-type ware (LCOAR), which was produced by adding a temper of coarse sand (composed of quartz, sandstone, iron ore and shell fragments) to a fine clay matrix. This matrix is generally finer-textured than that of London-type ware.

The principal characteristics of London-type ware (LOND) are an ill-sorted sand matrix, the larger grains of which

are rounded, with sparse to moderate inclusions of red iron ore, green glauconite up to 1.0mm in size and rare fragments of flint, up to 2.0mm in size. Another coarse variant of this fineware fabric has a moderate quantity of rounded quartz and is fired at a slightly higher temperature than normal. It is, nevertheless, finer than Coarse London-type ware and is typically used for mid 13th-century highly decorated and anthropomorphic jugs. This suggests that these vessels may be the products of a separate, but related, industry. Visual analysis by A. Vince and A. Streeten indicates a source in the London area, rather than, for example, the Earlswood kilns in Surrey.

A small group of vessels, which will form the subject of a further paper in the present corpus, and whose fabric has been termed Late London-type ware (LLON), has been dated by its presence in Trig Lane waterfront dump G15 to the mid 15th century. Its production consequently post-dates the main London-type series. The fabric is similar, although somewhat finer, and the same technique of splash-glazing is used. Late London-type vessels have forms which appear to be precursors of those found in the Tudor redware industries (see Fig.49, No.169; Fig.59; Fig.77, Nos.419-420). The early 15th-century squat/rounded jug illustrated in Fig.49, No.169 may well be an intermediate form: the method of handle attachment (see p.26), the splash-glaze, and the poor firing technique, resulting in the fabric having a grey core, are typical of London-type ware jugs. At present, therefore, the available evidence suggests a break in pottery production in the London area in the late 14th century, although the similarity in manufacturing methods hints at a continuity for which there is no archaeological evidence.

METHODS OF MANUFACTURE

The running of glaze indicates that most, probably all, London-type ware jugs were fired in an inverted position. That they were stacked one on top of another in the kiln is shown by the presence of reduced areas on the base of many vessels, corresponding to the often overlapping rim diameters of super-imposed jugs (see Fig.15, No.21). Pipkins, however, not uncommonly have a pool of glaze inside the base, just below the handle, showing that they were fired in an upright position on a flat surface, and resting on the side of the handle.

Possible wasters or 'seconds' are extremely rare. A flared baluster jug from the Museum of London reserve collection (Fig.36, No.119), is probably the best example, showing substantial evidence of having been in contact with the bodies and rims of at least six other vessels in the kiln, and of having cracked in firing. It appears to have been rescued from the kiln after an accident during the firing, possibly the collapse of the firing stack. A rounded jug from the British Museum reserve collection appears also to have been a 'second'. Although the surface of the base has spalled off, making the vessel defective, it was still glazed and fired.

The body colour of London-type vessels is characteristically a dull reddish-brown (Munsell 2.5YR 6/7-5YR 7/10 to 10YR 7/4). Visual comparison with the experimentally fired clay samples from Bishopsgate, which were removed from the kiln at intervals of 100°C (see above), suggests that London-type ware was probably fired above 600°C, but never as high as 900°C. The closest comparison in colour is to be found in deliberately reduced samples. Thin-section analysis has further shown that 13th-century vessels were more highly-fired than 12th-century types (see Appendix 1). The fabric core is commonly grey (Munsell N4 to 8), and organic inclusions in the clay are often still in a carbonised state, indicating that the duration of firing was insufficient to burn out

the carbon completely. Completely oxidised vessels are rare, and probably fired at a relatively high temperature *i.e.* c. 800°C, since they have a brick-red (Munsell 10R 6/8) fabric. Clear leaf impressions were recognised on the inner surfaces of three vessels – a conical drinking jug and two jugs (Pl.6). They have been tentatively identified as *Pteridium Aquilinum*, a common type of bracken (V. Straker, pers. comm.).

The unusually pale-coloured, carbonate-free fabric of a relatively small number of late 12th-century vessels (see above), appears to have been deliberately produced, since red-firing slip, rather than white-firing slip was applied for contrasting decorative effect. The means of achieving this light colour are uncertain. The clay used may have had a naturally low iron content, so producing a light-coloured fabric, although in cross-section the fabric has a slight, but perceptible, bluish tinge which suggests a reducing atmosphere in the kiln. The colour may, therefore, have been obtained by careful manipulation of the firing conditions.

Late 13th- to 14th-century vessels, particularly plain baluster jugs, drinking jugs and bottles, appear to be far more poorly fired than earlier types, and frequently display surface variations in colour, with carbonised fragments of organic matter retained in the fabric. Little care or effort seems to have been employed in firing and stacking, and the vessels give the impression of having been piled together in close proximity in the kiln. Mass-production rather than quality would seem to have been the aim as the industry went into decline.

Glaze was applied by dusting, rather than by any other method. Small pits or pock-marks may be seen at the centre of splashes of glaze on better-fired vessels, where the lead has reacted with the body of the pot. Globules of metal remain on the surface of poorly-fired examples, although the presence of this metallic lead does not prove that the

glaze itself was powdered metal, since the same effect would be obtained if a lead compound was fired in a reducing atmosphere. Whatever the composition of the glaze, there must have been some means of ensuring that it stuck to the vessel. It might have been applied while the pot was still wet, although it can be seen to overlie surface treatments such as knife-trimming. If the glaze was applied to a leather-hard pot, it could either have been mixed with water, or the surface of the vessel might first have been covered with a flour and water paste. It is uncertain which of these methods was used.

A different method of glazing may have been applied to certain jugs of North French style which have a thick and lustrous glaze cover. This may have been obtained by painting, or by dipping the pot into a glaze in which the lead, or lead compound, was mixed with slip.

X-ray fluorescence analyses on samples of glazes have been carried out by Justine Bayley of the Ancient Monuments Laboratory (see Appendix 2). These confirm that a lead glaze was used on London-type ware, and that the green colour of some glazes was achieved by adding copper. Other metals,

such as tin and zinc, have been identified, but not in sufficient quantity to affect the colour of the glaze. The tin and zinc are almost certainly present as impurities in the lead, since no relationship could be detected between the quantities of tin, zinc and copper as would be expected if a copper alloy had been used to colour the glaze.

Apart from Developed Stamford ware, the London-type industry is probably the earliest in this country to use copper to give a green glaze. Added to the lead glaze and sprinkled onto the body of the vessel, this tends to give a somewhat patchy, yellow-green colour. A more even cover would have resulted from the use of a ground powder or a frit made by melting together lead and copper with quartz sand and a flux to produce a glass.

The white slips applied to the body to give the fabric a white-firing appearance are too thin to allow petrological analysis. However, application appears to have been by smoothing the liquid clay onto the vessel with the hand, rather than by dipping, or painting. The London-type ware industry is probably the earliest to use this technique, which had a long life in the south-east of England (Vince, 1983a).

SOURCES

Documentary sources show that people termed 'potters' were working in the City of London in the late 13th and 14th centuries, mainly in the eastern parishes. The references cluster around Billiter Lane, now Billiter Street, which is first mentioned as *Belzetereslane*, that is, lane of the bell-founder or -founders (Ekwall, 1954, 113). This, together with the social standing of some of the 'potters', for example, Walter le potter, an alderman and sheriff in the 1270s (Hodgett, 1971, 197, 344, 905), suggests that they were more probably workers in cast bronze than pottery. The term 'potter' could equally be used to describe workers in metal or clay (Le Patourel, 1968, 102-3;

Walters, 1926). References to 'potters' working in Chingford, however, (Hale, 1858, 88-91), are less likely to indicate metalworkers, and a rural location for the pottery industry seems more probable. This area would have had access to the same London brickearth deposits as are found in the City, and is in relatively close proximity to the capital. There are also documentary references in the early 14th century to 'potters' at Blackheath, in south London, which would be similarly placed with regard both to clay source and to access to the City (Streeten, 1982, fig.2). However, no kiln sites have been found in either area, nor are there any locally found groups of

medieval pottery available for study. Moreover, a source immediately to the east or north-east of the City would appear less likely on the evidence of collections of pottery from West Ham, Stepney and Barking, which produced more Mill Green ware than London-type ware.

There is no firm documentary evidence for the exact location of pottery kilns

either in the City or its suburbs. However, the distribution of London-type ware and its relation to the areas served by other known contemporary kilns is firmly centred on London, and no other site has a higher frequency of the ware. It would, therefore, appear that the industry was very probably located close to the City, whether inside or outside the walls.

DISTRIBUTION

Museum collections in Hertfordshire, Essex, Middlesex, Surrey and Kent have been examined to determine both the extent of trade in London-type ware, and the proportion of the medieval pottery of these areas supplied by London. Very few of the collections studied contained London-type ware in quantities comparable with those found in London itself (see Appendix 3). A collection from the Archbishop's Palace at Otford, Kent (now in Maidstone Museum; Ward, 1974), is a notable exception, and consists of about twelve London-type jugs decorated in the Rouen style, a small number of North French style jugs and a few non-London-type vessels. The Rouen style vessels all have a 'family resemblance' which suggests that they were part of a single consignment of jugs (Fig. 29, Nos. 72-4). Small quantities of London-type ware have been found on sites throughout the Home Counties, as represented by the museum collections studied, notably in those areas more accessible to the capital by water transport (see Figs. 1-3; the larger circles on the maps indicate a relatively high proportion of London-type ware and the smaller circles represent smaller collections).

Long-distance trade in London-type ware is illustrated by the surprisingly large number of coastal sites at which it is found, again generally in small quantities (see Figs. 4-5). This is emphasised by the

fact that collections from the east coast have not been systematically searched for London-type ware, and the findspots noted here are only those which happen to have come to the attention of the authors. This suggests a frequency and distribution similar to that of 11th- to early 13th-century Stamford ware, which is found at sites considerable distances from Stamford, but as a very low proportion of contemporary assemblages (Kilmurry, 1980).

The close similarity in appearance between individual small sherds of London-type jugs of North French style and those of Aardenburg ware (Dunning, 1976a), suggests the possibility of confusion in identification, especially at coastal sites on both sides of the Channel, a problem to which the examination of dubious sherds in thin-section could usefully be applied. However, the forms and decorative schemes of the two areas are quite distinct and it is unlikely that complete vessels or substantial fragments could be confused (F. Verhaeghe, pers. comm.).

Sites outside the London area whose pottery has been examined include Exeter which produced a small collection of London-type ware with early rounded, Rouen and North French style jugs, but no baluster jugs, or other late 13th- to 14th-century types. Local fine, wheel-thrown wares were not produced in the Exeter area until just before c. 1250

(Allan, 1984). Excavations at King's Lynn (Clarke and Carter, 1977) produced a single early rounded jug and sherds of Rouen style and North French style jugs, but again no baluster jugs or other late types. Both coarse and fine London-type jugs of late 12th-century date, and North French style jugs were found in excavations at Bridge Street, Ipswich (P. Blinkhorn, pers. comm.). Only North French style and baluster jugs were found at Colchester which was probably also supplied by sea. This is unlikely to be merely a reflection of the date of the pottery recovered from the town, since Heddingham ware, which is essentially contemporary with London-type early rounded and Rouen style jugs, occurs in quantity at Colchester (we are grateful to R. Symonds for showing us material from current excavations).

Perhaps the most surprising evidence for the extent to which London-type ware was traded comes from the east coast of Scotland. Excavations at a number of sites in Perth have produced large groups of stratified 12th-century pottery in which London-type ware constitutes the most common glazed ware (L. Blanchard, pers. comm.). Numerous early rounded jugs, in both coarse and fine fabrics, and identical to vessels found in London, show without doubt that Perth was receiving pottery in significant quantities from London. Sherds of early jugs have also been found at Aberdeen, where 12th-century levels are much rarer, as well as later vessels of Rouen and North French styles, although the quantity of London-type ware relative to other glazed wares is lower than at Perth (Murray, 1982). Sherds of London-type Rouen style jugs have also been found at Perth, Elgin and Inverness (W. Lindsey, pers. comm.). No later London-type wares have been identified amongst the eastern Scottish material examined. In

common with Exeter, no local glazed wares were made in Scotland in the 12th century. However, by the late 13th to 14th century, Scottish glazed ware industries had started production, and the majority of pottery used on the east coast was locally made.

The unusual distribution pattern of London-type ware in the 12th century is further highlighted by discoveries at Hereford and Gloucester. Both coarse and fine London-type ware early rounded jug sherds have been found at Hereford (Brine and Vince, 1984), while excavations at Gloucester have so far produced a single sherd from a Coarse London-type early rounded jug with white slip linear decoration. These occurrences suggest that the quantity of London-type ware on 12th-century sites in southern England may be higher than can yet be demonstrated. Unlike Developed Stamford ware, sherds of London-type ware are not immediately recognisable as non-local products. However, the distinctive nature of the London-type Rouen style jugs, even as small sherds, renders them far more easily identifiable. Since none has been identified by the writers from inland sites outside the Home Counties, it appears that, by the early 13th century, there was not such an extensive inland trade in London-type ware.

It is clear that there is a difference between the distribution of London-type ware in the late 12th to early 13th century and in the late 13th to early 14th century, while long-distance trade in London-type ware is predominantly an early feature. However, since the nature of the distribution of London-type ware differs from that of other wares found in London, such as Mill Green ware or Kingston-type ware, it is not yet possible to plot a reasonably complete distribution onto a map.

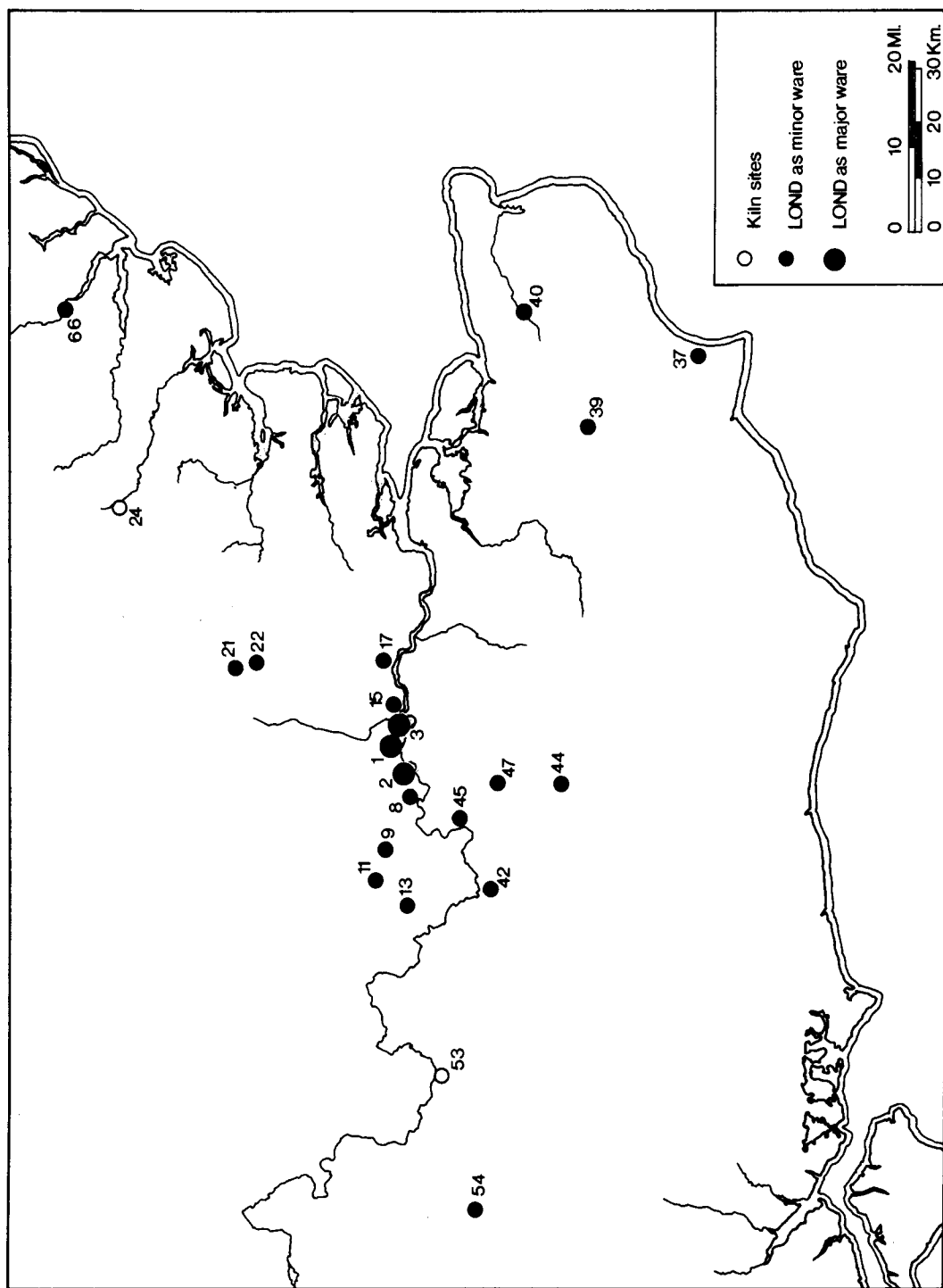


Fig. 1. South-east England, showing the distribution of London-type ware in the late 12th century (for site names and details see Appendix 3).

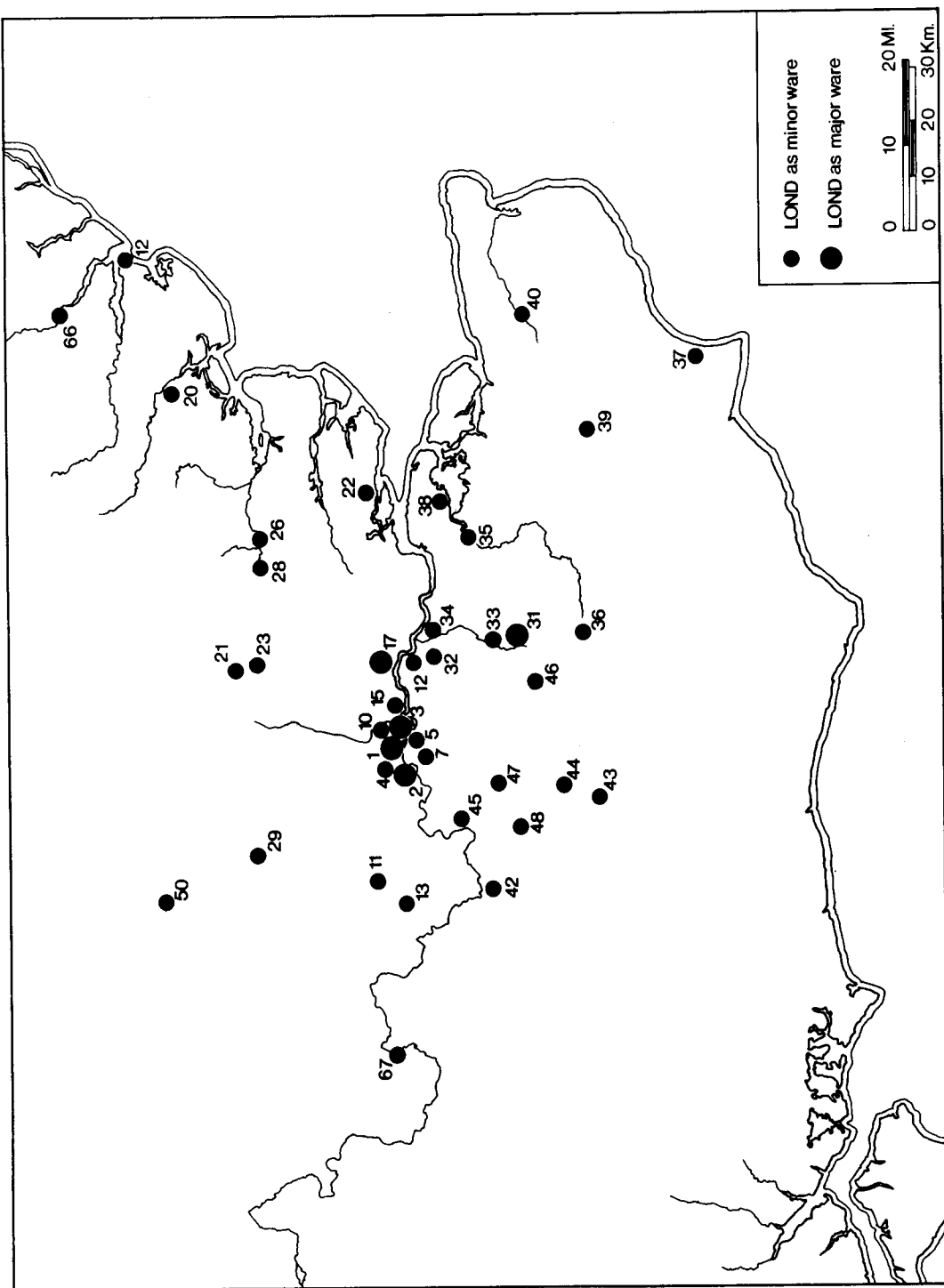


Fig.2. South-east England showing the distribution of London-type ware in the early 13th century (for site names and details see Appendix 3).

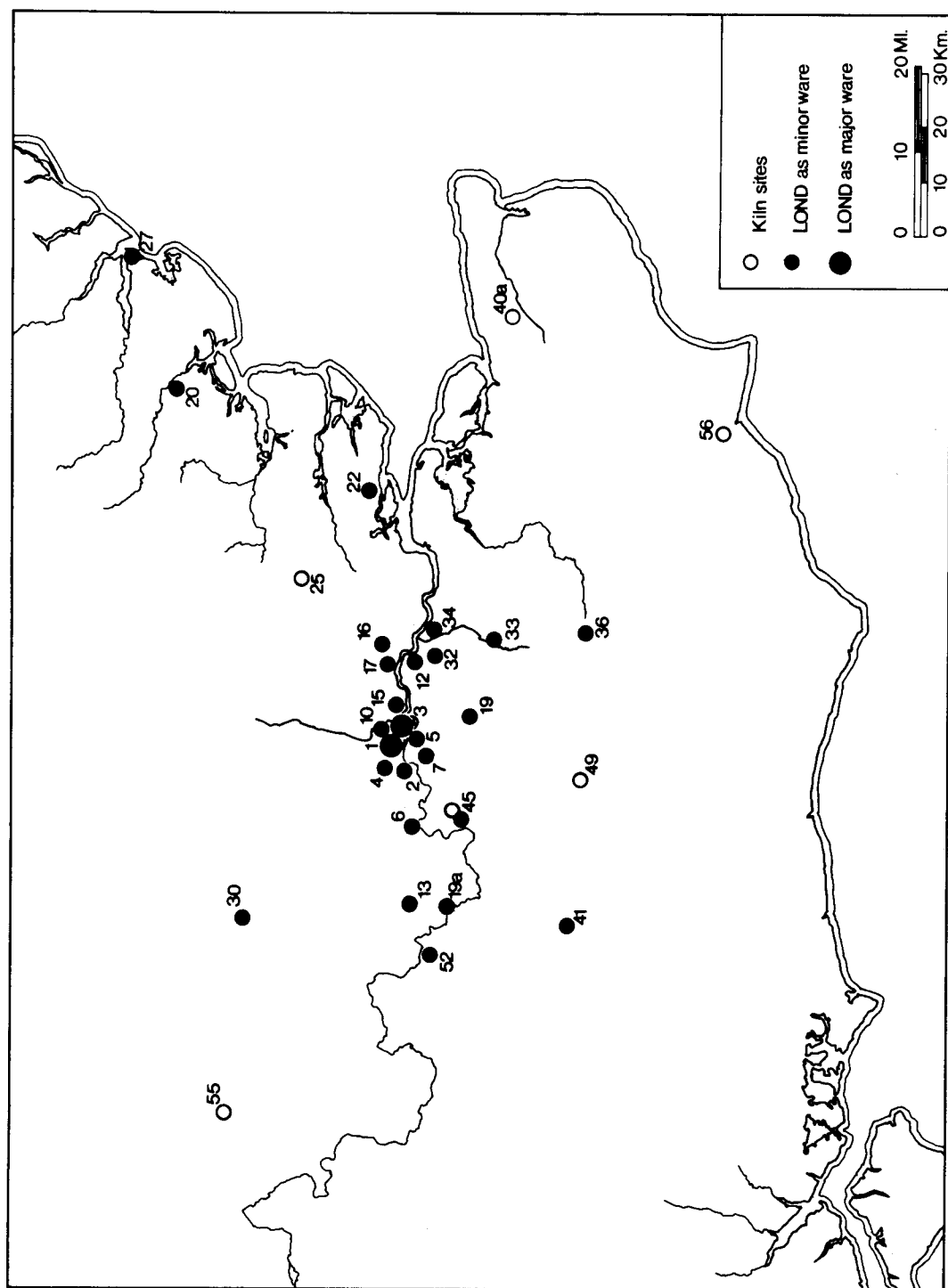


Fig.3. South-east England showing the distribution of London-type ware in the late 13th to 14th centuries (for site names and details see Appendix 3).

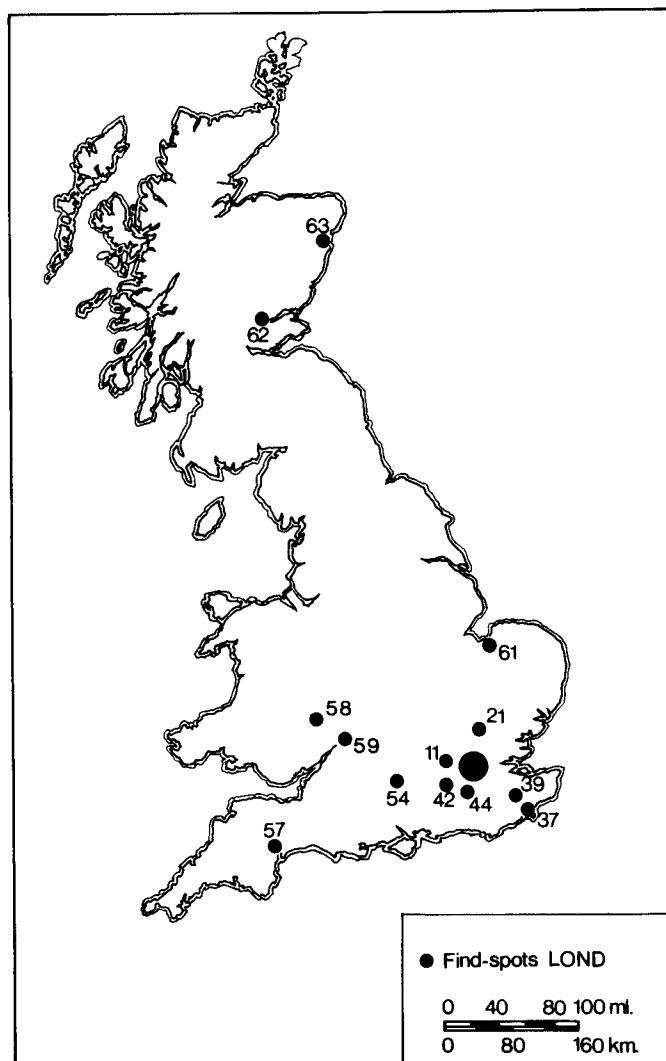


Fig.4. Mainland Britain showing the distribution of London-type ware in the late 12th century. Only the furthest extent of distribution is indicated in the south-east, but not every site at which London-type ware is found (see Fig.1; for site names and details see Appendix 3).

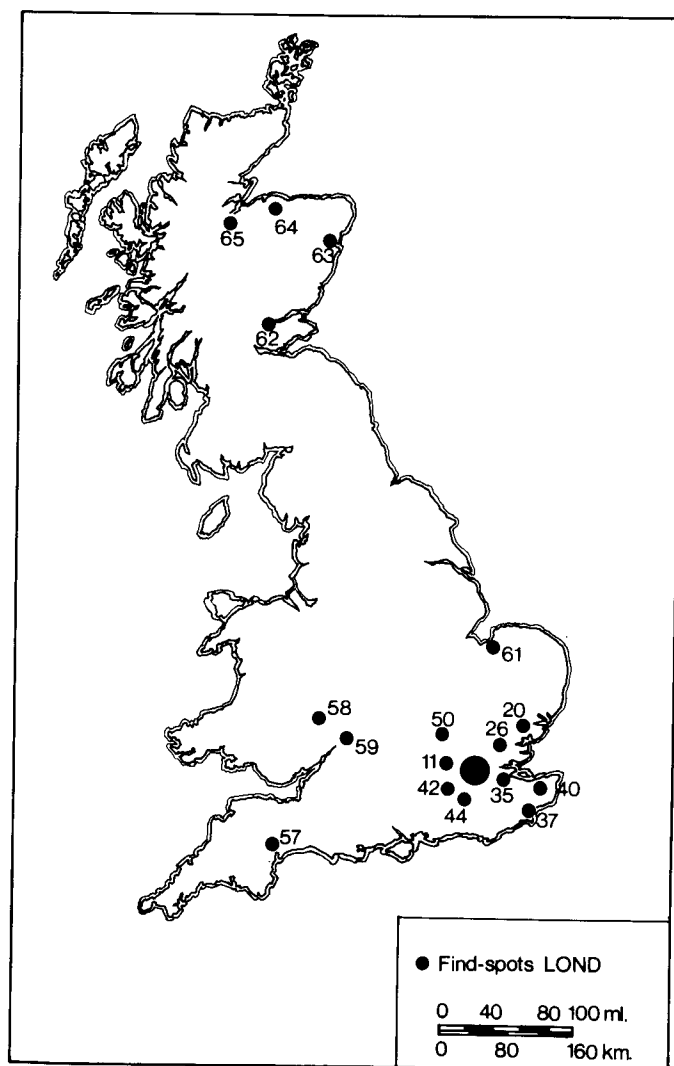


Fig.5. Mainland Britain showing the distribution of London-type ware in the 13th century. Only the furthest extent of distribution is indicated in the south-east, but not every site at which London-type ware is found (see Fig.2; for site names and details see Appendix 3).

DATING

Apart from uncertainty as to the starting date of the industry in the early to mid 12th century, and its rate of decline in the early 14th century, London-type ware is probably as closely dated now as it will ever be. This is principally the result of analysis of information from recent excavations in the City of London, and, in addition, to the slow rate of change of pottery styles between the 12th and 14th centuries.

Over most of the City, medieval stratigraphy has been destroyed by the construction of cellars. At Peninsular House (PEN 79) and Pudding Lane (PDN 81), for example, the latest surviving horizontal stratigraphy is of late 11th- or early 12th-century date. Much 12th-century and later pottery has been recovered

from pits and other intrusive features on inland sites, but the most significant series of dates for the medieval pottery of London has been provided by stratified waterfront sequences, some of which have been dated by tree-ring analysis (Morgan and Schofield, 1978). At sites along the north bank of the Thames, the process of waterfront advancement has meant that between the 12th and 15th centuries large quantities of medieval rubbish were deposited in dumps behind the timber revetments. Within these sites such dumps included large groups of stratigraphically-related pottery, sometimes protected from later intrusion by 'capping layers' (such as oyster shells, sand or gravel).

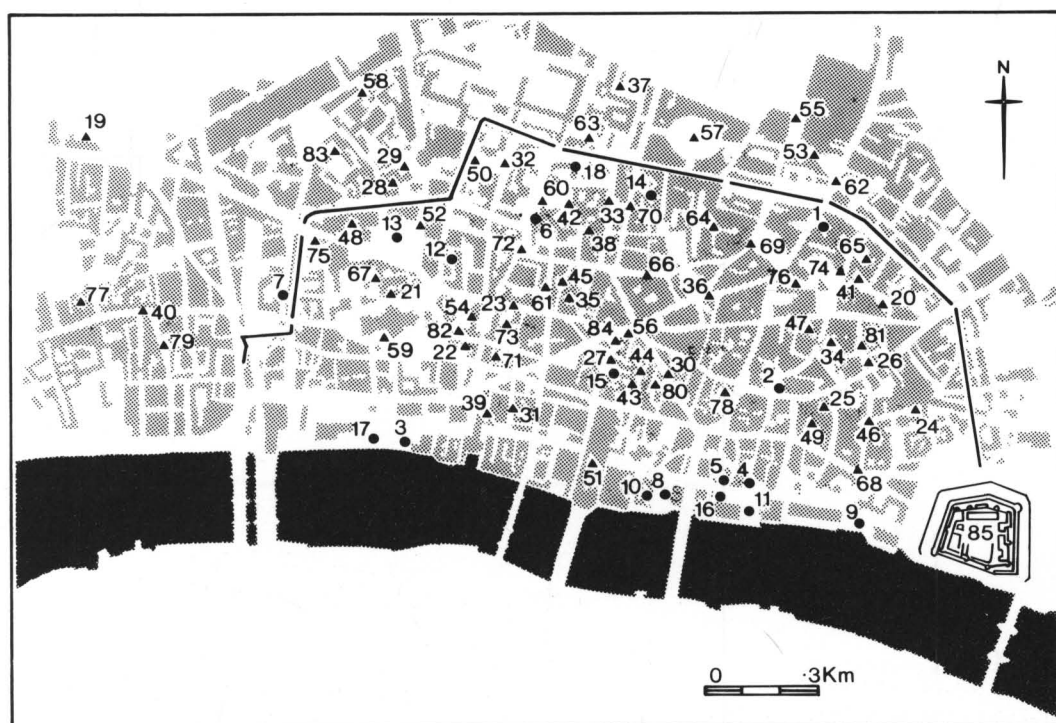


Fig.6. The City of London showing DUA sites mentioned in the text, and other find-spots of illustrated, provenanced London-type ware. Where museum records indicate street names, but not an exact location, the site has been suggested centrally within that street (for site names see Appendix 4).

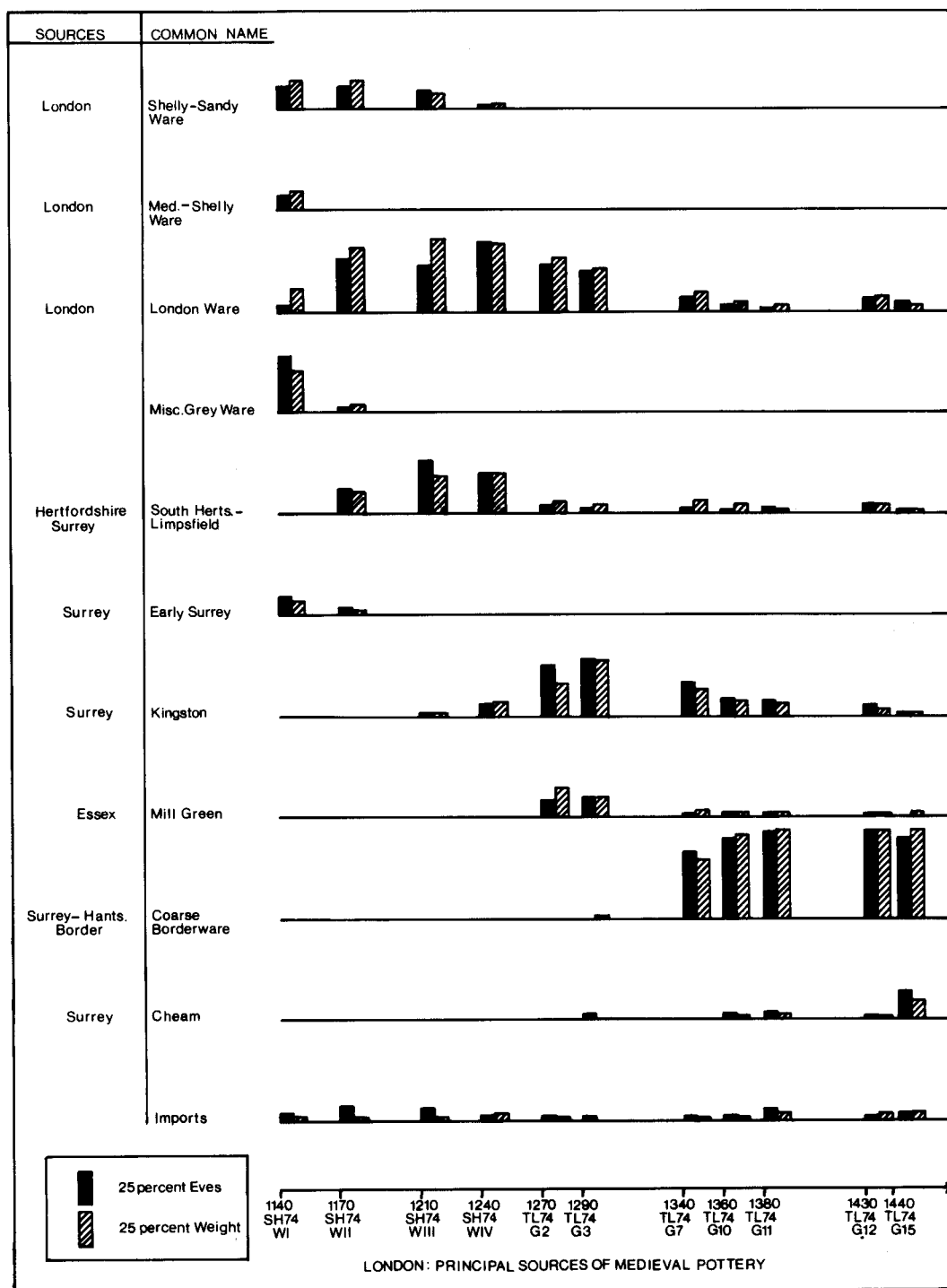


Fig.7. The relative frequencies of the major pottery sources in the Seal House/Trig Lane waterfront sequence.

MAJOR GROUPS

Dated revetment groups containing London-type ware provide a secure chronological sequence starting *c.*1140 and finishing *c.*1440. It has been established that the timber from groups dated by dendrochronology is not reused, and the estimated date of felling and presumably of use is given. No bark has been found, and therefore no timber can be dated to the exact year.

CUSTOM HOUSE

The 1973 excavations at Custom House (CUS 73) produced three large groups of medieval pottery, one of which, group C2, was dated by dendrochronology to slightly before *c.*1350 (Thorn, 1975). Another group was deposited in front of this revetment, and a third (group B) can be dated by the pottery to the late 14th century. London-type ware was not specifically identified in the pottery report, but several undoubted London-type vessels can be recognised from the illustrations of group C2. The forms are similar to those found at Trig Lane in G7, dated *c.*1340, and include drinking jugs and baluster jugs. Without re-examining the unpublished potsherds it is not possible to say how common London-type ware was in these groups.

SEAL HOUSE

Four reclamation dumps, numbered I to IV, were excavated at Seal House in 1974 (Morgan and Schofield, 1978). Waterfronts I and II, dated by dendrochronology to *c.*1140 and *c.*1170 respectively, had both been robbed, and were found collapsed onto their respective foreshores. The deposits behind them had consequently spilled forward over the remains of the revetment. Neither dump had an obvious sealing layer, and the group from waterfront I is comparatively small (9.5kg), containing pottery which is definitely intrusive from the overlying early 13th-century levels. Although this group does include sherds of early rounded jugs which may be contemporary, the overall impression is that London-type ware is not common (see Appendix 5; Fig.7). The discovery and analy-

sis of further groups of early to mid 12th-century pottery with associated timbers suitable for dendrochronological analysis is, therefore, a high priority.

The waterfront II material does not contain any significant number of intrusive sherds, although it was recovered from a dump directly overlain by that behind the waterfront III revetment, without a separating sealing layer. Waterfront III was found to be undisturbed and was sealed by oyster shell dumps. Dendrochronological dates of *c.*1210 were obtained from the timbers of the waterfront, and *c.*1220 from a timber drain cutting through the dump.

The fourth revetment (waterfront IV) was associated with the construction of a building (D) with shore foundations. The second phase of occupation of this building contained pottery that can be paralleled from the first revetment dump at Trig Lane (G2; *c.*1270). No dendrochronological date was obtained for this dump. However, the nature of the pottery assemblage makes it clear that the dump can be dated midway between the waterfront III (*c.*1210) and Trig Lane G2/3 (*c.*1270) dumps. This gives an estimated date of *c.*1240 for waterfront IV. Comparison with the coin-dated Billingsgate waterfront assemblage suggests a further refinement, with a date closer to *c.*1250.

Apart from the pottery, and a small number of leather shoes, little other datable material was found in the Seal House waterfront sequence, and when the dendrochronological dates were originally published a discrepancy was noted with the dates then assigned to the pottery (Morgan and Schofield, 1978).

TRIG LANE

The Trig Lane excavation sequence is fully discussed in the published report (Milne and Milne, 1982, 50-53, fig.39). However, a re-examination of the dating evidence has been undertaken, the results of which are to be published elsewhere (Vince, forthcoming), and the dates given in this paper supersede those of the site report. The Trig Lane waterfront sequence is more complex than the Seal House sequence, since the excava-

tion covered parts of three separate properties which were extended towards the river at different rates. The earliest waterfront group to contain a significant quantity of associated medieval pottery (G2) was dated to *c.*1270 by *ampullae* and a lead token. After an interval of about twenty years, this revetment was raised and the associated pottery, from group G3, consists of precisely the same range of types as is found in G2; in some cases, parts of the same vessel are present in both. It would, therefore, appear that the pottery from G3 is largely disturbed material from the earlier revetment.

A small group of pottery was recovered from the foreshore in front of the G3 revetment, sealed by a revetment dump (G7), which is dated to *c.*1340. Consequently, there is no securely dated waterfront group of definitely contemporary pottery between *c.*1270 and *c.*1340, a period which witnessed the decline, and possibly the demise, of the London-type ware industry.

Revetment G7 represents a slight southward advance of the waterfront from G3, and revetment G10 is a continuation of the same line, dated by dendrochronology to about twenty years later, *c.*1360. London-type ware was extremely rare in this group which was probably deposited after the end of the industry. The Trig Lane sequence, therefore, includes three fresh dumps relevant to the study of London-type ware – G2, G7, and G10 (*c.*1270, *c.*1340 and *c.*1360) – and a series of intermediate repairs and raisings of the waterfront. Since all groups later than G7 contain only very small quantities of London-type ware, it is the earlier groups, taken in conjunction with the evidence from Seal House, that form initially the basis for the dating of the industry.

SWAN LANE

In the course of a watching brief carried out by the Museum of London at Swan Lane (SWA 81; Youngs, Clark and Barry, 1983, 194-5), over 37 fragments of different waterfront revetments were exposed. A vast quantity of pottery was recovered and identified, but none has yet been quantified. With the exception of dendrochronology, all avail-

able dating evidence has been examined and synthesised.

A number of 12th-century revetment dumps was exposed, the latest of which were associated with timber revetments, and dated by coins to *c.*1180 or later. A clearly defined line of early 13th-century revetments was revealed, with little or no external dating evidence. This was succeeded by another line of mid 13th-century revetments, again dated mainly by pottery.

The next line of revetments, to the south, produced large numbers of coins, tokens and other artefacts, together with substantial collections of pottery. The coin dates show that these dumps were deposited after *c.*1260, but before *c.*1279, when the long-cross coinage of Henry III and Edward I was demonetised, while other finds, predominantly lead alloy *ampullae*, suggest a deposition date of *c.*1270-80.

Little 14th-century material was recovered from Swan Lane, apart from isolated groups of mid to late 14th-century date. By the time the next large groups were deposited, *c.*1380-1400, London-type ware was no longer in use.

BILLINGSGATE LORRY PARK

The 1982 Billingsgate Lorry Park excavations (BIG 82; Youngs, Clark and Barry, 1983, 191-2) produced a sequence of 11th- to 13th-century revetments with associated dumps and overlying buildings. The preliminary analysis of the stratigraphical data from this site has shown that extremely close dating of the waterfront sequence will be possible for the period from *c.*1080 to *c.*1250. The results of dendrochronological analysis are not yet available, but examination of coins, tokens and lead alloy pilgrim souvenirs has shown that during the late 12th and early 13th centuries there were four major advances in the waterfront, dated *c.*1180 or later, *c.*1205 or later, *c.*1220 or later and *c.*1247-1250. Refinement of this chronology, which will aim to distinguish foreshore deposits from dumps, and interleave occupation deposits from the associated waterfront buildings, will eventually lead to the establishment of an almost exact chronology for

the site. The sequence and relative quantities of London-type ware within the existing Billingsgate chronology conform closely with the evidence from Seal House. Between *c.*1080 and *c.*1180, there was one major waterfront advance, before which waterfront activity was confined to the repair of the so-called 'Saxon Bank'. Originally this bank had an inlet, or slip-way, leading up to dry land, but in subsequent alterations this was made narrower, and then completely infilled. Relative dating of the bank sequence suggests that the infilling of the inlet must have taken place in the first half of the 12th century. The associated pottery is comparable with that from Seal House waterfront I in that it includes a small quantity of London-type ware.

LUDGATE HILL

A massive collection of 118kg of pottery (see Appendix 5) was recovered from the site of the City ditch at Ludgate Hill (LUD 82) during 1982 excavations directed for the Museum of London by P. Rowsome (Youngs, Clark and Barry, 1983, 194). Various features, notably the presence of sherds of the same vessels throughout the filling, both vertically and horizontally, show that the whole group, one of the largest from the City, was deposited at one time. A coin of Edward II was found in the top of the excavated fill which was itself truncated by post-medieval cellars so that the coin would originally have been about half-way down the deposit. The presence of this coin dates the deposit to *c.*1307 or later. Documentary evidence suggests that the ditch at this point was probably filled and built upon by the 1320s, and was definitely built upon by the 1340s (Dyson, unpubl.). This group can therefore be taken to fit into the Trig Lane sequence between G2/3 (*c.*1270) and G7 (*c.*1340). The relative frequency of different types shows that the group is later than Trig Lane G2/3, although it contains a range of earlier decorated London-type ware jugs, notably of large rounded and conical form, not present in the Trig Lane G2/3 assemblage. These vessels may be residual from the mid 13th century, when such types are common, or, as seems

more likely, the Ludgate Hill group is of such a size that the inclusion of a number of rare forms is not unusual.

COPTHALL AVENUE

A further group containing London-type wares was recovered from a dumped soil layer found during excavations at Copthall Avenue (OPT 81), directed in 1981 by C. Maloney (Youngs, Clark and Barry, 1982, 192). As at Foster Lane (see below), the London-type ware assemblage consisted mainly of baluster jugs, together with fragments of dripping dishes, drinking jugs and cauldrons. An early 14th-century date is postulated.

DATING BY ASSOCIATION

A number of contexts from sites all over the City (see Fig.6) have no stratigraphical relationships, but are nevertheless important since they contain large fragments of vessels, many of which join together within groups to reconstruct complete profiles. For much of the decorated pottery this is the only material of suitable quality to allow precise identification of form and decorative scheme. In addition, many such groups, from the nature of their context, are likely to represent pottery thrown away over a short period of time, and probably once used by the same household. Associations of this sort are lost when pottery is deposited in waterfront revetment and similar dumps.

GUILDHALL EXTENSION

The most important group of this type to date came from the site of the Guildhall Extension (ER1076; Guildhall Museum, 1968). A wooden box or crate (ER1076c), containing several near-complete London-type jugs, all of early rounded form and datable to the late 12th century (Fig.10, Nos.1, 4, 6; Fig.11, No.7; Fig.12, No.11; Fig.15, No.22), was found in a large pit (ER1076a), after the removal of a general dump fill. Fragments of the same jugs were

also found in the bottom of the pit, outside the box, which indicated to the excavator that the pottery was placed in the box before the soil was packed around it. This would appear to rule out any interpretation of the box as, for example, the lining of a cess-pit (P. Marsden, pers. comm.). The close association of so many vessels demonstrates the contemporaneity of the coarse and fine London-type ware fabrics, and of the various types of decoration, shape and handle form.

ST SWITHIN'S HOUSE, WALBROOK

Other pit groups excavated by the former Guildhall Museum have been examined and include several in which London-type ware was present. One pit group in particular, from St. Swithin's House, Walbrook (ER1522), contained several near-complete baluster jugs, all of which had the flared rim (Fig.36, No.118), rather than the more common inturned 'tulip' neck. The presence of Mill Green ware jugs in this group suggests that its date of deposition can be placed in sequence between Seal House waterfront IV, c.1240, which contained no Mill Green ware, and Trig Lane G2, c.1270, which contained mainly tulip-necked baluster jugs.

FOSTER LANE AND THE GPO SITE

Smaller assemblages were recovered from Foster Lane (OST 82; Youngs, Clark and Barry, 1983, 193), associated with a collection of 'Syro-Frankish' glass dated to the late 13th or early 14th century (Clark, 1983); and from a stone-lined cess-pit at the GPO site, Newgate St. (POM 79; Webster and Cherry, 1980, 253). The former assemblage contained a large number of London-type ware baluster jugs, part of a cauldron and the complete profile of a small rounded jug. London-type ware was the most common type present in this group (Blair, 1983, 25). The GPO group, however, contained Kingston-type ware jugs with stamped boss decoration, a complete Saintonge Polychrome jug, a near-complete Mill Green Polychrome baluster jug (Pearce *et al.*, 1982, fig.7), and substantial parts of two London-type ware dripping dishes (Fig.70, No.372). There were no London-type jugs.

TOWER OF LONDON

The sequence of defences on the south side of the Tower of London can be closely dated on the basis of architectural relationships and documentary evidence (Parnell, 1983). Analysis of the pottery in groups deposited in c.1190-1221 and c.1221-1238 corroborates the evidence of the London waterfronts sequence, although the small size of the assemblages recovered renders useful comparison difficult (Redknap, 1983).

A slightly later group was found in the Wakefield Tower. The original floor of this tower was raised in the late 13th century, soon after its construction, to compensate for the general raising of ground level in the area resulting from the erection of the curtain wall by Edward I between 1272 and 1307 (Curnow, 1977). The pottery from the dump used to raise the floor level includes a London-type tripod pipkin (Moorhouse & Thorn, 1977, fig.11, No.18). None of the other pottery from this group is positively identifiable from its description, nor was it available for study at the time when this paper was being prepared. However, the potential of material from the Tower of London for dating, and for providing assemblages with a proven social context, is undoubtedly high.

SAINTONGE WARE AS A DATING TOOL

The frequency of Saintonge ware in London is much lower than that of any of the more local wares. However, it is of significance in differentiating groups of late 13th-century date from those of the early 14th century, a distinction which is otherwise difficult to establish from the character of the assemblages. Mottled green-glazed Saintonge ware jugs, probably of tall baluster form with splayed base, typified by examples from Southampton (Platt and Coleman-Smith, 1975, nos.999-1001), were found at Swan Lane in groups provisionally dated c.1270-80, and in Trig Lane G2 and G3 (c.1270). However, Saintonge Polychrome jugs, and jugs with an even

green glaze, are present in Trig Lane G7 (*c.*1340), the Ludgate Hill assemblage (*c.*1307 or later), the Copthall Avenue dump and the GPO cess-pit group (both early 14th century). This sequence is also recognised at Southampton (Platt and Coleman-Smith, 1975, 26), where a group thought to date to *c.*1294 has produced the later Saintonge jug types. Further precision in the dating of this ware is made possible by evidence from Wales. Saintonge mottled green-glazed

jug sherds were found at Dyserth Castle, which was only occupied between 1243 and 1263 (Hewitt and Morgan, 1977). At Castell-y-Bere, on the other hand, a Saintonge Polychrome jug was found on a site occupied only during the decade 1284-1294 (Butler, 1974, 83). These three fixed points corroborate the London evidence, provided that it is accepted that Trig Lane G3 is not a contemporary group.

DATING FRAMEWORK

The combined evidence for the chronology of London-type ware suggests the following relative sequence (see also Figs.8-9; Appendix 5):

Phase 1. (Pl.1) Late 12th century – Guildhall Extension (ER1076), Seal House waterfront II and Billingsgate Lorry Park (*c.*1170), with the same types probably already current but rare *c.*1140 (waterfront I).

- a. Early rounded jugs – in coarse and fine fabrics (Figs.10-18; Pl.1)
- b. Large squat/rounded jugs with massive strap handles, in fine fabric only (Figs.19-20; Pl.1)
- c. Cooking pots in coarse fabric only (Fig.67, Nos.336-340)
- d. Tripod pitchers (Fig.21, Nos.43-44; Fig.22; Fig.23, No.47)
- e. Spouted pitchers (Fig.21, Nos.40-42)
- f. Miniature jugs (Pl.4)

Phase 2. (Pl.2) Early 13th century – Seal House waterfront III and Billingsgate Lorry Park (*c.*1210), with types which may start at any time after *c.*1180.

- a. Rouen style jugs predominate (Figs.25-32; Pl.2 left)
- b. N. French style jugs – mainly small baluster jugs (Figs.33-34; Pl.2 right)
- c. Pipkins (Fig.68 Nos.349-360, 363)
- d. Dripping dishes (Figs.70-71)
- e. Aquamaniles (Figs.74-75)
- f. Chafing dishes (Fig.73)

Phase 3. Mid 13th century – Seal House waterfront IV and Billingsgate Lorry Park (*c.*1250).

- a. N. French style jugs – baluster form (as above)
- b. N. French style jugs – large rounded form (Figs.39-40)
- c. Highly decorated jugs (e.g. Fig.41)
- d. Baluster jugs – with flared rims (Fig.35; Fig.36, Nos.118-120,122)
- e. Rouen style jugs (as above)
- f. Polychrome jugs – large rounded form (Figs.42-44, No.146)
- g. Polychrome jugs – conical form (Fig.54, Nos.205-207; Fig.55)
- h. Dripping dishes (as above)
- i. Pipkins (as above)

Phase 4). (Pl.3) Late 13th to early 14th century – Ludgate Hill ditch terminal, Swan Lane, Trig Lane G2, G3 and G7 (c.1270-1340).

- a. Baluster jugs (Figs.37-38; Pl.3)
- b. Bottles and drinking jugs (Figs.64-66; Pl.3)
- c. Polychrome jugs (as above)
- d. Small rounded jugs (Fig.50)
- e. Cauldrons (Fig.69; Pl.3)
- f. Tripod pipkins (Fig.68, Nos.361-362)
- g. Dripping dishes (as above; Pl.3)
- h. Dishes (Fig.72; Pl.3)
- i. Bowls (Fig.72)

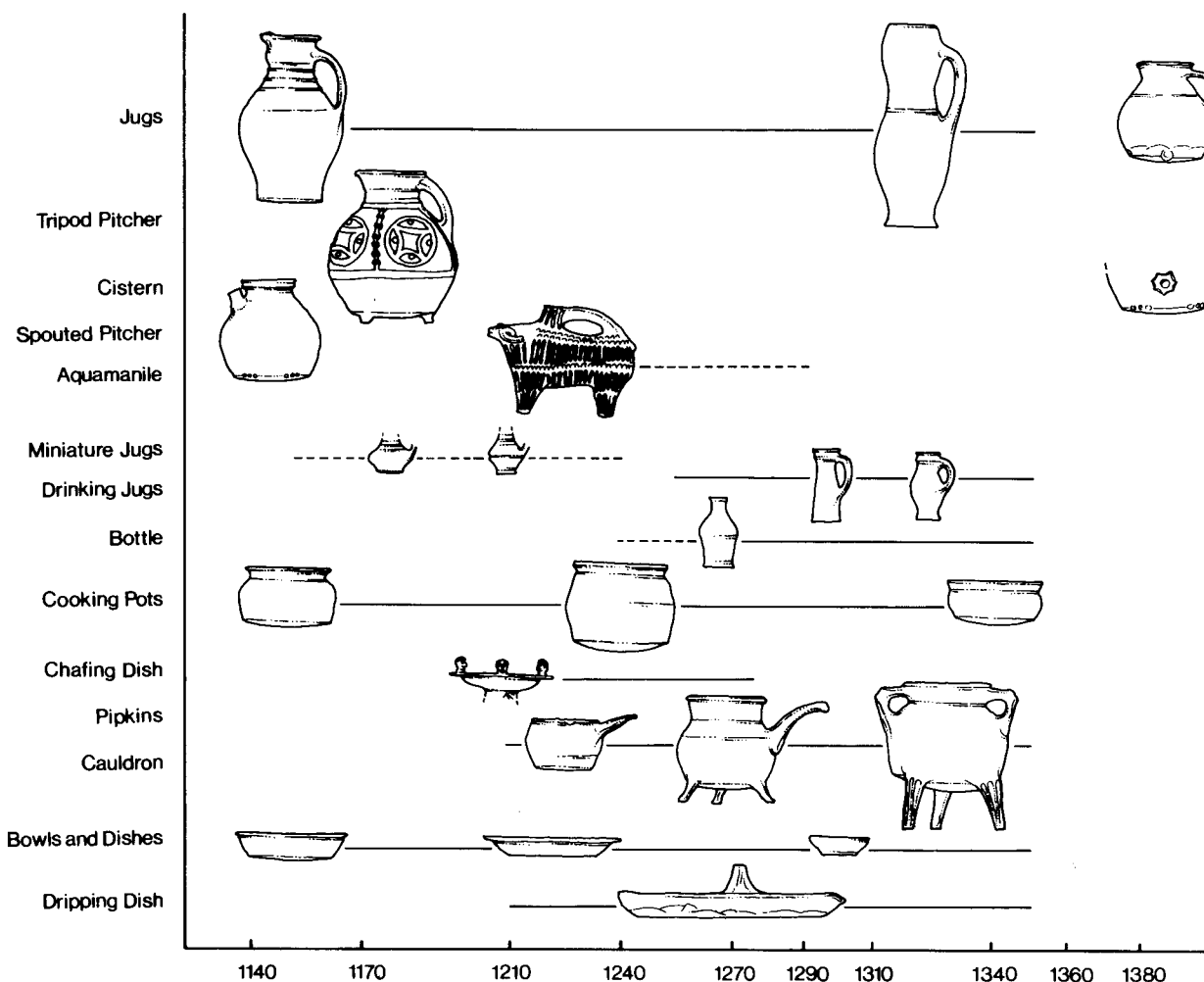


Fig.8. Diagram to show the life-span and evolution of the major London-type ware pottery forms as demonstrated by the Seal House/Trig Lane waterfront sequence. The horizontal axis gives the central dates of the groups. (1/16)

Phase 5) The extremely low quantity of London-type ware in Trig Lane G10, *c.*1360, and later contexts, combined with its absence from a dump at Swan Lane dating to the end of the 14th century (*c.*1380-1400), shows that the London-type industry came to an end between *c.*1340 and *c.*1360. Late London-type ware is first found in a foreshore deposit at Swan Lane dated to the first quarter of the 15th century, *c.*1420.

Further refinement of this sequence may be made possible by dating more accurately the change from one phase to another. However, this changeover probably took place relatively quickly, and within phases the frequency of different vessel types is likely to be governed more by the use to which they were put, than by the date of deposition. Dating an assemblage by the relative frequency of London-type forms present is, therefore, not possible.

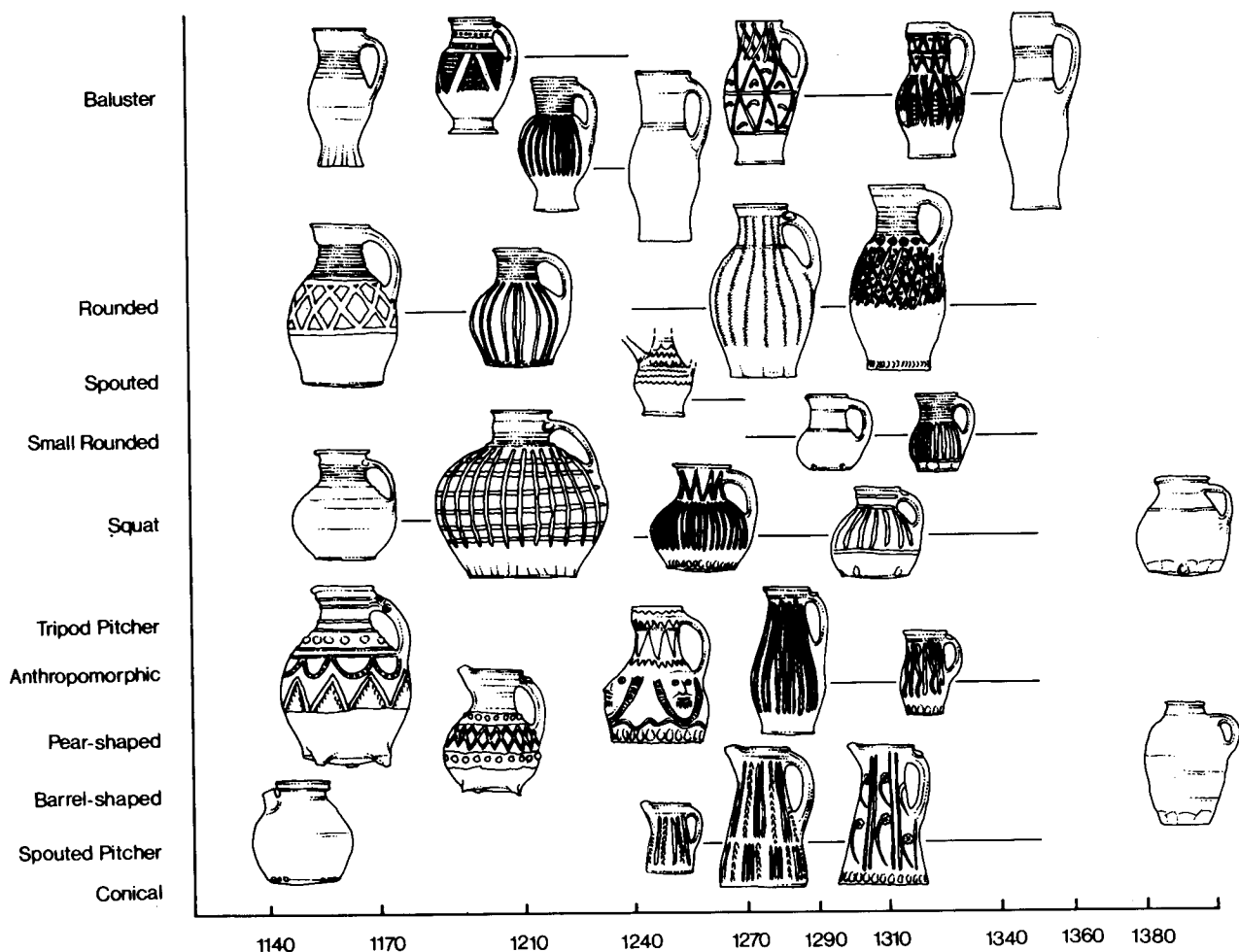


Fig.9. Diagram to show the life-span and evolution of the major forms of jug in London-type ware, as demonstrated by the Seal House/Trig Lane sequence. The horizontal axis gives the central dates of the groups. (1/16)



Plate 2. Early 13th-century assemblage. From left to right: Baluster jug with Rouen style decoration (Height 292mm), baluster jug with North French style decoration.

DESCRIPTION AND TYPE-SERIES

Jugs are by far the commonest vessel form throughout the London-type ware sequence. Other vessels, made for culinary purposes, or for serving and use at table, include cooking pots, dripping dishes, bowls, drinking jugs, bottles and a few more unusual forms. Relatively small quantities of roof furniture have also been found. However, apart from jugs and pitchers, no vessels made specifically for dry storage have yet been identified.

JUGS

FORM

Several distinct forms of jug were made in

London-type ware. These may be decorated, and a limited number of styles have been identified. The capacities of complete vessels were measured to the nearest 10ml, using dry rice.

1. Rounded

As the name suggests, the body is more or less rounded, with a distinct neck, and tapers gently into the base. Three types can be distinguished:

a. *Early rounded* (Figs.10-18, 84; Pls.I, III; Pl.1): This form typically has a collared rim and rilled neck, sagging base and strap handle. It is made in both coarse and fine fabrics and is decorated in the early style. Capacities range from 1950ml to 8300ml.



Plate 3. 13th- to 14th-century assemblage. From left to right, bottom row: Condiment, dish, dripping dish. Top row: Conical drinking jug, cauldron, baluster-shaped drinking jug, tulip-necked baluster jug, small pear-shaped jug (Height 176mm), bottle.

b. *Large rounded* (Figs.39-45): Principally decorated in the North French, highly decorated and white slip decorated styles, this form characteristically has a rod handle, a flat or recessed base, and, in many instances, a rather more distinct shoulder, with an

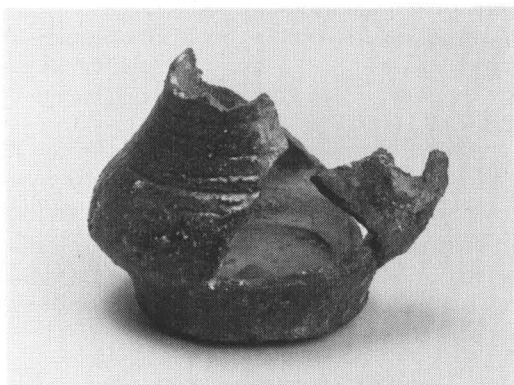


Plate 4. Miniature jug with clear glaze. (Height 60mm)

approximately straight-sided neck (e.g. Fig.39, No.131). Measured capacities range between 5250ml and 8080ml. A number of rounded jugs do not fit comfortably into either the small or large rounded category as defined here (e.g. Fig.47), and are often difficult to distinguish from jugs of squat form (*q.v.*).

c. *Small rounded* (Fig.50): As the name suggests, this is a smaller version of the above, generally having a more noticeably rounded body, and commonly with a thumbled base, often the only decorative feature. Capacities are in the range of 1140-1450ml.

2. Baluster

This form is characterised by a pear-shaped or rounded body, generally with a distinct neck and a slightly constricted and flared base, which may be recessed or flat. The overall height is always well in excess of the maximum girth, and may be, in certain

examples, up to three times greater. The form may again be subdivided:

a. *Early baluster* (Fig.24; Pl.I): This type, while of distinctive baluster shape, shares certain features with the early rounded jug form, notably the rilled neck, strap handle and collar rim. The base is generally knife-trimmed in vertical facets. Only one complete example was identified, measuring 2610ml in capacity.

b. *Rouen type* (Figs.25-31, 86; Pl.V; Pl.2): This is characterised by a parallel-sided neck, frequently ribbed, with a distinct groove at the neck/body junction, and a roughly biconical or rounded body. The base is generally cordoned. Both the form and decorative style of these jugs are derived from French Rouen ware (see pp.28-29). The capacity ranges from 1160ml to 3250ml.

c. *North French type* (Figs.33-34, 87; Pl.2): This form is similar to the Rouen type, generally with a slightly flared neck, a more rounded body and no base cordon. The inspiration of northern French vessels is again very apparent. The capacities fall in a range similar to that of the Rouen type jugs, but with a higher upper limit of 4435ml.

d. *Flared* (Figs.35-36): As the name suggests, this form has a trumpet-shaped neck which splays outwards at the rim. The body and base tend to merge into each other rather than appearing as more or less distinct components of the whole. Flared baluster jugs may be highly decorated, white slip decorated, or simply white-slipped under a clear glaze.

e. *Tulip-necked* (Fig.37, 89; Pl.VIII; Pl.3): This is the well-known, tall, baluster-shaped jug of 'majestic proportions' (Rackham, 1972, 12), and is invariably undecorated. The body is bulbous and this shape is echoed by that of the neck, the two parts often being separated by one or more slight cordons. The capacities of the complete tulip-necked and flared baluster jugs in the Museum of London reserve collection range from 2400 to 4300ml, and the average capacity may well correspond with Henry III's 1266 wine gallon measure of 3540 ml (Skinner, 1967, 92-3; see Fig. 91).

3. Squat (Figs.46-9; Pl.II)

The body is more or less globular in appearance, with the height and girth approximately equal. The neck is generally distinct and parallel-sided. The form may be closely similar in shape to the rounded jug, and almost impossible to distinguish from vessels of intermediate size between large and small rounded (Figs.47-49). Capacities range from 2649ml to 4000ml. Less common is a much larger form of squat/rounded jug or pitcher, possibly used for liquid storage (Figs.19-20, 32, Nos.98, 100). Surviving examples are decorated in the early and Rouen styles. The capacity of the only complete vessel illustrated in this paper (Fig.20) has been mathematically calculated (by Clive Orton) to be approximately 230l. Another, almost complete, example of this type of vessel, decorated in the Rouen style, was found during excavations at Westminster Abbey (Platts, 1976, fig.13, no.31; pl.8).

4. Pear-shaped (Figs.51-53; Pls.VI, VII)

The upper part of the body is similar in shape to the conical jug, but without the straight sides, the profile curving gently into the base, giving a bulbous appearance. Very few complete examples survive, and decoration is mostly restricted to the North French and highly decorated styles.

5. Conical (Figs.54-55)

The shape is that of a truncated cone, with straight sides, and the base diameter wider than that of the rim. Conical jugs may be plain, or decorated in the North French or highly decorated styles. The shape is echoed by the form of the conical drinking jugs (see p.40).

6. Waisted (Fig.34, Nos.111, 112; Fig.41, Nos.139, 141; Fig.53, Nos.191-193; Pl.VI)

A small number of jugs, although basically of baluster, rounded or pear-shaped form, have a constriction of the body which gives them a waisted appearance.

7. Barrel-shaped (Fig.59)

Only two examples have been identified.

The shape mirrors that of the 15th-century Cheam ware barrel-shaped jug (Orton, 1982, fig.16, nos.1-4. 5R; nos.6-10. 11M) and, made in Late London-type ware, they seem to be a conscious imitation of this form.

RIM FORM.

Early jugs characteristically have a collar rim, a type which is of limited occurrence on later forms. It most commonly has a flattened and externally-thickened (Fig.11, Nos.7, 9) or bevelled top (Fig.10, Nos.5, 6), but also occurs in simple rounded form (Fig.10, No.1; Fig.14, No.17). Other early jug rim forms include a simple flat-topped type (Fig.15, No.21), and an externally-thickened, flat-topped type, with a ridge below the rim (Fig.13, No.14). The rims are formed on the wheel, the potter commonly finishing with a flat top, although those with a bevelled appearance have simply been pressed inwards with the thumb. Rilling, or shallow decorative grooves, c.1-2mm deep and c.9-10mm wide are found on almost all early jugs (Fig.10, Nos.4-6; Pls.I, III), starting just below the rim, and continuing down to the shoulder.

Rouen and North French style baluster jugs most frequently have a simple, flat-topped or slightly bevelled, externally-thickened rim, as opposed to a collar rim (Fig.25, Nos.51-53; Fig.33, Nos.101-104). The neck is straight-sided, and may have a ribbed appearance, produced on the wheel by making fairly regular, overlapping grooves with the thumb, in direct imitation of French models (*décor annelé*). Rouen style jugs frequently have a number of distinct cordons around the neck (Fig.25, No.52).

Highly decorated jugs of various forms share certain rim characteristics. They are commonly thickened externally and internally bevelled or flat-topped (Fig.52, Nos.186-188). A slight external cordon may be added, formed on the wheel by deliberately pressing out a ridge of clay. In a few examples the pressure of the thumb inside the vessel while forming the rim has pushed the clay outwards to give a collared effect similar to early jug types (e.g. Fig.40, No.132).

A simple, internally-bevelled rim is most

frequently found on white slip decorated and undecorated baluster forms, with a more distinct, parallel-sided or slightly flaring neck (Fig.35, Nos.113-115; Fig.48; Fig.36, Nos.118-119). The same basic rim form also occurs on the tulip-necked baluster form, but with the typical bulbous neck. Most of these vessels have a rounded rim, grooved on the inside (Fig.37, No.126).

SPOUTS

The majority of early jugs, and certain highly decorated and white slip decorated forms, such as small rounded and squat jugs, are provided with a simple, pulled pouring lip (Fig.12, No.11; Fig.50, Nos.172-174; Fig.48, Nos.163, 165), sometimes also slightly pinched (Fig.10, No.6). A few early jugs, and baluster jugs of most types, in particular Rouen and North French copies, have deliberately been made without a spout or pouring lip (Fig.10, No.5; Fig.25; Fig.33). Only one of the early jugs examined, of large rounded/squat form (Fig.19, No.38) was found to have a spout, rather than a pouring lip. It is apparently derived from an animal head, with the mouth forming a channel for the contents of the vessel. This form of spout is related to the type found on a number of zoomorphic and anthropomorphic jugs (see p.30). Bridge spouts, copying French examples, are commonly applied to highly decorated and North French style conical jugs (Fig.54, Nos.203-206), and somewhat less frequently to other forms, for example, pear-shaped jugs (Fig.52, Nos.185, 190; Pl.VII).

A small number of long tubular spouts with separate 'bridges' or struts of clay have been found in 13th-century contexts at Billingsgate (Fig.58, Nos.234-238). The complete form of the vessels from which they come is not yet known, and only a few plain, tubular spouts been found still attached to part of the original vessel. The most complete example is a small, highly decorated, bottle-shaped vessel (Fig.58, No.233), whose top and handle are now missing. The spout, which is attached to the shoulder, has also been broken away, but would clearly have been of the type found at Billingsgate. Rather more unusual are two tubular spouts whose

lower portions are missing, but which were originally connected with the rim of a vessel whose shape cannot now be reconstructed, by means of a strut in the form of a human arm and hand (Fig.58, Nos.239, 240).

The one complete spout of tubular form is both shorter and wider than those described above (Fig.58, No.230), and is fixed to the narrow neck and collar rim of a North French style jug. This form of vessel might have had a lid. Two nearly complete London-type ware lids of only slightly smaller diameter (Fig.58, Nos.231-232) may well have been made for such jugs. One of these (No.231), has two small pre-firing holes, *c.*15mm apart, neatly pushed through the flange. This feature has also been noted in Stamford ware, in which it appears to have been intended to facilitate attachment to the jug (Kilmurry, 1980, 20; fig.5, no.22). Tubular spouts and lids occur together on highly decorated Scarborough ware (Farmer, 1979, 42), and comparable tubular spouts on Grimston ware jugs (Clarke and Carter, 1977, 206-7).

BASE FORM

Virtually all early jugs have a 'sagging' base, with varying degrees of curvature ranging from almost flat (Fig.10, No.3) to distinctly convex (Fig.12, No.11). The smooth, well rounded external appearance of such bases, and the internal hand impressions, suggest that they were pushed out from inside the vessel into a mould, or possibly into a pad of leather. Slightly sagging bases are less commonly found on other forms, such as rounded, conical and squat jugs, and when they do occur, may be produced by the method described above. However, a slightly convex appearance in such cases is more frequently the result of pulling the clay up towards the base angle when making thumbled decoration (Fig.51, No.179). Thumbing, which is found on most jug types, may be continuous (Fig.34, Nos.108, 111) or spaced at regular intervals, either as single impressions (Fig.50, Nos.173, 174), or in groups of two to four (Fig.51, No.180; Fig.53, No.191). In only a few instances are the bases of early jugs thumbled in this way (Fig.12, No.12). A small number of vessels simply

have oblique, thumb-nail nicks around the base (Fig.53, No.192), or a series of single, well-spaced, broad impressions (Fig.53, No.196).

Knife-trimming, to pare down the thickness of the base angle, is common, especially with a sagging base. This may be in the form of overlapping, horizontal knife-marks, or, particularly on early jugs, of distinct, long, vertical facets (Fig.12, No.13; Fig.24, Nos.49, 50). Baluster jugs of all types most commonly have a flat (Fig.25, Nos.54, 55), or recessed base (Fig.25, Nos.51, 52) which may be created simply by smoothing the thumb around the base, as in a number of Rouen and North French style jugs (Fig.33, No.101), or more frequently by using a knife (Fig.31, No.88).

HANDLE FORM

Early jug handles are most characteristically of strap form, thicker at the edges than in the middle, and generally with a smooth, concave profile on the upper surface. This type of handle, which appears to have been made on the wheel, is almost invariably restricted to late 12th-century forms. Only one exception has so far been recognised, a pear-shaped jug of North French type (Fig.51, No.179) which apparently represents a mixing of the early style with the new French-derived style.

It is not clear whether other forms of London-type handles were wheelthrown, or formed as a 'sausage' of clay, which could then be flattened, or shaped as desired, before being attached to the jug. The 'pulled' handle, with its gently tapering form produced while on the jug, is completely absent from London-type forms. At the rim and where it joins the body, the handle is pushed through the wall of the pot, rather than smoothed on externally (Fig.12, No.11; Pl.5). A separate strip of clay is then wrapped around the join which can usually still be seen, although it is mostly wiped smooth on the inside. This method of attachment remains characteristic of the London-type industry throughout its life, but, with the notable exception of Kingston-type ware (Jenner *et al.*, forthcoming), is not widely

recorded in other contemporary industries in south and west England (Vince, 1983b).

Various simple types of decoration may be added to early jug strap handles. These include closely-packed stabbing (Fig.18, No.33), single, large thumb impressions along a central ridge (Fig.19, No.38) and regular thumb impressions down the sides, pushing the clay slightly inwards on the upper surface (Fig.18, No.34; Fig.12, No.13). Slightly more elaborate methods involve the application of thumbed strips down the centre of the handle (Fig.19, Nos.36, 37; Fig.20, No.39).

Rod handles, which are not so common on early jugs, are the only form used on Rouen style jugs. They remain the predominant handle form throughout the rest of the life of the industry. Rouen style jug handles are often deliberately faceted along their length (Fig.31, No.88; Fig.32, Nos.98, 100). Handles of squashed oval section may also be found with most jug types (Fig.11, No.7; Fig.52, No.186).

Decoration continues to be employed rarely, and is almost always simple. Early jug rod handles may be decorated with short, oblique slashes (Fig.14, No.17), chevrons (Fig.12, No.12), stab-marks (Fig.13, No.14), incised lines (Fig.14, No.20), or a combination of these (Fig.13, No.16). Decoration on later jugs mostly consists of two or more shallow vertical grooves running down the length of the handle (Fig.35, No.116). Rouen and North French style, and highly decorated jugs typically have plain handles decorated only with two 'ears' of applied clay, just below the rim (Fig.30, No.78; Fig.33, No.102; Fig.40, No.136). This feature is also found on decorated Kingston-type ware jugs of mid to late 13th-century date (Jenner *et al.*, forthcoming). A small number of early jugs have a single thumb impression either side of the handle where it joins the rim (Fig.10, No.3; Fig.11, No.9), although this is very rarely found on later forms (*e.g.* Fig.34, No.107). A number of white slip decorated jugs, notably those of rounded and squat form (Fig.48, Nos.163, 165), have two shallow, but distinct thumb-impressions, in place of the applied 'ears' described above. This method is prob-

ably copied from contemporary Mill Green ware jugs (Pearce *et al.*, 1982).

'MAKERS' MARKS'

Two London-type ware vessels have been marked in what appears to be a non-decorative fashion (Fig.36, No.119; Fig.38, No.129). Both are plain baluster jugs, and one (No.119) has also been recognised as a possible 'waster' or 'second' (see p.4). The mark on this vessel takes the form of a reversed 'P', made in a coarser clay than was used for the jug itself, and was applied to the body before firing, just below the shoulder, opposite the handle.

The baluster jug illustrated in Fig.38 has two groups of symbols incised on the body before firing, one just below the handle join and the other in a similar position on the front of the vessel. The exact significance of these marks is unknown, although there are a number of parallels. Symbols on Saintonge green-glazed jugs have been interpreted as marks made by the potter or master-potter to record batches, or as trade-marks (Dunning, 1968c, 12-3), but are invariably made after firing. Nevertheless, it is likely that the London-type jugs were marked for a similar purpose. Notable parallels in south-east England are known in Mill Green ware (Pearce *et al.*, 1982, fig.6, no.4), Kingston-type ware (Jenner *et al.*, forthcoming), and on a baluster jug in Guildford Museum made in an unidentified dark red sandy fabric (Rackham, 1972, pl. 21).

DECORATION

A number of different 'styles' of decoration may be recognised on London-type ware jugs, although the distinction between them may not always be clear from sherd material.

1. Early style (Figs.10-24, 46; Pls.I-IV; Pl.1)

Early jugs are normally splash-glazed over the upper two-thirds of the body. White slip may be applied to the whole of the upper part of the vessel to give the appearance of a white fabric. A clear lead glaze is most commonly used, although copper-stained green glaze is also found, mostly on white-slipped bodies.

The most common method of decoration

involves the application of thick lines of white clay, probably in a plastic state, c.10–15mm wide. The designs are usually very simple, consisting of repeating linear patterns symmetrically arranged around the body. These include arrangements of diagonals, single (Fig.13), or crossed (Fig.14, Nos.17–18), and sometimes within horizontal limiting lines (Fig.14, No.19), simple horizontals (Fig.15, No.21), verticals (Fig.17, No.25), lattice patterns (Fig.15, No.23), semicircular arcs (Fig.15, No.22; Fig.16; Fig.17, No.26) and a variety of rather freer designs (Fig.21, No.43).

Applied lines of brown clay, with a higher iron content than the fabric of the vessel, are sometimes found in designs similar to those described above. Examples are known which combine such decoration with white clay lines (Fig.17, No.26; Fig.20), or with applied pellets of self-coloured clay (Fig.19, No.36).

Other forms of decoration include horizontal lines of applied scales (Fig.46, No.153; Fig.17, No.28; Fig.24, No.50), or finger-impressed dimples (Fig.18, Nos. 30–32), combing (Fig.46, No.152) and incised wavy lines (Fig.24, No.48). An unusual method of decoration (not illustrated) involves the application of diagonal lines of green glaze on a clear-glazed jug.

Only a few examples have been identified of early jugs decorated using any form of stamp. One complete early squat jug (Pl.II) combines horizontal rows of white slip scales on a red-slipped body under a clear glaze, with a single row of white slip discs, stamped with a cruciform design, around the neck.

Sherd material confirms that simple, linear, white slip designs far outnumber more complex schemes. However, it is not generally possible to assign parts of vessels to a particular design scheme with any degree of reliability.

2. Rouen style (Figs. 25–32, 86; Pl.V; Pl.2)

Decoration is in direct imitation of French models from the Rouen area (Barton, 1965), although the means of achieving the distinctive 'style' are different. The effect of areas of red-painted decoration on a white clay body may be imitated in London-type ware by

applying broad lines of thick white slip onto an unslipped body in juxtaposition with contrasting areas of red, applied as a thinner slip, and each defined by strips of white slip squeezed onto the pot between the fingers (Fig.25). However, the effect is more frequently achieved on later Rouen copies by wiping white slip over the whole of the upper two thirds of the body by hand, perhaps with a pad of leather, finishing in an uneven line anywhere from the maximum girth to just above the base. Areas and lines of red slip are then applied over this under a clear lead splash-glaze (Fig.28).

The neck is most frequently decorated with alternating horizontal zones of white and red slip, often separated by cordons, or by strips of white slip. The red bands commonly contain one or more horizontal rows of white slip pellets (Fig.25, Nos.52–55; Fig.26, No.56). Occasionally, horizontal or diagonal elements are included (Fig.25, No.51; Fig.26, No.58).

The most common design scheme is based upon repeating chevrons painted in white slip in a zone around the body of the pot, generally ending more or less at the maximum girth or just below. The triangles left between the chevrons are filled with red slip, outlined with one or more applied white strips and filled with closely-packed rows of white slip pellets (Fig.25; Fig.26, Nos.56–59; cf. Barton, 1965, fig.1, no.1). Alternatively, the chevrons may be filled with thin red slip, and embellished with a line of white pellets down the centre (Fig.26, Nos.60, 61; Fig.28, Nos.63–66; cf. Barton, 1965, fig.1, no.4). This design is mostly confined to jugs with an overall white slip, the triangles between the chevrons being left blank or occupied by a single vertical (Fig.28, No.65), or crescent-shaped strip of white slip (Fig.28, No.64) either of which may be roller-stamped (Fig.28, No.66; Fig.27), or further pellet-filled chevrons (Fig.26, Nos.60, 61). However, in comparison with the French material, roller-stamps and other stamps are rarely used (*e.g.* Fig.26, No.59; Fig.27; Fig.28, No.66; Fig.30, No.80; Pl.8c–d). Another common design scheme consists of varying numbers of vertical white slip lines which



Plate I. Early rounded jug with white slip decoration and clear glaze. (Height 313mm)



Plate II. Early squat jug with red slip and clear glaze. (Height 255mm)



Plate III. Early rounded jug with red slip decoration and clear glaze. (Height 390mm)



Plate IV. Tripod pitcher with polychrome decoration. (Height 275mm)



Plate V. Baluster jug with Rouen style decoration. (Height 260mm)



Plate VI. Waisted pear-shaped jug with North French style decoration. (Height 260mm)



Plate VII. Pear-shaped jug with polychrome decoration. (Height 215mm)



Plate VIII. Tulip-necked baluster jug with white slip and clear glaze. (Height 427mm)

separate wider red slip bands containing lines of white slip pellets (Fig.30, Nos.78–80; cf. Barton, 1965, fig.2). Very simple patterns are also known based on regularly-spaced horizontal or vertical lines of white slip, or both, generally on an unslipped body (Fig.31, Nos.83, 84, 86; Fig.32, No.97). One example has a lattice design made from thick red slip strips, with a white slip pellet at each intersection (Fig.31, No.85).

More unusual designs include crossed diagonals (Fig.31, Nos.87, 88), semicircular arcs of white and/or red slip (Fig.28, No.70; Fig.29, Nos.76, 77; Fig.32, No.98), inverted horseshoes (Fig.32, No.89), white slip in wavy lines (Fig.30, No.81), ovals (Fig.29, No.75) and other less easily recognisable schemes. The jugs from Otford (Fig.29, Nos.72–4) are all decorated with red-infilled circles or shield-shapes (cf. Barton, 1965, fig.1, no.2). Prominent bosses, common to the French vessels (Barton, 1965, fig.1, nos.3, 5; fig.2, nos.6–9), are almost entirely absent from London-type Rouen copies.

3. North French style (Figs.33–4, 39–40, 47, 50–4, 87; Pl.VI; Pl.2)

This style, used on jugs of baluster, rounded, conical, pear-shaped and squat form, is again derived from contemporary northern French models (*e.g.* Barton, 1966, fig.23; Platt and Coleman-Smith, 1975, fig.180, no.991). The London-type vessels characteristically have a copper-stained, green glaze which may be less patchy in its cover, and both thicker and more lustrous than on early jugs. This is generally, but not invariably, applied over a white slip covering the neck and body, thus giving the appearance of a white fabric. Polychrome decoration may also be employed, involving the application of red or white slip stripes painted with green glaze, under an overall clear, lead glaze (Fig.51, No.184). Decoration at its simplest takes the form of more or less regularly spaced, plain, vertical lines or groups of lines extending from just below the rim or from the shoulder, to anywhere from the mid-point of the body to just above the base (Fig.33). These lines or stripes are generally made of thick, white slip pressed or squeezed onto the

body in the same manner as on Rouen style jugs. However, strips of self-coloured clay may be used on unslipped bodies (Fig.33, Nos.105, 106).

Variations, maintaining the same regular linear scheme, commonly involve the application of one or more vertical lines of scales made from thick, white slip, alternating with any combination of one to four plain or roller-stamped strips (Fig.40, Nos.132, 136; Fig.51, No.183). Several different types of roller-stamps have been identified (see Pls.9–11), the most commonly used having regular square grid (Pl.10a–c), crossed diagonal lattice (Pls.9, 11e) and horizontal notched patterns (Pls.10f, 11a–b). Ring and dot stamps are also used (Fig.60, No.256; Pls.12f, 7–8), in addition to stamps of more individual design (Pls.11e, 12a–e).

Three of the complete vessels examined have a single decorative motif placed opposite the handle, within the usual simple arrangements of vertical lines. In two instances this takes the form of a cross whose outline is made up of applied strips of white slip, with the area thus delineated filled in with red slip (Fig.39, No.131; Fig.40, No.136). The motif on the jug illustrated in Fig.39, No.130 is so far unique in London-type ware. Outlined again in white slip, it represents a human figure which has been illustrated by Gerald Dunning as complete (Dunning, 1960, fig.47). However, the upper part of the torso and the head are now missing from the Museum of London reserve collection.

4. Highly decorated style (Figs.41–44, 55)

The distinction between this and the North French style is somewhat arbitrary, being based on the recognition of a greater complexity and freedom of design than is present within the regularity of the earlier style. It is often difficult, therefore, to distinguish the two styles in sherd material, especially since the methods of decoration employed are more or less the same.

The overall linearity of the design schemes, which remain generally vertical, tends to be broken by the introduction of non-linear motifs. Plant-derived scrolls, some of them

probably vines with clusters of grapes (Fig.41, No.138, 142; Fig.60, No.257), floral motifs (Fig.41, No.141; Fig.61, No.266), fleur-de-lys (Fig.60, No.255), closely-packed horizontal rows of scales in various patterns (Fig.41, No.139; Fig.51, No.181; Fig.60, No.250; Fig.61, Nos.261-263), rows of chevrons (Fig.54, No.204) and lattice patterns of crossed diagonals (Fig.40, No.134; Fig.52, No.189; Fig.61, No.264), sometimes with infill designs (Fig.42, No.143; Fig.52, No.186; Fig.62, No.285), illustrate something of the diversity of this 'style'. The polychrome jugs tend to display an even greater complexity, often combining several different methods of decoration (Fig.35, No.117; Fig.55, No.210; Fig.62). The large rounded polychrome jug illustrated in Fig.43 has an extremely unusual and striking design consisting of two tiers of large, regularly-spaced roundels, separated by panels of foliate decoration, possibly vinous. The borders of the roundels are coloured with red slip, and contain stamps resembling wheels (Pl.11f), all surrounding an applied central motif of a bird with comb-stabbed body, crest and tail, stamped eye and incised beak.

Further decorative variation is obtained by applying white slip designs of varying degrees of complexity to a red-slipped body, under a clear glaze (Fig.44, No.146; Fig.62, No.289). Far greater use is made of stamps, including fleur-de-lys (Pl.12d, e), wheels (Pls.11e-f, 12a), flowers (Pl.12b) and ring-and-dot devices (Pls.7-8), in conjunction with roller-stamp patterns similar to those found on North French style jugs (*e.g.* Pls.11e, 8a; Fig.41). Combed and incised decoration are also found, generally in simple designs such as crossed diagonals (Fig.34, No.108; Fig.50, No.176; Fig.61, Nos.267, 268). More complex patterns are relatively uncommon (Fig.40, No.137; Fig.61, Nos.269, 275). The baluster jug illustrated in Fig.35, No.116, is decorated with an unusual combination of white slip chevrons with combed ovals containing rows of stab-marks made with a comb.

Anthropomorphic jugs form a distinctive sub-group of highly decorated jugs, and may be divided into two types: those with faces modelled on the body, and those with face-

spouts. Of the former category, three different illustrated vessels in particular display remarkably similar features and technique, and may well have come from the same workshop (Fig.56, Nos.211-213). However, the complete profile of only one of these can be reconstructed (No.211). The vessel is of pear-shaped form, decorated with combed chevrons and wavy lines around the neck and above the base. It seems that a series of three faces, probably identical, were modelled around the body. The one surviving face is that of a bearded man, pushed out from inside the vessel to emphasise the features. The prominent nose is applied, the eyes are ring-and-dot stamps, and the mouth, beard, eyebrows and additional details are incised. Other surviving fragments of applied faces are also modelled in white slip and clay, and utilise similar methods of emphasising the features (Fig.56, Nos.214-19). Such methods were also employed on the modelled face-spouts (Fig.56, Nos.215-218, 220, 222; Pl.12f). These may provide, through the mouth, a channel for liquids (Fig.56, Nos.215, 220); or the face may simply be decorative, modelled below an applied bridge spout (Fig.56, No.222). The fragment illustrated in Fig.56, No.221, appears to have been deliberately cut down from a face jug into a roundel, with only the nose remaining as a means of identification. The purpose of this adaptation is unknown.

Jugs with zoomorphic decoration (Figs.43, 57) constitute a further sub-group, and, in common with anthropomorphic vessels, may have figures placed around the body, or modelled animal heads applied at the rim. The latter are principally intended to act as spouts, pushed through from inside the jug, although in one instance, the mouth would not allow the passage of liquid (Fig.57, No.224). One of the three examples illustrated appears to represent a pig's head, with additional incised decoration (Fig.57, No.226); one is a ram's head (Fig.57, No.224); and the other is somewhat stylised, with appendages perhaps intended to represent the horns of a ram (Fig.57, No.223).

Two vessels are decorated with pairs of confronted birds grouped around the body

(Fig.57, Nos.227, 229). The more complete of the two (No.229) retains indications of what was probably an oval formed of white slip containing each pair of birds. The birds are separated by two parallel, vertical lines which may represent the trunk of a tree. The birds' bodies are modelled in thick white slip, with the wings added in the same clay as the body of the jug. The body-slip is smoothed over the wing, and the whole jug is covered with a lustrous green glaze. The outline of the wing is emphasised by combing, and the body is closely stabbed with a small comb. Ring-and-dot stamps are used to represent the eyes. Similar techniques were employed on the other green-glazed jug fragment with bird decoration (Fig.57, No.227), on the several birds applied to the large rounded polychrome jug illustrated in Fig.43 (see above); and one other illustrated sherd, probably from a zoomorphic jug (Fig.57, No.228).

5. White slip decoration (Fig.35, Nos.113-15; Fig.44, No.147; Figs.45, 48-9, 88)

This style is found on jugs of squat, rounded and flared baluster form, and involves the application, in a plastic state, of white slip lines in zones around the neck and body. A sparse, clear, lead splash-glaze is used over this, but the body is otherwise unslipped.

Decoration on the neck may take the form of crossed diagonal lines (Fig.35, Nos.113-115), parallel horizontal lines (Fig.48, Nos.163-165), or overlapping loops (Fig.63, No.293). Each of these types may be found with any of the decorative schemes applied to the body.

Body decoration commonly consists of regularly-spaced vertical lines, arranged in a zone extending from the bottom of the neck to just above the base (Fig.44, No.147; Fig.48, No.161). These may or may not be contained within upper and lower horizontal lines (Fig.35, No.113; Fig.48, Nos.162, 164, 165; Fig.50, No.178). The vertical lines may also be separated by further zones of decoration, for instance, by series of short, oblique strokes (Fig.48, No.163; Fig.63, No.292), or wavy vertical lines (Fig.45, No.148). Other

simple schemes include parallel, horizontal lines, separated by broken horizontals (Fig.49, No.166), crossed diagonal lines (Fig.49, No.168; Fig.63, No.295), and horizontal rows of conjoined loops (Fig.63, No.296).

Decoration on the large rounded and baluster jugs is often more complex. The body may be divided into two or three broad, horizontal zones, each of which is occupied by various combinations of vertical lines and semicircular loops or triangles (Fig.35, Nos.114, 115; Fig.45, Nos.149, 150).

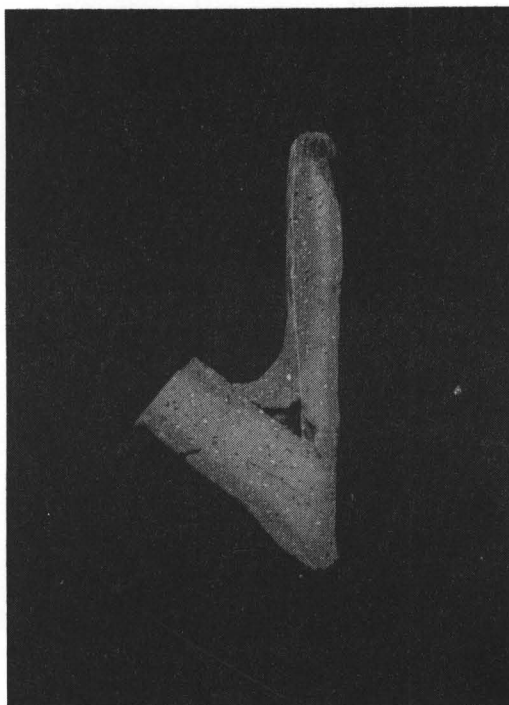


Plate 5. Section through wall of jug showing method of handle attachment.

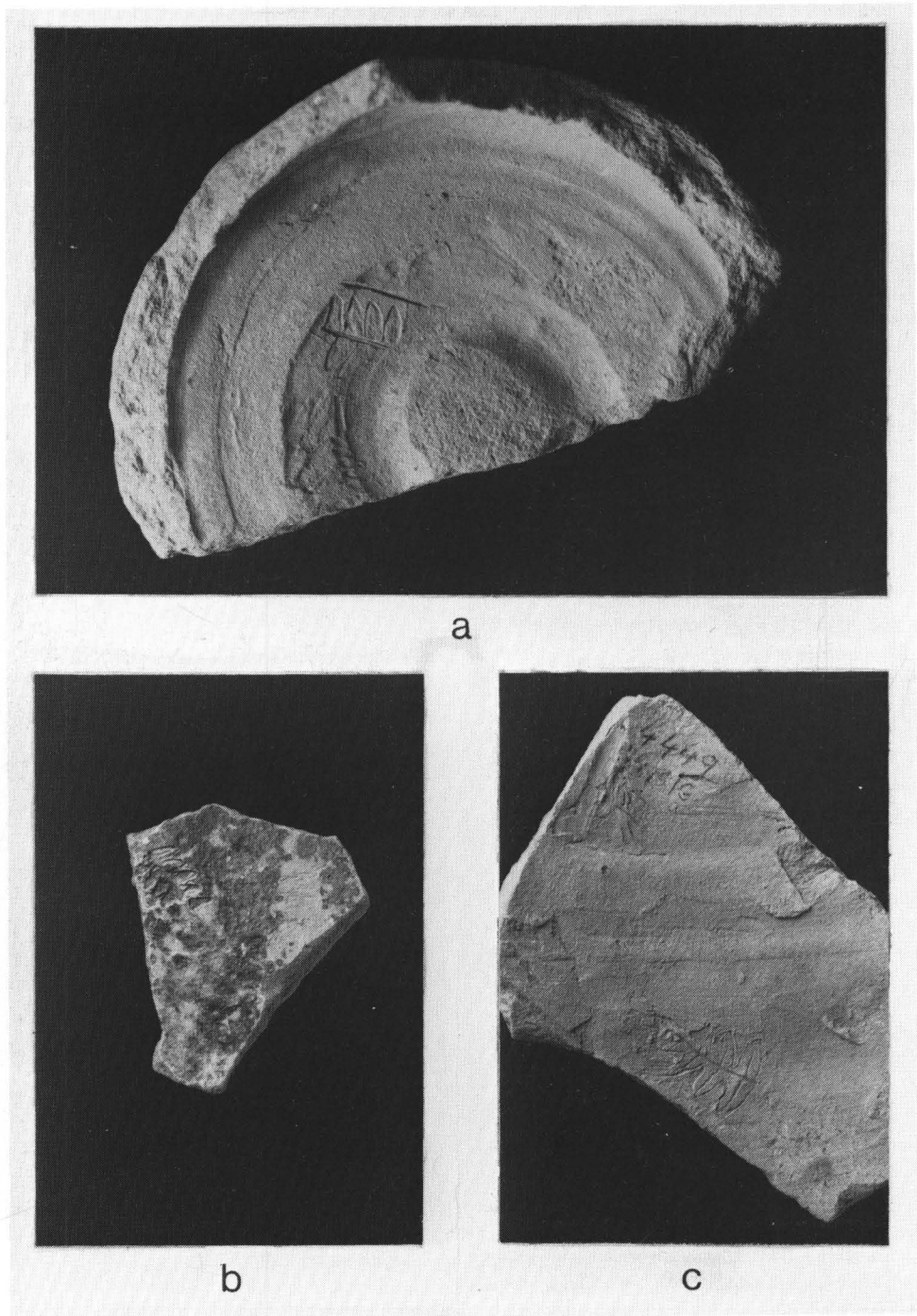
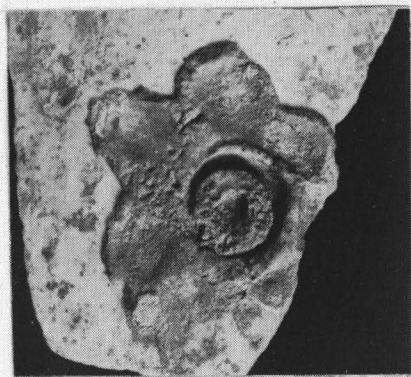
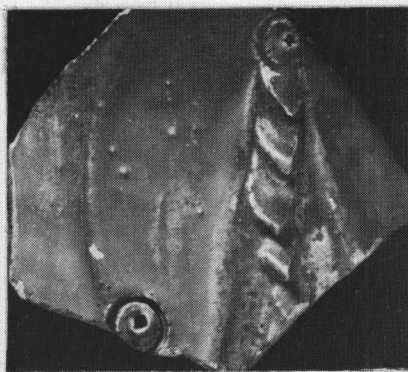


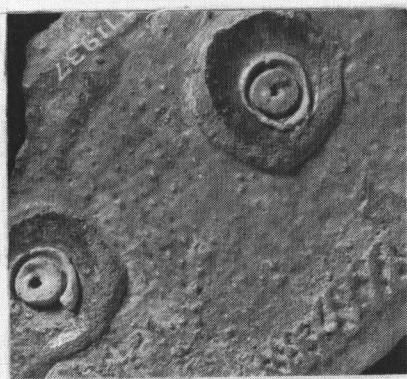
Plate 6. Sherds showing plant impressions on the inner surface.



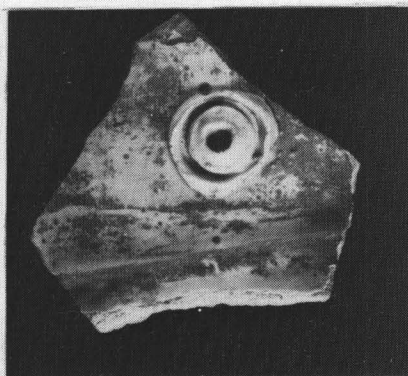
a



b



c



d



e



f

Plate 7. Details of ring-and-dot stamps from miscellaneous jugs. (1/)

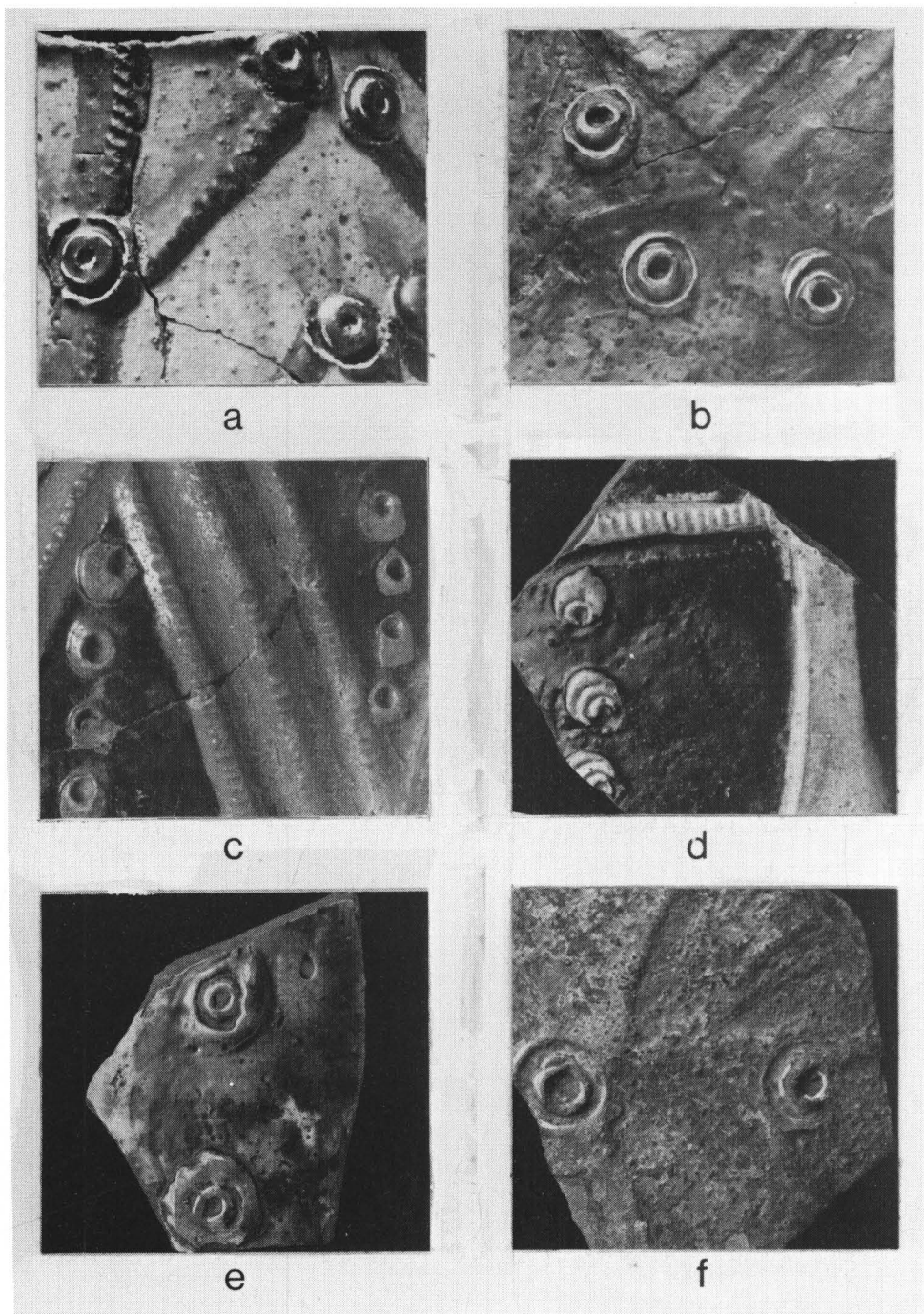


Plate 8. Details of ring-and-dot stamps from miscellaneous jugs. (1/1)

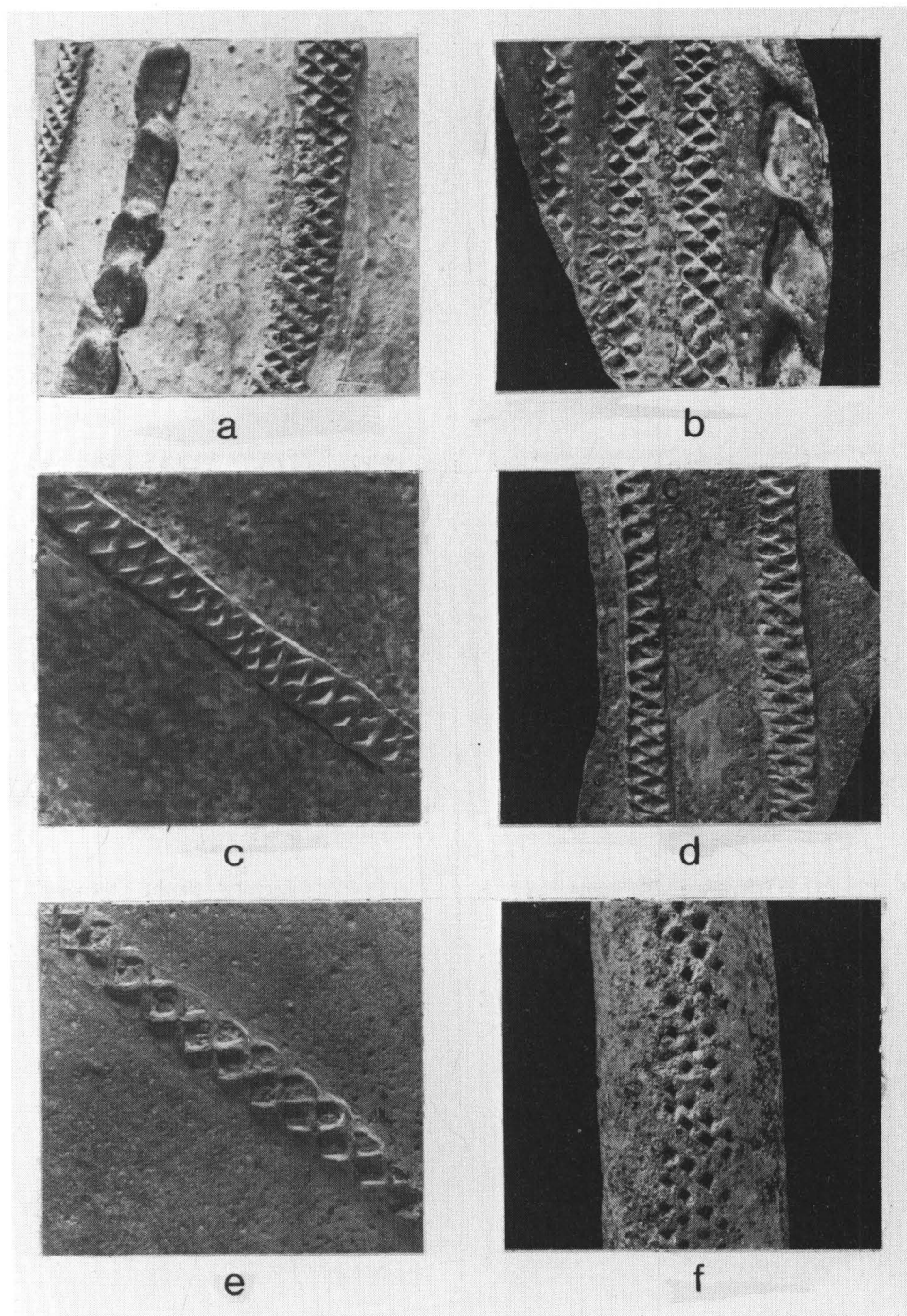


Plate 9. Details of roller-stamp impressions from miscellaneous jugs. (1/1)

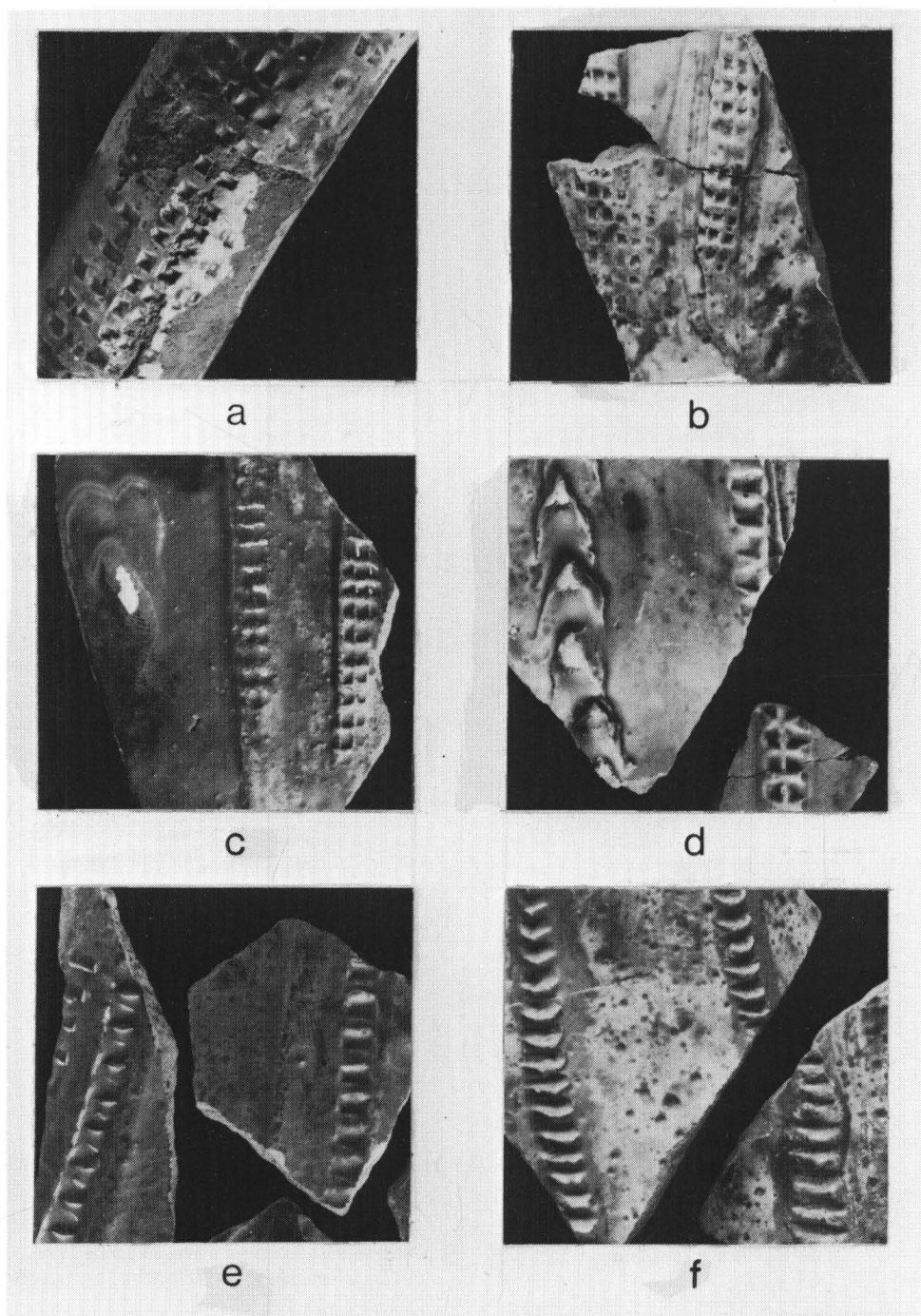
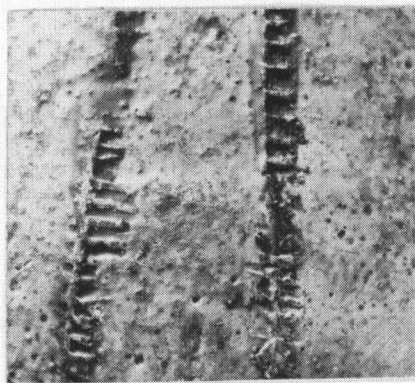
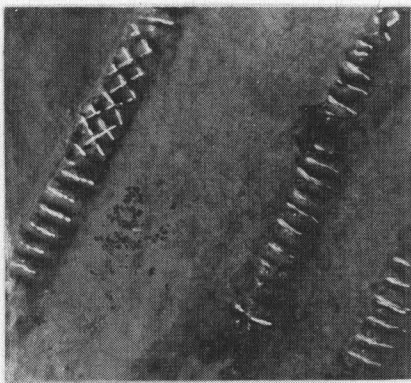


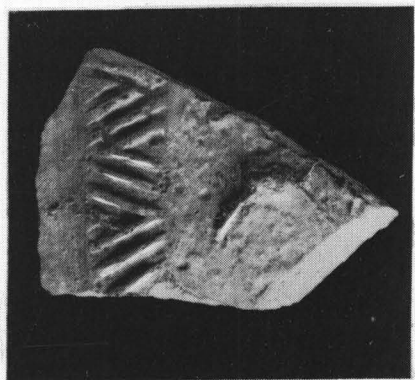
Plate 10. Details of roller-stamp impressions from miscellaneous jugs. (1/1)



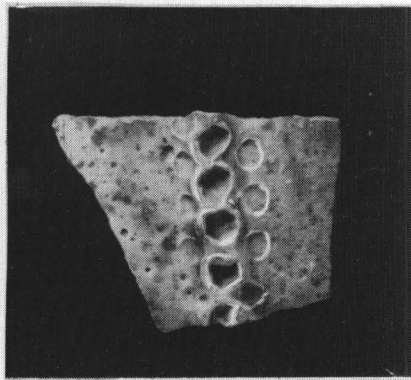
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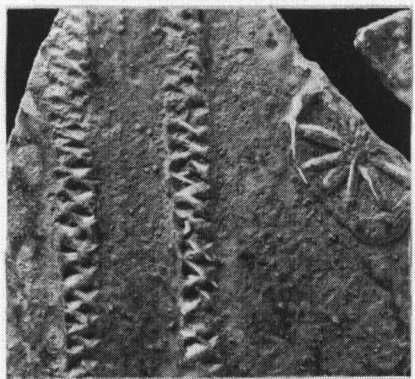
b



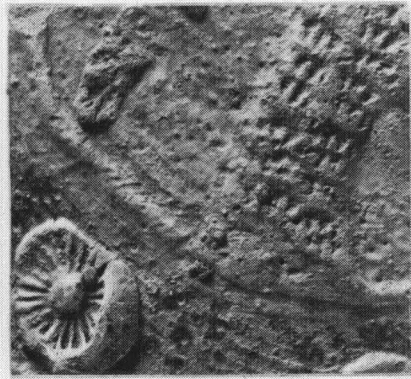
c



d



e



f

Plate 11. Details of roller-stamp impressions (a-c), and 'wheel' stamps (e-f) from miscellaneous jugs. (1/1)

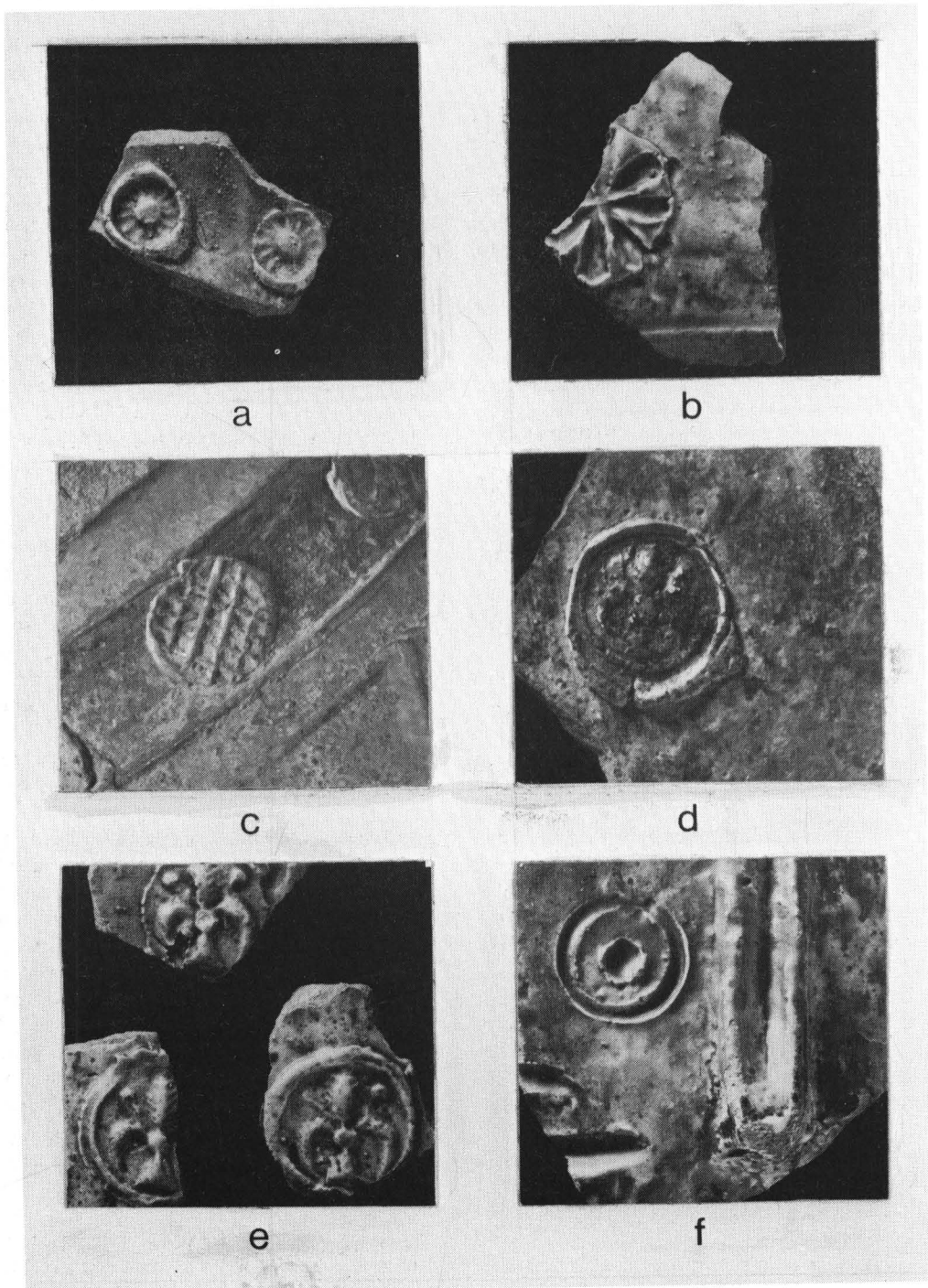


Plate 12. Details of various stamps (a-e) and ring-and-dot stamp (f) from miscellaneous jugs.
(1/1)

SPOUTED PITCHERS (Fig.21, Nos.40–42; Fig.85)

Only one complete London-type spouted pitcher has so far been identified (Fig.21, No.40). It is of jar form, with a globular body, narrow neck, sagging base and no handle. The spout, as on the two other illustrated examples, is a short, free-standing tube of clay attached to the shoulder. The clay of the vessel walls is smoothed up from the inside towards the mouth of the spout. The rims of all three examples are different: No.40 has a collar with a slightly flattened top; and Nos.41 and 42 both have flared rims. The former is very simple, with a slight flattening at the top, comparable with the rim form associated with tripod pitchers (see below). The latter is rounded internally, with regular external thumbing. The base of the complete vessel is knife-trimmed underneath and around the lower part of the body, with groups of three closely-spaced, very slight thumb impressions around its circumference.

All three illustrated spouted pitchers are wheelthrown and made in Coarse London-type ware, with sparse patches of clear splash-glaze externally. The complete pitcher (No.40) has been published by Dunning, with a suggested Netherlands origin (Dunning, 1976a, 192; fig.1, no.7). Since the vessel is absolutely complete, the fabric is not visible in section. However, rim sherds of a spouted pitcher from early to mid 12th-century contexts at Billingsgate provide a close parallel, and can be positively identified as Coarse London-type ware. Only one vessel (Fig.21, No.41), has any form of decoration: a horizontal band of thick, crudely-applied white slip around the neck, with a single row of white slip pellets directly above.

TRIPOD PITCHERS (Fig.21, Nos.43, 44; Figs.22–3; Pl.IV)

There is a small number of substantially complete London-type tripod pitchers in the reserve collections of the Museum of London, British Museum and Bank of England, and several sherds have been found in 12th-century contexts at Billingsgate and Ludgate

Hill. Made in both the coarse and fine London-type fabrics, including one of the light-firing variants, three types may be distinguished. The commonest of these, (see Fig.21, Nos.43, 44; Fig.22, No.45; Fig.23, No.47), appears to be influenced by southern English tripod pitchers: the body is rounded or squat, and distinct from the early rounded jug form, with a constricted neck, simple, internally bevelled, flaring rim and pulled pouring lip. The base is convex in profile with three short feet. These may have a small, central hole pushed through from the bottom, apparently to facilitate attachment to the base. Handles are of rod or squared section, and may be decorated: two of the illustrated examples have a line of closely-spaced, stabbed chevrons; and one (No.44) has a thick, twisted strip of clay inlaid down the centre (cf. Jope and Threlfall, 1959, fig.17). Although tripod pitcher handles are generally attached in the manner typical of London-type ware, that is, by being pushed through the wall of the pot (see p.26), the handle of No.47 is simply pushed onto the outside of the body.

Body decoration may be related to the early style, consisting of curvilinear designs applied in white slip (Fig. 21, No.43). The pitcher illustrated in Fig.22, No.45 has a particularly unusual design scheme in which thick and prominent lines of white clay form a series of circular motifs, separated by alternate plain and chained vertical lines, within two horizontal limiting lines. A number of sherds from 12th-century contexts at Seal House waterfronts I and II, and from Billingsgate, share a common scheme of decoration with a near-complete tripod pitcher in the Museum of London reserve collection (Fig.23, No.47). This scheme consists of applied horizontal bands of clay with crude roller-stamped decoration of square-grid pattern. All of these pitchers have a clear splash-glaze over the upper part of the body, with spots and dribbles inside the neck.

The other two classes of London-type tripod pitcher are each represented by one complete illustrated example. The large pitcher of early rounded form (Fig.22, No.46), is probably French-influenced. It has

a collar rim with pulled and slightly pinched pouring lip, a cordonned neck and sagging base, with three solid, applied feet. Where it joins the rim, the rod handle is decorated with two thumb impressions, one on each side, and a number of oblique incised lines which may represent a devolved animal head. The overall decorative scheme is rather unusual, making use of applied pellets and prominent bosses of white clay. Incised lines define triangular and semi-circular areas filled with red slip, and this provides a contrast with the pale colour of the body, under a clear glaze.

The third class of tripod pitcher to be recognised in London-type ware is clearly influenced, both in form and decoration, by Rouen ware. On this basis, it can be dated to the 13th century, later than the examples described above. The illustrated vessel (Fig.23, No.47a) is much smaller than the other forms of London-type tripod pitcher, with a capacity of 4300ml – by way of contrast, the capacity of No.45 was measured at 8000ml. The profile is essentially that of a small rounded jug (see Figs. 47–50). Links with the French vessels are demonstrated by the bridge spout, 'eared' rod handle, and flat base with pulled, rather than applied, feet. The use of polychrome decoration with prominent applied bosses further reinforces this connection (cf. Barton, 1965, fig.1, nos.3, 5; fig.2, nos.6–9).

DRINKING JUGS AND BOTTLES (Figs.64-66, 90-92; Pl.3)

A sample of fifty-six complete or near-complete drinking jugs and nine bottles from the Museum of London and British Museum reserve collections was examined, in conjunction with sherd material from excavations at Trig Lane, Swan Lane and Ludgate Hill. The complete vessels were divided into eleven groups on the basis of form, presence of handle, capacity and weight (see Appendix 6).

Bottles, recognisable by the definite absence of handles, were found to constitute 15% of the complete vessels examined. All the other vessels are of jug form, with handle.

Either type may be of baluster (55% of the total; Figs.64-65) or conical shape (Fig.66). A similar proportion of baluster to conical forms is found in identifiable sherd material (primarily bases). Bottles, however, can only rarely be positively identified from sherds.

Rim Form

Most of the bottles, and a smaller number of drinking jugs, have a simple everted rim (Fig.64, Nos.298-304, 310). Drinking jug rims are most commonly externally thickened and collared, generally with a cordon which may be quite pronounced (Fig.64, Nos.305-309). The rim itself may be flat-topped (Fig.64, No.306; Fig.65, No.316), or bevelled (Fig.64, No.305; Fig.65, No.314). Variants include rounded rims with a shallow groove (Fig.65, No.317; Fig.66, No.331) and simple external thickening (Fig.66, No.330). It is difficult to distinguish the various types of form on the basis of rim/neck sherds.

Base Form

The base form is of particular value in distinguishing between the baluster and conical forms of both drinking jugs and bottles. The base-angle of baluster-shaped vessels is generally noticeably less than 90°, while conical vessels are nearly vertical. All bases are flat and knife-trimmed to some extent, on the underside and in horizontal strokes just above the base. This often markedly warps the base diameter.

Handle Form

All drinking jug handles are of plain rod form, with a diameter in the range of 14-18mm. The method of attachment, in common with London-type jugs, is by pushing the upper and lower parts of the handle through the wall of the vessel. The upper part of the handle, easily accessible to the potter, is either smoothed over on the inside by hand, thus obscuring the groove of the cordon below the rim, or is covered over with additional clay on the inside. This fills in the groove of the cordon, and may warp the rim diameter. These methods of attachment can be detected only where the clay has been inadequately bonded and cracks have

appeared during firing (Fig.65, No.317). Variations in the method of handle attachment are more clearly visible on the lower part of the vessel. When the rod is pushed through the wall of the pot, it is often visible on the inside with the excess clay still attached. Some drinking jugs have a round hole, neatly cut or pushed through the wall to facilitate attachment of the handle, leaving little or no excess clay on the inside. Occasionally, the handle can be seen to have been pushed into a V-shaped, vertical or oblique knife-slit or triangular hole cut in the wall of the pot. In some instances, the lower part of the handle has clearly been smoothed down internally by hand, or possibly, if the potter's fingers could not reach, with a pad of leather or cloth attached to the end of a stick. Only one of the vessels examined has a luted handle (Fig.66, No.332). In all examples the join is well smoothed on the outside, with extra clay applied.

Discussion

The majority of drinking jugs and bottles display a complete disregard for quality and finish. Gashes, possibly made with the implements used to pare down the base, kiln scars on glazed vessels (Fig.65, No.316), firing cracks (Fig.64, No.310), and areas of 'flashing' (Fig.64, No.299; Fig.66, No.330) may be found on the body and base. Only rarely were any drinking jugs or bottles carefully finished (*e.g.* Fig.65, No.313). A clear, splash-glaze, with or without an overall white slip, may be applied (Fig.65, Nos.315-320), although the majority of vessels are unglazed.

One illustrated conical drinking jug (Fig.66, No.327) appears to have been deliberately shaved down with a sharp implement after it was fired, probably to just below the rim cordon. The rim so formed is flat-topped and grooved. The handle has also been removed, although the position of the lower attachment is still visible as a reduced scar on the outside wall. A small number of vessels have single, small, post-firing holes, with an average diameter of 6mm, cut out of the body in various positions (Fig.64, No.300; Fig.65, No.316). Their purpose remains an

enigma, and only very few examples have been found in other London-type forms (see Fig.50, No.171; Fig.36, No.123).

Analysis of the capacities and weights of drinking jugs of both types, in relation to measures known to be contemporary, suggests that some at least were deliberately made to given specifications, for use as measures (see Appendix 6; Figs.91-2). Those vessels whose capacities cannot so easily be related to known measures, and which display a greater degree of care in finishing, are more likely to have been made as drinking vessels. Of the larger illustrated drinking jugs, two (Fig.65, Nos.315, 317), have a 'tankard-like' appearance, somewhere between the conical and baluster forms. These, and most other drinking jugs of greater capacity, have handles that are more easily held in the hand. This provides a contrast with some of the smaller vessels, which were probably only given handles to allow them to be hung from a hook on the wall. The measured capacities of bottles, and the absence of handles, suggests that they were probably intended as measures, and were made not to be suspended, but simply to stand on a flat surface. The vessel illustrated in Fig.64, No.310 is exceptional: from its neck dimensions and rim form, it might be described as a bottle with handle attached.

There were no London-type ware drinking jugs in the Seal House waterfront IV assemblage (*c.*1240), nor in any earlier groups, although bottles of both conical and baluster form were found at Billingsgate in early 13th-century contexts. Both bottles and drinking jugs are found in contexts dated to *c.*1270-1280 and *c.*1400-1450 at Swan Lane and Trig Lane, but are particularly common in the mid 14th century (Trig Lane G7; see Fig.90; Appendix 5).

COOKING VESSELS

A number of different types of cooking vessel can be identified in London-type ware – cooking pots, pipkins, tripod pipkins, cauldrons, bowls and dripping dishes. Of these, the last two are readily recognisable as distinct types. However, a degree of similarity exists between the remaining forms, as

represented in the sherd material, which renders their positive identification impossible, unless diagnostic features are present.

COOKING POTS (Fig.67)

These are made in both the coarse, 12th-century fabric and the typical, fine London-type fabric, but with little difference in form. The body is approximately rounded or biconical, and the complete profile may be shallow and bowl-like (Fig.67, No.348), or, more commonly, jar-shaped with the height and girth more or less equal (Fig.67, Nos.337, 339, 340, 342). The base is slightly sagging and the neck short and straight, or slightly flared, with an everted rim which may be rolled (Fig.67, No.338), flat-topped (Fig.67, Nos.345, 347) or bevelled inwards (Fig.67, Nos.339, 342, 348). Identifiable lid-seatings are rare, and it appears that suitable lids were not made in London-type ware. The cooking pot illustrated in Fig.67, No.343 has an externally thickened rim, with an inner ledge which may provide accommodation for a wooden lid. Cooking pots, in common with other related cooking vessels, are often unglazed, or may have a thin, clear splash-glaze inside the base, with a few dribbles and spots on the outside of the body. London-type ware cooking pots occur throughout the waterfront sequences at Seal House and Trig Lane, forming between c.0.4% and 4.8% by EVEs (Estimated Vessel Equivalents; see Appendix 5) of the total London-type ware assemblage from those waterfronts in which they are not residual (up to G7).

PIPKINS (Fig.68, Nos.349-360, 363)

Pipkins are a smaller adaptation of the cooking pot, made by the addition of a horizontal handle. However, in examining excavated material, unless sherds bearing diagnostic features are found, pipkins are not easily distinguishable from cooking pots. Only a relatively low proportion has been identified from the principal waterfront sites under discussion (see Appendix 5).

Those vessels whose complete profile can be reconstructed approximately mirror the body shape of the cooking pots (Fig.68, No.352). Pinched pouring lips are infre-

quently found (Fig.68, Nos.352, 354). Surviving handles may be slightly curved, springing from the shoulder of the vessel, and are of flattened or squared section with a shallow central groove on the upper surface (Fig.68 Nos.358-360). The short, flaring, hollow handle of tubular section illustrated in Fig.68, No.363 is so far unique in London-type ware, and may have acted as a socket for a wooden handle. Bases, when they can be associated with a pipkin form, are generally more or less flat, rather than sagging, but do not retain throwing marks as a result of having undergone some post-throwing modification (Fig.68, Nos.352, 357).

Pipkins first occur in Seal House waterfront III, c.1210.

TRIPOD PIPKINS AND CAULDRONS (Fig.68, Nos.361-2; Fig.69; Pl.3)

Tripod pipkins are closely related to pipkins in shape, although they are slightly larger, and rather less common. Minor variations in rim form may be observed. The neck is longer and gently flared, and the rim rounded with an external ledge, giving a bevelled appearance. The body is typically white-slipped under a sparse, clear splash-glaze. Tripod pipkins differ from pipkins principally in having three short, solid feet, and in this respect they resemble the larger and longer-legged cauldrons. Both types reflect the shape of metal prototypes (see Ward Perkins, 1940, 205-7; pls.LV, LVI). Ceramic tripod pipkins are first positively identified in an early 14th-century context at Ludgate Hill.

Cauldrons closely resemble tripod pipkins in the globular shape of the body, and in the presence of three feet (Fig.69). The main differences lie in the overall dimensions, and in the type of handles and feet or legs. Cauldrons are generally both larger and more substantial than tripod pipkins or cooking pots, and are fitted with two diametrically opposed, angular loop handles of rod section. In only one instance was part of a cauldron leg found still attached to the base (Fig.69, No.367), although almost complete leg sherds have been found in excavations. These are longer, broader and heavier than

tripod pipkin feet and generally have two shallow grooves on their outer surface (Fig.69, Nos.368-370). One example (Fig.69, No.369), has in addition been stabbed twice with a wedge-shaped tool. The angle of surviving base sherds indicates a sagging profile (Fig.69, No.367), apparently pushed out from inside in a manner similar to that employed on the early rounded jugs (see p.26). Neck and rim forms are comparable with those of tripod pipkins. The body generally has an overall cover of white slip, with only a thin spread of clear glaze on the inside of the base. Splashes and dribbles run from the rim and down the neck, both inside and out (Fig.69, Nos.364-367). Heavy soot-ing is evident in all cases.

A relatively small number of cauldrons has been identified in excavated material from Trig Lane groups G2, G3 and G7 (dated c.1270–c.1340), from Foster Lane and Ludgate Hill.

DRIPPING DISHES (Figs.70-71; Pl.3)

Only two substantially complete London-type ware dripping dishes have been found to date, from excavations at Ludgate Hill (Fig.70, No.372) and the Post Office Middle site (Fig.70, No.371; Pl.3). However, sherds are more common. Made to collect the juices from spit-roasted meat, dripping dishes are slab-built and heavily knife-trimmed around the walls and base. The more complete vessel (No.371) is approximately oval in shape, with a pinched-in pouring lip at either end. A single handle, with a pronounced central groove in the upper surface, springs from the middle of one side. On the base below the handle, there remains the stump of a small, applied foot of oval section. The interior of the vessel is covered with a patchy, clear, lead glaze, and the side opposite the handle is heavily caked in soot. The Ludgate Hill vessel (Fig.70, No.372), is similar in shape, but with one side flatter than the other. The pouring lips are less prominent and more pointed. Those parts of the walls to which handles might have been attached are now missing. It is therefore not possible to determine whether or not any handles originally present would have been similar to those on

the more complete vessel, although one has been reconstructed in the illustration, on the less heavily sooted side. One other type of handle has been found, on a sherd from Trig Lane (Fig.71, No.374); it is of horizontal loop form with rod section. A triangular-shaped foot is still attached to the base of the vessel.

A number of dripping dish fragments, most of which could have come from vessels similar in form to No.371, were identified amongst excavated material. The rims are either rounded (Fig.71, Nos.374, 376), or squared (Fig.71, Nos.379, 381). It was not possible to discern the exact orientation of many of the examples.

Sherds showing very little significant difference in typology or frequency occur throughout the 13th-century sequence at Seal House and Billingsgate, and in groups G2 and G3 at Trig Lane (c.1270). Dripping-dishes were never common and were probably in use from the early 13th to mid 14th century (see Appendix 5).

BOWLS AND DISHES (Fig.72; Pl.3)

The distinction between bowls and dishes is somewhat arbitrary, and for convenience is based on relative dimensions, when complete profiles are present. Although in many cases, the terms have to be used interchangeably, dishes are generally shallower and smaller than bowls. Both forms commonly have a very sparse cover of clear glaze inside the base or, less frequently, a copper-stained green glaze. Only one example of a decorated bowl has so far been recognised (Fig.72, No.391). It is covered with a thick green glaze, over a white slip smeared onto the body both internally and externally. On the outside of the bowl, just below the rim, a fairly elaborate decorative scheme combines combed zig-zag lines with regularly-spaced ring-and-dot stamps on applied pads of clay. The only other example of any form of non-functional surface treatment is found on a small dish (Fig.72, No.392) which has a discrete equal-armed cross lightly incised on the outside wall.

Rim forms of both bowls and dishes may be simply rounded (Fig.72, Nos.392, 395), externally thickened (Fig.72, Nos.385, 388,

391) or flat-topped (Fig.72, Nos.389, 390). The body profile may be that of a simple, truncated cone (Fig.72, Nos.385, 390), or may be slightly convex (Fig.72, Nos.384, 388), with a flat or only slightly sagging base. A few dishes have an external thickening round the edge of the base, giving the profile a slightly constricted appearance. (Fig.72, Nos.394, 397). Knife trimming is often apparent around the lower part of the body (Fig.72, No.393). Many of the larger vessels identified as bowls have an external covering of soot sometimes reaching as far as the rim, which suggests that they were used as cooking vessels, or for keeping food warm on the fire. The smaller dishes are more likely to have been used at table (see pp.125-126).

Bowls and dishes were also made in Coarse London-type ware, although they are by no means so common. The only example for which a complete profile can be reconstructed (Fig.72, No.385), is similar in its shallow, truncated cone-shape to the later forms (*e.g.* Fig.72, No.390), but with thicker walls, and a squared rim. The other illustrated coarse bowl (Fig.72, No.384) cannot be paralleled in London-type ware. It has two, diametrically opposed, horizontal loop handles of square section, with a slight central groove, standing upright above the rim. The body is unglazed and the surviving sherd has a vertical, thumbled strip of clay applied below the handle.

Bowls and dishes are much more common in late 13th- to 14th-century contexts than earlier, although both forms are comparatively rare (see Appendix 5).

CONDIMENTS (Fig.72, Nos.398-99; Pl.3)

Condiments are small divided trays or dishes made for use at table. Only a few examples have so far been found in London-type ware, two of which are illustrated here – one from the Museum of London reserve collection (Fig.72, No.399), and one from the excavations at Swan Lane (Fig.72, No.398). It is possible that small body sherds without any diagnostic features may have been identified as parts of a bowl or dish. The illustrated examples represent two types; one is a small wheelthrown dish, with a central slab of clay

dividing it into two (No.399). The rim is bevelled on the outside, the base is knife-trimmed and flat, and the vessel has an overall white slip with a thin spread of green glaze inside the base. The Swan Lane condiment (Fig.72, No.398), however, was hand-made in rectangular form rather than circular. Built up from separate slabs of clay for the sides, base and central partition, it is much more crudely made than the wheel-thrown condiment dish. Heavily knife-trimmed on the sides and base, it is both unslipped and unglazed.

CHAFING DISHES (Fig.73)

Fragments of a small number of chafing dishes, one of them anthropomorphic, were found during the Seal House and Billingsgate excavations. The most complete example (Fig.73, No.400) takes the form of a shallow dish fixed over a perforated, pedestal base, with triangular openings to take the burning charcoal or embers which kept the contents of the dish warm. Fixed to the flat-topped rim is a solid human head modelled in clay. It is suggested that there would originally have been three such heads spaced at regular intervals around the rim, each linked by applied arms and crossed hands. The arms are decorated with shallow, roller-stamped squares, and the hands are cut to represent fingers. The hair is suggested by deeply incised lines and the eyes are stamped from pellets of clay. The vessel is clear-glazed. Sherds of other chafing dishes found at Billingsgate appear to be similar in form (Fig.73, Nos.401-403), although none retains any decorative features, if these were originally present. These chafing dishes were found in early 13th-century contexts: no parallels of similar date have yet been found in Britain.

Only one other comparable modelled human head is known, although of somewhat different form (Fig.73, No.404). The broken sections clearly show that it was attached to the rim and sides of the dish, forming a small 'cup'. It has a green glaze over white slip, and the features bear a close resemblance to those of a number of anthropomorphic jugs with

which the vessel may be contemporary (Fig.56, Nos.211-3, 216, 219). This would place it rather later in the London-type sequence than the other surviving chafing dishes.

AQUAMANILES (Figs.74-5)

Aquamaniles, probably used to hold water for handwashing at table, are only infrequently found in London-type ware assemblages. Identifiable sherds generally come from the most substantial parts of the vessel. All surviving examples are in the form of animals whose species is often indeterminate. Those which can tentatively be identified from the head include sheep or rams (Fig.74, No.405; Fig.75, Nos.408, 413, 414), and a deer (Fig.75, No.409). The only complete vessel (Fig.74 No.405) was made by wheel-throwing a cylinder for the body of the animal - the main water-carrying area. The head, legs, rump, handle and filler were all handmade and added to this central portion. The handle is thick and of rod section, with a central, separately-applied ridge along the upper edge. The head, by which the animal can be recognised as a ram, has applied strips of clay curled to represent horns, and small pads of clay with oval impressions for eyes. The head consists of a cone of clay with a hole pushed through the tubular snout to provide a spout. The whole of the vessel, apart from the face and handle, is covered with regularly-spaced, vertical applied strips and rows of scales, under a white slip and green glaze. Only one other similarly decorated body sherd has been found, probably coming from the chest region of a comparable aquamanile (Fig.75, No.412). All the other surviving heads identified have been carefully moulded by hand, usually with applied horns and stamped eyes. However, the pouring aperture, provided in No.405 by the mouth, may be far less obvious. In some examples (*i.e.* Fig.75 Nos.408, 413-4), the nostrils alone appear to have acted as channels for the contents of the body.

Fragments of three aquamaniles made in the form of a knight on horseback have been found (Fig.74, Nos.405a-b; Fig.75 No.406). One, now in the Cuming Museum, consists of

the chest of a horse, fitted with harness, and part of the surcoat and the mailed legs of the rider, his feet with prick-spurs and stirrups (No.406; Cuming, 1857, 132; pl.20; fig.2). As with the complete ram aquamanile, the central portion of the horse was wheelthrown and the rest of the body handmade with applied details. The other fragments are both in the form of helmeted heads (Nos.405a-b). Both are hand-modelled and hollow, and were made as separate pieces to be attached to the body. The flat top of the helm of No.405a was probably added as a separate slab of clay, and the eye-slits are cut right through. The rows of holes below are stabbed into the clay, but not through it, and were made after the head had been joined to the body, since they are entirely undisturbed by the finger-marks which would have been the inevitable accompaniment of this procedure. The other helm (No.405b) does not display the same degree of detail, and the eye-slits are not cut through the clay. However, a hole in the top of the head may at one time have held a crest. Details of the armour - the flat-topped helms and the surcoat - show that all three aquamaniles were very similar to a metal vessel dated to the mid 13th century (Nelson, 1939). However, this type of armour had a long usage, from the end of the 12th century until early in the 14th century.

Aquamanile legs are less frequently found and surviving examples are plain (Fig.75, No.410), or decorated with applied strips extending from the body (Fig.75, No.411). In one instance (No.410) the top of the leg, where it has been broken away from the body, has a central lump or plug of clay which probably acted as a tenon, providing the means of attachment through a hole in the body. A different method of attachment is suggested for No.411, since the leg has a finger-made hollow in its upper part. The clay of the body was pressed down into the top of the leg, and extra clay appears to have been luted onto the outside of the vessel around the join.

Aquamaniles are comparatively rare in London-type assemblages but have been found in 13th-century contexts at Billingsgate.

MISCELLANEOUS FORMS

There are a number of unusual London-type forms which do not fit into any of the categories described above. None is at all common.

JAR/VASE (Fig.76, Nos.415-7)

The complete profile of an unique vessel which has been here termed a jar or vase, for want of a more adequate definition, was reconstructed from sherd material from the Billingsgate Lorry Park excavations (Fig.76, No.417). The body is of jar or cooking pot shape, with a rounded profile, flat-topped, externally-thickened, bevelled rim and a flared, recessed base. The remaining handle sherd may represent a leg, perhaps belonging to a figure seated on the rim. The vessel has a thick, lustrous, green glaze over a white slip. The decoration, which may be placed in the highly decorated style, is almost impossible to reconstruct. It appears to be either geometric or zoomorphic, standing out in relief and built up from thick, white slip. A man's face, forming the base of a bucket handle may be from the same or a similar vessel (Fig.76, No.416). Only one other sherd from what may have been a jar has so far been found (Fig.76, No.415). It comes from the body, probably near the base, of a vessel which is again green-glazed, but has a small head, possibly human or simian, attached in the manner of a bunghole. The mouth provides a narrow channel from the interior, presumably for liquids.

WATERING POTS (Fig.77, Nos.418-19)

Three almost complete London-type watering pots of sprinkler form have been identified in the reserve collections of the Museum of London and the British Museum. Two are illustrated in this paper (Fig.77, Nos.418-19), both bottle-shaped with a short, narrow neck on a rounded body. The top, on the complete examples, is thickened, leaving only a small hole which would be covered by the thumb during use to halt the flow of water through the base. The base is flat with, in one example (No.418), nine regularly spaced holes arranged in a square in the centre, and in the others (*e.g.* No.419), a greater number

of holes arranged in concentric circles. The two watering pots from the British Museum are made in Late London-type ware, with a thin, green splash-glaze, placing them near the end of the life of the medieval industry. The other illustrated example (No.418), is green-glazed over a white slip. No watering pots have yet been identified in excavated material.

LAMPS (Fig.77, No.428)

Only one example is known of a purpose-built ceramic lamp (Fig.77, No.428). It is handmade in Coarse London-type ware, with an almost conical profile, simple rounded rim and pointed base. Glazed on the outside and sooted internally, it would appear to have been suspended in use.

CRUCIBLES (Fig.77, No.429)

The illustrated example (Fig.77, No.429) is so far the only known London-type crucible. It is globular in shape with a simple rounded rim, no glaze and external sooting. It is somewhat surprising, in view of the light industries known to have existed in London, that no more crucibles have yet been recognised.

MINIATURE JUGS (Fig.77, Nos.424-6; Pl.4)

The forms represented in Fig.77, Nos.424-6 appear to be miniature jugs or bottles, made on a wheel and sparsely glazed. The most complete example (Fig.77 No.424) is approximately biconical in shape, grooved at the maximum girth, and has a narrow neck and rod handle. The vessel illustrated in Pl.4 is made in Coarse London-type ware, and is thus dated to the late 12th century. It is clear-glazed, squat in shape, with a handle of squared section, and horizontal grooves around the neck. Miniature vessels appear to be less common in London-type ware than in other contemporary local industries, such as Mill Green ware (Pearce *et al.*, 1982) or Kingston-type ware (Hinton, 1980; Jenner *et al.*, forthcoming), although their introduction in London predates both.

OTHERS

Of the remaining miscellaneous forms illustrated, the two 15th-century bungholes (Fig.77, Nos.420-1), come from cisterns of jug form, probably made in the late London-type industry. There is no evidence for their production in London-type ware. A small number of sherds whose form cannot be determined have nevertheless been illustrated (Fig.77, Nos.422, 423, 427), No.423, which is unglazed, possibly representing part of a lid.

SECONDARY USE

A small number of obviously re-used vessels survive in the excavated material. One of these, an undecorated pear-shaped jug (Fig.53, No.195), has been adapted for use as a lantern by cutting five circular holes at intervals around the body. The vessel is blackened internally and would presumably have contained a candle.

Another vessel which has probably been adapted for secondary use is represented by part of a baluster jug from Ludgate Hill (Fig.36, No.123), with five small holes, approximately 5mm in diameter, drilled through the base. It is not clear why this was done, although it is possible that it would facilitate the straining of semi-liquid substances. Neatly cut holes have been found in the base and sides of a number of jugs of various fabrics in the Museum of London reserve collection, including London-type ware (*e.g.* Fig.64, No.300; Fig.50, No.171). The evidence from recent excavations suggests that these holes were made in antiquity.

A rather more unusual example of re-use is found on a small rounded jug, now in Maidstone Museum (not illustrated). Chaff-tempered clay had been applied around the base of the finished vessel and then heated, but not sufficiently to melt the lead glaze. The purpose of this is unclear.

An early rounded jug in the Museum of London reserve collection (not illustrated; MOL Acc. No.83.462/32) has three plugs of lead fixed through its sagging base. Since these do not in any way act as feet to enable the pot to stand more securely on a flat surface, it seems likely that they are repairs

necessitated by wear and tear, or by defects in manufacture. Whether or not this vessel is a 'second' is uncertain.

ROOF FURNITURE

Roof furniture found in London consists of finials, louvers and roof tiles. Flat roof tiles, so-called 'peg-tiles', occur in excavated contexts in the City from the middle of the 12th century (Armitage *et al.*, 1981). They are made in a range of fabrics, one of which (DUA fabric code: 2273), has a general similarity to Coarse London-type ware, but is normally coarser-textured. Otherwise, none of the London-type fabrics described above (see pp.2-3) appears to have been used by tilers. It is likely, therefore, that flat tiles in London were made in a distinct fabric by a different group of artisans.

Curved ridge tiles, none of which are made in London-type ware, are also found in mid 12th-century and later contexts. Virtually none of these is decorated in any way. In this respect, London differs from most 13th- to 14th-century pottery industries in which the production of decorated ridge tiles and more elaborate roof furniture forms a minor sideline to the manufacture of pottery vessels.

Finials and louvers were made in both the coarse and fine London-type pottery fabrics. The earliest stratified finial comes from Lime Street and is associated with Coarse London-type jugs. Such jugs and other forms made in the coarse fabric had definitely gone out of use by *c.*1210 (Seal House waterfront III). Coarse London-type ware finials and louvers, however, occur throughout the Seal House/Trig Lane sequence from waterfront IV to G15 (*c.* 1240 - *c.*1440), probably reflecting the date they were discarded rather than when they were made.

Finials and louvers form only a very small proportion of London-type assemblages from excavations in the City, although their bulk and weight can give the appearance of a greater relative frequency. A more accurate indication of the relative importance of roof furniture as a part of the London-type industry is provided by the calculation of Estimated Vessel Equivalents (EVEs) which gives an approximation of the number pre-

sent in an assemblage (see Appendix 5). Both finials and louvers can be seen from these data to be of very limited importance.

FINIALS (Figs.78-79)

Finials are principally decorative additions to the ridge of a roof, but may also serve as ventilators. No complete London-type finial is known to date, and most probably conform to the 'bottle-neck' type (Fig.78, Nos.430-3), in which a more or less globular, wheel-thrown body with an open, tubular stem is surmounted by a narrow, tubular neck. This may be open at the top, and have one or more carinations (Fig.78, Nos.430-34, 437), or grooves (Fig.78, No.433). The neck of one such finial (Fig.78, No.432), is packed with mortar around an iron nail. The head of the nail is at the top, showing that it was pushed down into the body, possibly securing a further decorative structure.

The most elaborate finial of 'bottle-neck' type illustrated in this paper is made in at least three parts (Fig.78, No.437). The neck is added as a separate wheelthrown component to the body and stem which are made in two pieces. The major part of the body is thrown in one piece with the stem, in the manner of No.442a (see below). The section between the neck and this part of the body is coil-built. The body is grooved at the maximum girth and has three decorative arms attached just below the neck. Although broken, enough remains to show that they were probably curled back on themselves, or formed into a spiral such as that illustrated in Fig.78, No.438. The neck section is incomplete, but may have been quite elaborate with several carinations, as seen on No.430. The whole finial has a thin, clear splash-glaze on the neck and upper part of the outside of the body, but, apart from a few spots, none on the inside or the base. The spiral arm mentioned above illustrates at least one means by which these appendages may have been attached to the body of the finial: the base of the arm has a 'peg' of clay which would presumably have fitted into a socket on the body forming a tenon join (cf. the aquamanile foot, Fig.75, No.410).

An almost complete London-type finial,

found on the site of the Mercers' Hall, Cheapside, but not illustrated in this paper, provides a very close parallel to No.437 (Dunning, 1968, fig.31, no.4). The evidence of the finials in the Museum of London reserve collection and the fragments from excavations suggest that Dunning in fact illustrated the form upside down. The elaboration of the neck, which is complete, and comparison with the more substantial base of No.437 indicates that such a stem would have formed the termination of the body where Dunning postulated a domed top. A further parallel, probably locally-made, may be seen in an open-topped, globular finial, from Southampton, again published upside down, and dated to *c.*1300 (Dunning, 1975, fig.214, no.1405).

The one complete London-type roof finial (Fig.79, No.442a) is more or less pear-shaped in form with no neck. The body was thrown upside down, with a cylindrical base or stem finished on the wheel at the top. This stem is comparable with that of No.437, and would, in the same manner, have been used to fit the finial into the roof-ridge. The base of the finial as thrown, that is, the top part when in use, has been cut across, and a separately coil-built cone added. The body is covered with a green glaze which stops short of the stem, the part not intended to be visible. The juncture between the body and the stem has a horizontal thumbled strip of applied clay. This form of decoration may be paralleled on other illustrated finial sherds, both in a similar position, and at other points on the body (Fig.78, Nos.434-36). The addition of decorative thumbled strips at neck and base junctures may also be seen on finials from other parts of the country (Dunning, 1976, fig.32, nos.3-4).

Part of a particularly large finial from the Museum of London reserve collection (Fig.78, No.442), is covered with more or less horizontal rows of applied scales, under a clear glaze. This form of decoration may be compared with that of certain late 12th-century London-type jugs (*e.g.* Fig.17, No.28; Fig.24, No.50). The upper part of the finial, which tapers gently into a very narrow neck, is coil-built separately and added to the

wheelthrown body; this is emphasised externally by a change in the direction in which the scales were applied. Since the neck is broken, it is uncertain whether the top would have been open in the manner of Nos.431-33, or whether it terminated in a solid knob. One other sherd with similar decoration is illustrated (Fig.78, No.435) and presumably comes from near the top of the finial, below the neck. A prominent strip of thumbled clay has been applied above the surviving line of scales, forming a distinct flange.

A simple, mushroom-shaped, closed finial with no neck (Fig.78, No.441) was found during excavations at 25-6, Lime Street (LIM 83). It has a wheelthrown body with a handmade, domed top on a cylindrical stem which probably fitted into a ridge-socket. A thin, clear glaze covers the top of the dome leaving dribbles running down to the base. The form is so far unique in London-type ware, although a close parallel may be found in a green-glazed finial from Rouen (Dunning, 1962, 84-5; pl.IIb). This has a modelled animal's head attached on one side, but, since the London example is incomplete, it is not possible to determine whether it too carried any such embellishment.

Dunning recognised two major classes of ceramic roof finial, generally characterised by having a more or less globular body on a tubular stem: those with closed stem, and consequently probably decorative; and those with an open stem (Dunning, 1976, 52). The latter category may similarly have only a decorative purpose, suggested by the absence of body apertures, by the top of the form being closed, and by the lack of smoke-staining. However, within this subdivision of the form, a class of ventilator-finial may also be recognised by the presence of holes arranged in zones around the body, an open top and internal smoke-staining. Both open-stemmed and closed finials, whether decorative or functional, can be further classified according to the means of attachment to the ridge: some are made separately, to be fitted into an open socket in the ridge-tile; others are made in one with the tile.

None of the London-type finial fragments shows any sign of smoke-staining, and there

is no definite evidence for pierced holes in surviving body sherds. Since these would be essential to assist in the drawing of smoke-laden air from an open hearth, even through an open-topped form, it appears that London-type ware finials were intended to be decorative rather than functional structures. Surviving stem sherds whose bases are almost complete (Fig.78, Nos.437, 439, 440), are of the open type, designed to be fitted into a socket. No finials have yet been found in London still attached to a ridge, or with a closed stem, nor are there any surviving roof tiles with circular openings to hold such a form. One of the surviving finial base sherds from Trig Lane (Fig.78, No.439) appears to have been secured into some form of socket with mortar, a band of which extends upwards to the body from a line approximately 50 mm from the base. Traces of mortar were also found around the stem of the complete finial (No.442a), both inside and out, but none was recorded on any other finials. An unusual form of base may be seen in Fig.78, No.440, deliberately cut into a gently curved edge as if to fit over another structure, possibly a ridge tile. Alternatively, it could simply be part of a large hole in the side of the finial.

A small number of large, crudely fashioned animal and human heads and faces (Fig.79 Nos.443-5), may have come from finials rather than from aquamaniles which, except in size, they closely resemble (Figs.74-5). In no instance can the complete form be reconstructed, although it seems likely that heads would have formed part of a complete figure, which, in common with the aquamaniles (Figs.74-5), may have had wheelthrown sections.

The one animal head is that of a horse (Fig.79, No.443). It is hollow, realistically if robustly modelled, and clear-glazed with an applied mane, incised to represent hair, and applied harness fittings and ears. The eyes and ears, but not the nostrils or mouth, are pierced through from the outside. The presence of harness suggests that the complete figure may originally have had a rider. The majority of zoomorphic finials found in Britain are grouped in the Midlands. Notable

southern parallels to the London horse's head finial include horse or horse and rider/knight finials from Stonar, Kent (Dunning, 1979, fig.70), Netherton, Hants. (Fairbrother, 1973, fig.6) and Bedford (Dunning, 1974). Although such finials are normally made in one with the ridge tile, the London-type head is in a fabric not normally used for roof tiles.

The other two illustrated finials are represented by hand-modelled human heads (Fig.79, Nos.444-45). Both are made, as is the horse's head, in fine London-type ware. Far too little of No.445 survives for the sex of the figure to be determined. If male, it is not impossible that it may have come from a rider on horseback (cf. Dunning, 1961, fig.5.1). However, separately modelled human figures, or applied faces on globular finials are also known (cf. Rackham, 1972, pls.14, 15). Although it is not clear to which type such a small fragment would originally have belonged, it need not have come from a finial made in one with the ridge tile. The more complete head (Fig.79 No.444), is probably that of a woman whose features can be compared with those of the London-type anthropomorphic jugs (Fig.56). The eyes are applied, stamped discs of clay. The prominent nose is moulded in one with the face, and additional details are incised. The two hands are still attached to the chin, and the fingers are represented by knife cuts. The whole head is green-glazed. The modelling is insufficiently detailed to determine whether the figure has plaited hair wrapped around the head, or whether a net-like headdress is intended. A small plug of lead was found inside the neck, bearing the impression of what appears to have been a nail inserted into the body of the finial.

LOUVERS (Figs.80-83)

Louvers are far more complex structures than finials, and were designed to serve as smoke-extractors or ventilators. The most complete louver whose profile can be reconstructed was found in various contexts at Trig Lane, dated to *c.* 1360, (Fig.80, No.446). It is of beehive shape, and, in common with all London-type louvers, handmade, by way of contrast with finials, which are principally

wheelthrown. The whole is covered with thick white slip and a clear splash-glaze. The body is divided by plain, horizontal bands of applied clay into four tiers or storeys, the middle two of which have apertures of three different shapes cut through the body before firing. The lower of these central tiers has a combination of narrow, round-ended, vertical slits with triangular openings, around the top two sides of which canopies or 'baffles' of clay have been added. Triangular apertures, with far more elaborate canopies, are also known in louvers from Great Easton, Essex (Dunning, 1966) and from the Manor of the More, Rickmansworth, Herts. (Dunning, 1959). The tier above adds to this combination of apertures a number of unusual quatrefoil openings, without canopies. The irregular spacing of the apertures and the fragmentary nature of the material renders it difficult to estimate the total number of each type of opening in each tier. The top of the louver, or uppermost tier, appears to be domed, with a circle of applied rectangular slabs of clay spaced at regular intervals and standing upright, giving a crenellated effect. The base is slightly flared, and it is not clear exactly how the louver would have been fitted to the roof. A small oblique cut in the base may have facilitated attachment to a timber frame or platform within the roof aperture. Traces of mortar show that this was used to provide greater security of attachment. However, the absence of soot inside the louver suggests that it might in fact have been ornamental, or that it might have functioned as a ventilator to an unheated building.

The only other London-type louver of distinctive form again comes from Trig Lane (G12, dated to *c.* 1430), and is illustrated in Fig.81, No.447. It might be termed 'house-shaped', and has one surviving tier of rectangular apertures whose upper edges form a hood or canopy. The line of the hood is emphasised with vertical, applied strips of clay, and extends upwards from the top two corners of the aperture. A broad, horizontal strip of applied clay runs around the body of the louver at the bottom of the apertures. There is again no sign of sooting. Rectangu-

lar apertures are also known on louvers from Southampton (Dunning, 1975, fig.216, no.1419), and from Great Easton, Essex (Dunning, 1966, fig.26).

Other louver fragments examined were generally too small to allow reconstruction, and it has not been possible to recognise any different forms, or even to equate sherds with the more complete louvers. Corners of apertures that may have been rectangular or triangular were identified in a small number of sherds (Fig.82, Nos.449, 452). One of these (No.452) comes from the base of a louver which was probably both larger and more crudely fashioned than the other forms represented here. Although not heavily sooted, dark stains around the interior of the base show that it was probably used as a smoke-extractor.

A fifth type of louver aperture is circular (Fig.83), although only a few examples with a sufficient proportion of the circle surviving have been identified (Nos.456, 458). Some of these more complete circular apertures appear to have baffles built out around their entire circumference. Other illustrated examples may well have formed part of quatrefoil openings (cf. Fig.80), and all seem to have been placed in juxtaposition with apertures of

other shapes (*e.g.* Fig.83, No.459).

Decoration is seldom elaborate and is mainly restricted to the form of the apertures, or the applied bands of clay which accentuate the shape of the louver. In addition, louvers with white slip linear decoration (Fig.82, No.450; cf. Dunning, 1959), and applied pellets or scales of clay (Fig.82, No.451) have been recognised. A louver sherd from the British Museum reserve collection (Fig.81, No.448) is, by comparison, highly decorated, with an applied shield in thick white slip under a lustrous, clear glaze, giving a polychrome effect on an unslipped body. The shield bears a floral device formed by eight cones of slip, and the body of the louver is incised with various floral patterns.

Dunning recognised two classes of louver or ventilator (Dunning, 1975, 186): those made as separate structures to be fitted over a hole in the roof (Class 1); and those made in one with the ridge-tile (Class 2). London-type ware louvers are known almost entirely from excavated material. Where base sherds survive, they indicate separately made structures of Class 1. There is no evidence that louvers of Class 2 were made in London-type ware.

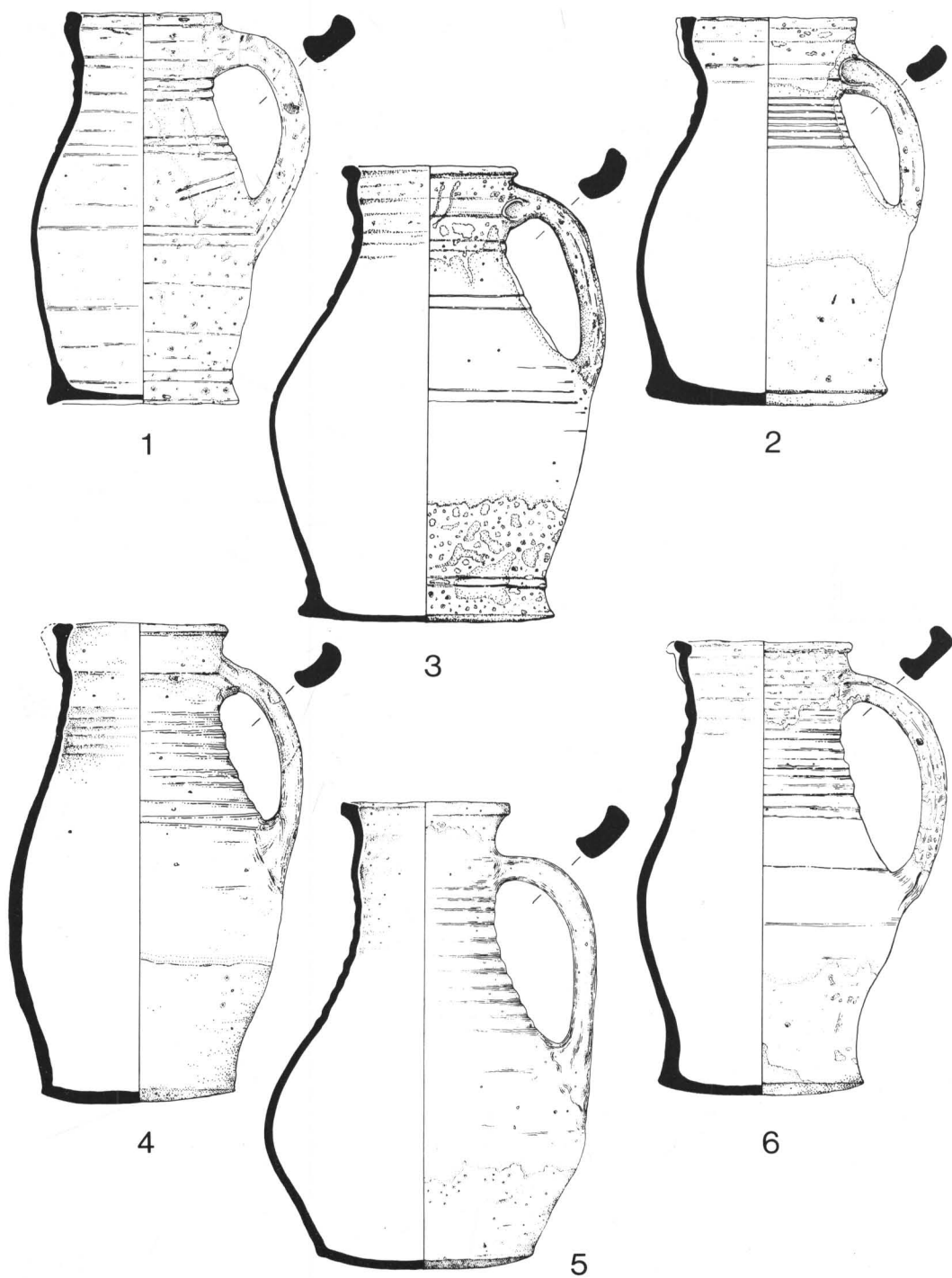
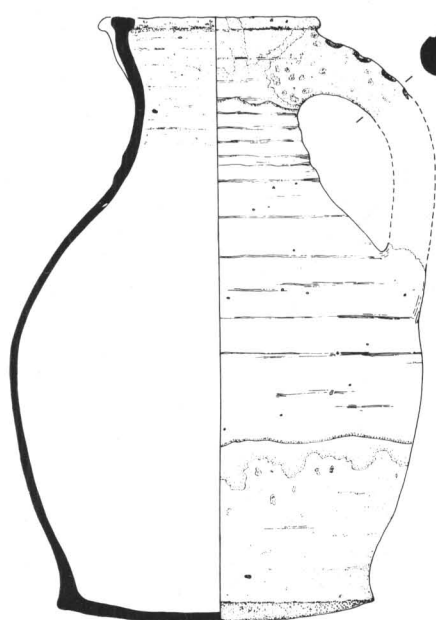
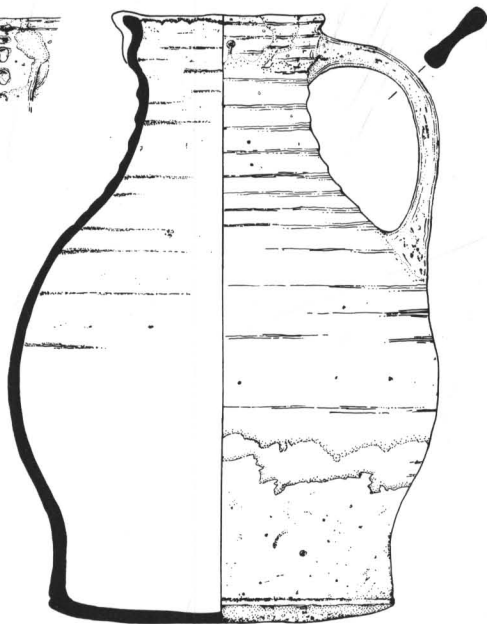


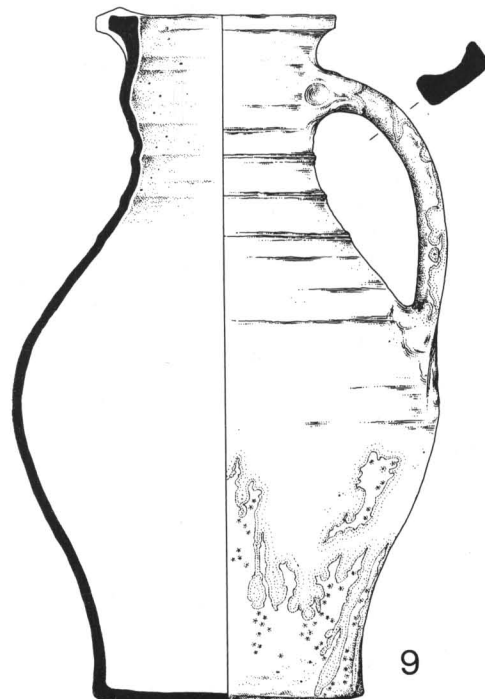
Fig.10. Early rounded jugs. (1/4)



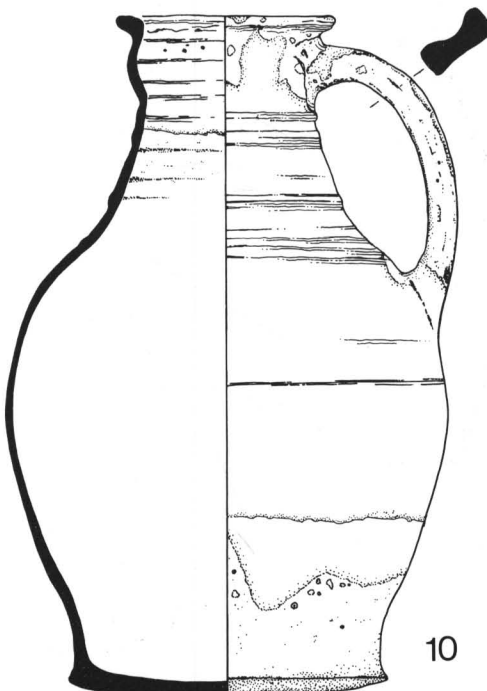
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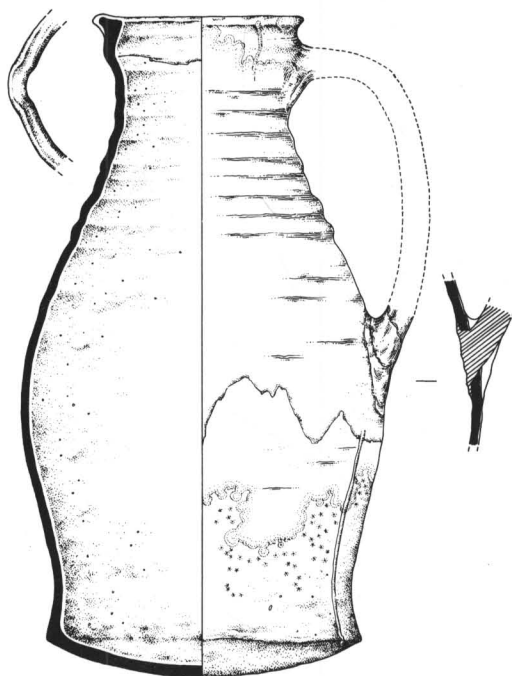


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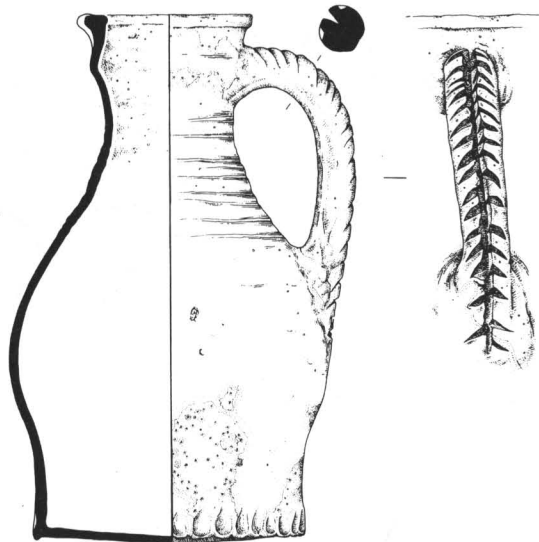


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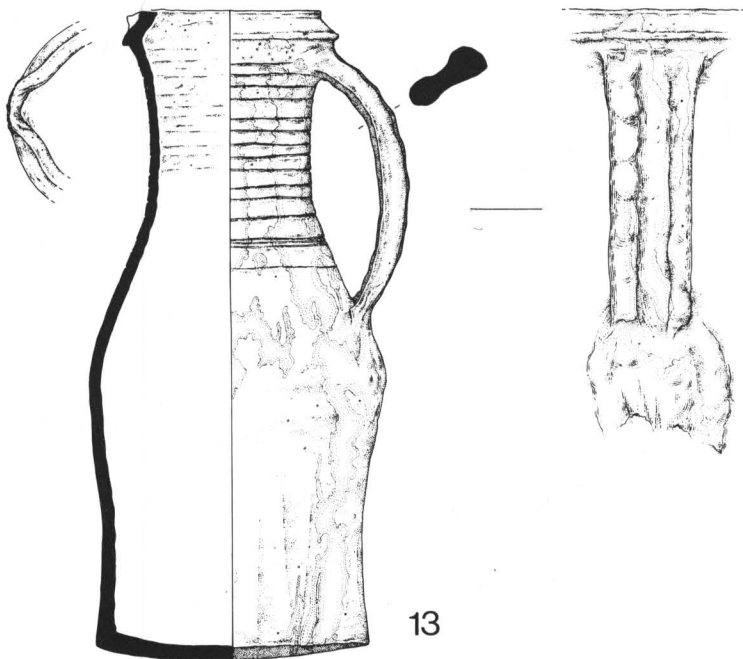
Fig.11. Early rounded jugs. (1/4)



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Fig.12. Early rounded jugs. (1/4)

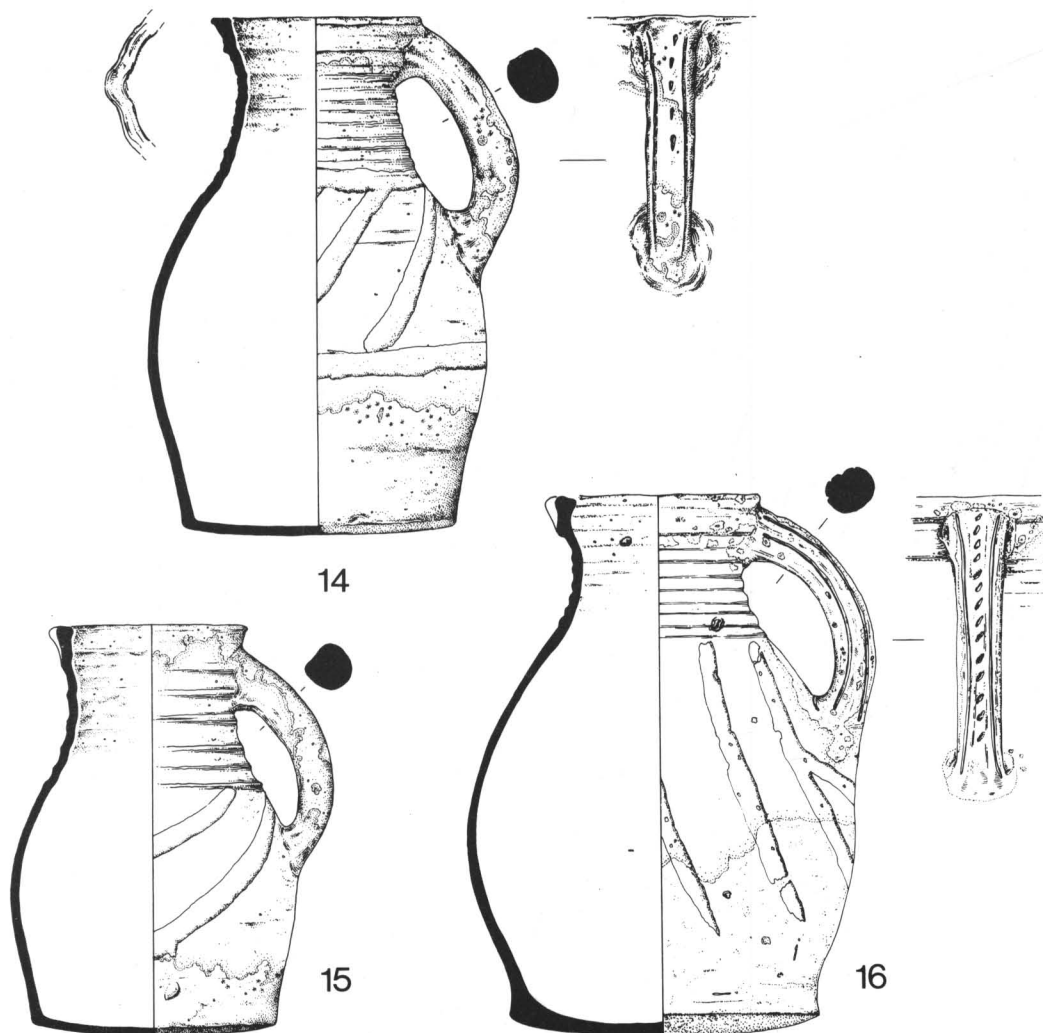
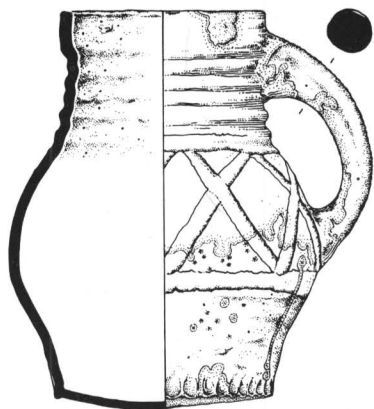
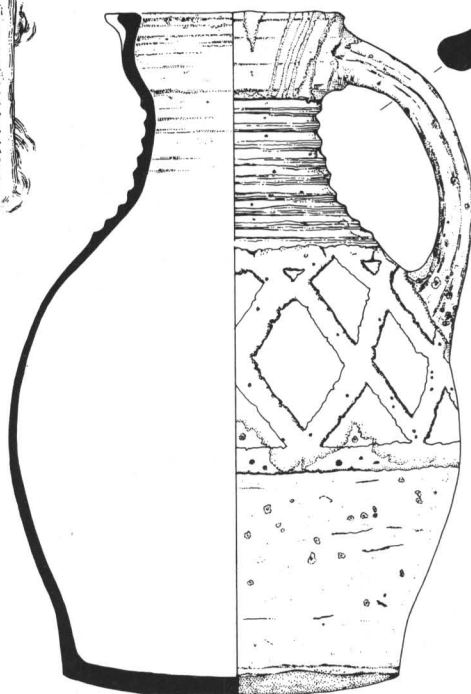
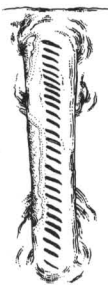


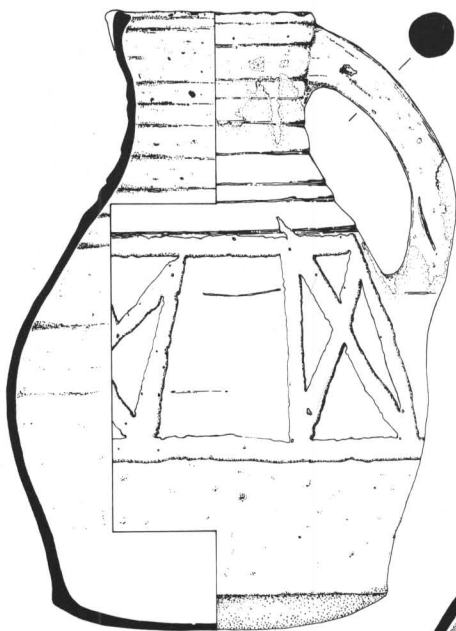
Fig.13. Early rounded jugs with white slip decoration. (1/4)



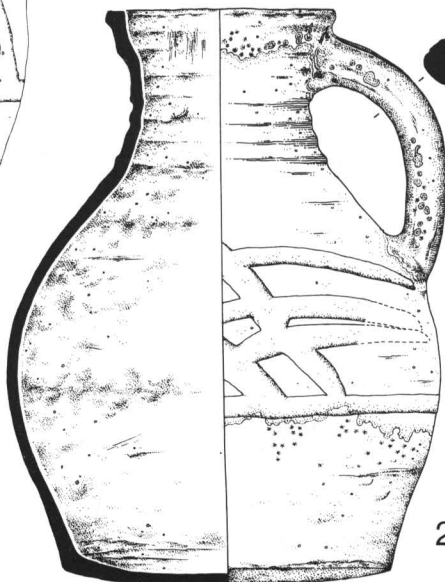
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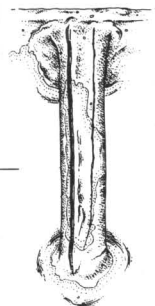


Fig.14. Early rounded jugs with white slip decoration. (1/4)

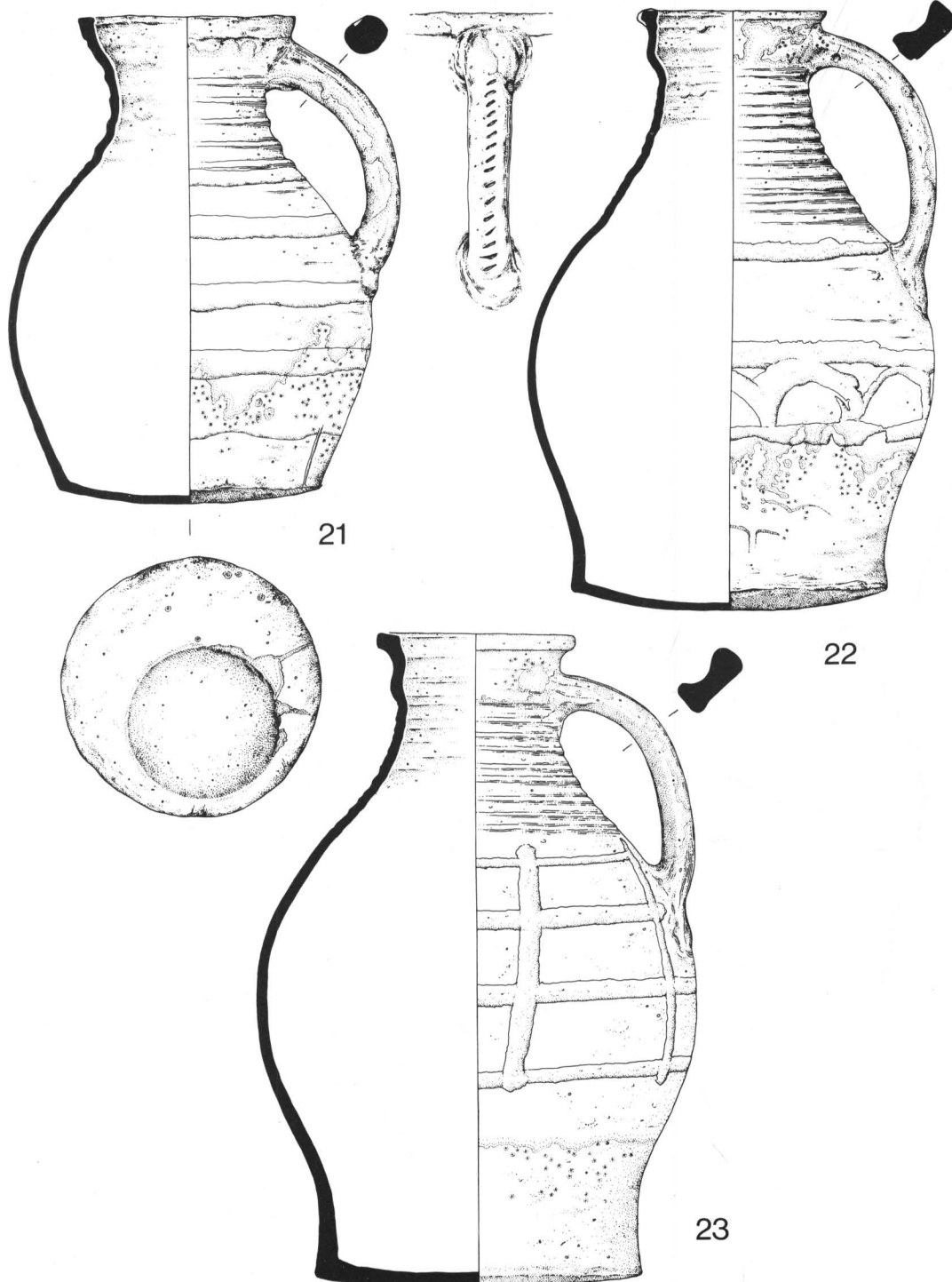


Fig.15. Early rounded jugs with white slip decoration. (1/4)

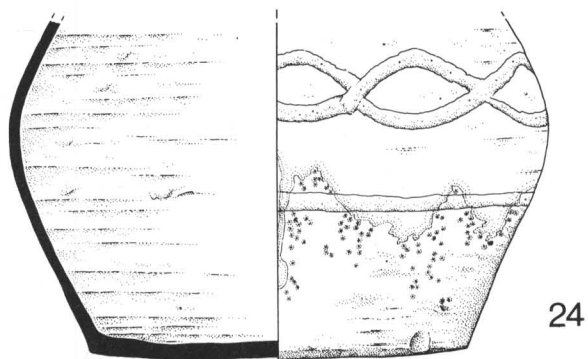


Fig.16. Early rounded jug with white slip decoration. (1/4)

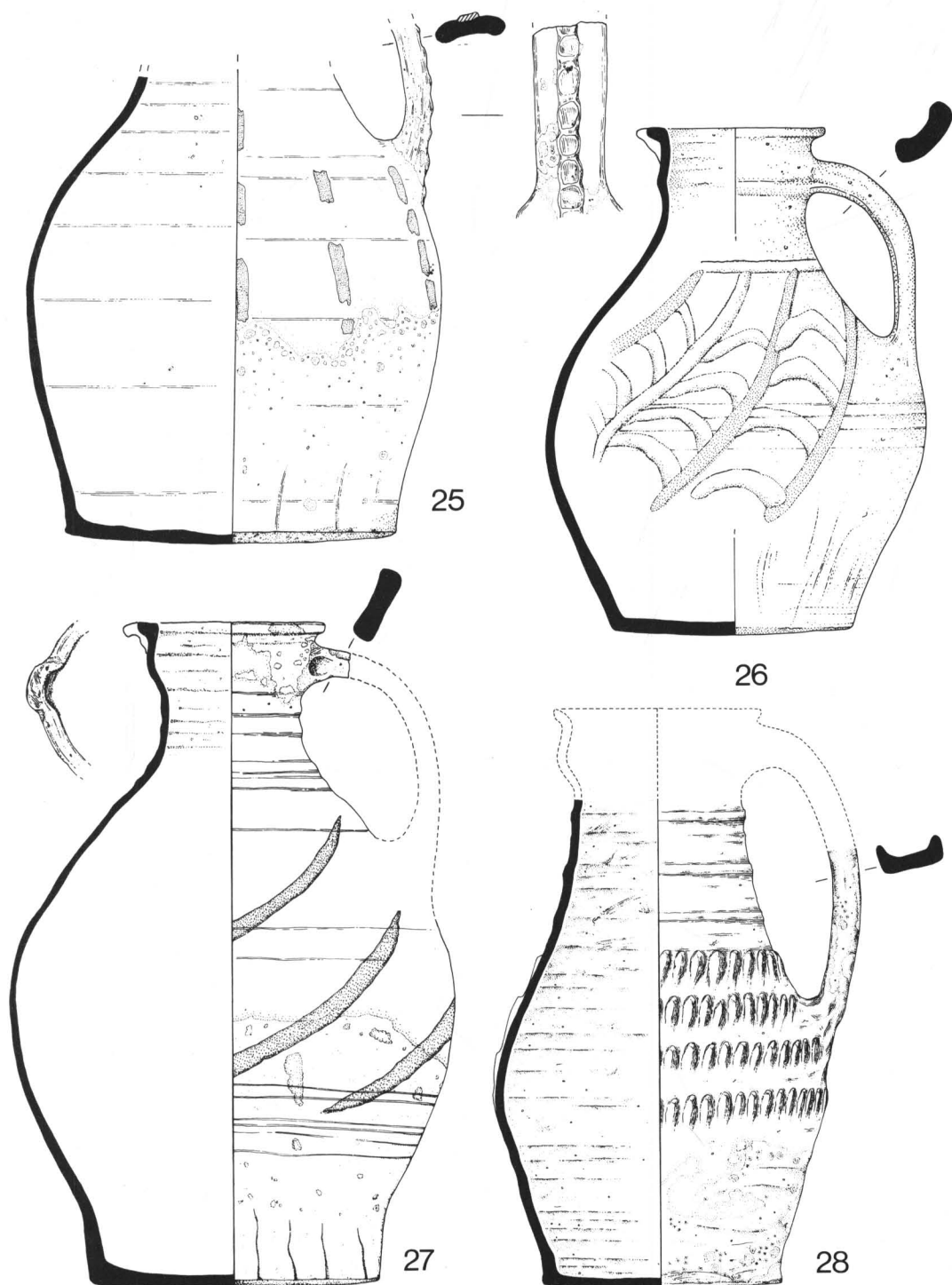


Fig.17. Early rounded jugs with red and white slip decoration. Nos.25-7. Early rounded jug with scale decoration. No.28 (1/4)

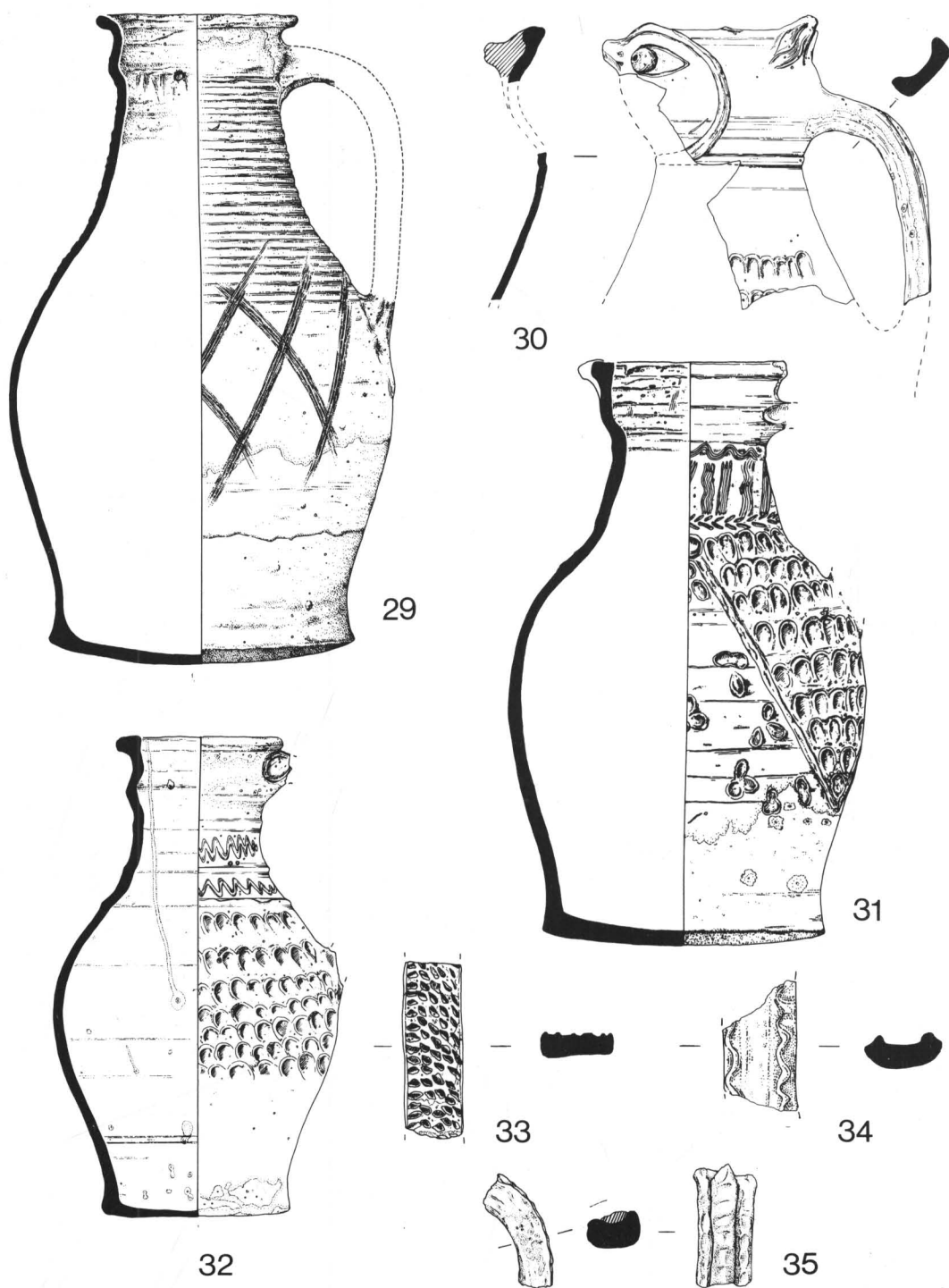


Fig.18. Early rounded jugs with combed and impressed decoration. Nos.29-32. Decorated handle fragments. Nos. 33-5. (1/4)

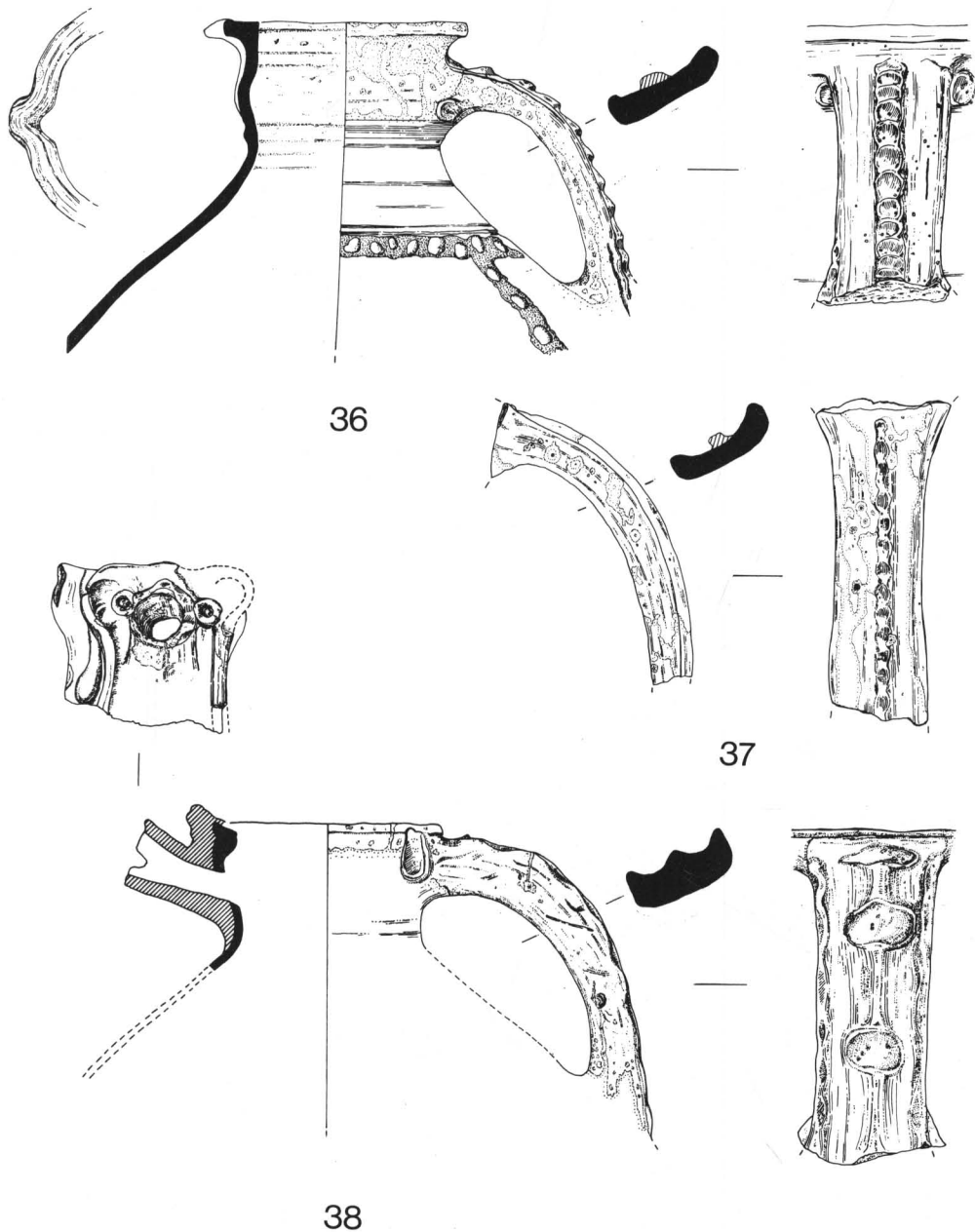


Fig.19. Large squat jugs. (1/4)

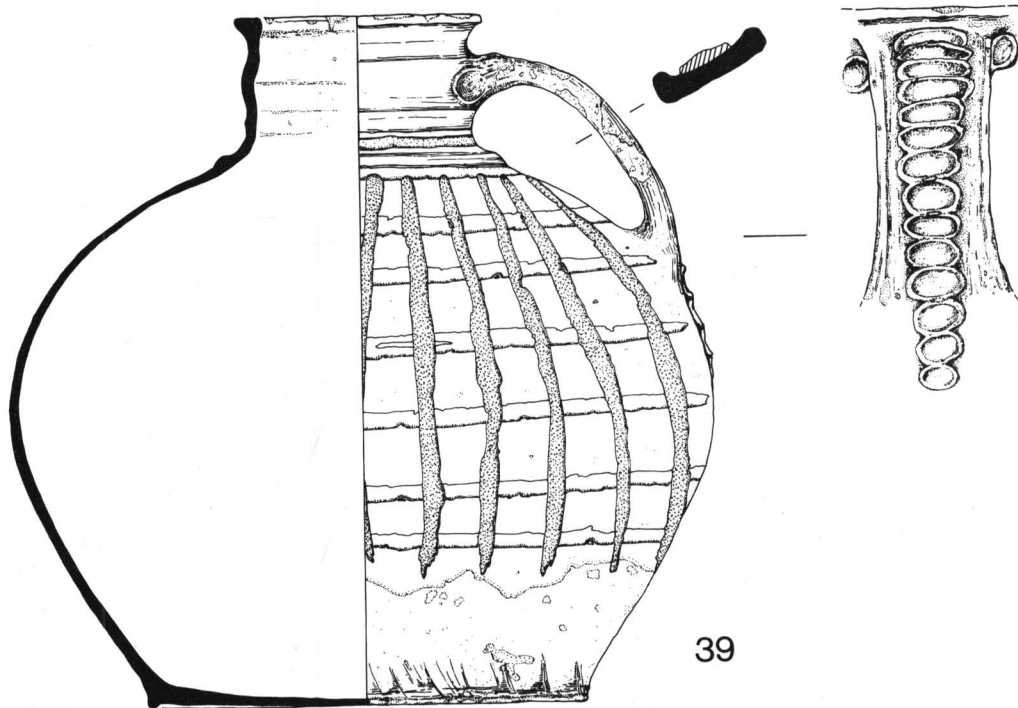
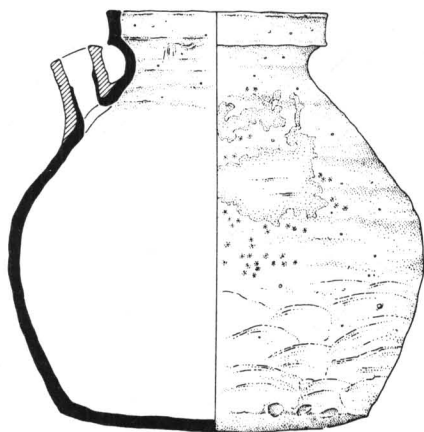
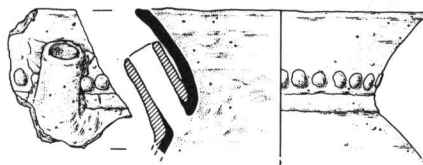


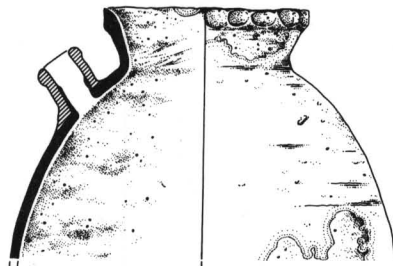
Fig.20. Large squat jug with red and white slip decoration. (1/4)



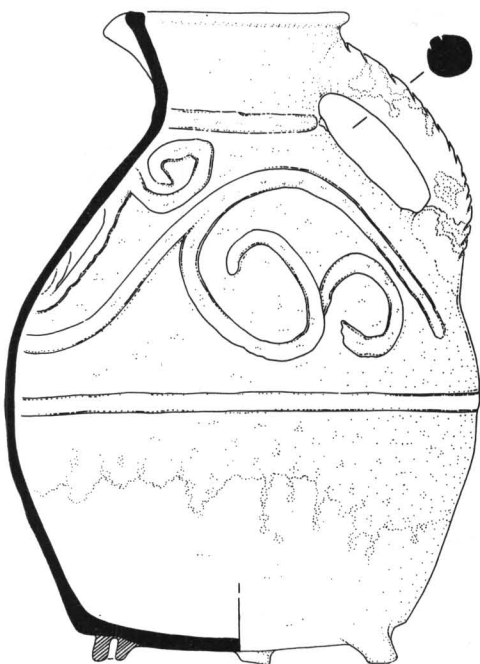
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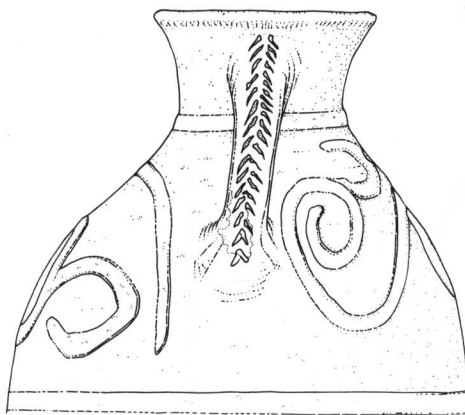
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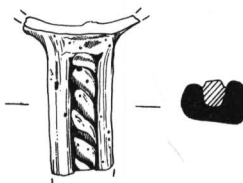
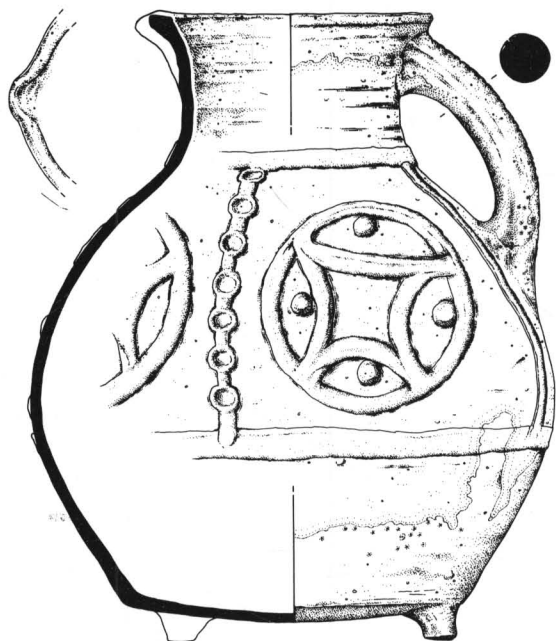
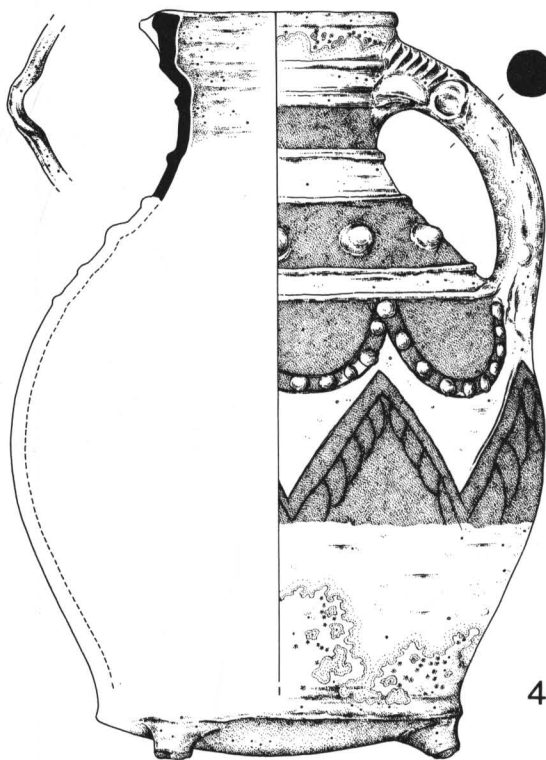
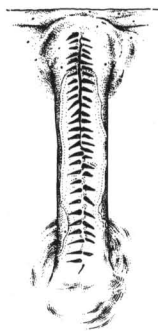


Fig.21. Spouted pitchers with clear glaze. Nos.40-2. Tripod pitcher with white slip decoration and clear glaze. No.43. Handle fragment. No.44 (1/4)



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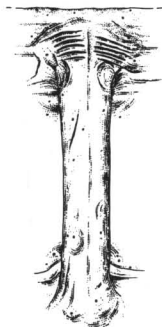
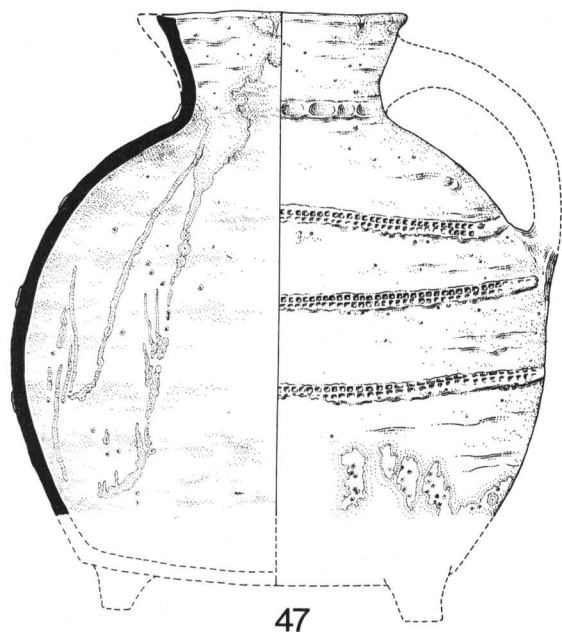
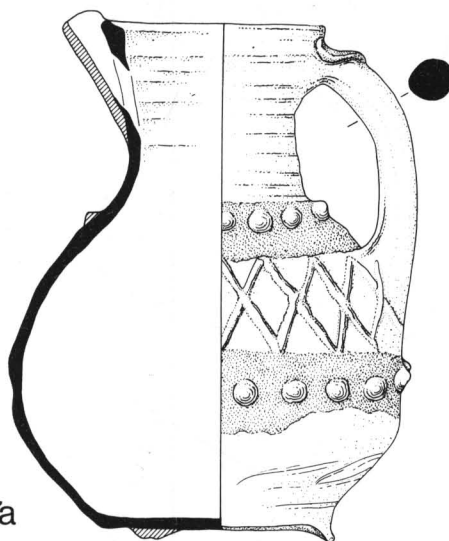


Fig.22. Tripod pitchers with red and white slip decoration. (1/4)

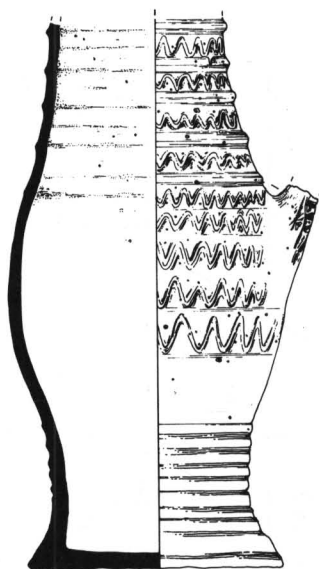


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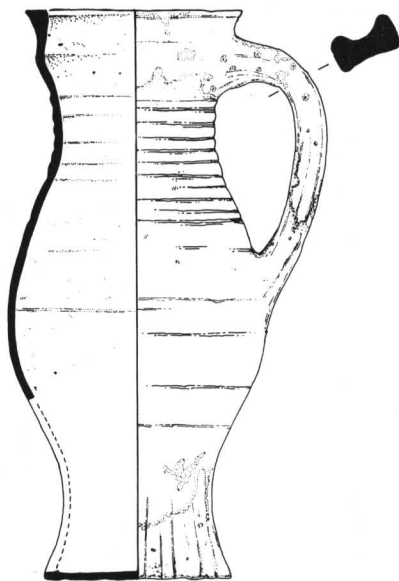


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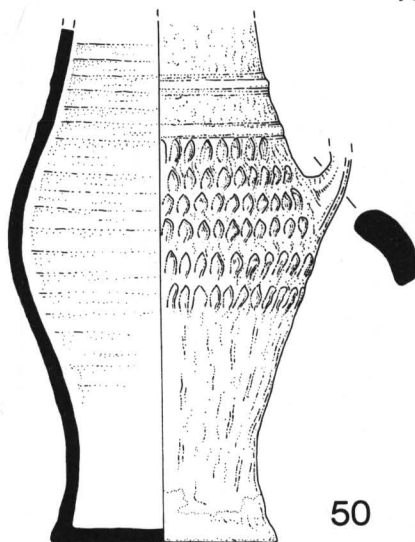
Fig.23. Tripod pitcher with clear glaze. No.47. Tripod pitcher with polychrome decoration. No.47a (1/4)



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Fig.24. Early baluster jugs. (1/4)

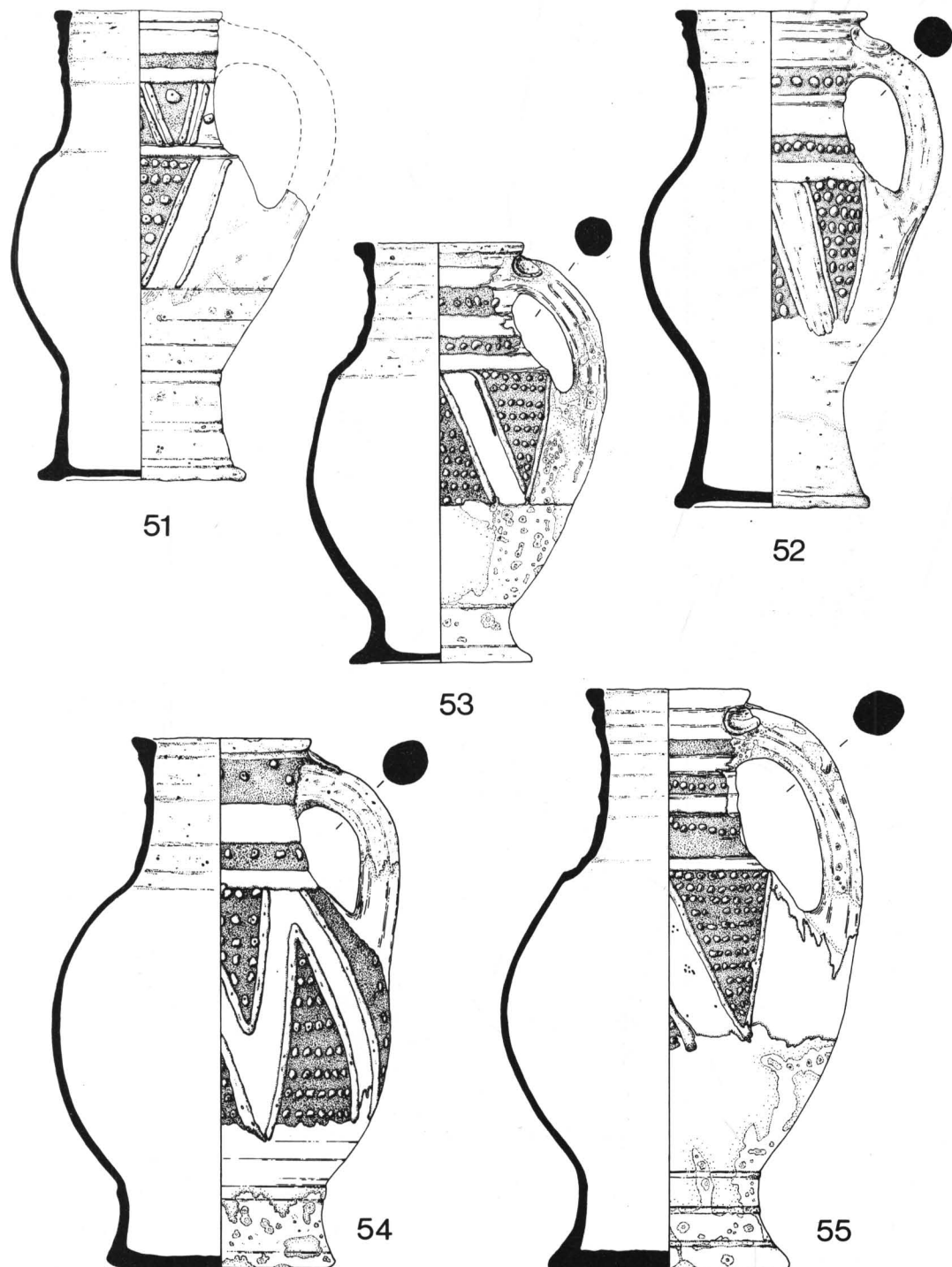
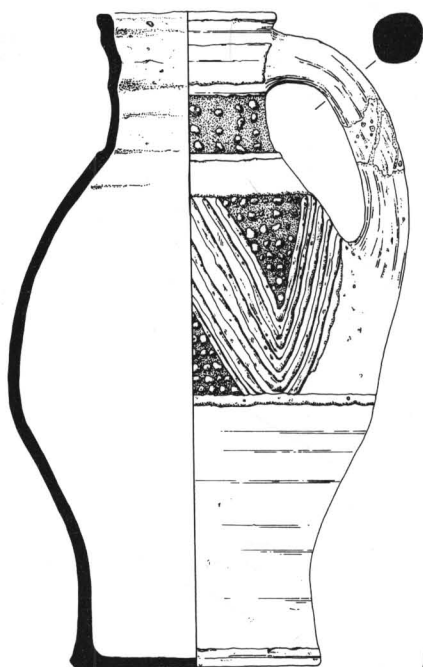
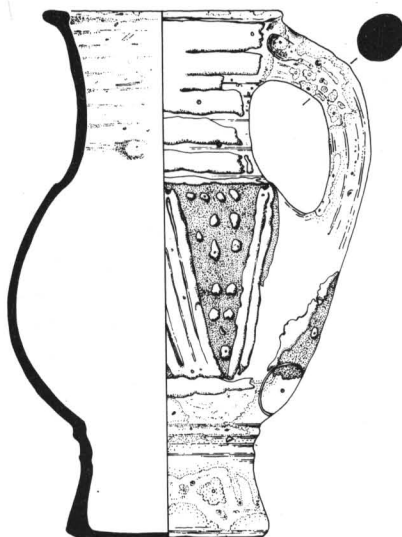


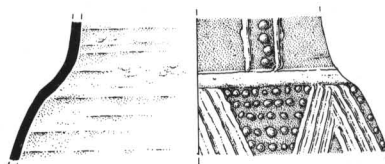
Fig.25. Baluster jugs with Rouen style decoration. (1/4)



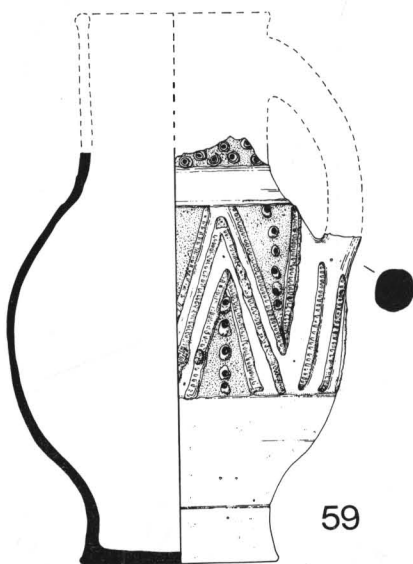
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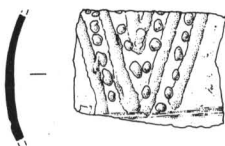
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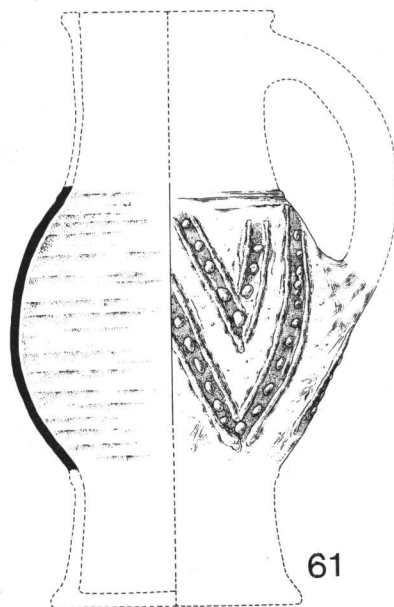
58



59



60



61

Fig.26. Baluster jugs with Rouen style decoration. (1/4)

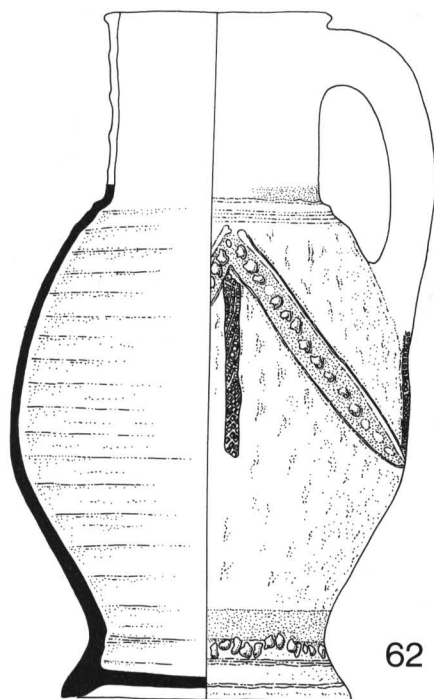
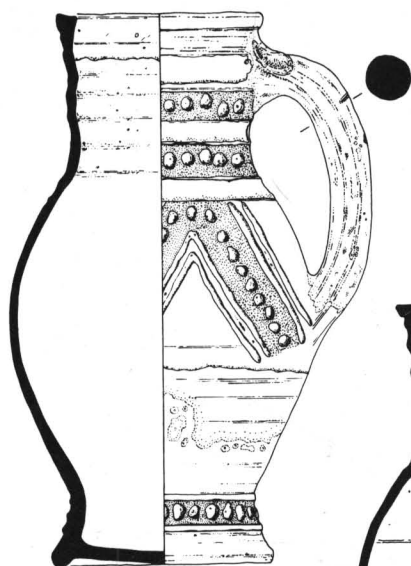
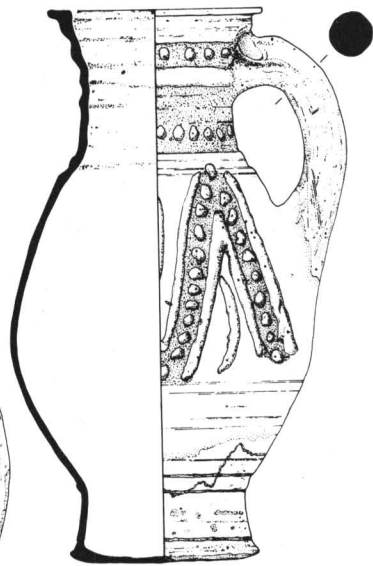


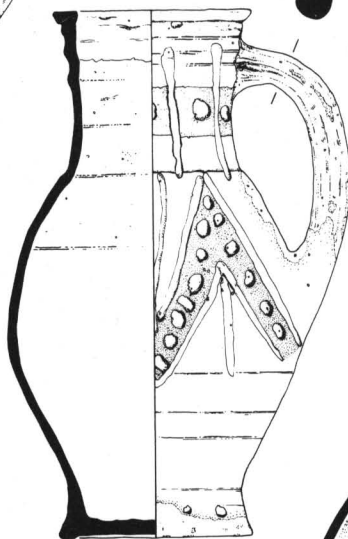
Fig.27. Baluster jug with Rouen style decoration. (1/4)



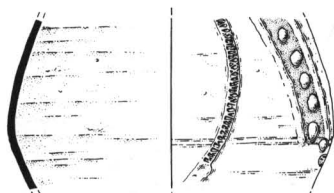
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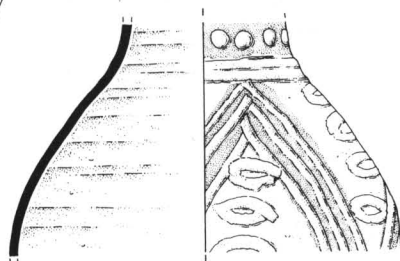
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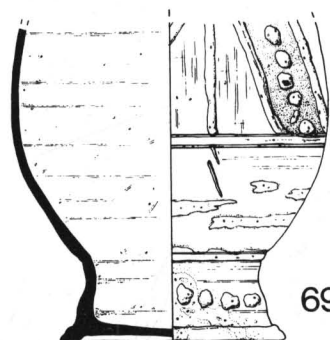
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66



68



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70

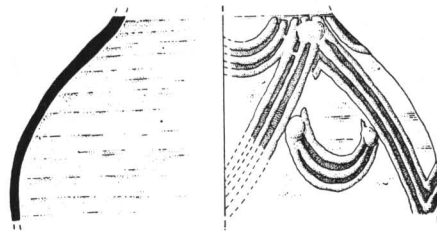


Fig.28. Baluster jugs with Rouen style decoration. (1/4)

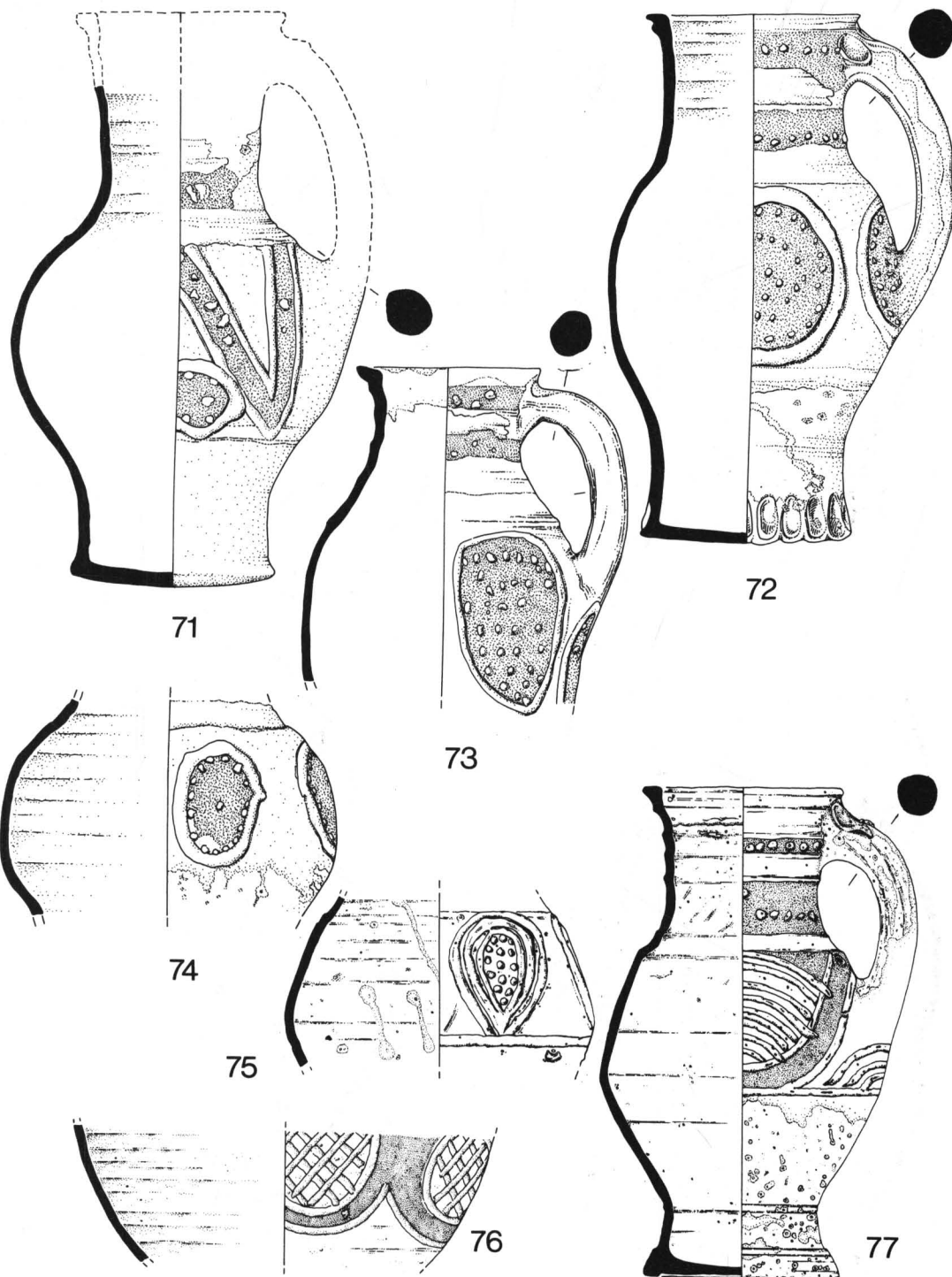
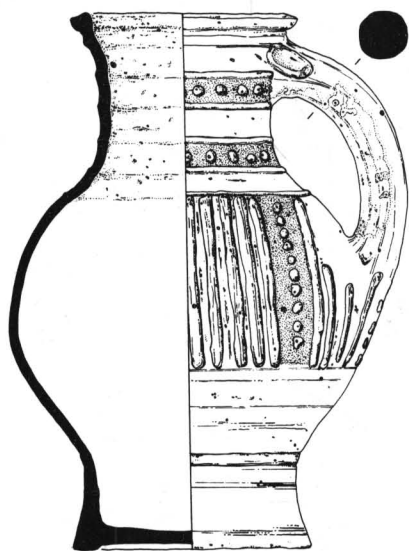
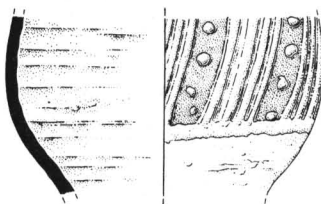


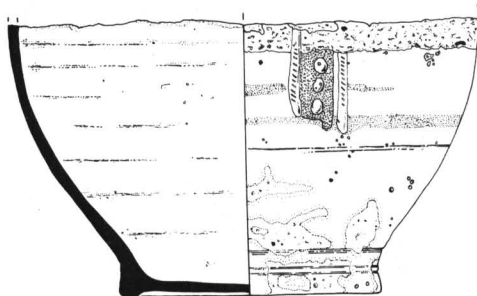
Fig.29. Baluster jugs with Rouen style decoration. Nos.72-4 from Otford, Kent. (1/4)



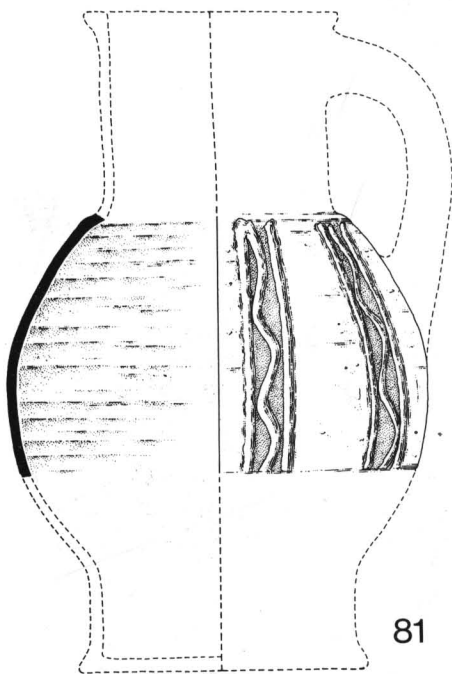
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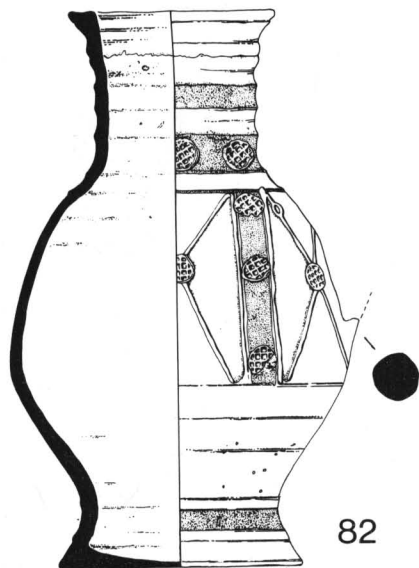
79



80



81



82

Fig.30. Baluster jugs with Rouen style decoration. (1/4)

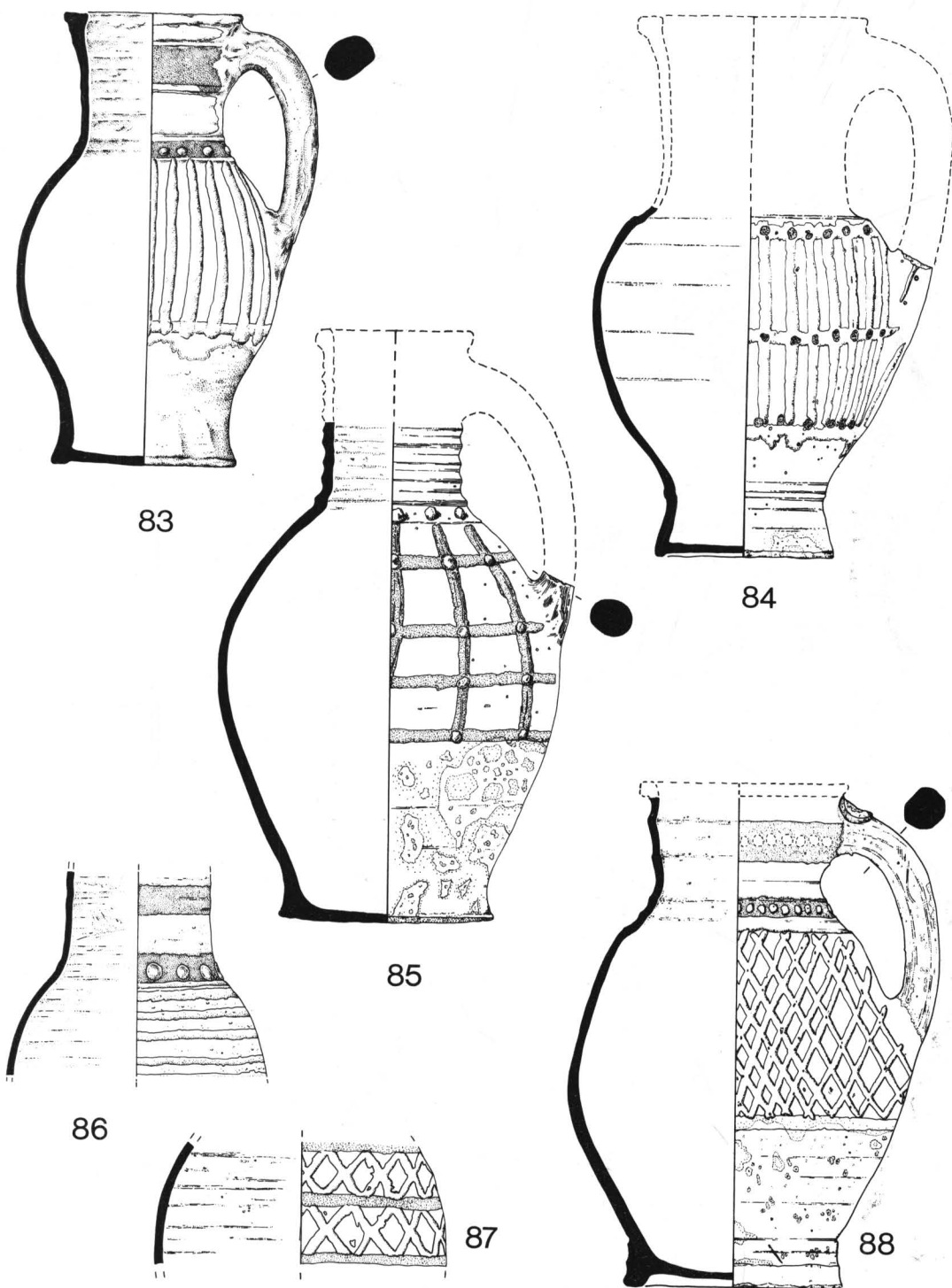


Fig.31. Baluster jugs with Rouen style decoration. (1/4)

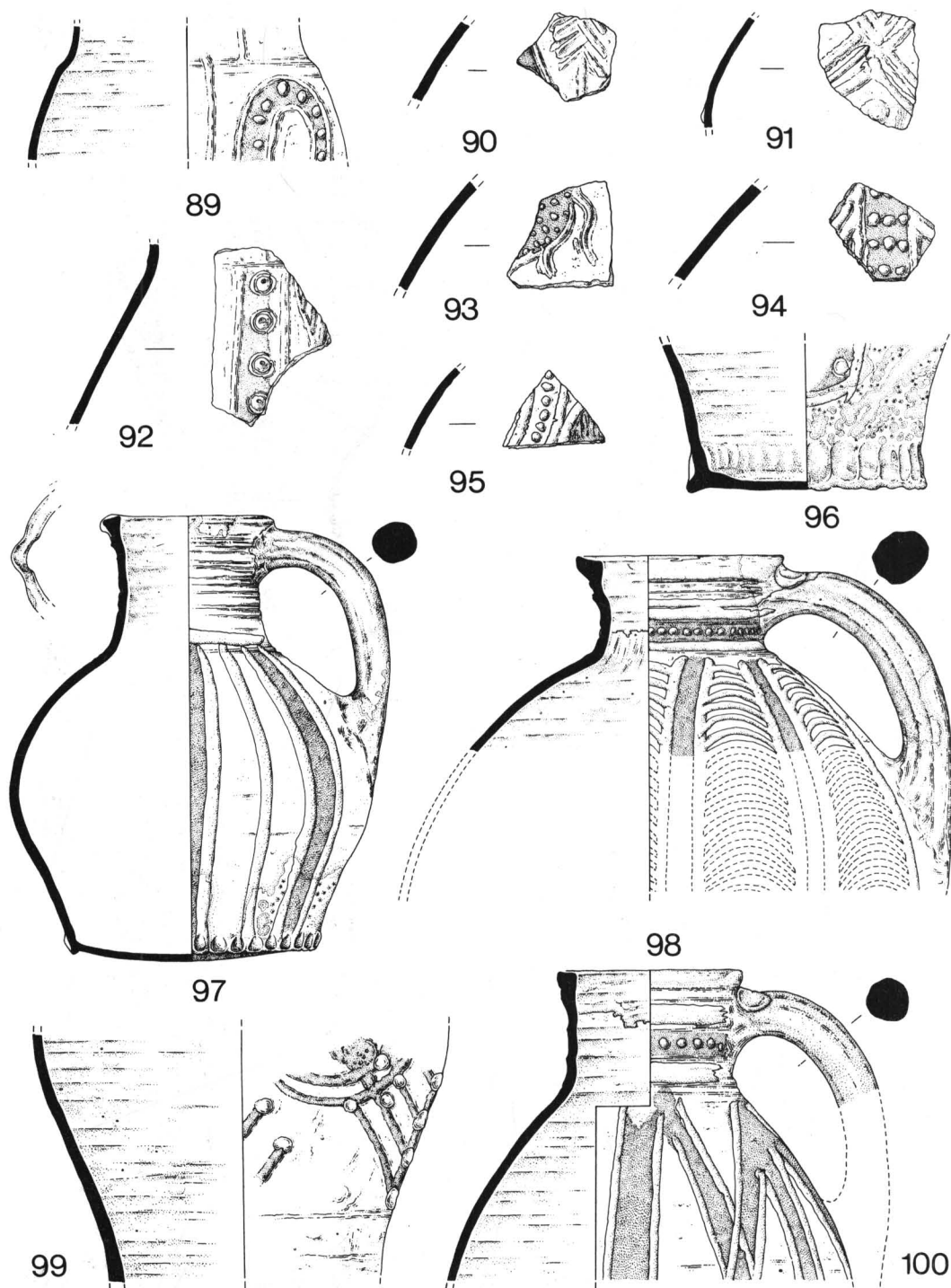
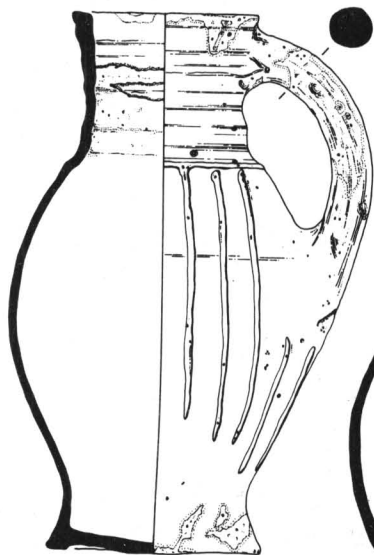
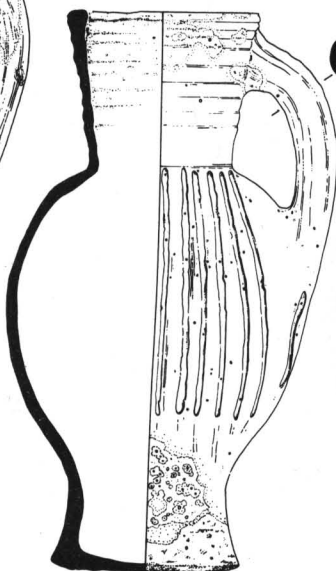


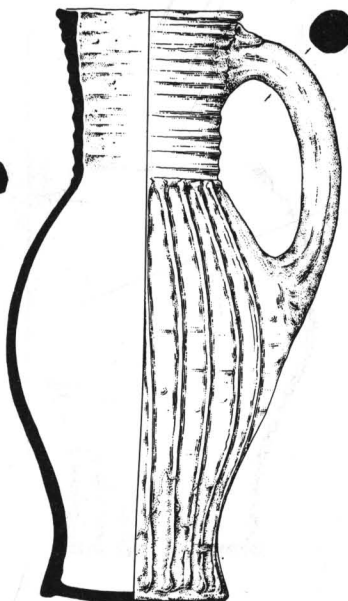
Fig.32. Miscellaneous sherds with Rouen style decoration. Nos.89-96. Rounded jugs with Rouen style decoration. Nos.97-100. (1/4)



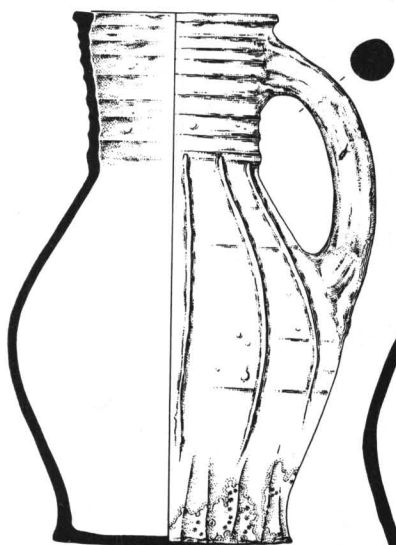
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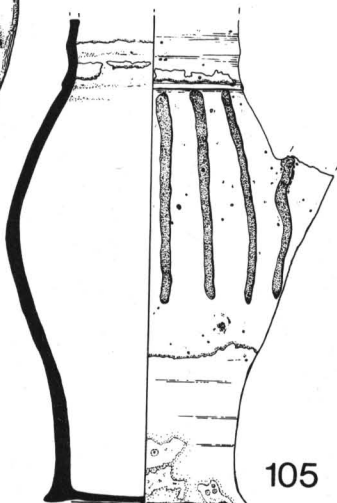
103



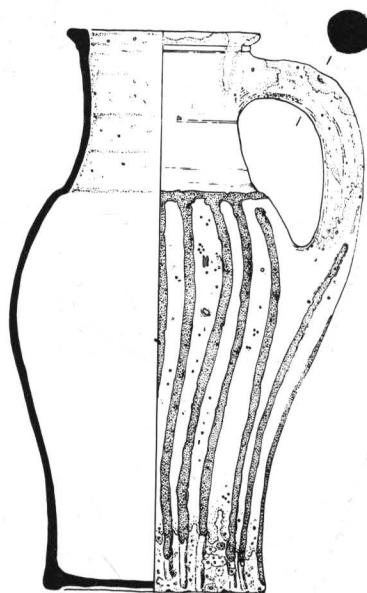
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104

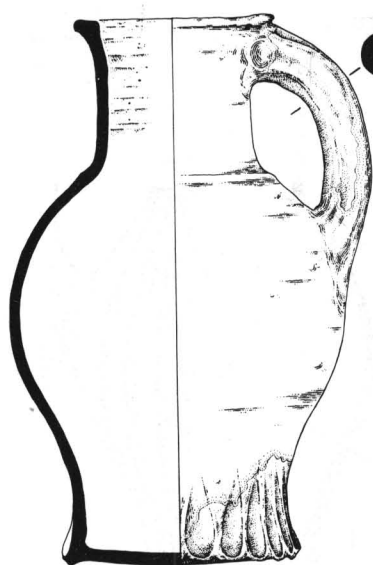


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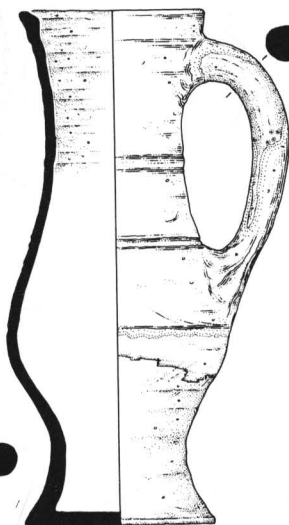


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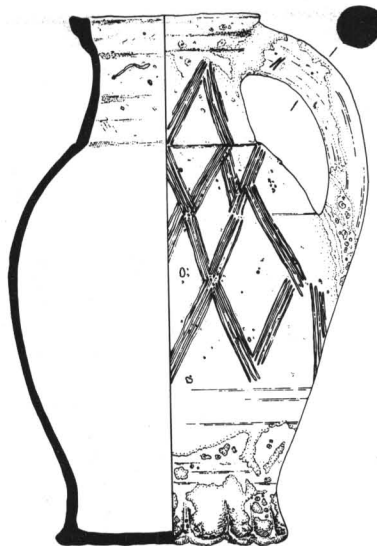
Fig.33. Baluster jugs with North French style decoration. (1/4)



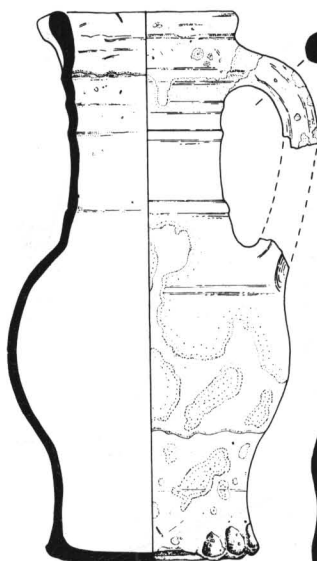
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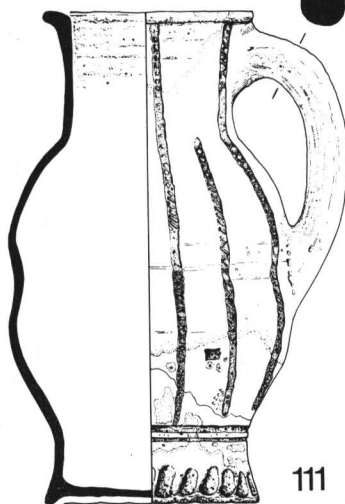
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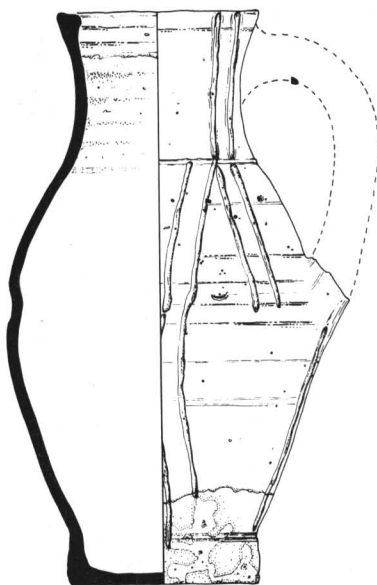
108



110



111



112

Fig.34. Baluster jugs with North French style decoration. (1/4)

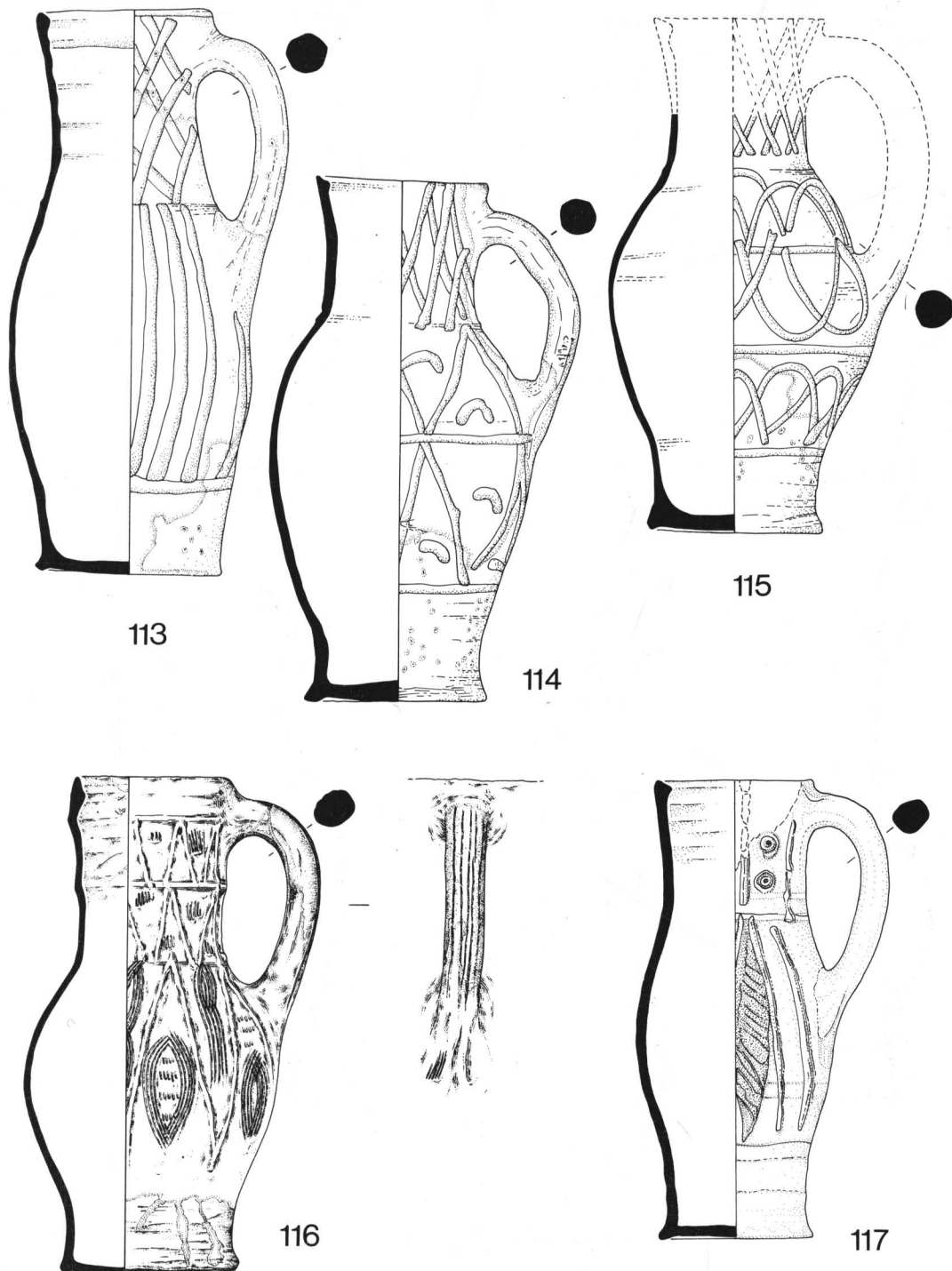


Fig.35. Baluster jugs with white slip decoration. Nos.113-5. Baluster jugs in the highly decorated style. Nos.116-7. (1/4)

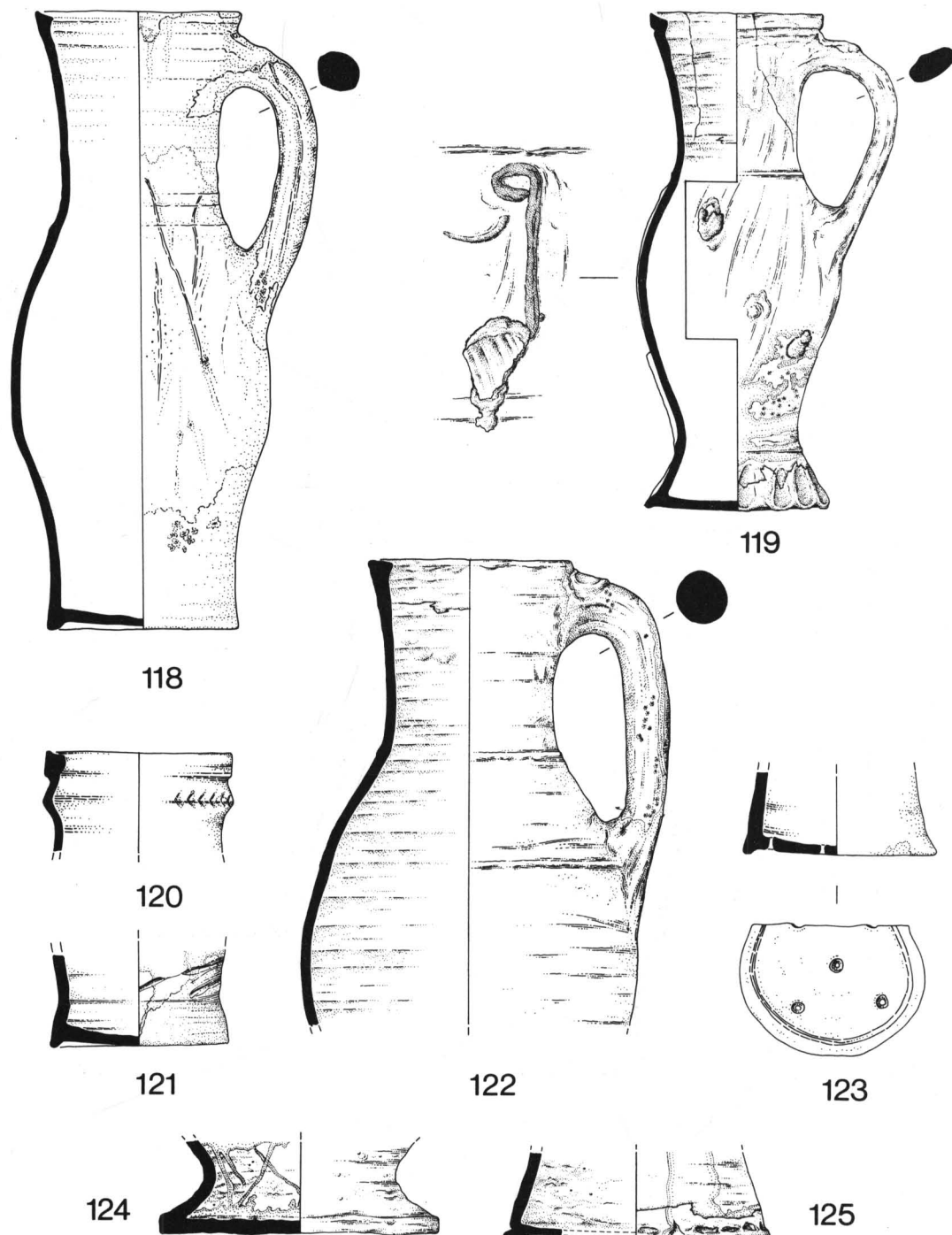


Fig. 36. Flared baluster jugs with white slip and clear glaze. Nos. 118-20. Baluster jug with white slip and green glaze. No. 122. Miscellaneous baluster jug fragments. Nos. 121-5. (1/4)

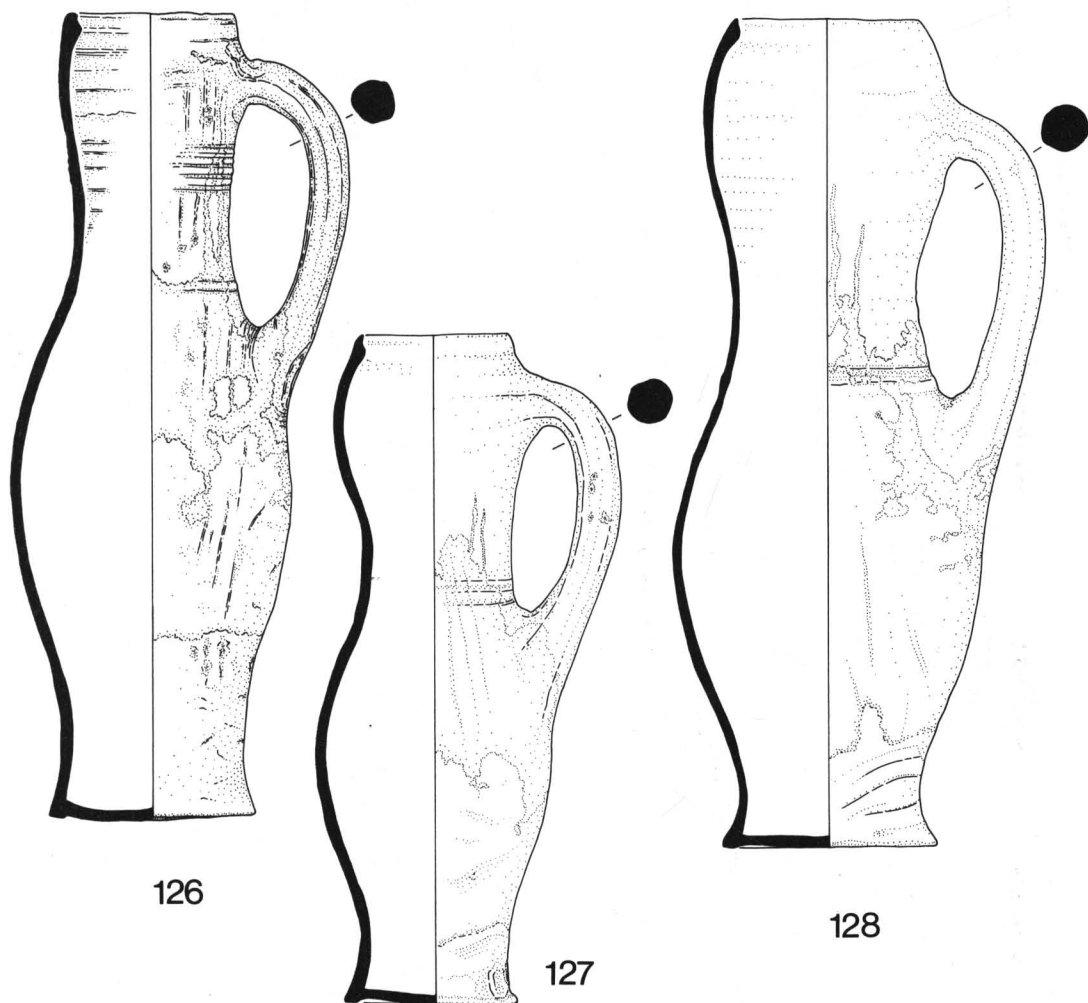


Fig.37. Tulip-necked baluster jugs with white slip and clear glaze. (1/4)

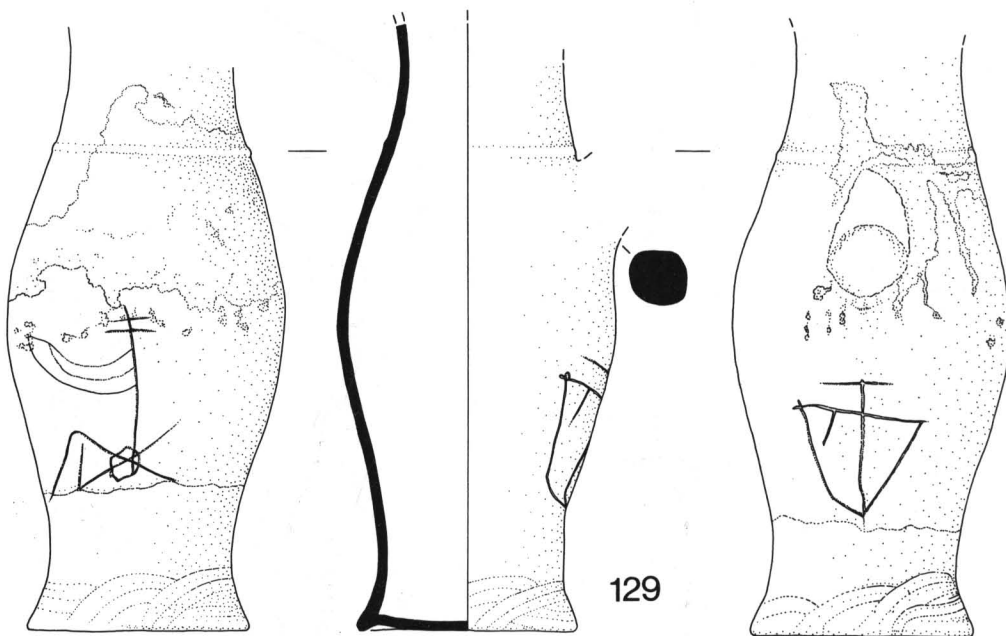


Fig.38. Baluster jug with white slip and clear glaze and 'maker's marks'. (1/4)

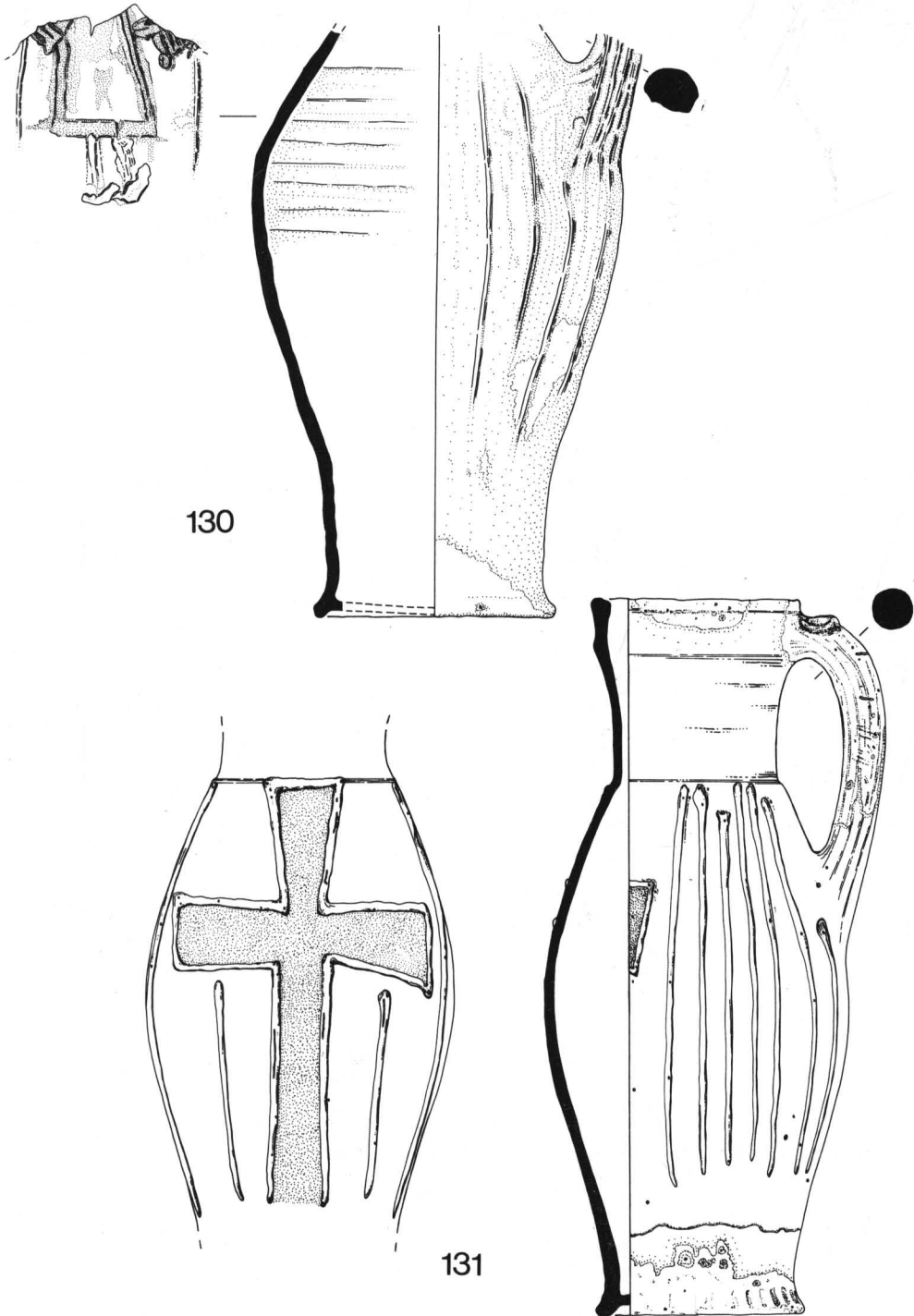


Fig.39. Large rounded jugs with North French style decoration. (1/4)

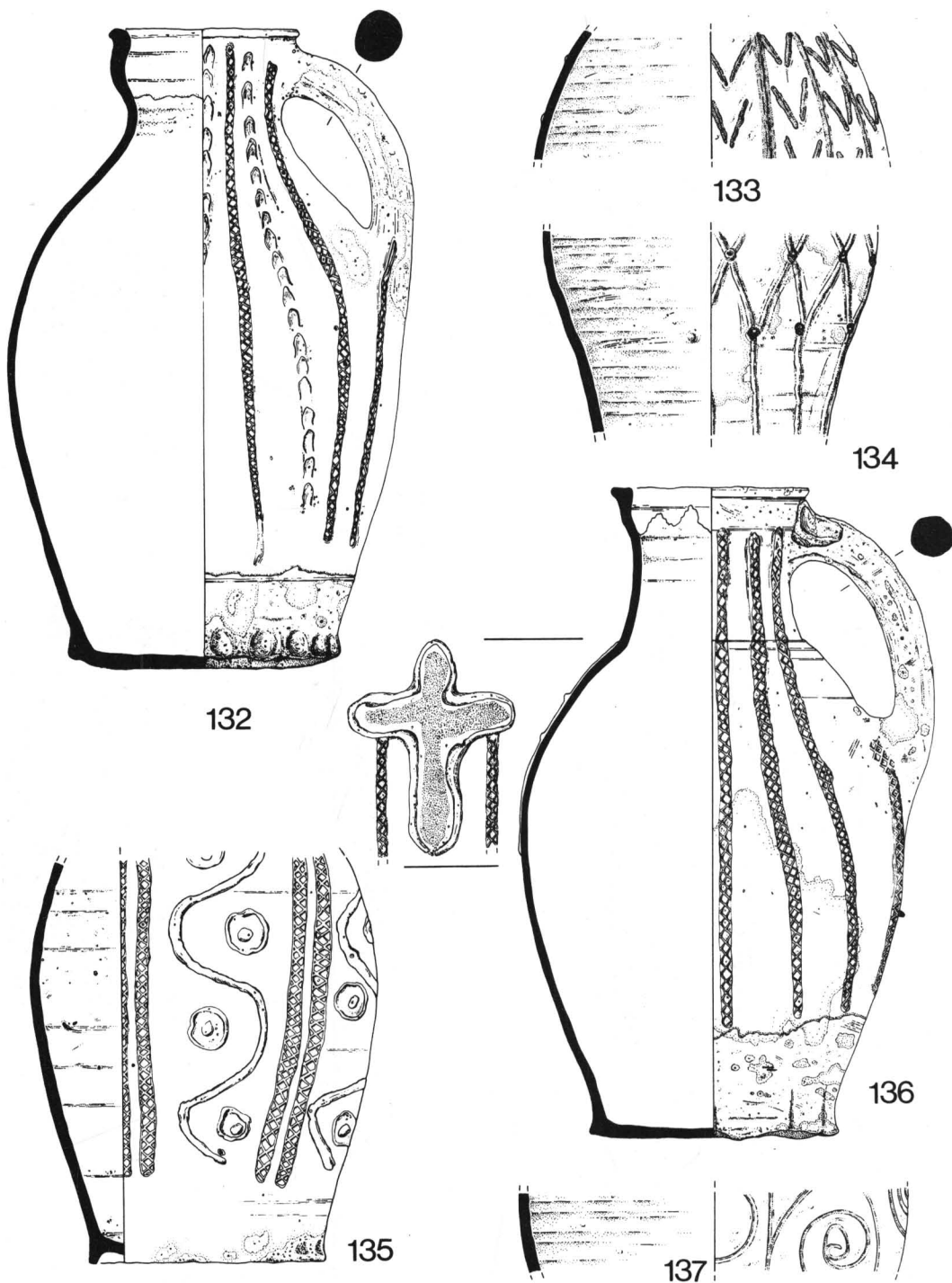
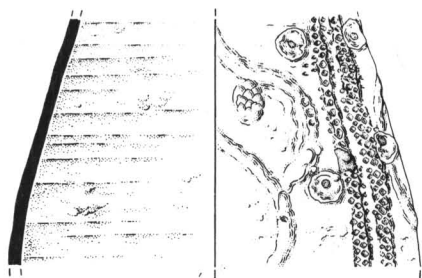
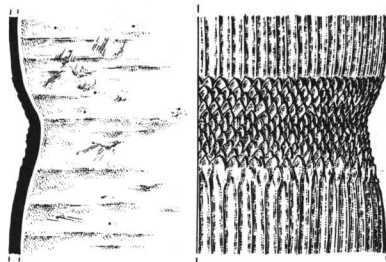


Fig.40. Large rounded jugs with North French style decoration. (1/4)



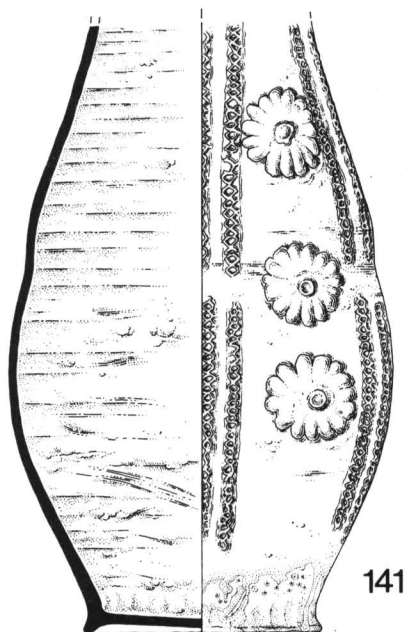
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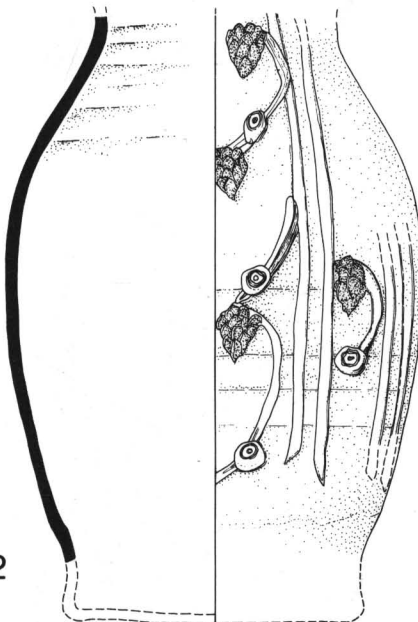
139



140



141



142

Fig.41. Large rounded jugs in the highly decorated style. (1/4)

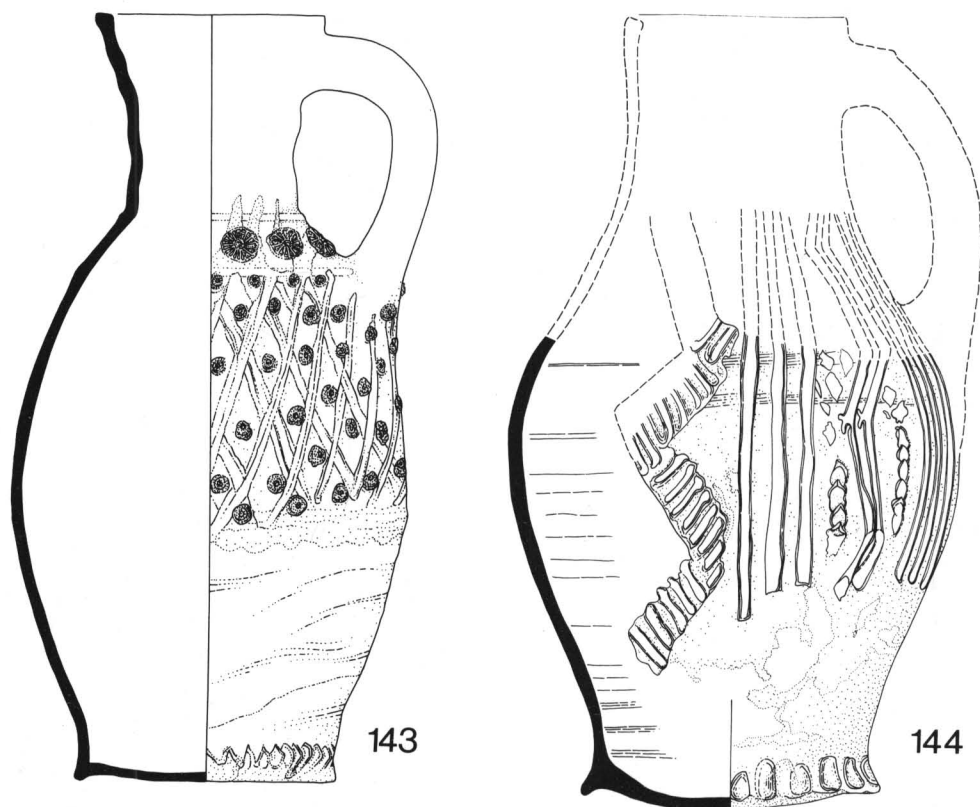


Fig.42. Large rounded jugs in the highly decorated style. (1/4)

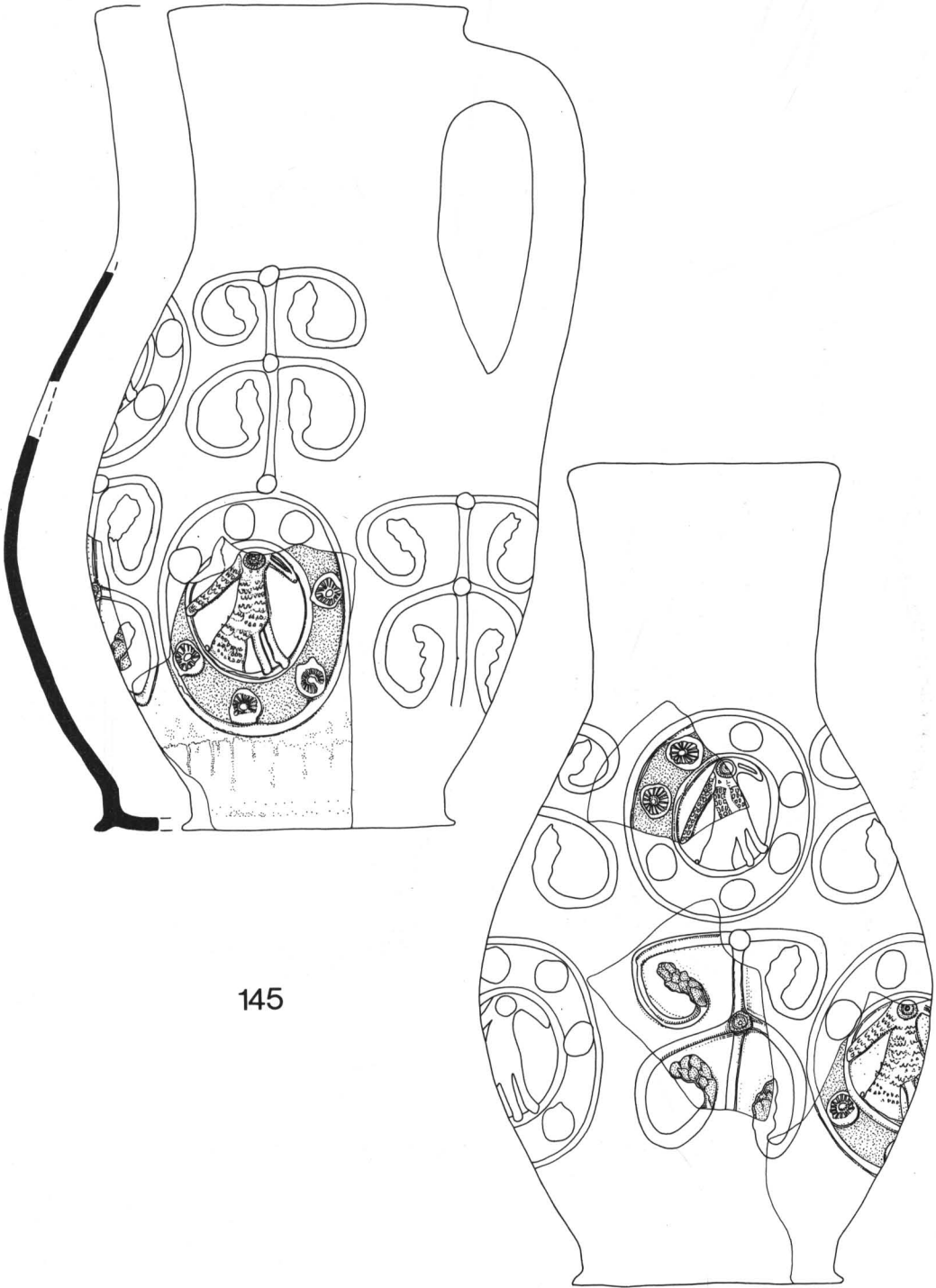


Fig.43. Large rounded jug in the highly decorated style. (1/4)

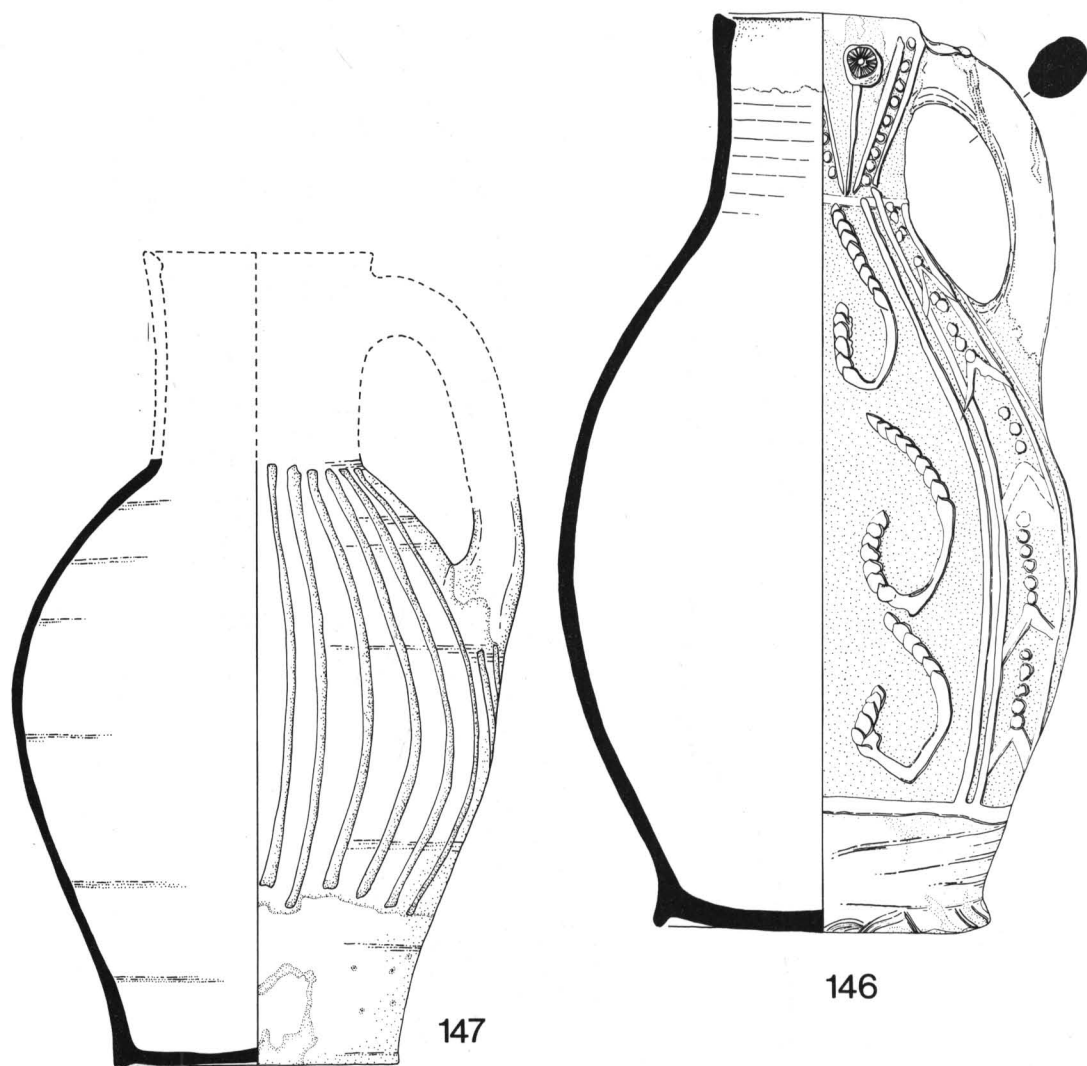


Fig.44. Large rounded jug in the highly decorated style. No.146. Large rounded jug with white slip decoration. No.147. (1/4)

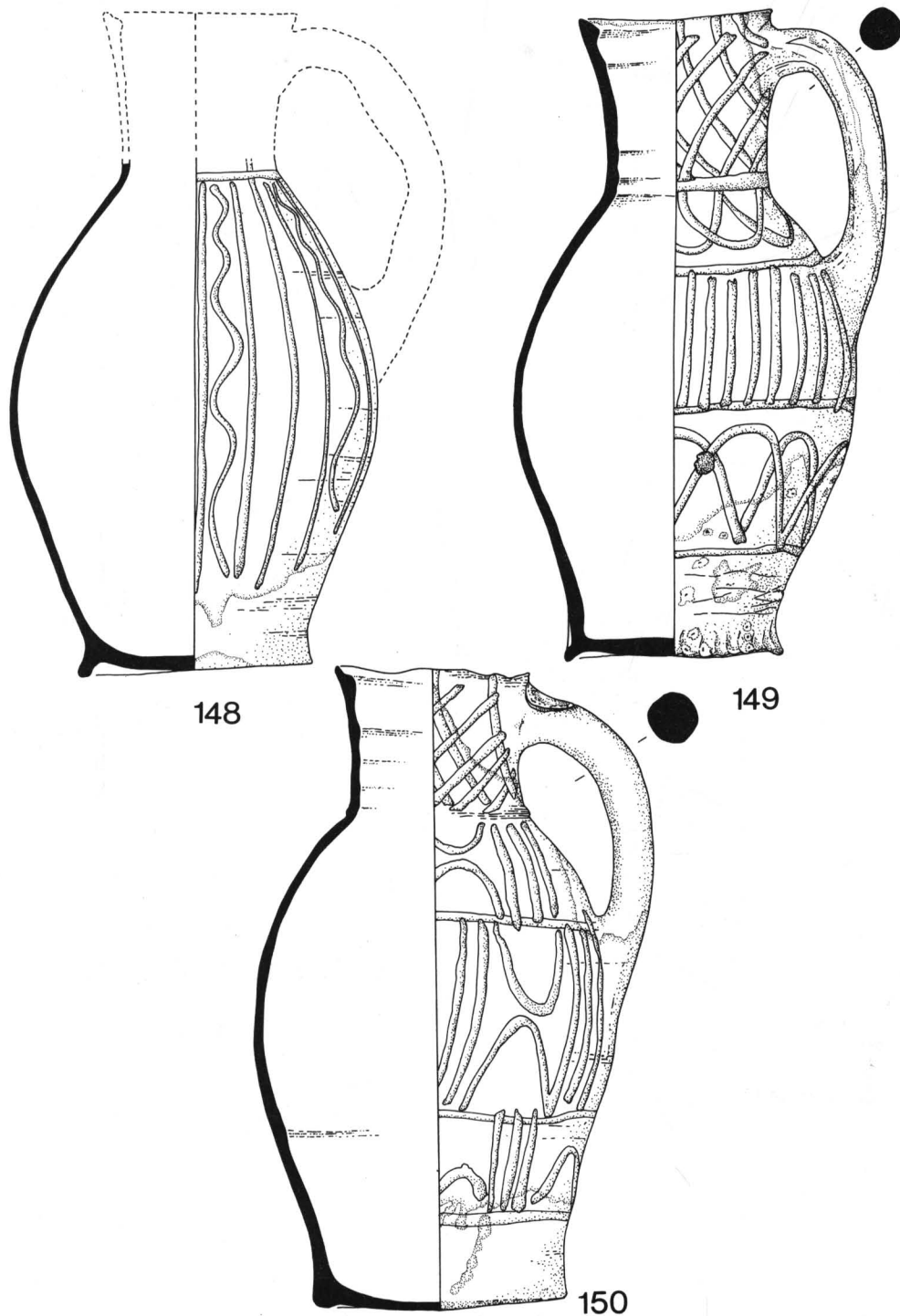
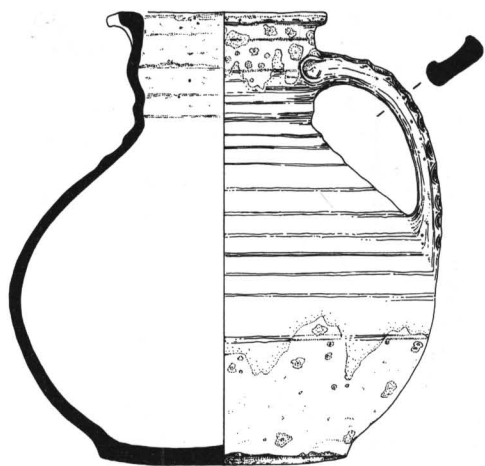


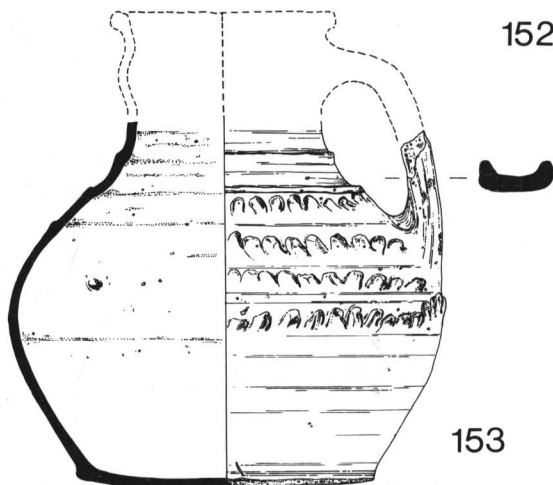
Fig.45. Large rounded jugs with white slip decoration. (1/4)



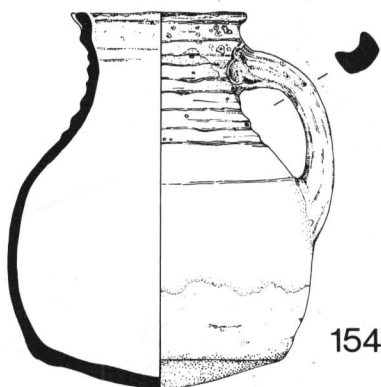
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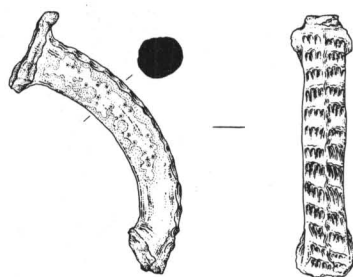
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153



154

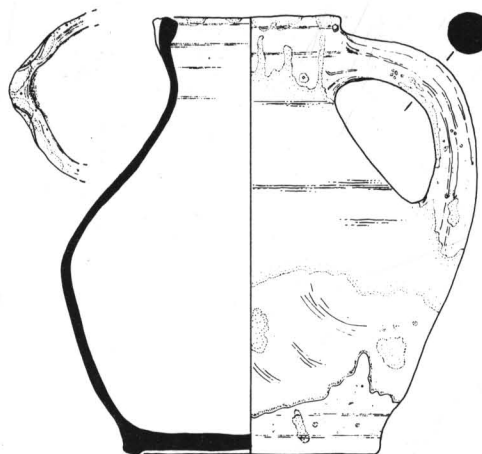


155

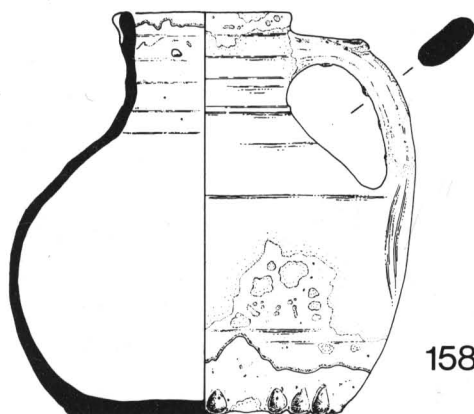
Fig.46. Early squat jugs. (1/4)



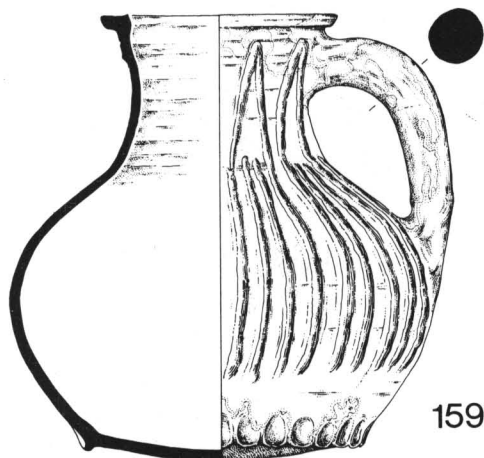
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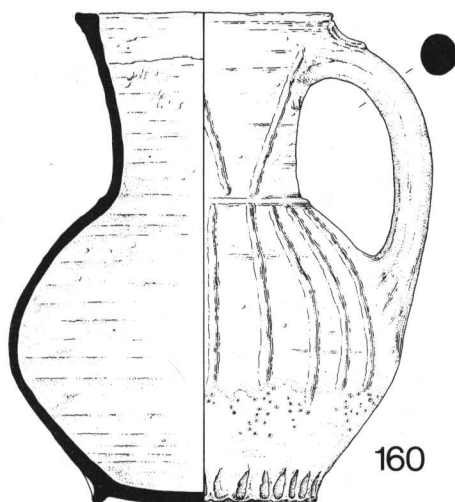
157



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159



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Fig.47. Squat/rounded jugs with North French style decoration. (1/4)

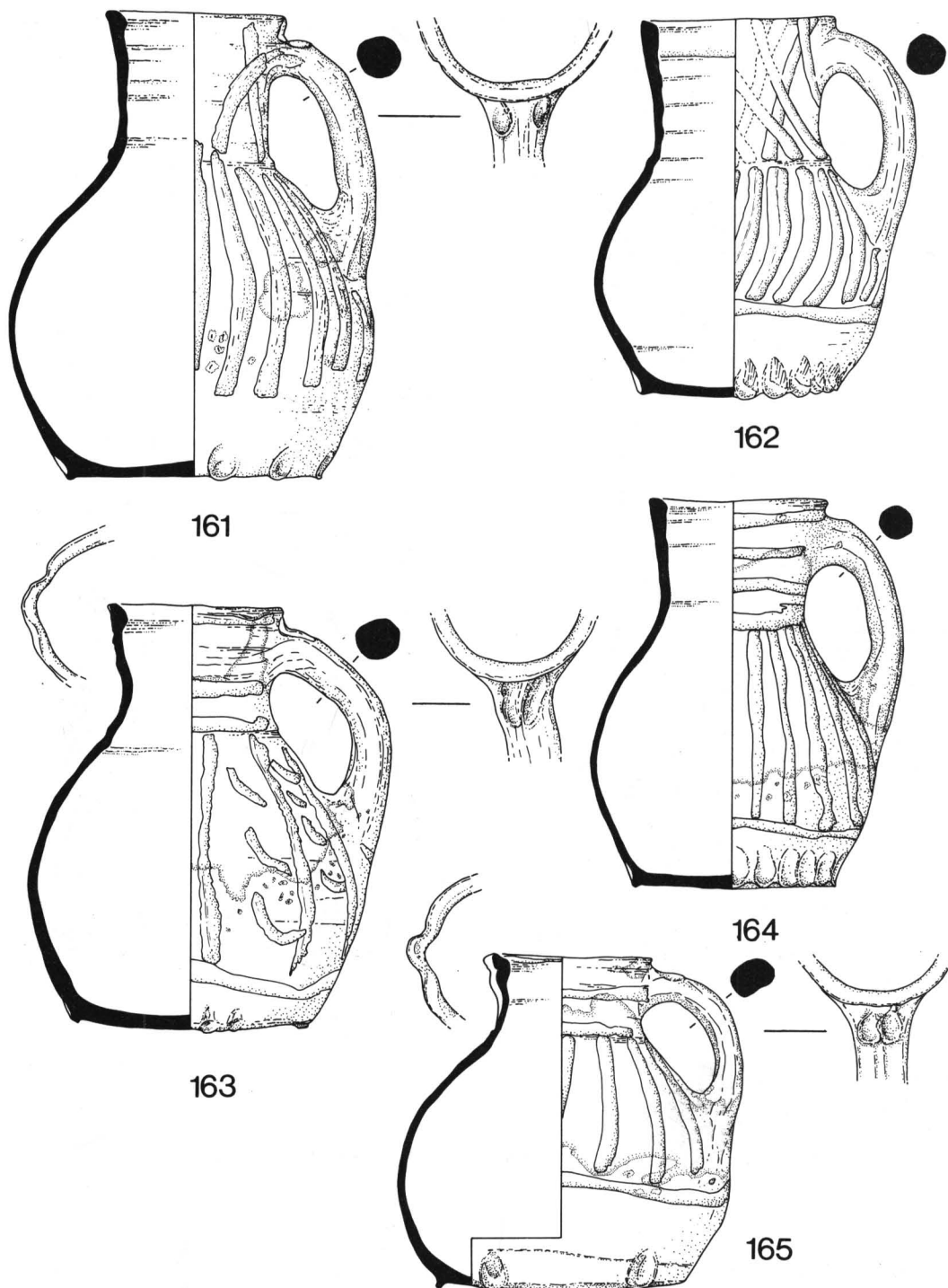
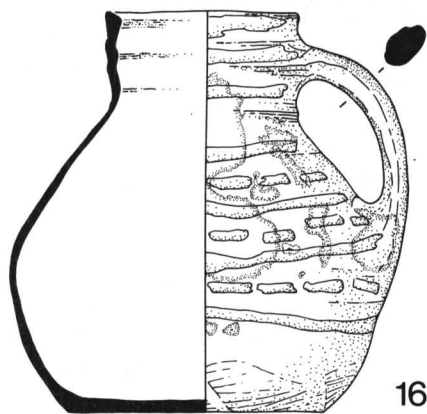
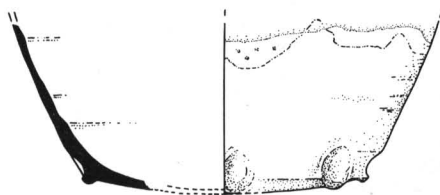


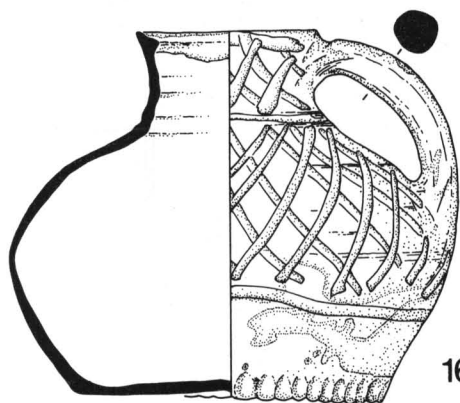
Fig.48. Squat/rounded jugs with white slip decoration. (1/4)



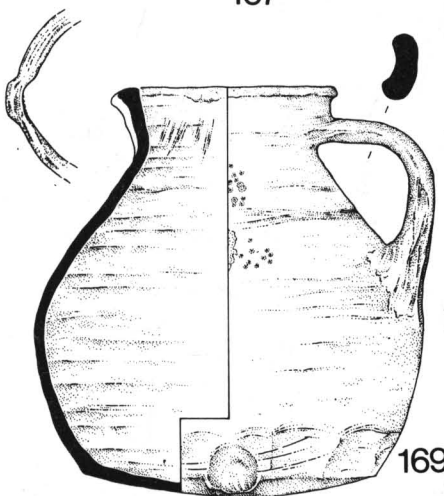
166



167



168



169

Fig.49. Squat jugs with white slip decoration. Nos.166-8. Squat jug with clear glaze. No.169.
(1/4)

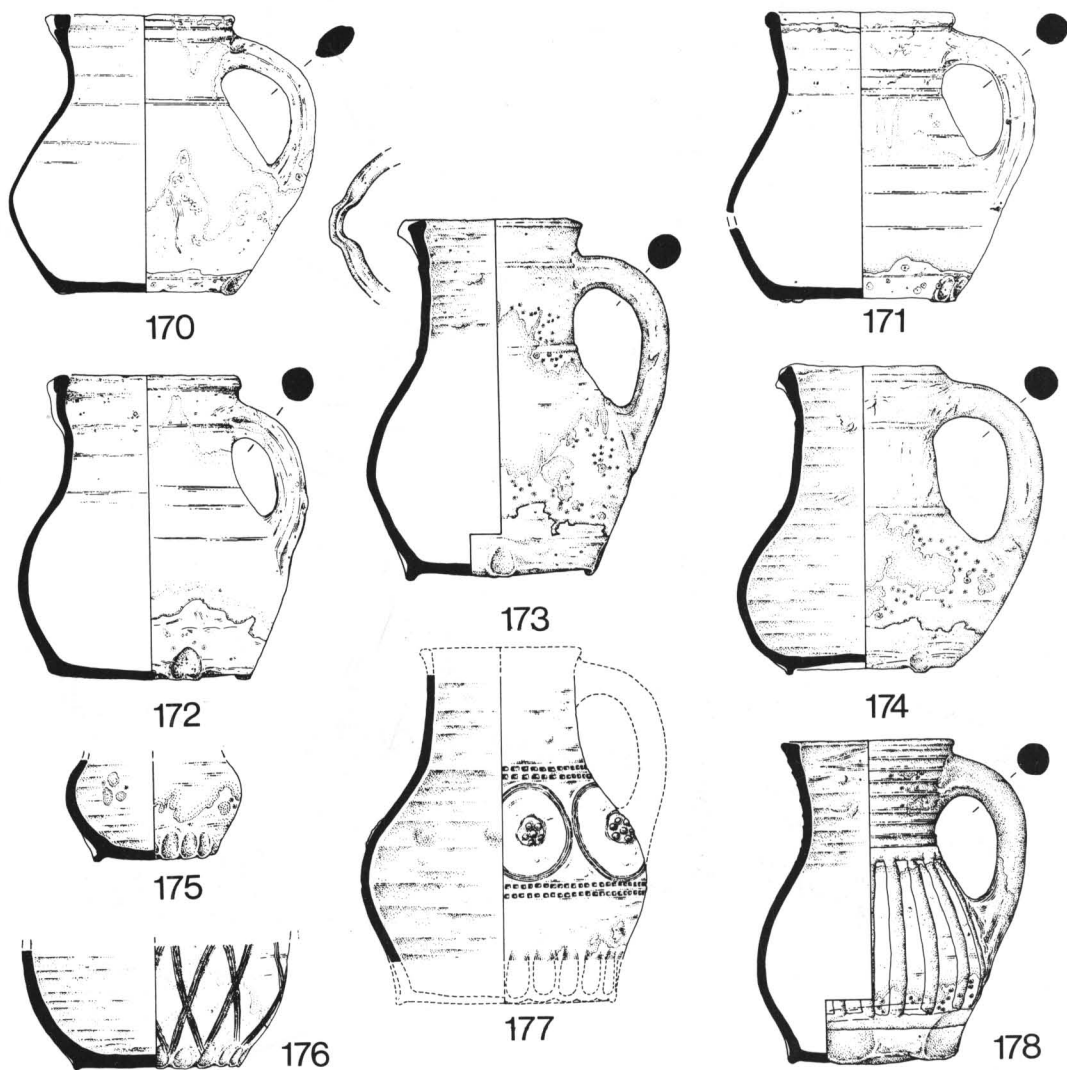


Fig.50. Small rounded jugs. (1/4)

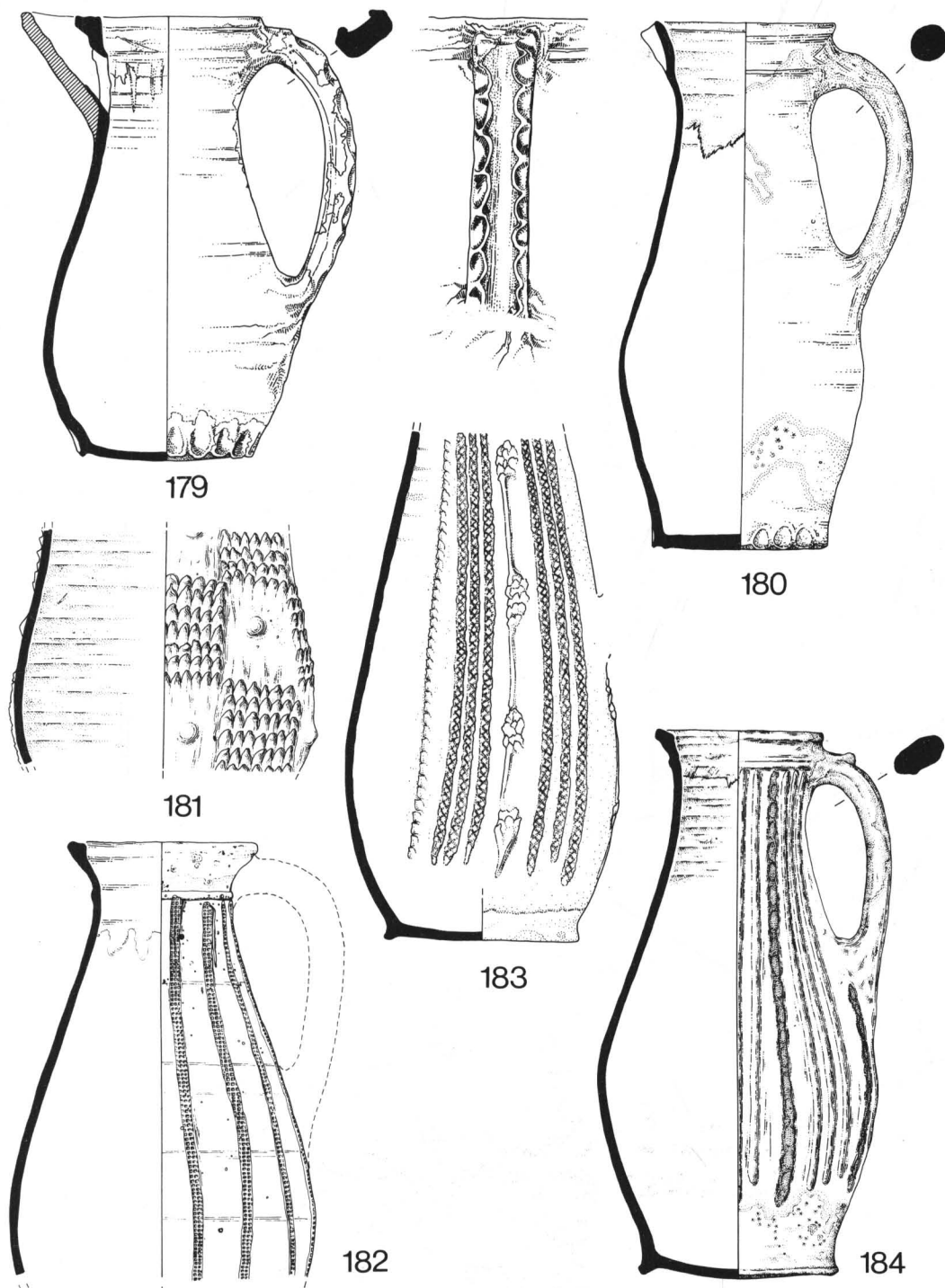
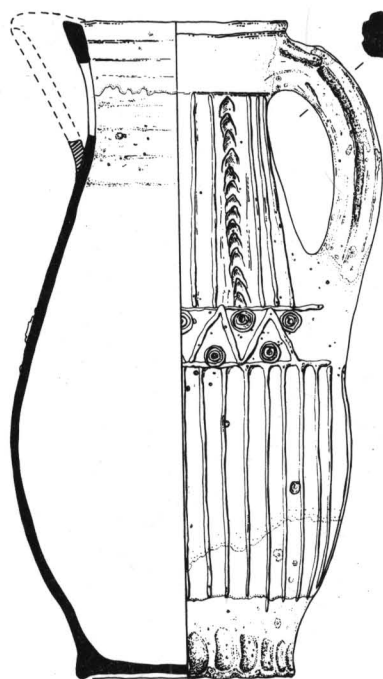
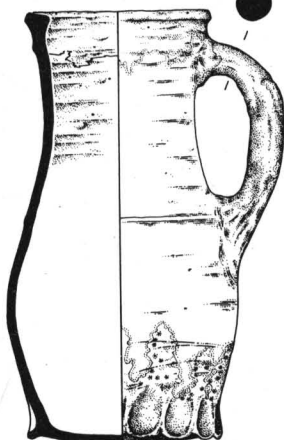


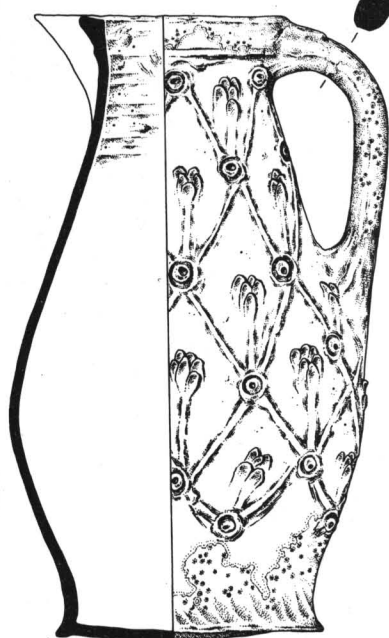
Fig.51. Pear-shaped jugs with North French style decoration. (1/4)



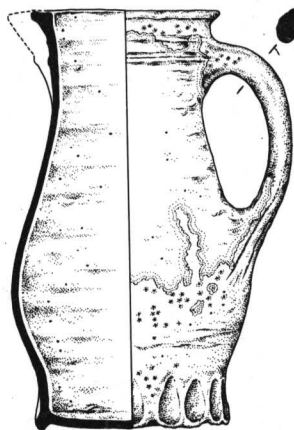
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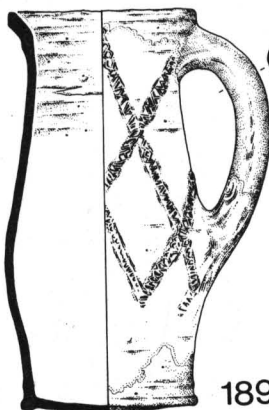
187



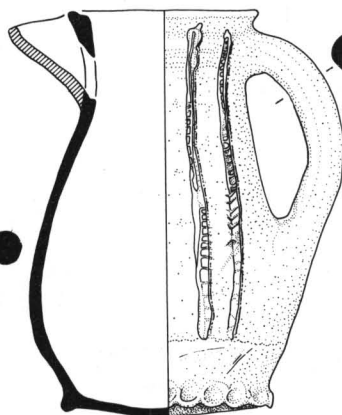
186



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189



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Fig.52. Pear-shaped jugs with North French style decoration. Nos.185-90. Pear-shaped jug in the highly decorated style. No.186 (1/4)

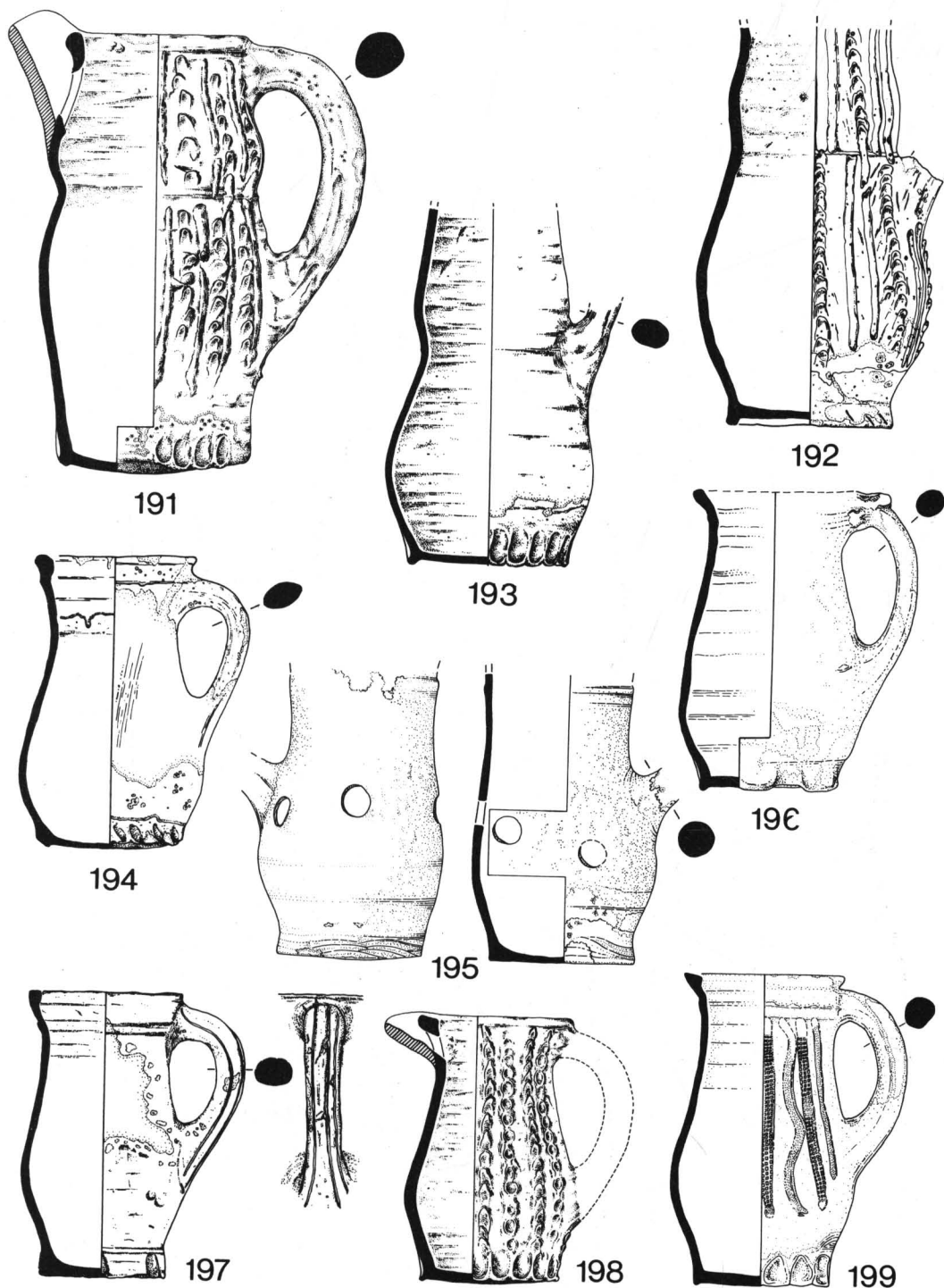


Fig.53. Small pear-shaped jugs with North French style decoration. No.195 reused as a lantern. (1/4)

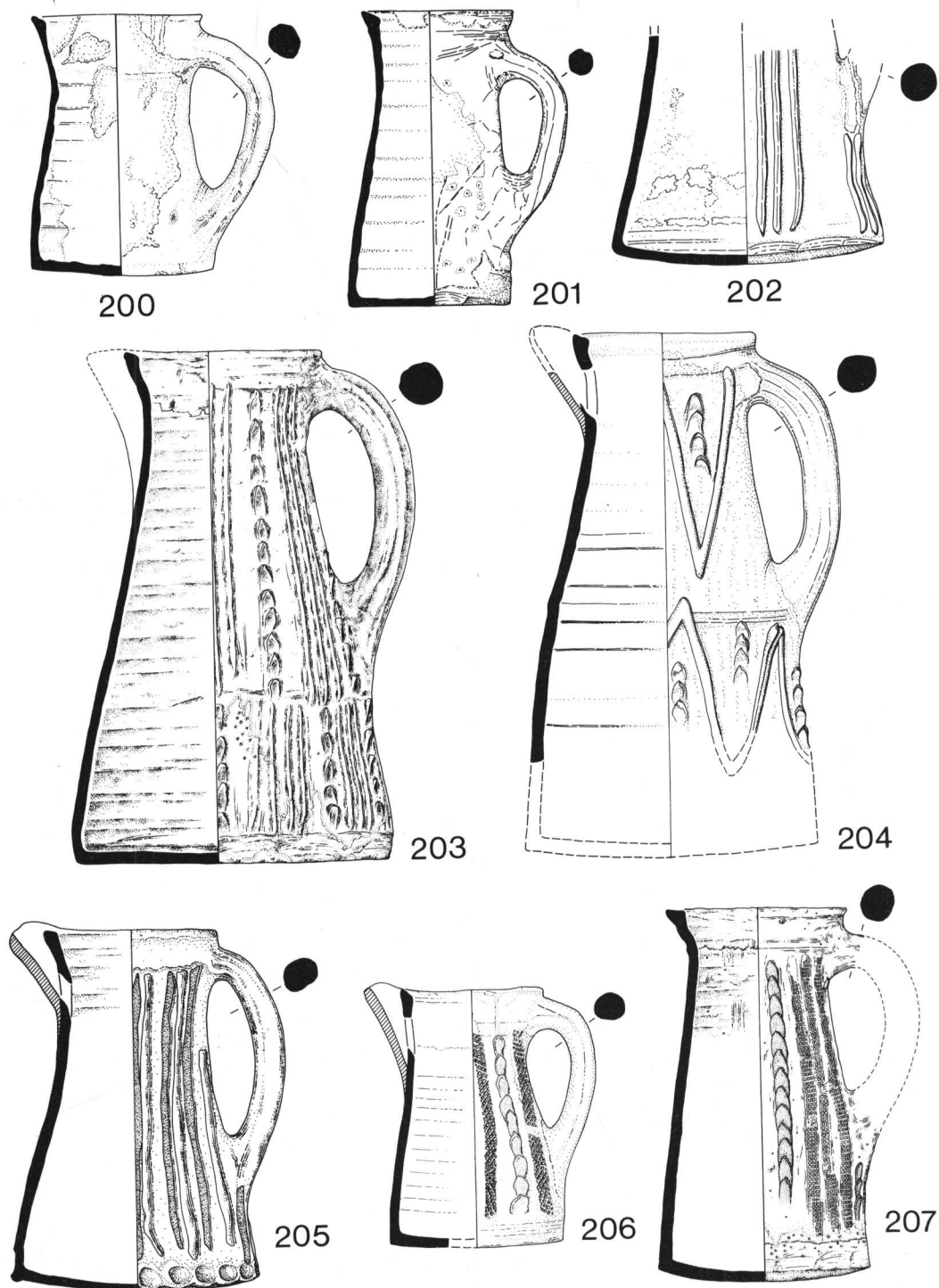
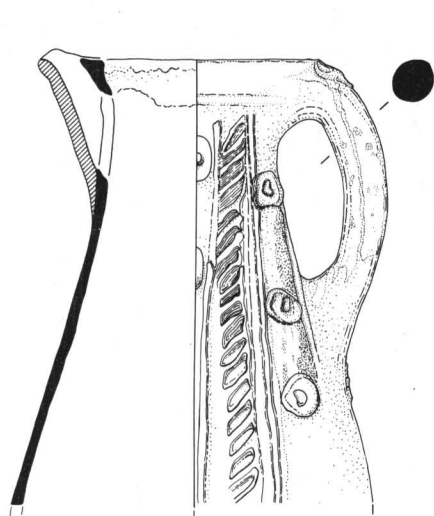
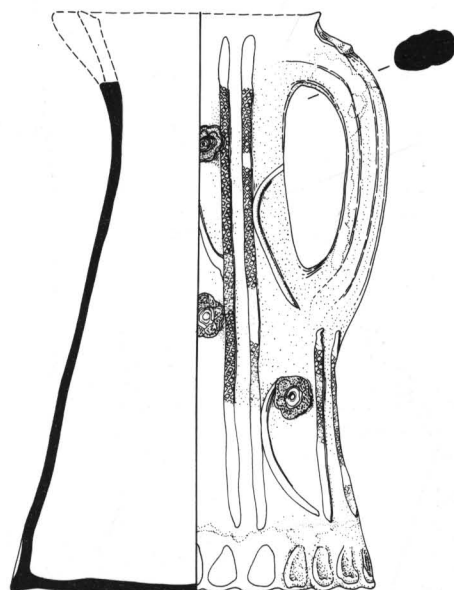


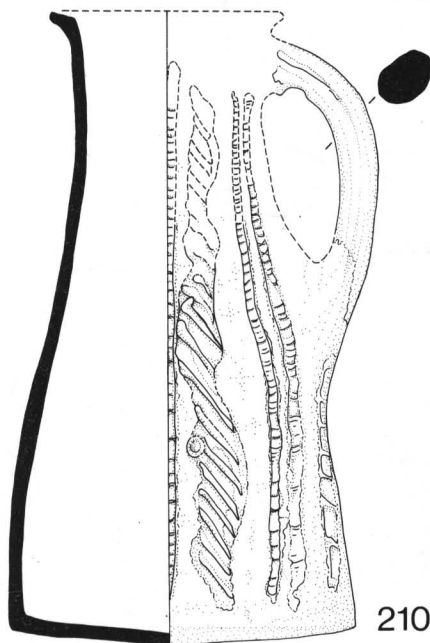
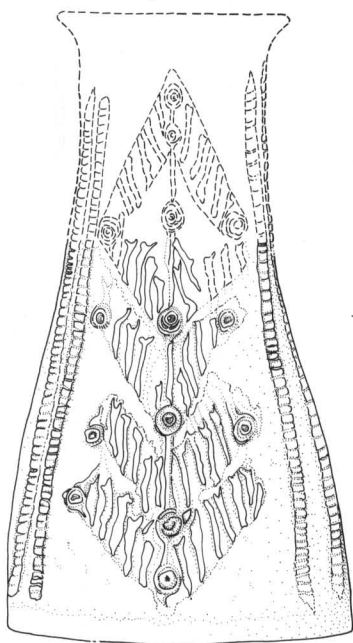
Fig.54. Conical jugs with North French style decoration. (1/4)



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210

Fig.55. Conical jugs in the highly decorated style. (1/4)

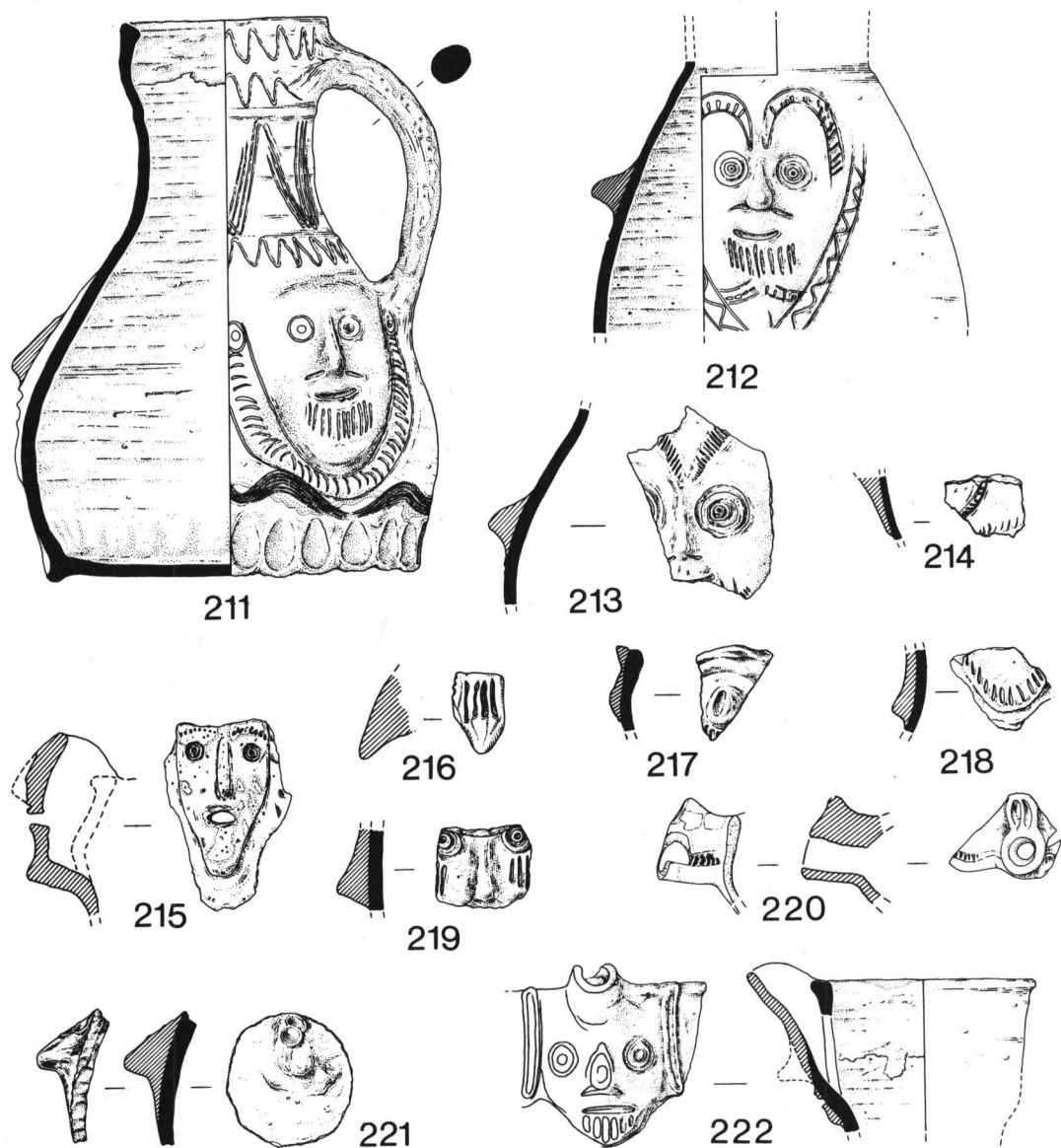


Fig.56. Anthropomorphic jugs. (1/4)

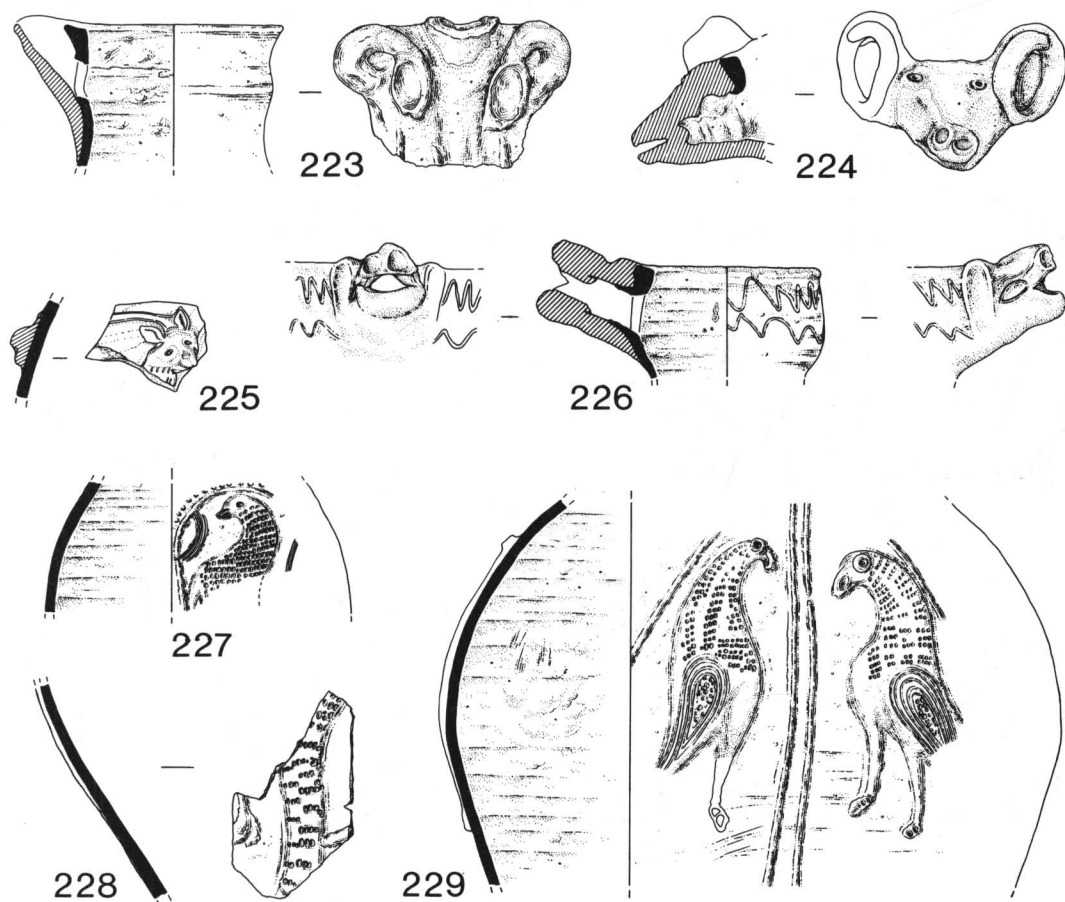


Fig.57. Zoomorphic jugs. (1/4)

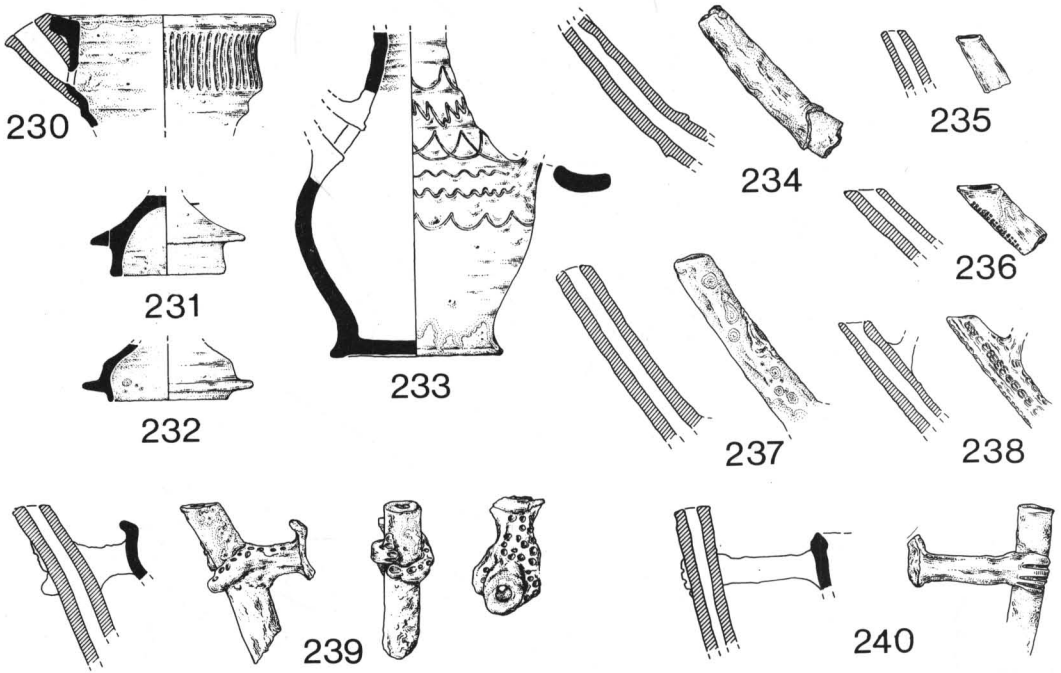


Fig. 58. Spouted jugs. (1/4)

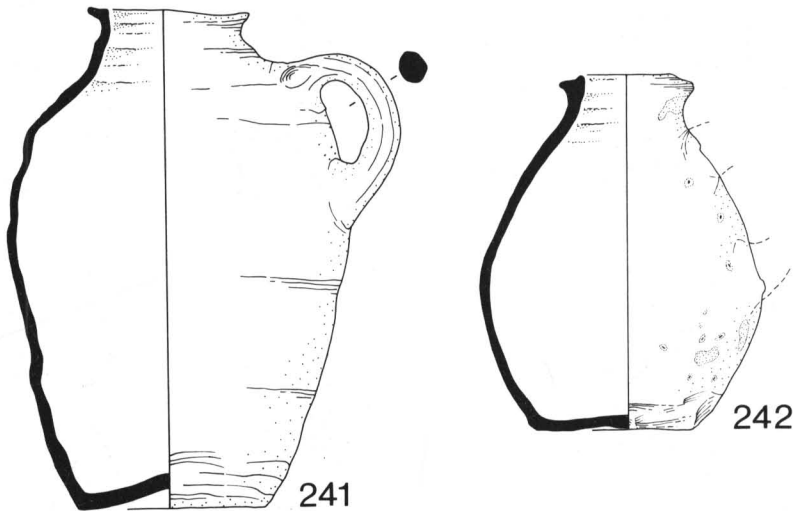


Fig. 59. Barrel-shaped jugs. (1/4)

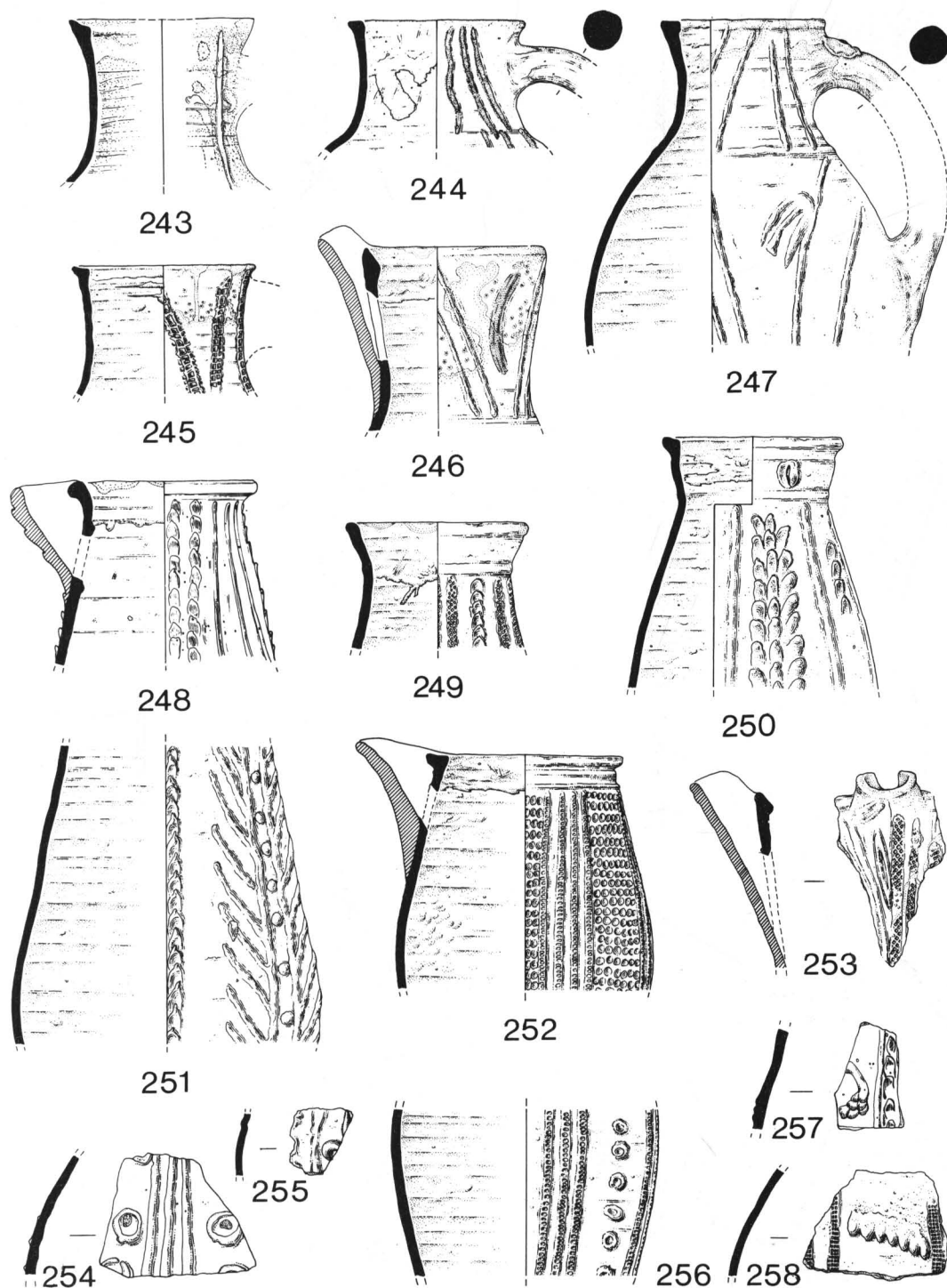


Fig.60. Miscellaneous jug fragments in the North French and highly decorated styles. (1/4)

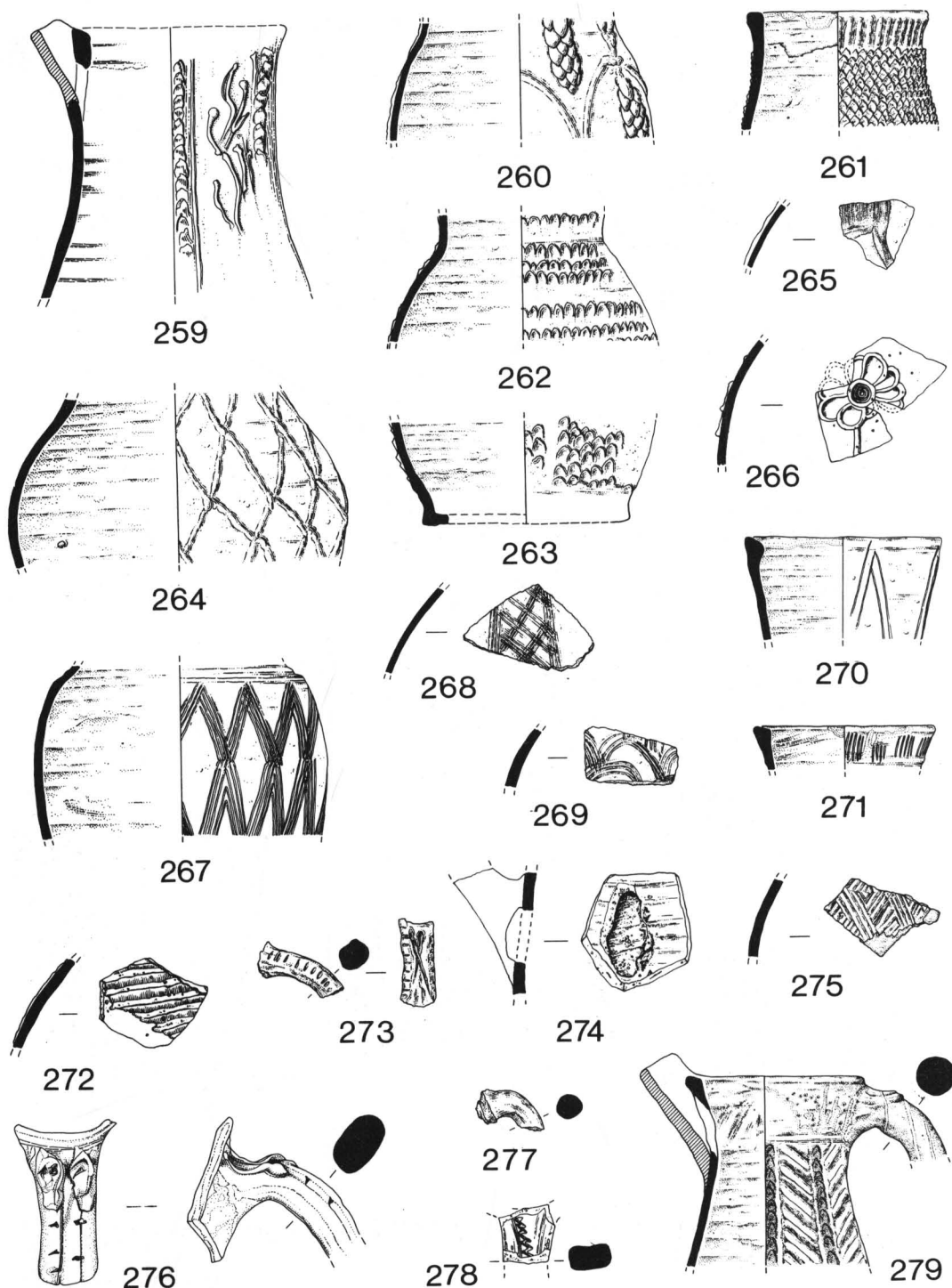


Fig.61. Miscellaneous jug fragments in the North French and highly decorated styles. (1/4)

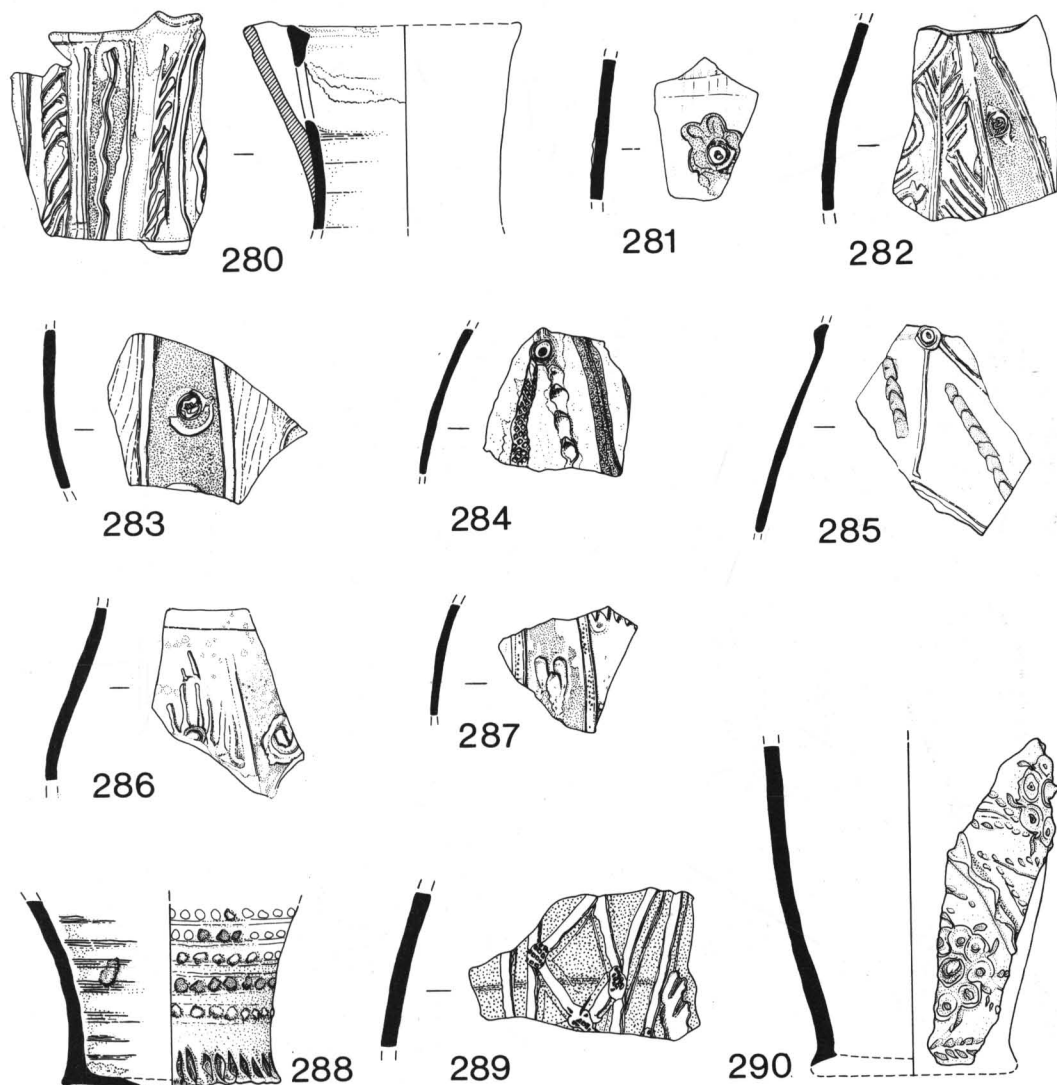


Fig.62. Miscellaneous jug fragments in the highly decorated style. (1/4)

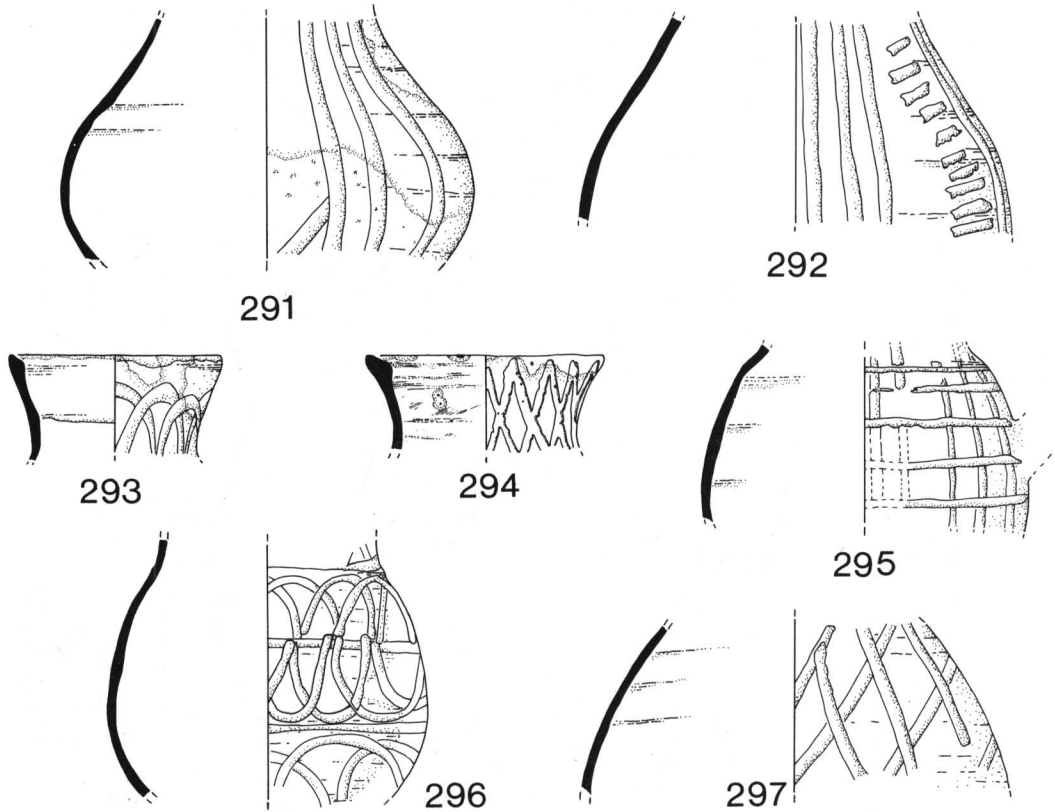


Fig.63. Miscellaneous jug fragments with white slip decoration. (1/4)

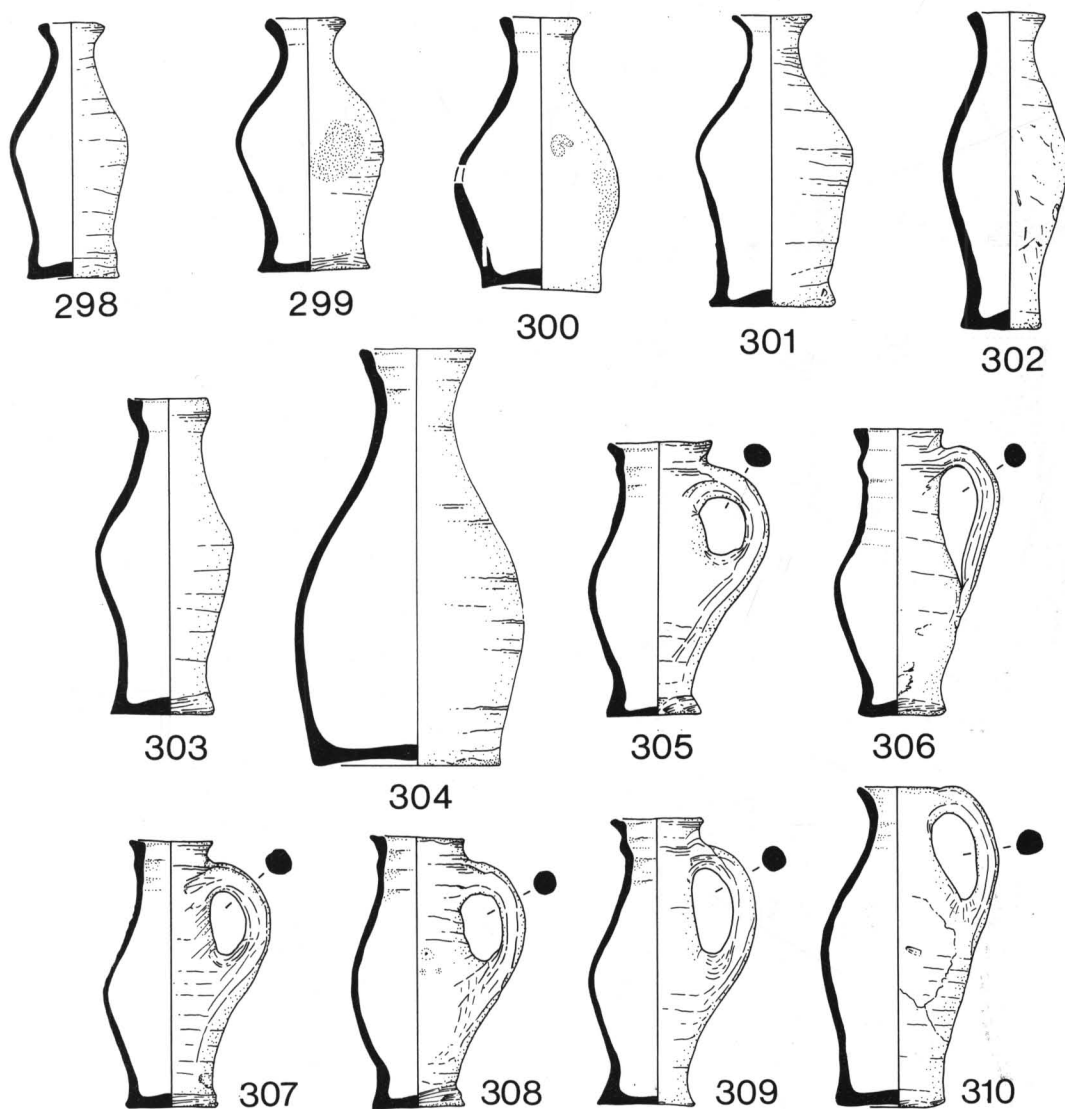


Fig.64. Bottles. Nos.298-304. Baluster-shaped drinking jugs. Nos.305-10. (1/4)

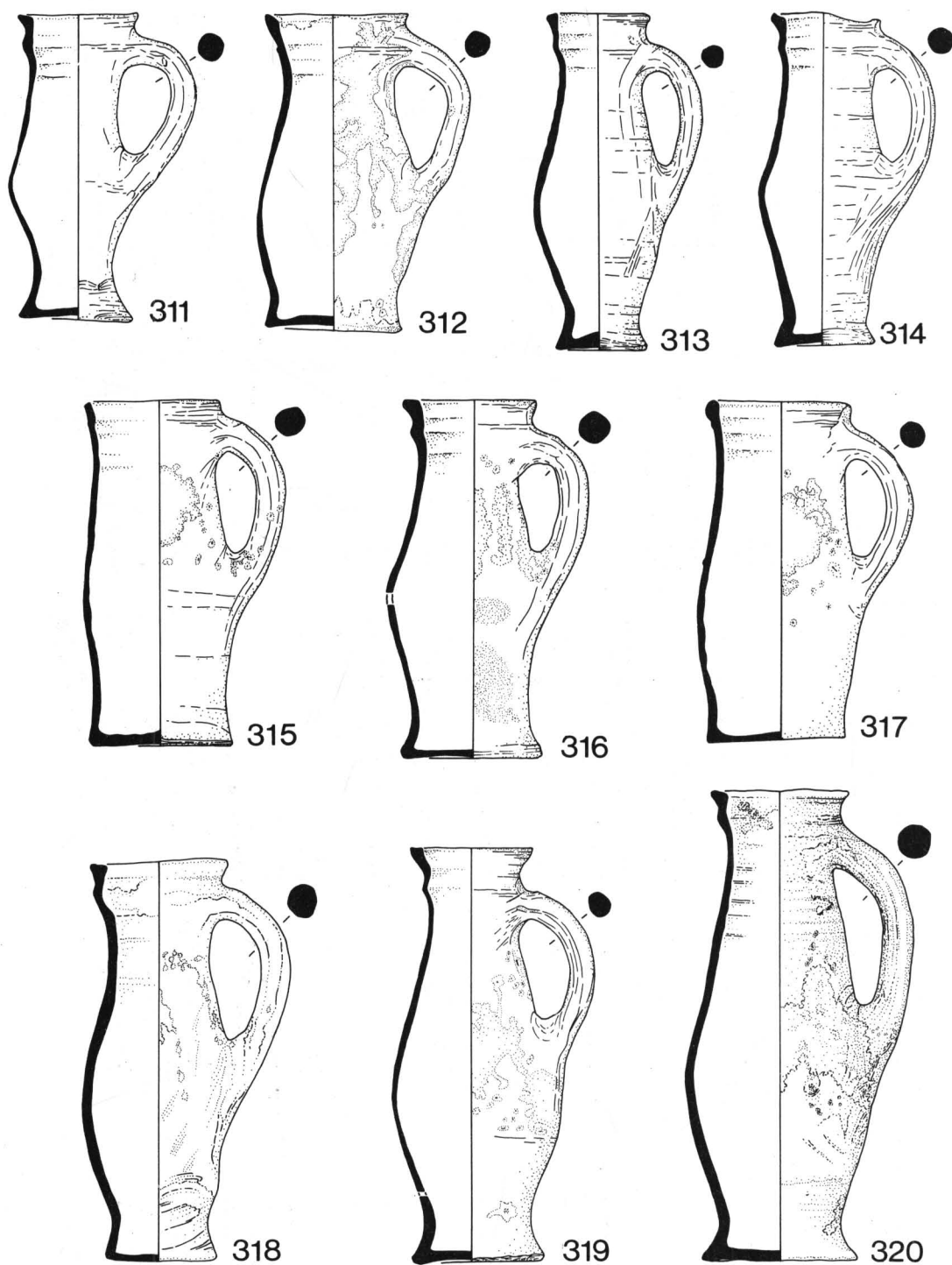


Fig.65. Baluster-shaped drinking jugs. (1/4)

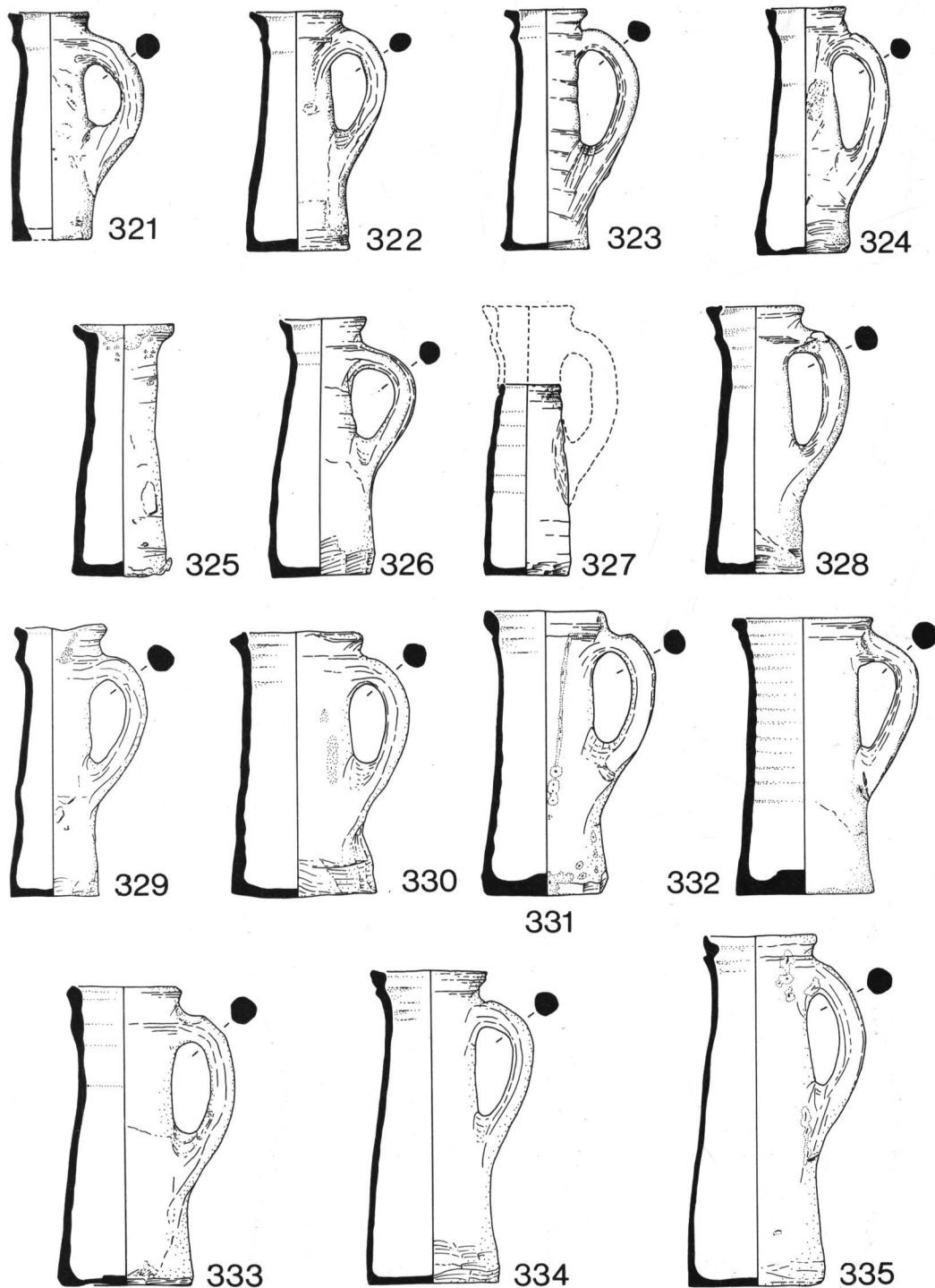


Fig.66. Conical drinking jugs. (1/4)

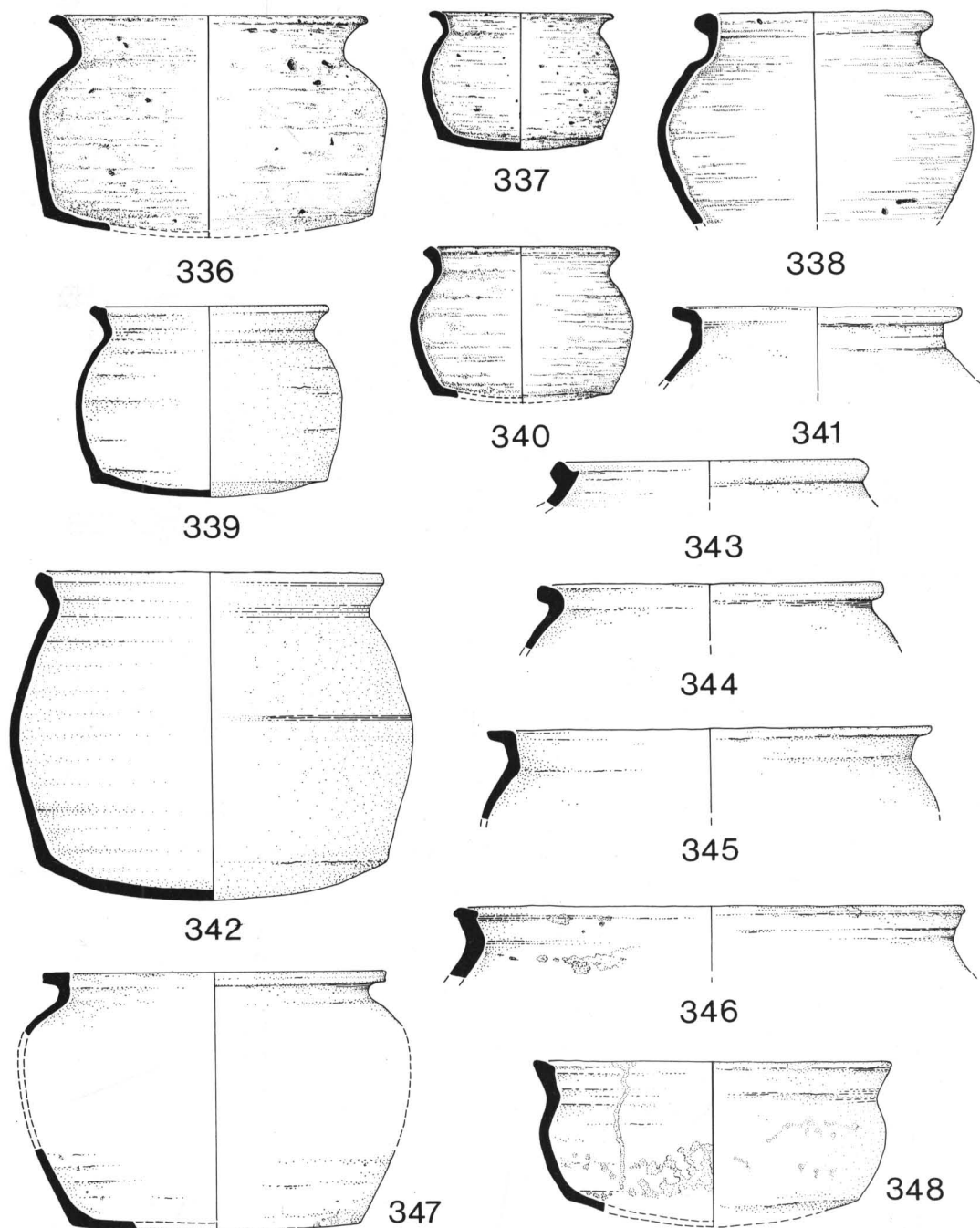


Fig.67. Cooking pots. (1/4)

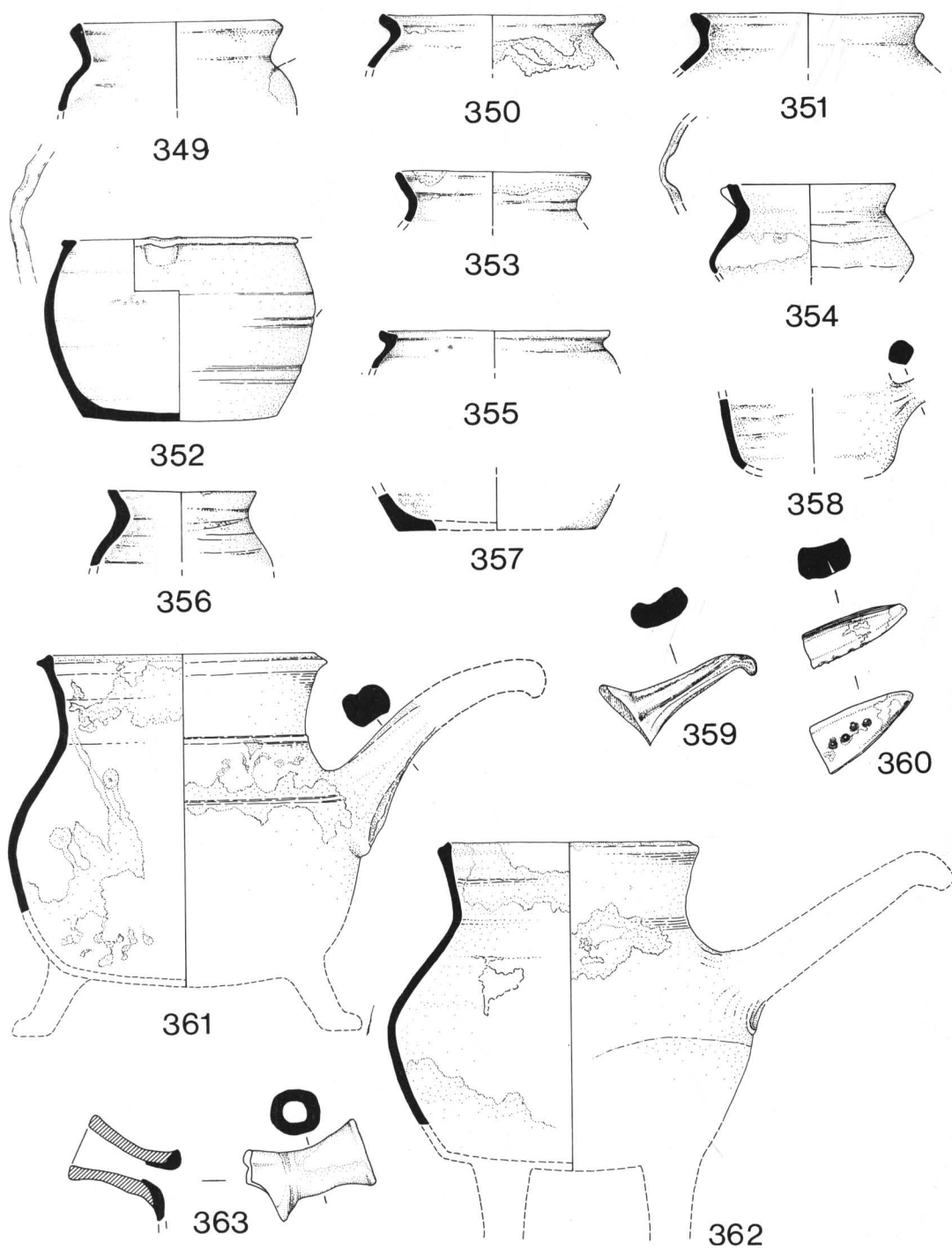


Fig.68. Pipkins. Nos.349-60. Tripod pipkins. Nos.361-3. (1/4)

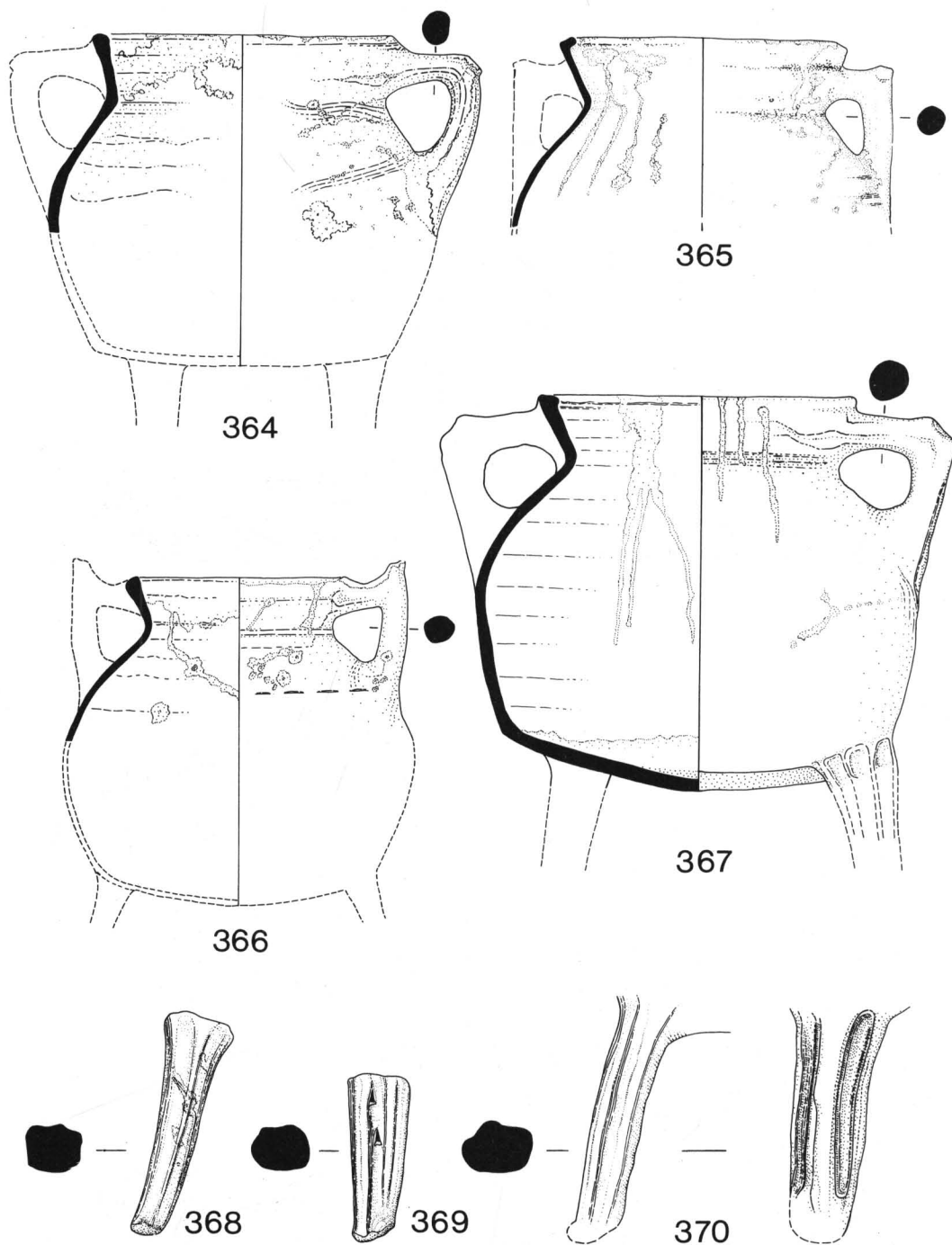


Fig.69. Cauldrons. (1/4)

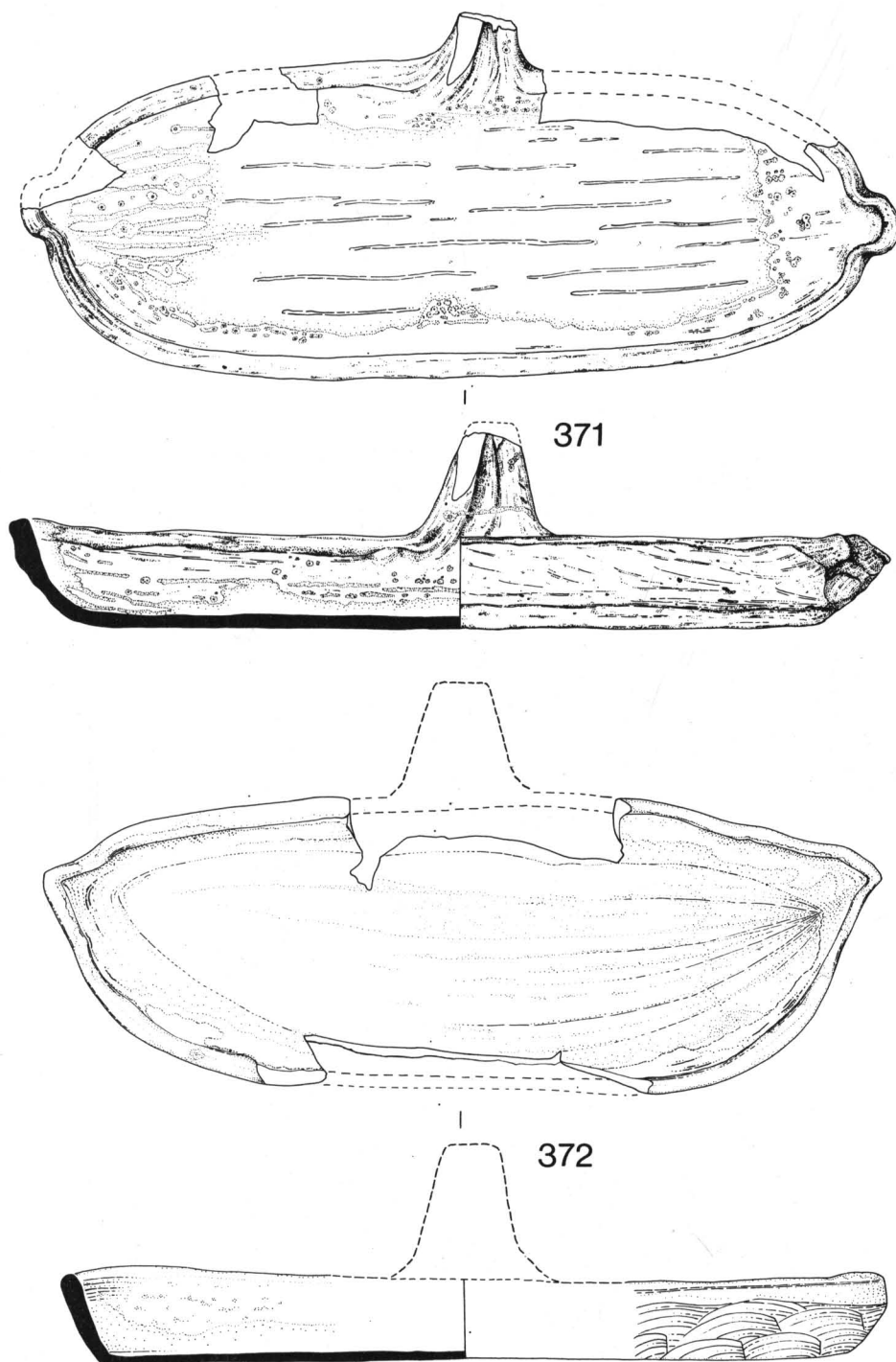


Fig.70. Dripping dishes. (1/4)

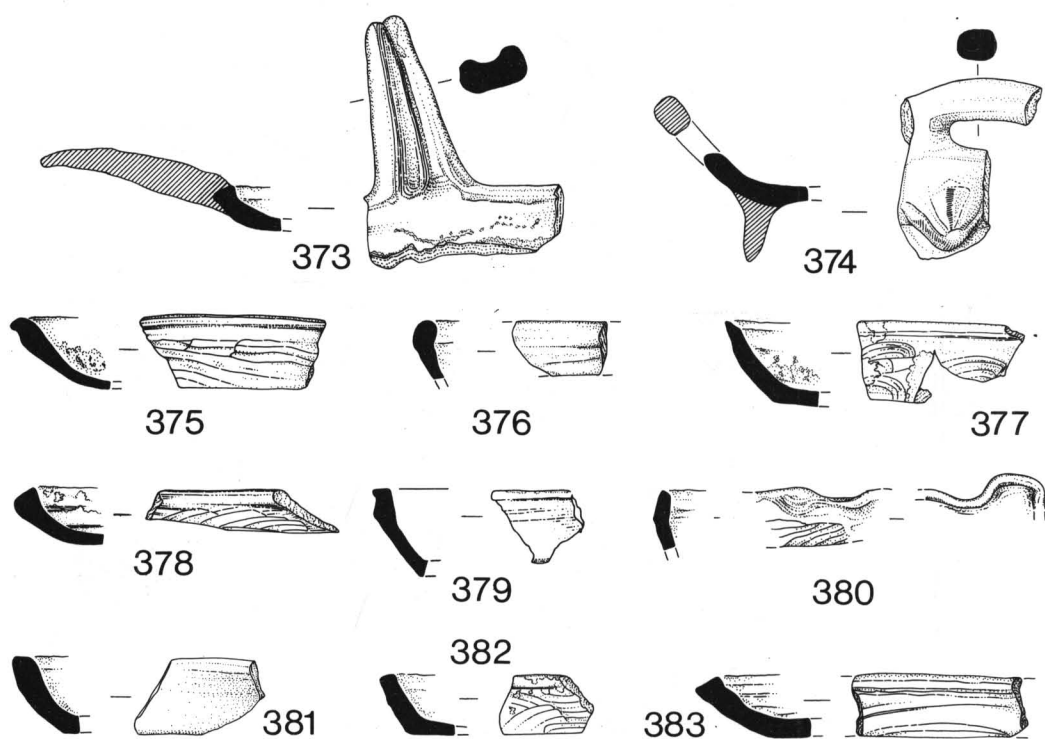


Fig.71. Dripping dishes. (1/4)

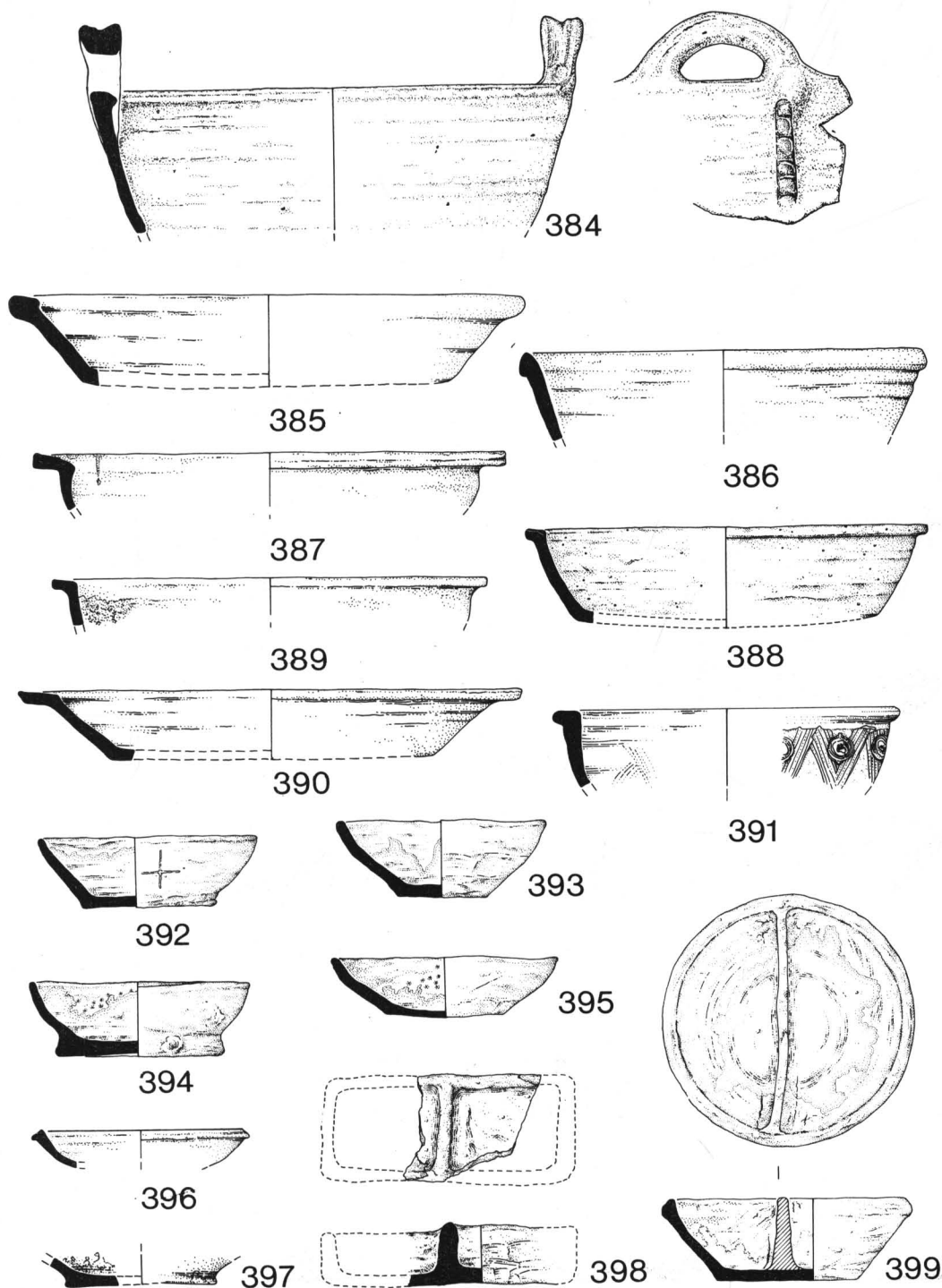


Fig.72. Bowls and dishes. Nos.384-97. Condiments. Nos.398-9. (1/4)

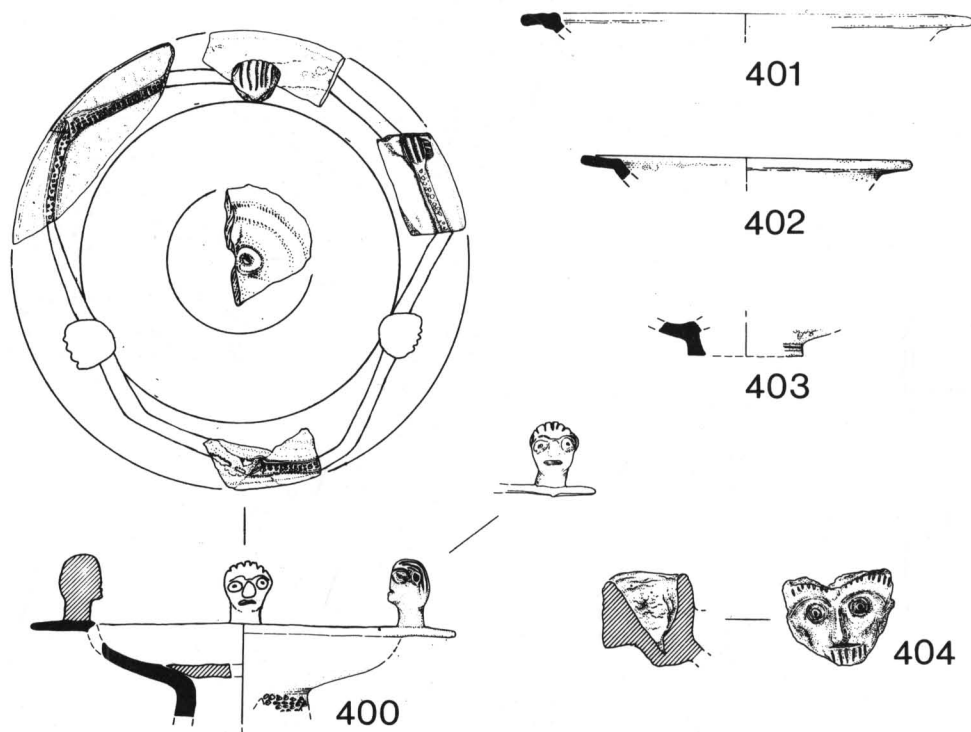


Fig.73. Chafing dishes. (1/4)

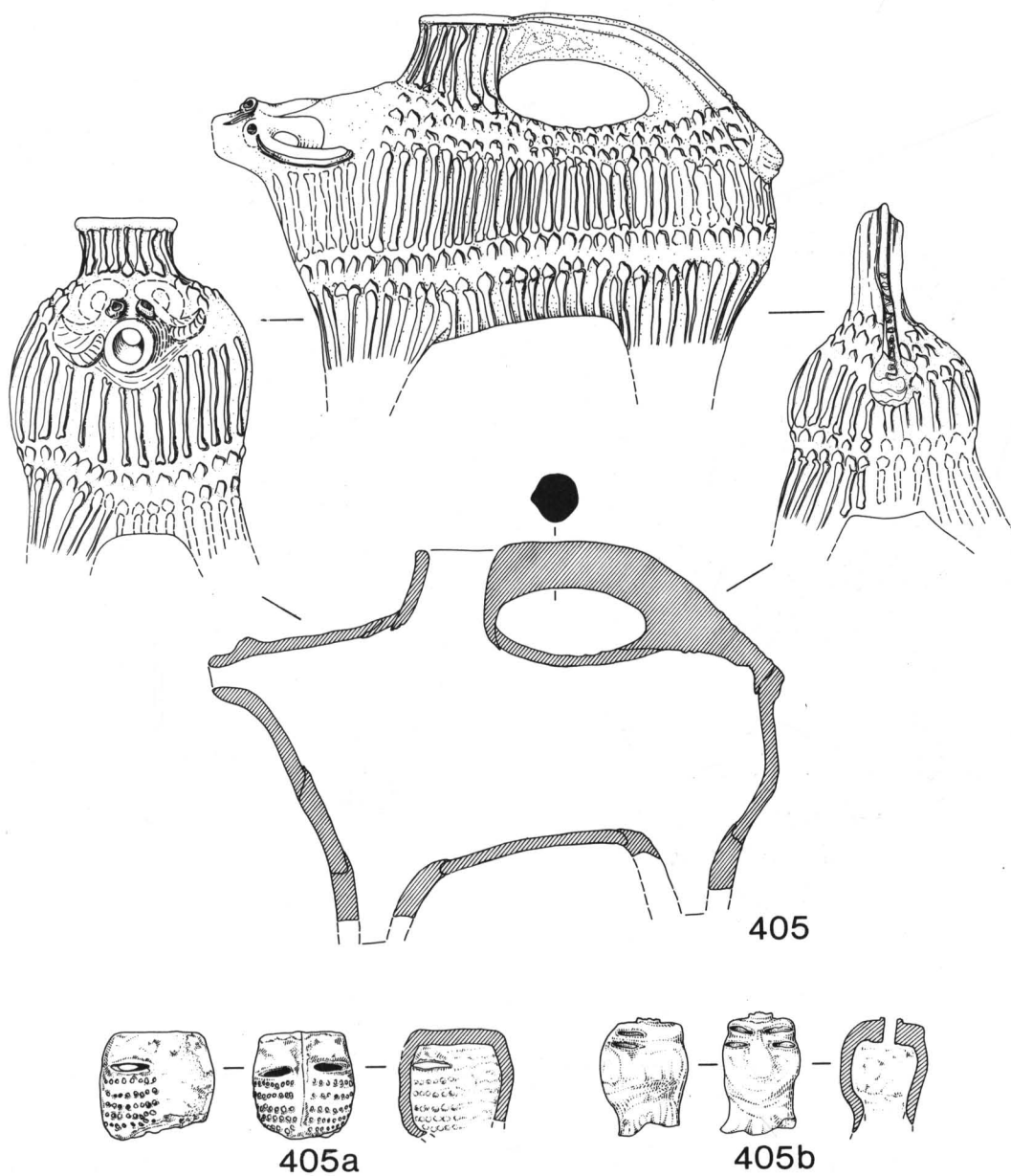


Fig.74. Aquamaniles. (1/4)

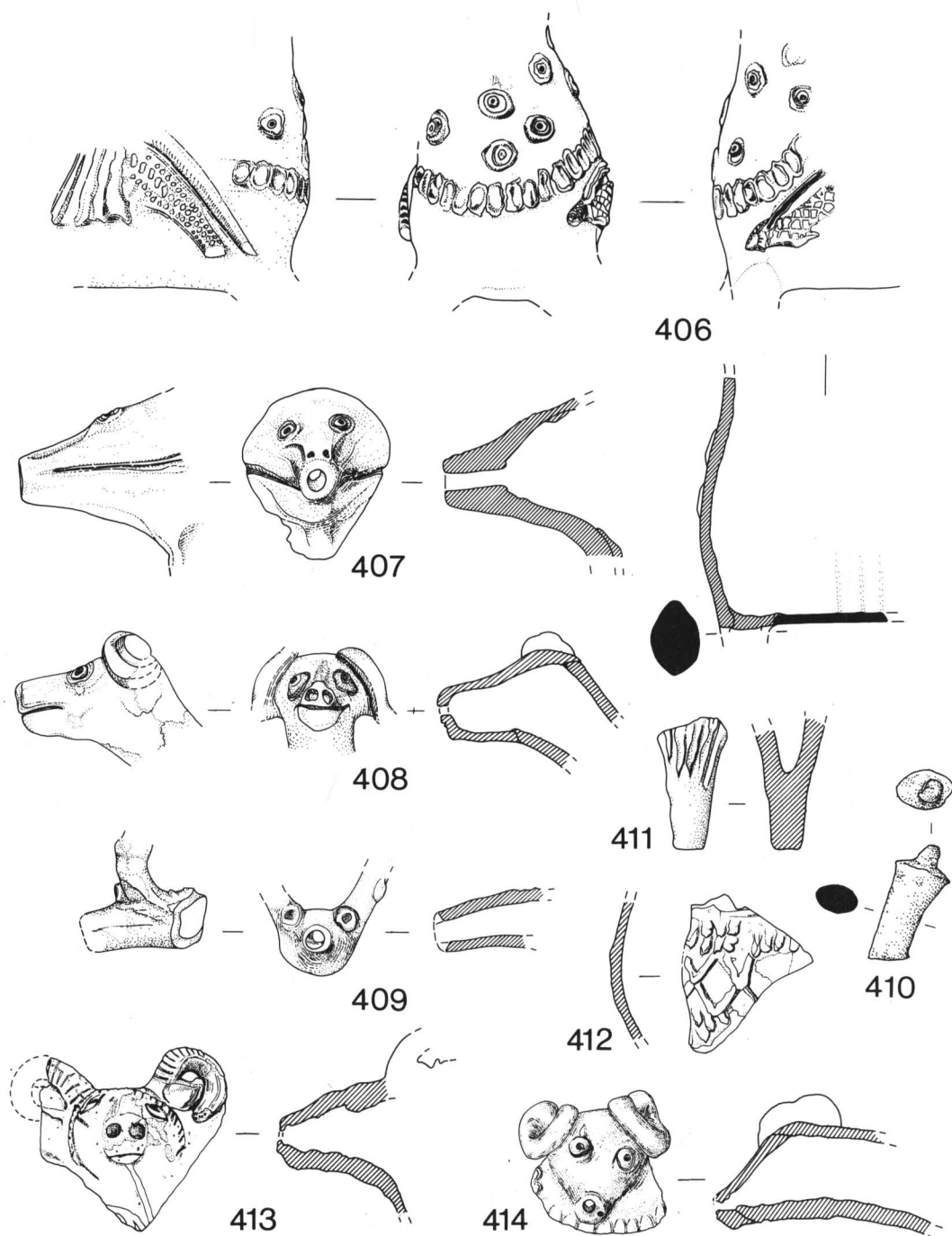


Fig.75. Aquamaniles. (1/4)

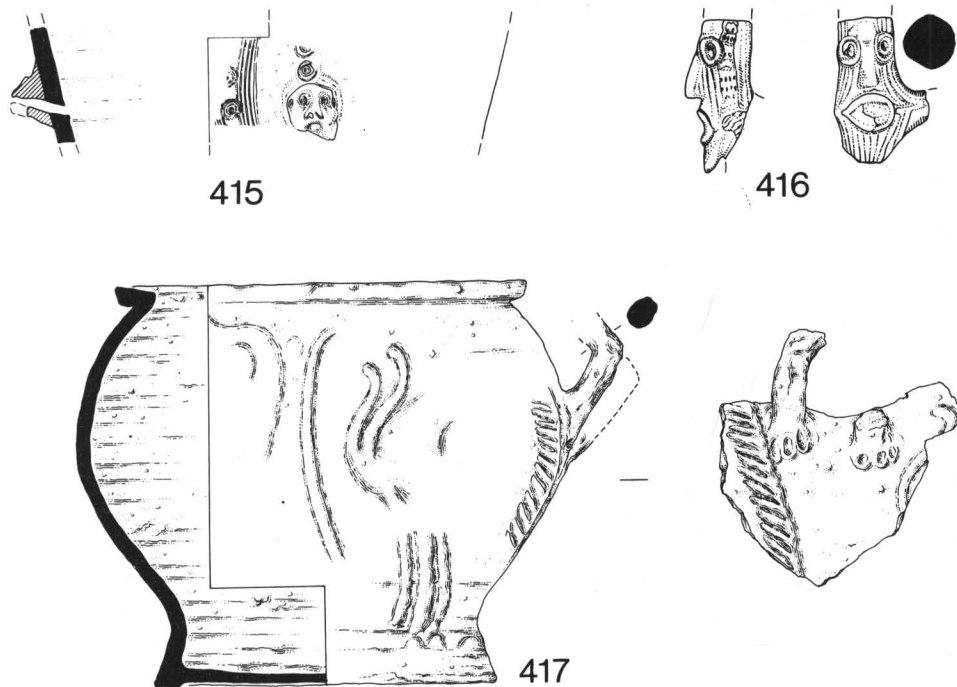


Fig.76. Vases or jars. (1/4)

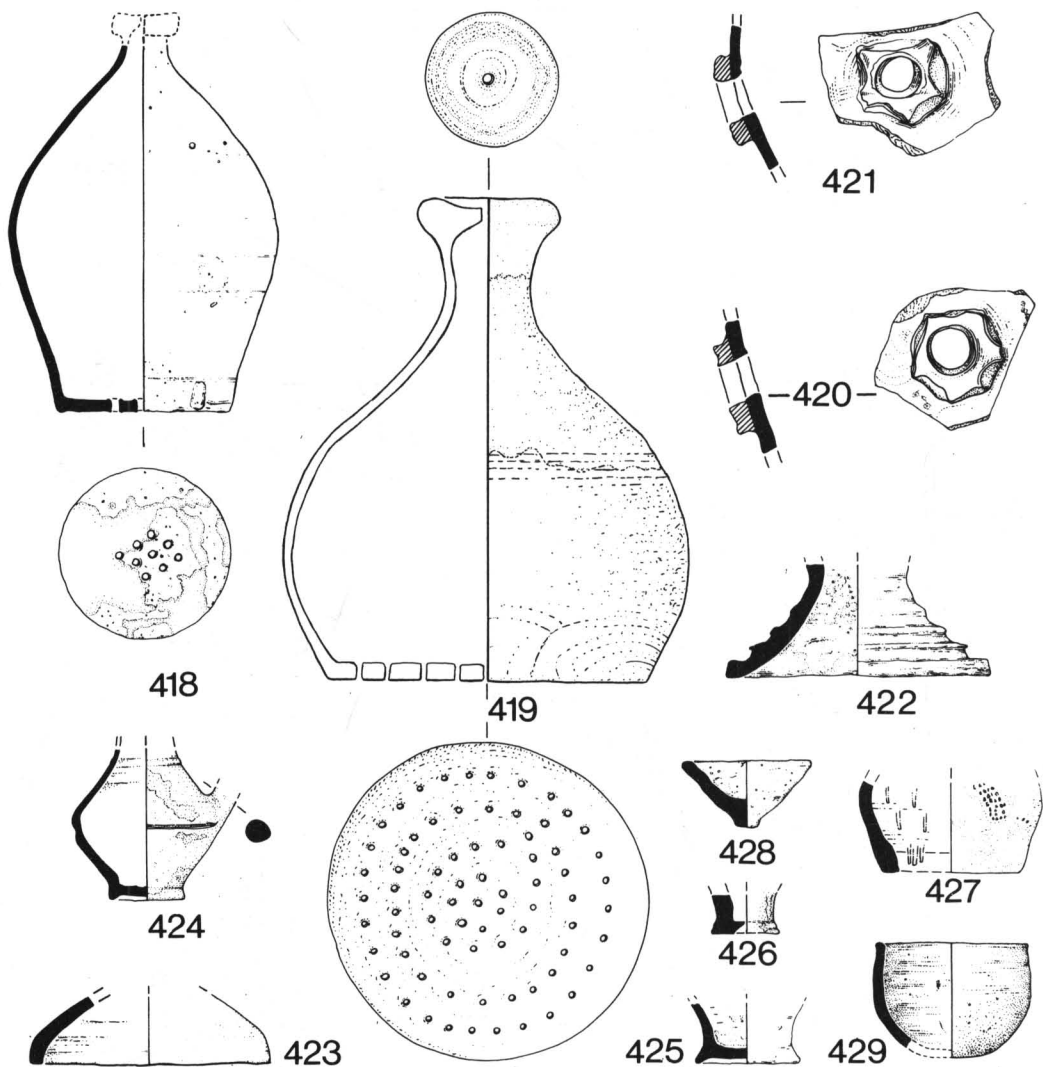


Fig.77. Watering pots. Nos.418-9. Cisterns. Nos.420-1. Miniature jugs. Nos.424-6. Lamp. No.428. Crucible. No.429. Miscellaneous unidentified sherds. Nos.422, 423 (lid?), 427. (1/4)

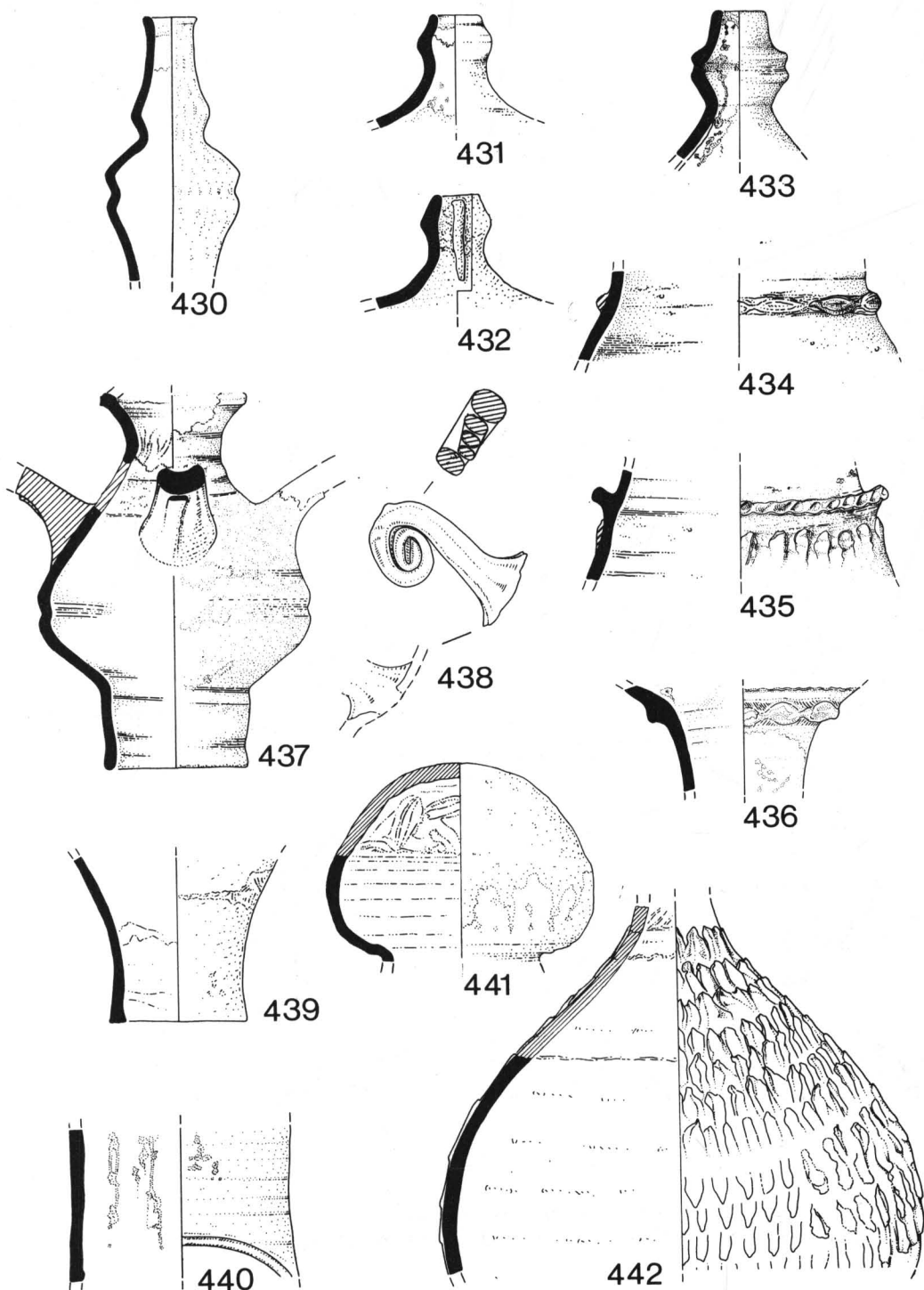


Fig.78. Roof finials. (1/4)

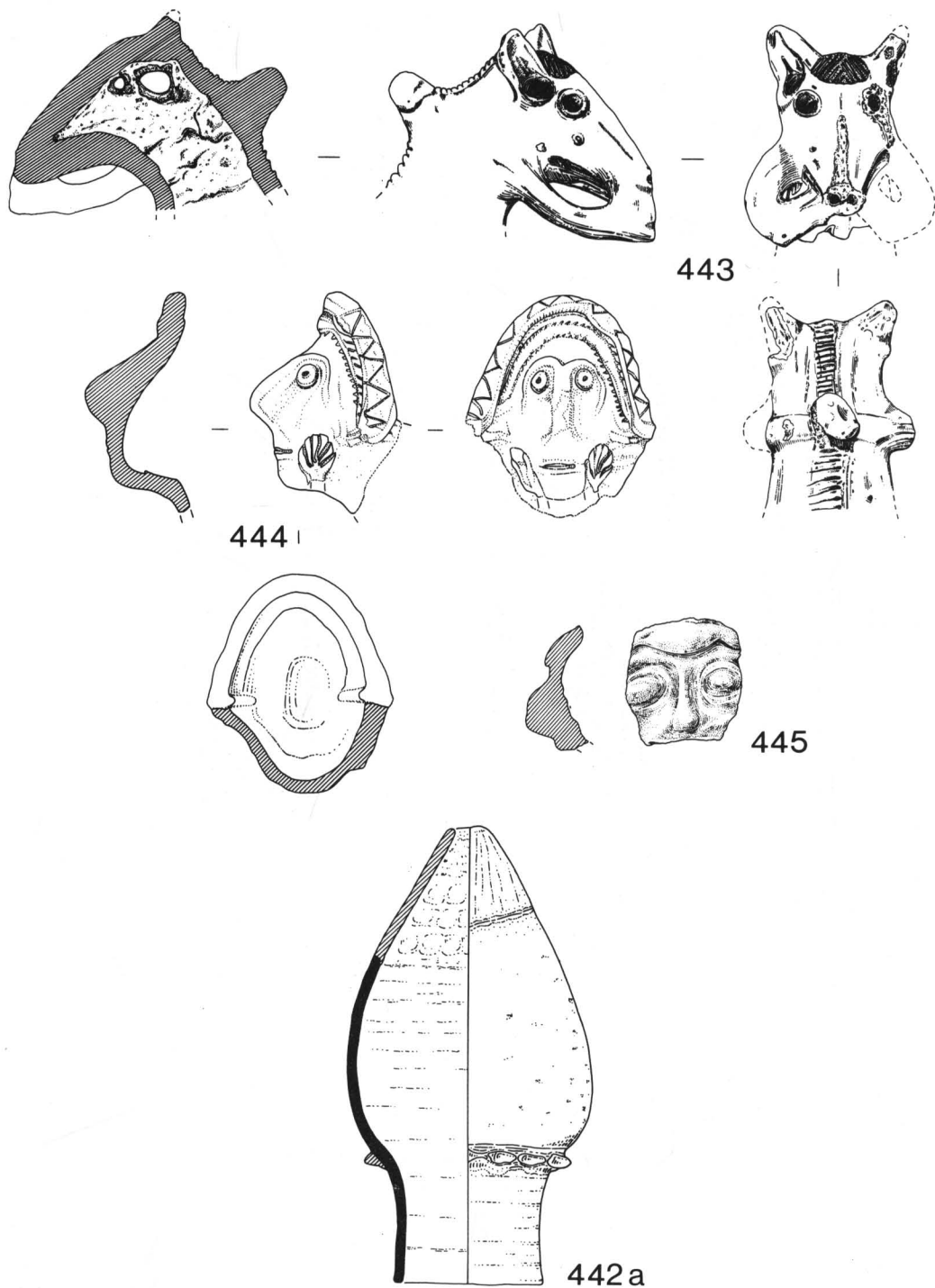


Fig.79. Roof finial. No.442a. Zoomorphic and anthropomorphic roof finials. No.443-5. (1/4)

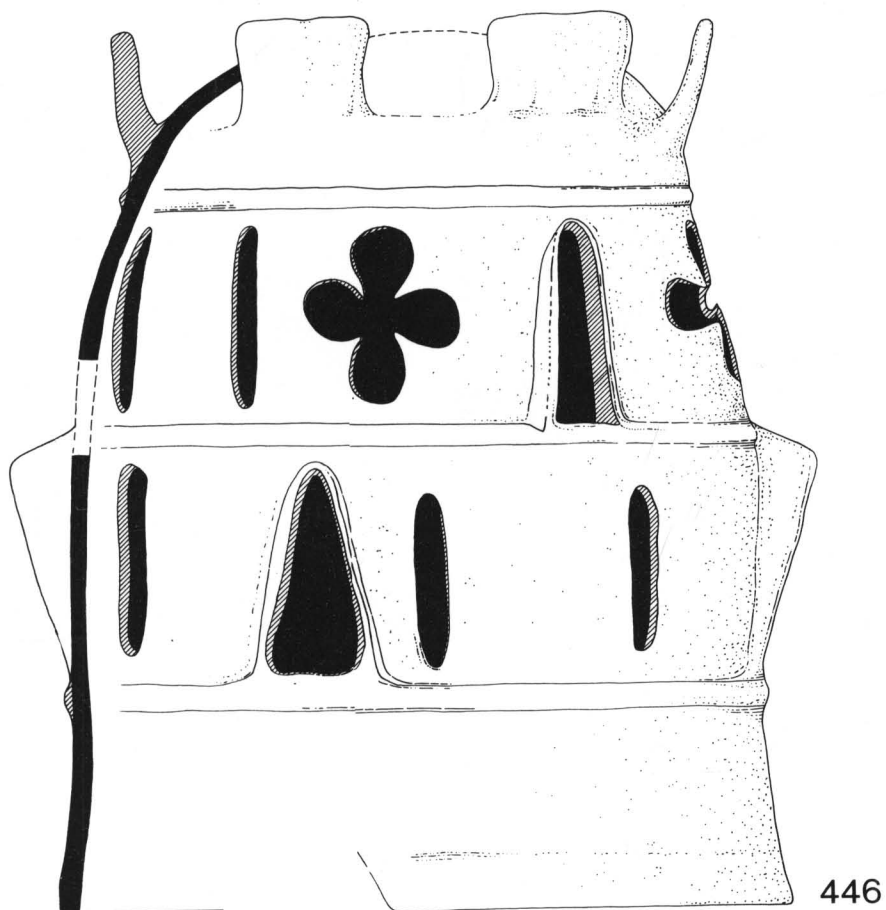


Fig.80. Beehive-shaped louver. No.446 (1/4)

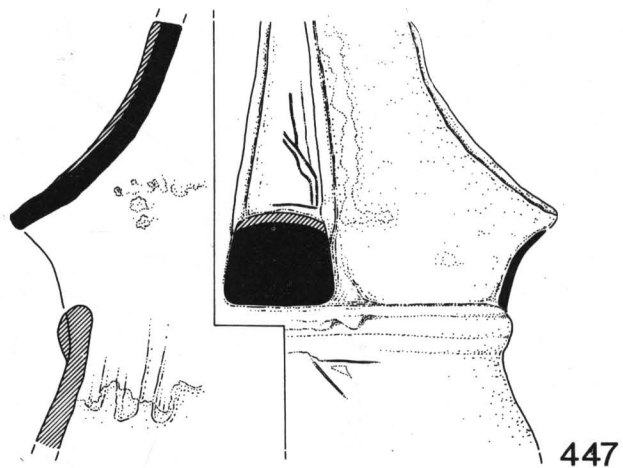


Fig.81. House-shaped louver. No.447. Highly decorated louver. No.448. (1/4)

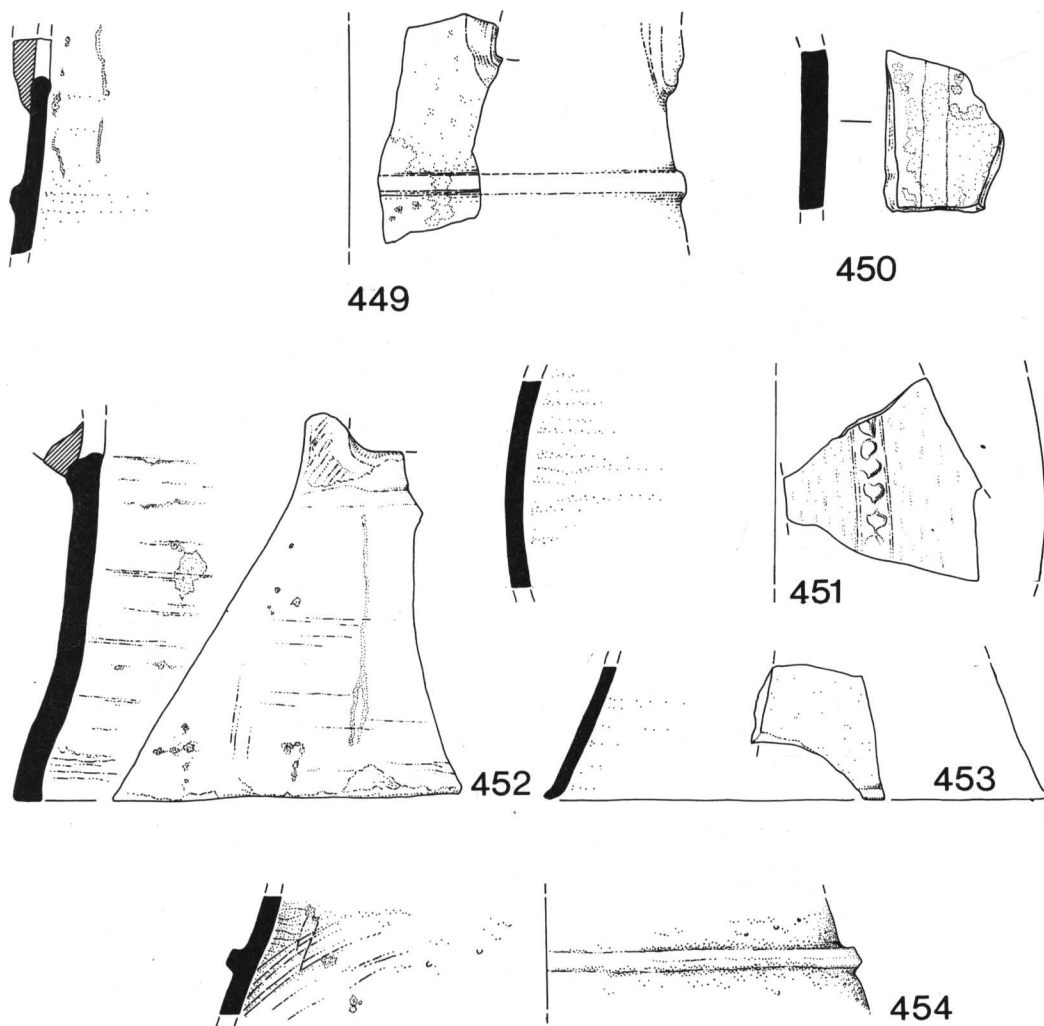


Fig.82. Miscellaneous louver fragments. (1/4)

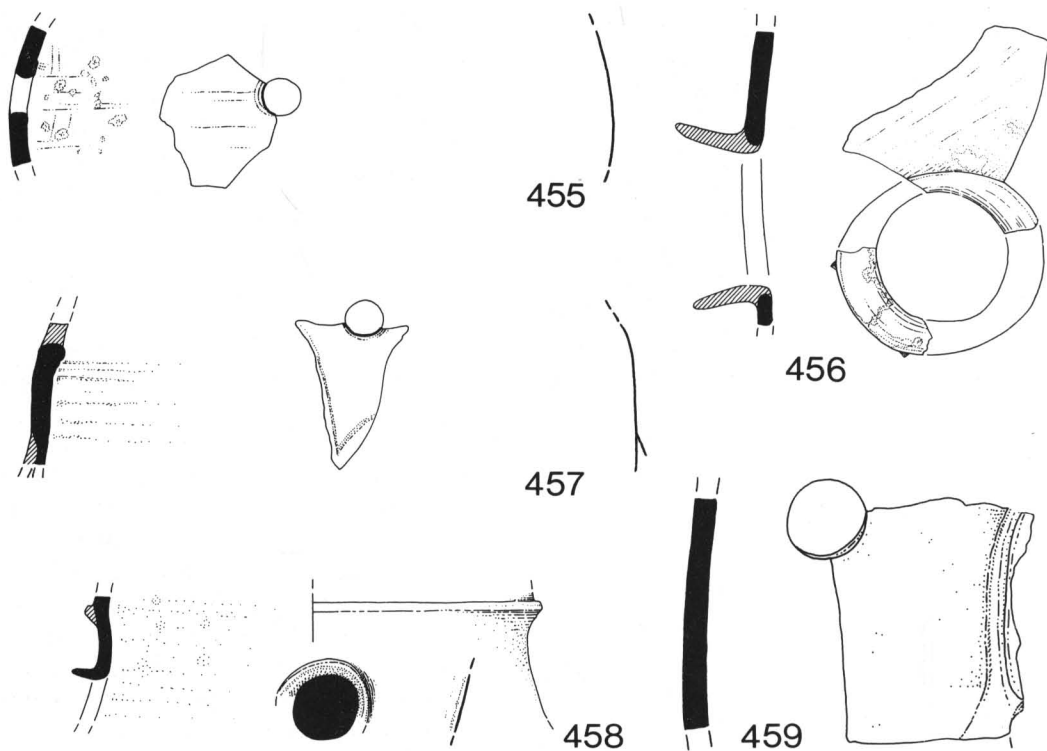


Fig.83. Miscellaneous louver fragments. (1/4)

FUNCTION

Accepted interpretations of common and long-lived ceramic forms are often open to question. Analogy with present-day usage can be misleading. Blanket-terms, such as 'cooking pot' are in need of refinement, sometimes of revision; and a number of forms, as, for instance, 'drinking jugs', may simply have been given functional terms of convenience. Numerous interrelated factors may lie behind the introduction of new forms within an established industry, and varying interpretations are possible. The need and market for previously uncommon, or unknown, and perhaps less basic, ceramic vessels may be created by cultural change, or innovation may simply be the result of the background, training,

imagination, or whim of the individual potter.

In the 12th century, when the London-type pottery industry began, there were very few classes of pottery vessel in use in London, and of these cooking pots were by far the most common. Pitchers, the next most common form, were rare by comparison. Although metal and wooden vessels were also used, they are poorly represented in excavated material, relative to their original frequency. Nevertheless, in view of the limited number of forms available, it is likely that at this period any one class of vessel would have served several different purposes, but with one main function. Cooking pots, for instance, were probably used mainly for

heating food, and pitchers for serving or storing liquids.

In the early 13th century, the range of vessel types in use increased considerably. This may well have been the result of the adoption of new and more elaborate methods of cooking, and of increased specialisation, with specially designed vessels developed to cater for the varied functions previously limited to a single form. Other factors governing the introduction of new types may include a general increase in prosperity, and the breakdown of certain social distinctions. For example, aquamaniles made of copper alloy were known in the 12th century, but their use was undoubtedly restricted to the nobility. The production of ceramic aquamaniles in the 13th century (see Figs.74-5) probably shows that the custom of ritually washing the hands before and after a meal was being adopted by a wider section of society, although ceramic jugs could well have served this purpose equally efficiently, if less fashionably.

The function of dripping dishes (Figs.70-1) is illustrated both in manuscript illuminations and in late medieval cookery books. The dish was placed underneath a spit to catch the dripping, which was then poured off into another vessel for mixing with other ingredients (Henisch, 1976, 137). No examples of metal dripping dishes are known, and wooden vessels would certainly have been impracticable. It is, therefore, possible that the introduction of the ceramic form took place in response to a change in diet, and that previously, the fat from roasted meat was not collected, but allowed to run off into the hearth.

Pipkins are generally interpreted as small cooking pots (Fig.68, Nos.349-358). They may have been made to serve the needs of smaller social groups, but it is more probable that they were used in

addition to larger forms for various stages of the cooking process. Since their first occurrence is contemporary with the introduction of the dripping dish, the two vessel types could well have been closely linked in terms of usage, for instance, in the making of sauces. After pouring the dripping from a dripping dish into a pipkin, it could be mixed with herbs, spices and any other sauce ingredients. Both vessel types were certainly in use in London in the early 13th century, as they were, slightly later, in the Worcester-type industry (Vince, 1983b). This hypothesis may be tested by means of a study of contemporary records, since changes in eating habits would be more likely than new trends in ceramic fashion to have attracted comment – favourable or otherwise – from the chroniclers of the period.

The function of the so-called drinking jugs made in London-type ware has been discussed elsewhere in this paper (see p.41). It is argued that they were not generally intended as ale or wine mugs to be used in the same manner as the well-known Siegburg stoneware vessels of similar form which are depicted in 14th-century manuscript illuminations. Their manufacture in graded sizes, and their poor finish suggest a number of possible functions, including the measuring out of ingredients, the containing of wine or ale for sale, and the preparation of food dressings. Salad dressings based on oil, vinegar and salt, for instance, such as are used today, are recorded in medieval cookery books (Henisch, 1976, 109-110).

Bottles (Fig.64, Nos.298-304) could also have been used as measures, or for the storage of liquids used in cooking, since their necks are small enough to have taken stoppers. An illustration in the Luttrell Psalter, *c.*1340, shows vessels of this form in use (Add.42130, f.207v; Randall, 1966, pl.XVI, no.73).

The small dishes made in London-type

ware (Fig.72, Nos.392-397) may be tentatively compared with saucers illustrated in manuscript illuminations of feasts (*e.g.* the Luttrell Psalter, Add.42130, f.208; Randall, 1966, pl.XVI, no.74). These vessels, used by the nobility to contain the sauces or dressings into which bread or meat were dipped, would probably have been made out of wood or metal, and their occurrence in pottery may give a further indication of aristocratic habits descending the social scale (*cf.* the wider circulation of ceramic aquamaniles). The London-type dishes occur mainly in late 13th- and 14th-century contexts, and may, in addition to dripping dishes and pipkins, be functionally linked with drinking-jugs in the making of sauces and dressings. The frequencies of dishes and drinking jugs can be shown to correspond, and this supports the suggestion that they had related functions. Wooden bowls, usually larger than London-type ceramic dishes, are common finds on archaeological sites, and are represented in manuscripts as available to all levels of society.

Cauldrons and tripod pipkins (Fig.68, Nos.361-362; Fig.69) presumably had the same functions as their metal counterparts. They were intended for cooking the large dishes of a medieval meal such as boiled meat or stews, although their size, by comparison with some of the metal vessels shown in illustrations, and taking into account artistic licence, may be a reflection of use by a relatively small household. However, an increase in the size of ceramic tripod cooking vessels may well have resulted in a greater degree of instability, and this consideration is perhaps more likely to have governed their dimensions.

The 13th and 14th centuries saw the introduction in London-type ware of various specialised vessel types. Nevertheless, pottery forms with more general-

ised and basic functions no doubt continued to be essential. Unfortunately, since few medieval well-groups have been found in London, it is difficult to determine which, if any, London-type jugs were used to collect and store water. The plainer vessels, such as undecorated tulip-necked baluster jugs, may have fulfilled this function, amongst others. Highly decorated jugs, however, are more likely to have been used at table to hold and serve wine or beer.

CHEMICAL ANALYSES

The above interpretations are based on contemporary documents and art, and these largely reflect the culture of the nobility. The only means by which these suggestions can be tested is by examination of the archaeological finds. Most London-type pipkin, cooking pot and cauldron sherds are coated with soot, which shows that they were heated over an open fire, rather than a gridiron. However, a small number of jugs also have a soot-blackened base, with the soot rarely extending more than 10mm up the sides of the pot. It is probable that they were placed on a gridiron for the purpose of heating drinks, such as mulled wine. The interior of these vessels sometimes has a whitish coating, which may be interpreted as various salts ('kettle fur') deposited during the repeated boiling of water. Other vessels have a black or brown deposit on the inside which probably includes carbonised food remains. The presence of such deposits suggests that the vessels were used for cooking thicker liquids, such as soups, stews or puddings.

It is now possible to identify traces of the original contents of pottery vessels by crushing a 5gm sample, and using various solvents to extract the organic compounds which can then be detected by chromatography. Analysis of a series of samples of London-type ware has been carried out by J. Evans and M. D. Card of the North-east London Polytechnic. The results are discussed below.

Eight samples of London-type cooking vessels (it was not possible to distinguish

between cooking pots and pipkins) and one sample of a London-type cauldron, all from Trig Lane, were examined. Analysis shows that some of the cooking pots and the cauldron contained traces of meat, probably cow or sheep, or unidentified animal products. This is consistent with the suggested functions of boiling and stewing meat. The other cooking vessels were found to contain traces of a milk product (which could be milk, butter, cream, or cheese). Clarified butter is a common ingredient in medieval recipes for sauces, while milk and cream were used for puddings.

A sample from a Late London-type cistern, from Trig Lane, also revealed traces of milk products, but no evidence of any other substances. It is, therefore, possible that this vessel was used simply to store milk.

Samples of two London-type dripping dishes were analysed: one produced traces of cow or sheep fat, while detailed examination of the triglyceride system suggests that the major fat in the other sample came from chicken or similar bird. This corroborates the evidence for the function of these vessels discussed above. Six jug samples from Trig Lane were analysed, and all produced evidence that the vessels were associated with fermented systems, such as wine or beer.

A single sample of a rectangular condiment

with internal divisions (cf. Fig.72, No.398) produced traces of olive oil, which is consistent with the suggested function of these dishes as a container for sauces, dressings or relishes. By the early 14th century, olive oil was principally imported from Spain for use in cooking, treatment of leather and preparation of cloth (Childs, 1976, 109-111). The discovery of olive oil in this dish is interesting, since it might be expected that locally produced substitutes would have been more readily available to the poorer members of society.

The possibility of contamination after burial affecting the results of these analyses was checked by testing five samples from the same context. These sherds had presumably been buried in the same environment, yet the analyses gave quite separate results – four sherds retained traces of milk, while the fifth – the cauldron – appeared to have contained beef or sheep fat.

Several problems remain, the chief of these being the question of the 'drinking jugs'. While the number of analysed samples is too small for general conclusions to be drawn, the work of Evans and Card is nevertheless extremely encouraging in suggesting that an area which was once the realm of speculation and hypothesis can now be subjected to the scientific method.

ORIGIN AND AFFINITIES

THE 12TH-CENTURY ASSEMBLAGE

Early rounded jugs

The Seal House sequence clearly shows the predominance of the London-type early rounded jug in London during the second half of the 12th century (see Fig.84; Appendix 5). Vessels of this form are rare in waterfront 1, *c.*1140, and almost entirely absent from the waterfront III assemblage of *c.*1210. However, they constitute approximately 33% of all wares in the waterfront II assemblage of *c.*1170. The much larger and more closely datable Billingsgate Lorry Park assemblages confirm this date range. The evidence from the two sites suggests that early rounded jugs were being made in London-type ware on a

small scale in the early to mid 12th century, but came into common use in the second half of the century, *c.*1150-70. Their manufacture is, therefore, more or less contemporary with the introduction and general use of glazed jugs over much of lowland Britain.

To the west of London, handmade, globular, glazed tripod pitchers were made throughout the 12th century. In the Oxford region, where they seem to be the earliest locally-made glazed forms, production started *c.*1120 (Jope and Threlfall, 1959, 258). By *c.*1150, similar types of tripod pitcher were also being made in south Oxfordshire and east Berkshire (Oxford Fabric AG; Haldon and Mellor, 1977, 118, 138),

although when London-type ware was first produced, perhaps in the second quarter of the 12th century, it appears that no local glazed wares were being made in the intervening region. To the north-west of London, in the Hertford area, only two 12th-century glazed wares are known: Stamford-type ware which was current in the first half of the century, and was replaced, in the second, by London-type ware (H. Borrill, pers. comm.).

No centres producing wheelthrown, glazed wares in the 12th century have yet been identified south of the Thames. A group of clear-glazed jugs from Southampton, dated to c.1200-50, provides close parallels with the London-type early rounded jug in shape, and in the collar rim, pulled lip, rilled neck and strap handle (Platt and Coleman-Smith, 1975, 75, fig.147 nos.351, 352, 356). Further similarities to the early rounded form may be seen on a jug found at Tenterden, Kent and now in Maidstone Museum (Varley, 1983). Made in a reduced, grey, sandy fabric, which is probably distinct from Limpsfield-type ware, the vessel is unglazed, and appears to be wheelthrown with a rilled neck, pulled spout and strap handle. No date can be assigned to this jug owing to the circumstances of discovery, nor is it known how common the early rounded jug form was in Kent.

To the north and north-east of London, wheelthrown jugs were being produced in a number of areas during the late 12th century. Unglazed jugs with a short neck, and less globular body than London-type vessels were made in St. Neots-type ware (Hurst, 1976, 320-23; fig.7.18, no.5), and clear-glazed jugs of early rounded form at Sible Hedingham, Essex (C. Cunningham, pers. comm.). An early rounded jug in 'Lincoln Splashed ware' was found in the construction rubble of a mound at the Observatory Tower, Lincoln Castle which has been identified as a motte built c.1151 by Rannulph, earl of Chester (Reynolds, 1975, 201-5). Although the closest parallels to this 'Lincoln Splashed ware' are dated in Lincoln to the last quarter of the 12th century, it has been suggested that production of this ware started before c.1150

(Reynolds, 1975, 204).

The best-known and most widely distributed glazed wheelthrown jugs of early rounded form are those made in Developed Stamford ware from c.1150 (Kilmurry, 1980, 130-143). The simultaneous introduction at this period of new forms, improvements in fabric, and the use of copper as a glaze colorant, which give rise to this terminology, suggest external stimuli, rather than local evolution within the Stamford-type industry. The early rounded form may perhaps be seen in this context.

There is no evidence that the introduction of the early rounded jug form in other areas of England predates its production in London-type ware. In both St. Neots-type ware and Developed Stamford ware, the introduction of the jug form is a development, albeit locally unprecedented, in existing industries, whereas London-type early rounded jugs are the product of a new 12th-century industry. This may increase the likelihood that the form is earlier in London than elsewhere in the country.

It seems probable that the early rounded jug form was derived from continental prototypes, perhaps from northern France or the Andenne region. Production of glazed Andenne-type ware apparently started toward the end of the 11th century (Verhaeghe, 1969, 106). Both Andenne-type jugs and English early rounded vessels are wheelthrown, with a sagging base and no sharp neck angle. Most of the English early rounded jugs, and particularly the London-type examples, reflect the typical Andenne-type collar rim, but without the undercut rim of the continental vessels. Northern French vessels of similar form, decorated with a clear lead glaze and red slip, have been found at Southampton in contexts dated c.1125-50 and 1150-1200 (Platt and Coleman-Smith, 1975, 126; fig.176, nos.897-898; fig.177, no.914). A few comparable sherds have also been found at Winchester Cathedral in even earlier groups dated c.1094 and c.1100-1105 (K. Barclay, pers. comm.). In all of these industries, continental and English alike, by the late 12th century early rounded jugs were the major form produced and the only one to be

widely traded.

Although the basic form is the same from northern France to Stamford, the decorative style and techniques used on London-type early rounded jugs cannot be paralleled in many of the contemporary industries under discussion. St. Neots-type jugs, for example, were decorated with roller-stamping and were unglazed. Coloured slip was used for linear decoration only at Sible Hedingham and London, while copper was used to colour the glaze of Developed Stamford and London-type wares, but not Sible Hedingham ware (C. Cunningham, pers. comm.). No other instance is yet known of white slip being used as a primer for decoration in the 12th century (Vince, 1983a), nor of the application of green glaze as a paint (see p.28), although the latter technique is used on certain Rouen ware vessels dated to the 13th century and possibly earlier.

Spouted pitchers

Spouted pitchers appear to be the earliest vessels made in London-type ware, although none of the three examples illustrated was stratified (Fig.21, Nos.40-2; Fig.85, No.2). However, a late 11th- or, more probably, early 12th-century date is suggested since all surviving examples are made in the coarse London-type fabric, which places their production before 1200. A small number of spouted pitcher sherds have also been positively identified in early 12th-century contexts at Billingsgate Lorry Park. By the second half of the 12th century, however, the spouted pitcher form, which was never common, had been completely replaced by the jug. This is demonstrated by the absence of examples in the many large late 12th-century assemblages now known from the City.

A few unstratified spouted pitchers in the Museum of London reserve collection are similar in form to the London-type vessels (Fig.85, No.3). They were made in a reduced sandy greyware which may have been produced in south Hertfordshire. In common with the London-type examples, they are wheelthrown, with a much narrower neck than is generally found on contemporary cooking pots (cf. Fig.67), although they do

differ from London-type vessels in being unglazed. Deliberately reduced, wheelthrown, sand-tempered vessels, mainly cooking pots, are first found in quantity in late 12th-century contexts, but may first have been made in the late 11th to early 12th century.

It is proposed that the London-type and S. Herts. spouted pitchers should be termed the Thames Basin type in order to distinguish them from the two other contemporary English types; the Wessex type and the Late Saxon wheelthrown type.

Late Saxon wheelthrown spouted pitchers were made at Stamford and a number of other centres in this country from the 10th to the early 12th century (Kilmurry, 1980, 14; fig.3, no.5). They differ from the Thames Basin type both in overall shape (they are generally taller with a wider neck), and in the addition of handles.

Examples of 'Wessex type' spouted pitchers have been found in 11th- to 12th-century contexts in London in several fabrics: Early Medieval Chalky ware, Early Medieval Sandy ware and Early Medieval Sand and Shell ware (Vince *et al.*, in prep.). They differ from the Thames Basin type in that they are unglazed, have handles, and were handmade in industries whose main product was the cooking pot, a fact which is reflected in their shape.

It is possible either that the Thames Basin spouted pitchers are a 'hybrid' between the wheelthrown spouted pitchers of Stamford and the handmade spouted pitchers of Wessex, or that they copied a continental prototype. The distinctive characteristics of the form – the narrow neck and free-standing spout on the shoulder – are also found on a Normandy Gritty ware vessel from Lewes, Sussex (Davison, 1972, fig.22), although this vessel has a handle. The main period of importation of such vessels is dated to the late 11th and early 12th centuries. Amber-glazed, wheelthrown pitchers such as that found at Lime Street (Fig.85, No.1), are also a possible prototype. These are termed 'Andenne-type ware' although they differ in several respects from the types found at the Andenne kilns (Borremans and Lassance, 1956; Borre-

mans and Warginaire, 1966). Their coastal distribution suggests an origin on the east coast of the North Sea, probably the Rhine delta.

Tripod pitchers

Tripod pitchers are rare in London-type ware (Fig.21, Nos.43-4; Figs.22-3). They can be dated on the basis of stratigraphy principally to the late 12th century, although some sherds have been found in early 12th-century contexts. Vessels of this form were also being made during the 12th century in south, central and western England, in the Low Countries and in northern France. The London-type ware vessels can be classified on the basis of body profile into three groups (see pp.39-40): those copying the southern English tripod pitchers; a single pitcher of early rounded form, with possible northern French prototypes; and a single vessel copying early 13th-century Rouen ware vessels.

In contrast with the London-type vessels, other English tripod pitchers are all hand-made. However, various features of these regional wares are also utilised on the London pitchers. For instance, the vessel illustrated in Fig.22, No.45, although wheel-thrown, has the slightly expanded rim and globular body typical of the Oxford region (Bruce-Mitford, 1940, figs.3-4). The highly

decorated London-type tripod pitcher (Fig.22, No.46) is basically of early rounded form, but the presence of feet, and the decorative features, such as the distinct cordons on the neck filled in with red slip, the contrasting bosses, and the handle treatment, cannot be paralleled on contemporary English examples. A similar division into horizontal bands of red-painted decoration may be seen on a jug from Normandy, also of early rounded form, found at Southampton and dated to *c.*1150-1200 (Platt and Coleman-Smith, 1975, 126, fig.177, no.914). Another late 12th-century tripod pitcher, again from Southampton and possibly of Andenne origin (Platt and Coleman-Smith, 1975, 153, fig.193, no.1117) shows that the form was also being made on the continent. The vessel has a cordoned neck and is decorated with red slip crosses around the body.

Tripod pitchers or jugs of early rounded form were also made in the Rouen area of northern France (Barton, 1965, figs.2-3). The small tripod pitcher illustrated in Fig.23, No.47a shows particularly close affinities with these French examples in terms of decoration. The bridge spout, handle form, applied bosses and pulled feet also invite close comparison with the Rouen tripod vessels.

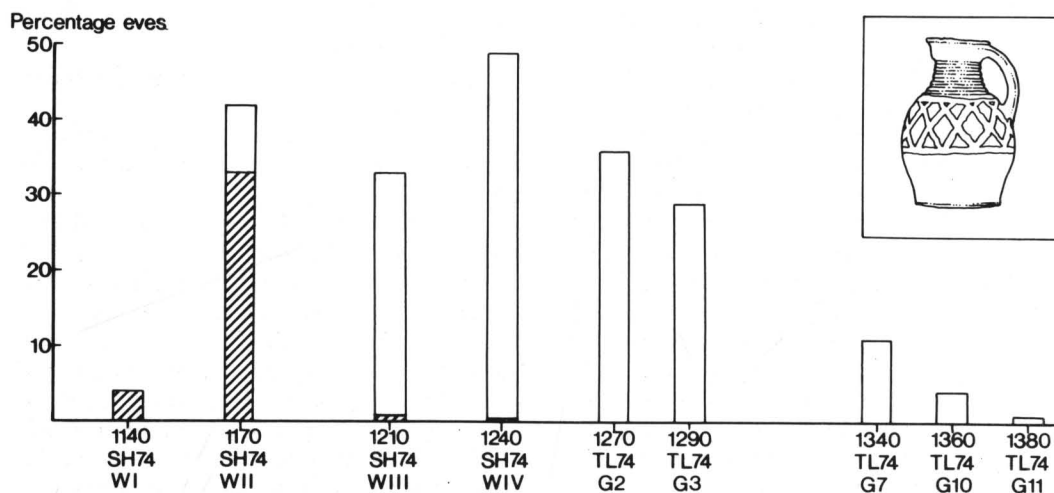


Fig.84. Diagram to show the relative frequency of early rounded jugs (represented by hatching) in London-type ware assemblages throughout the Seal House/Trig Lane waterfront sequence up to G11 (*c.*1380).

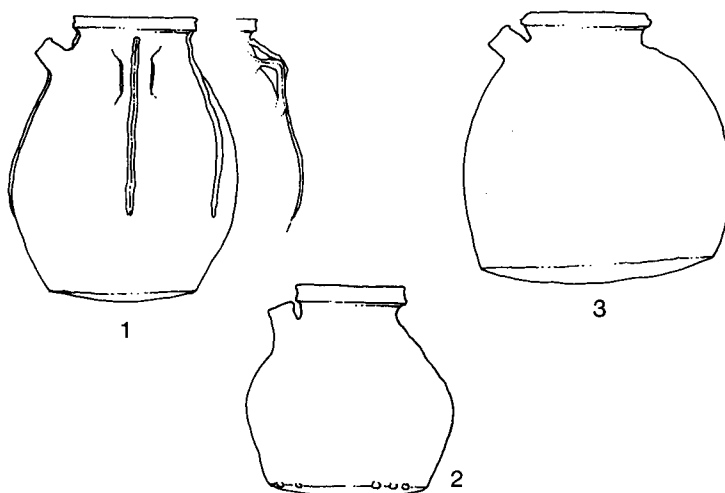


Fig.85. Forms of spouted pitcher current in the 12th century. Andenne-type ware. No.1. Thames Basin type: S. Herts. greyware. No.3. Thames Basin type: Coarse London-type ware. No.2 (1/8)

THE 13TH-CENTURY ASSEMBLAGE

Seal House waterfront III, dated to c.1210, produced a completely different London-type ware assemblage from waterfront II. Early rounded jugs are rare and probably residual, replaced by Rouen and North French style jugs (see Figs.86-7). Other forms in this assemblage include dripping dishes, pipkins and a single chafing dish. Further evidence for the range of forms current at this time comes from the 1982 excavations at Billingsgate Lorry Park which produced a small number of aquamanile fragments (Fig.75, Nos.409, 410, 412), chafing dishes, including the anthropomorphic example, (Fig.73, No.400) and a highly decorated 'vase' or jar (Fig.76, No.417); all associated with pottery comparable with that from Seal House waterfront III.

The jugs were made in four distinct shapes: squat, baluster (*i.e.* Rouen type), large and small rounded. Each of these shapes was probably first made in the London area at this time, although a few unstratified vessels combine certain features of the early rounded jugs with distinctive characteristics of the new forms (Fig.51, No.179; Fig.24). These

could well be 'hybrid' forms, post-dating the introduction of the North French style.

The London-type Rouen and North French style jugs are undoubtedly derived from French prototypes (Barton, 1965; 1966; 1977). The number of shared characteristics is striking and includes:-

- 1) cylindrical ribbed neck
- 2) groove at the neck/shoulder join
- 3) two applied 'ears' of clay at the rim/handle join
- 4) cordonned base
- 5) biconical body (particularly on the Rouen style vessels)
- 6) the decorative scheme (see pp.28-29).
- 7) the method of handle attachment (see pp.28-29).

It is noteworthy that the minimal differences between the two types are those of manufacturing technique, largely imposed by the use of a red-firing clay, coarser than the fine, white fabric of the French vessels. The body colour necessitated a more liberal use of white slip to reproduce the appearance of the Rouen and green-glazed North French originals. Other features which may not be indigenous to Northern France are the recessed base and method of glaze application, also found on early rounded jugs, and thus

suggesting a degree of continuity in manufacture. Nevertheless, the similarities between the London and Rouen vessels suggest very close links between the potters of the two areas. Incontrovertible evidence for immigrant potters in the medieval period is very scarce, and London-type ware probably provides the most convincing evidence to date. The possibility of immigration by French potters, rather than stylistic influence, is also borne out by dating evidence from the Billingsgate Lorry Park excavations. The period of changeover between early rounded and Rouen/North French style jugs can be coin-dated later than *c.*1180, but before *c.*1210. This confirms the Seal House tree-ring dating evidence, and shows that the new styles and forms were introduced over a relatively short period, as might be expected if potters trained in a different industry had settled in the London area. However, in the absence of more definite supporting evidence, the question must remain unresolved for the time being.

Having established a connection with northern France for the major early 13th-century jug forms, it is tempting to look to this area for the origin of the remaining contemporary forms. Unfortunately, much of the evidence for the development of French types is derived from unstratified collections with little information regarding source, as opposed to provenance (Barton, 1965; 1977). Jugs form the bulk of the vessels imported to this country from northern France although the Billingsgate Lorry Park excavations have produced a few sherds from partially glazed cooking pots and storage jars. However, no pipkins, dripping dishes, aquamaniles or chafing dishes with a northern French origin have yet been identified.

There is little evidence for the use as early as the first half of the 13th century of pipkins or dripping dishes in England outside the London area. These forms are not found in the Oxford or Berkshire region until the mid 13th century, although they do occur in Worcester by *c.*1220 (Vince, 1983b). The presence of chafing dishes in London as early as *c.*1210 (Seal House waterfront III) is quite astonishing. It has been suggested that metal

chafing dishes were copied by potters (Lewis, 1973, 59-60). However, as yet, no metal vessels have been found in this country dated earlier than the 15th century, when customs records of 1420 and 1421 first refer to the export of such dishes from Britain (J. Lewis, pers. comm.). London-type ware chafing dishes, therefore, predate the earliest recorded British examples by over a century.

The London aquamanile fragments, which are first found in early 13th-century contexts, are also probably earlier than other English ceramic examples, most of which are usually attributed to the late 13th and early 14th centuries, and are extremely varied in shape and decoration (Barton, 1979, 35). Metal aquamaniles of equestrian form are known to have been made in Britain and on the continent from at least the late 12th century, and probably provide the inspiration for the ceramic form (Nelson, 1932, 446-8).

In Seal House waterfront IV (*c.*1240), a further change in the composition of the London-type ware assemblage may be discerned, although it is not characterised by any drastic changes in the types present, merely in their relative abundance. One new type is the plain, flared baluster jug (Fig.36, No.118; Fig.89). The rim form is paralleled on London-type North French style jugs of this date (Fig.34, No.112; Fig.33). White slip decorated jugs, including those of identical flared baluster form (Fig.35, Nos.113-115), are also probably of mid 13th-century date, although they are difficult to distinguish from Rouen style jugs if only small fragments survive (see Fig.88).

The illustrated face jugs from excavated sites and from the Museum of London and British Museum reserve collections (Fig.56) are very fragmentary and largely unstratified. Two stratified examples from Billingsgate were associated with pottery of mid 13th-century date, including Kingston-type ware. Both the pear-shaped body of the complete example (Fig.56, No.211), and certain features of the anthropomorphic decoration are also found on vessels made in Sussex (Barton, 1979, 107-115). The dating evidence for these jugs is somewhat tenuous, but they appear to post-date the London-type products (Barton,

1967, 11). Face jugs from the Laverstock kilns in Wiltshire (Musty *et al.*, 1969, 123-132), bear certain similarities to the London-type examples, notably in the use of ring-and-dot stamps to represent eyes and in the modelling of a pronounced, incised beard. The active life of the kilns has been dated from the mid 13th to early 14th century, thus pre-dating the Sussex jugs but probably post-dating the London-type examples. Both anthropomorphic and zoomorphic jugs were made in Kingston-type ware in the mid 13th century (Jenner *et al.*, forthcoming), and are, therefore, contemporary with the London-type forms which they closely resemble.

Zoomorphic jugs with applied bird decoration (Fig.57, Nos.227, 229 and possibly No.228), were found at Billingsgate in contexts dated to the mid 13th century. The unstratified large rounded jug from the Museum of London reserve collection (Fig.43), with its series of applied birds with comb-stabbed body decoration and ring-and-dot stamped eyes, may also be considered in this group, and could well be of similar date. Two parallels in south-east England may be mentioned, one found in Cannon Street, London (Rackham, 1972, pl.B), and the other from Dartford, Kent (Mynard, 1973, fig.4, no.PP29). The Cannon Street pot was

probably made at Kingston upon Thames in Surrey, and has polychrome decoration with rampant, applied animals contained in lozenge-shaped panels. The treatment of the animals' bodies is in many respects comparable with that of the London-type vessels. Kingston-type ware is first found in London in contexts dated *c.*1250 (Jenner *et al.*, forthcoming). The Dartford jug fragments again represent rampant animals with roller-stamped body decoration, and contained in hexagonal panels. The fabric of these sherds has not been examined by the writers, and no definite ascription can be made.

Perhaps the closest parallel for the London-type bird jugs is provided by a polychrome, pear-shaped jug found at Saint-Denis (Meyer, 1979), and dated to the first half of the 13th century. The jug has five double-headed birds of prey applied around the body, interspersed with applied flowers and discs. The stab-marked bodies of the birds, and the heads with their curved beaks and stabbed clay discs for eyes, closely resemble the London-type birds. It seems highly probable, therefore, that northern France provided the inspiration for the London-type ware, Kingston-type ware and Dartford zoomorphic jugs.

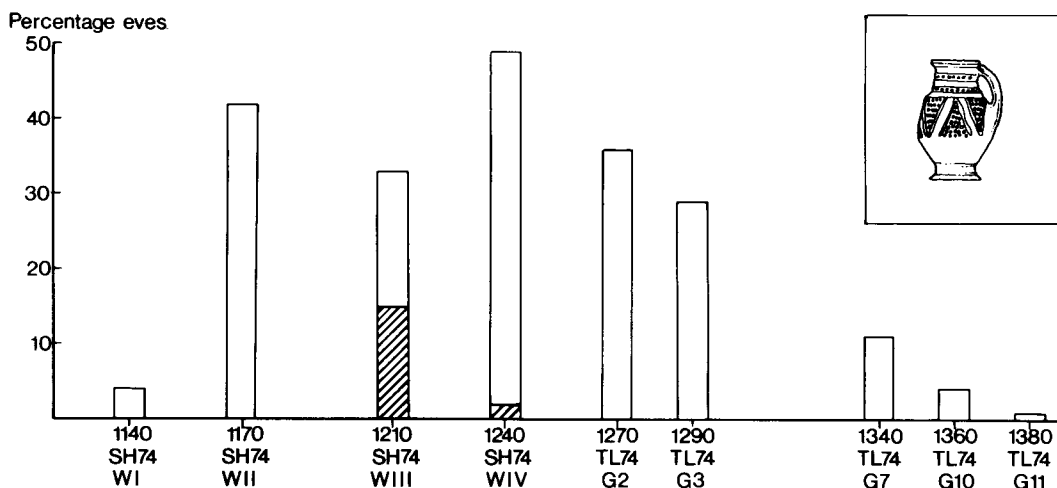


Fig.86. Diagram to show the relative frequency of Rouen style jugs (represented by hatching) in London-type ware assemblages throughout the Seal House/Trig Lane waterfront sequence up to G11 (*c.*1380).

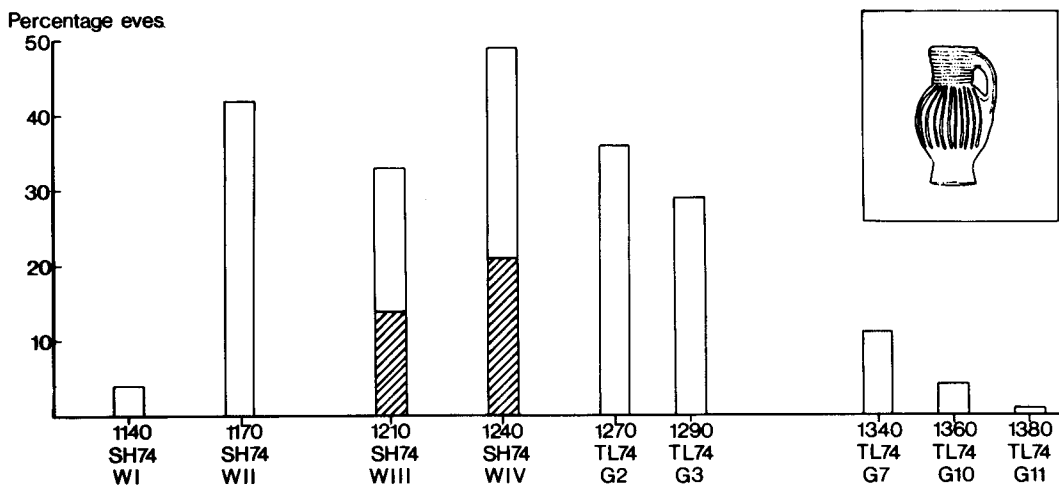


Fig.87. Diagram to show the relative frequency of North French style jugs (represented by hatching) in London-type ware assemblages throughout the Seal House/Trig Lane waterfront sequence up to G11 (*c.*1380).

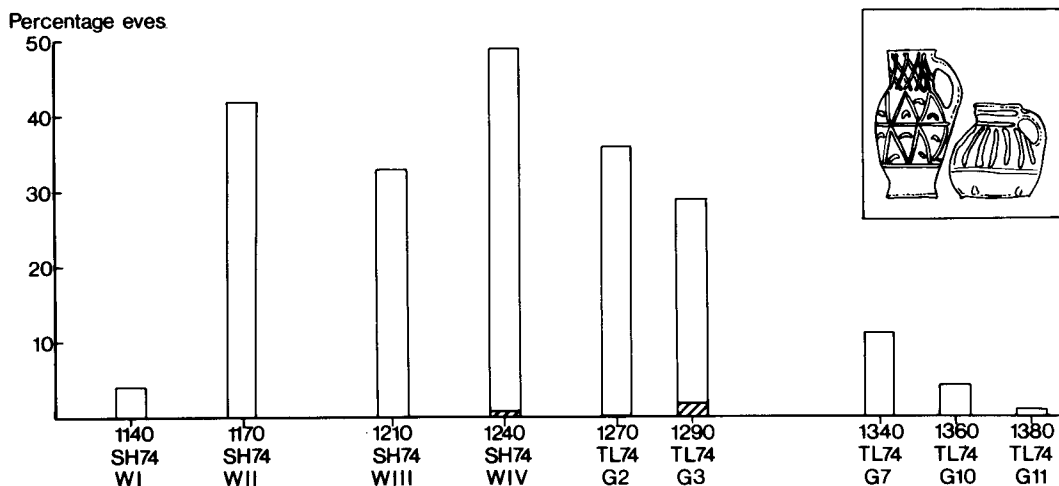


Fig.88. Diagram to show the relative frequency of white slip decorated jugs (represented by hatching) in London-type ware assemblages throughout the Seal House/Trig Lane waterfront sequence up to G11 (*c.*1380).

THE LATE 13TH- AND EARLY 14TH-CENTURY ASSEMBLAGE

In the four large late 13th- to early 14th-century assemblages examined – Trig Lane G2 (*c.*1270), G3 (*c.*1290, but mainly derived from G2), G7 (*c.*1340) and from the 1982 excavation at Ludgate Hill (*c.*1300-25) – London-type ware is less common than in the early to mid 13th-century groups (see Appendix 5). The London-type assemblage is dominated by plain, tulip-necked baluster jugs (Fig.37; Fig.89). Other forms, all of lower frequency, include North French style and highly decorated jugs of small and large rounded and conical form. Apart from jugs, forms represented in the London-type assemblage include drinking jugs and bottles (Figs.64-66; Fig.90), dishes (Fig.72), dripping dishes (Figs.70-71), tripod pipkins (Fig.68, Nos.361, 362) and cauldrons (Fig.69), all undecorated. In comparison with early 13th-century assemblages, a much smaller proportion of the output during this period was decorated, although jugs remain by far the commonest class of London-type ware vessel.

The jug forms are all developed from types current in the mid 13th century, with the exception of the conical jugs, a shape also used for drinking jugs (see Fig.66). London-type drinking jugs were never very common, and their peak of popularity, such as it was, occurred in the mid 14th century (Trig Lane G7; see Fig.90). From *c.*1360 London was supplied with drinking jugs by the Siegburg potteries in the Rhineland, and by the Surrey whiteware potteries at Cheam and on the Surrey-Hampshire border. Drinking jugs are as early in London-type ware as any in the country: the form is never found in the south and west of England, and is normally attributed to the late medieval period elsewhere in the country, as, for example, in York, where Humber ware drinking jugs are dated to *c.*1400-1500 (Holdsworth, 1978, 14-15; fig.15, nos.184-6). The other forms new to the late 13th- and early 14th-century assemblages – cauldrons and dishes – are probably not made in London-type ware significantly earlier than in the rest of the country.

THE END OF THE INDUSTRY

It is quite clear from examination of groups G10 and G11 at Trig Lane, dated *c.*1360 and *c.*1380 respectively, and of other late 14th-century London assemblages, that London-type ware was no longer in production by this time. There is, therefore, no discernible continuity of production between London-type ware and Late London-type ware, the introduction of which heralded the start of a London area pottery industry which grew to be of considerable local importance in the post-medieval period (Edwards, 1974).

It is possible to speculate on the reasons why the London-type pottery industry should start to decline in the second half of the 13th century and eventually disappear from the City and its suburbs. This period saw an increased demand for the white-bodied Kingston-type ware and the fine, red-fired Mill Green ware, both at the expense of London-type ware as the major source of London's glazed pottery. It might be suggested that the absence of clays of this quality in the London area meant that the London potters could not compete with these rural potteries. However, such an explanation founders because the fashion for whiteware pottery was at its height in the 15th century, when the Late London-type ware industry began. Medieval pottery production tended to be located on marginal land, for example on the boundaries of Royal Forests. This was probably because of the low return on investment given by pottery. Since it appears that commercial and administrative opportunities in London increased during the late 13th century, it might be that the London-type ware potters either found more profitable occupations in the London area, or moved out to areas where their overheads – such as rent, clay, and fuel – were smaller.

The truth of the matter is that at present there is no convincing explanation for the decline of the London-type pottery industry. All that can be said is that other pottery industries, such as those at Kingston upon Thames and Mill Green, have similar histories, and since these industries rose and fell at different times, there is no question that national economic factors might have been responsible.

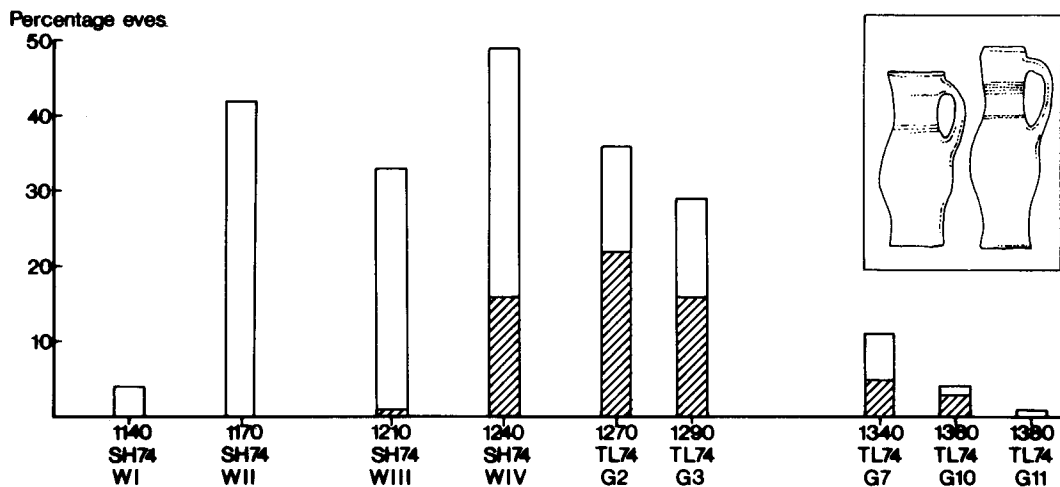


Fig.89. Diagram to show the relative frequency of plain baluster jugs (flared and tulip-necked; represented by hatching) in London-type ware assemblages throughout the Seal House/Trig Lane waterfront sequence up to G11 (c.1380).

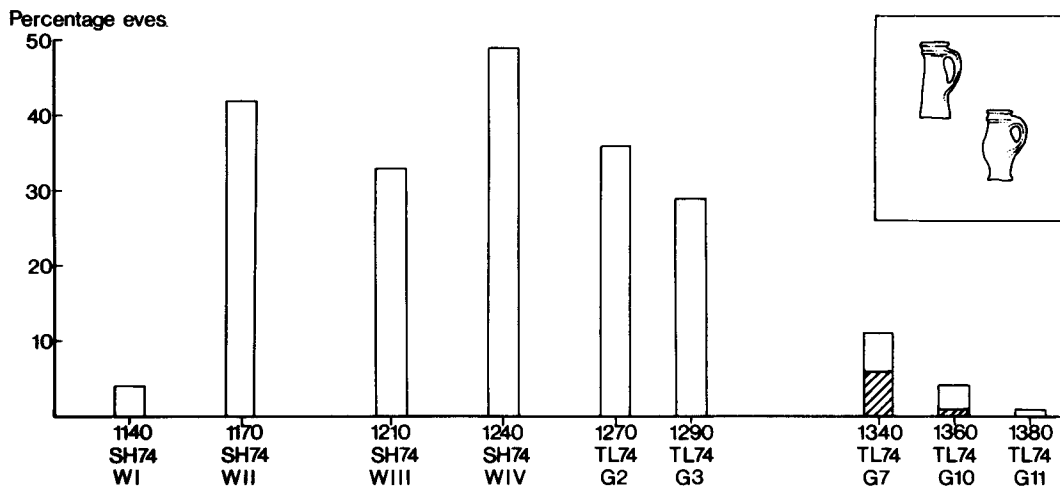


Fig.90. Diagram to show the relative frequency of drinking jugs (represented by hatching) in London-type ware assemblages throughout the Seal House/Trig Lane waterfront sequence up to G11 (c.1380).

CONCLUSION

Sherds of London-type ware have been found, albeit rarely, in early 12th-century contexts. Although most are plain body sherds, there are sufficient diagnostic fragments to show that spouted pitchers and tripod pitchers of southern English style, and probably early rounded jugs were being made. Well-established industries existed in several areas of England at this time. However, the quantity of glazed ware in use, both in London and elsewhere, was limited.

Mid to late 12th-century London-type ware forms are paralleled both in the East Midlands, around the middle of the century, and, although less closely dated, in Belgium and France as far west as Normandy. None of these areas can yet be shown to have priority over London in the replacement of the spouted pitcher by the jug form, and it is tentatively suggested here that the London area was the earliest in this country to produce jugs of early rounded shape, probably as a result of contacts with Northern France or Belgium. The relative frequency of London-type jugs in City assemblages (over 50%) is higher than that found in other settlements in England at this period. Indeed, there were still areas quite close to London where glazed jugs or tripod pitchers were not yet in use, for example the Kennet Valley in Berkshire (Vince, 1983b). The identification of London-type early rounded jugs at sites as remote from London as Gloucester and Hereford in the Welsh Marches, and Perth in

Scotland, shows the exceptional nature of the industry, and probably the extensive trading contacts of London.

In the early to mid 13th century, the London area remained a centre of ceramic innovation. A range of jug forms copies those of northern France and the Rouen area, but other new forms have no apparent antecedents in pottery. Forms and decorative techniques occur in London-type ware about half a century before they occur elsewhere. The range of early 13th-century forms was much greater than was produced either earlier or later, and the stylistic comparisons confirm the evidence of distribution in showing that London-type ware had far-flung affinities. Nevertheless, early to mid 13th-century London-type ware seems to have had little specific influence on the development of late 13th-century pottery types other than in the London area itself, as, for instance, at Kingston upon Thames where all the mid 13th-century forms and techniques can be paralleled in the London-type industry.

The late 13th- and 14th-century London-type ware industry was in no way exceptional. Its products have only a local distribution and even within the City of London they did not form the majority of vessels used. The industry was at this period in decline, and by the end of the 14th century was no longer in production.

ACKNOWLEDGEMENTS

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The photographs reproduced in Plates I, III-VII, and 1-3 are by John Edwards of the Museum of London; Plates 4 and 6 by Jon Bailey and Plates 5 and 7-12 by Colin Shuttleworth, both of the Department of Urban Archaeology. Plate II is reproduced by kind permission of the Cecil Higgins Art Gallery, Bedford.

Lastly, we are extremely grateful to Jane Bircher and Charlotte Harding for their help in proof-reading the text at extremely short notice.

APPENDICES

1. THE PETROLOGY OF LONDON-TYPE WARE

Fourteen samples of London-type ware were examined in thin-section, and form the basis of the following description. Their analysis provides confirmation that there is a difference in kind between the tempering and

fabric of Coarse London-type ware and fine London-type ware. Considerable variation was found within the fine London-type ware thin-sections, but this is wholly explicable in terms of the addition of a rounded quartzose sand temper to a silty, brickearth-based clay matrix.

Coarse London-type ware

The tempering consists of moderate fragments of rounded quartz (sometimes cloudy and/or stained red), and sparse rounded fragments of sparry limestone, opaque iron ore and phosphate. These fragments were sometimes as much as 1.0mm across, although most were less than 0.5mm. Sparse shell fragments up to 2.0mm long were represented either by the shell itself, or sometimes by a shell-shaped void.

The clay matrix contained abundant angular quartz and moderate angular flint or chert, both up to 0.1mm across; and sparse white mica (muscovite) laths up to 0.2mm across. The matrix is invariably anisotropic, indicating either a relatively low firing temperature, or a short firing.

Fine London-type ware

This fabric contains variable quantities of rounded quartz and sparse rounded fine-grained sandstone (with a silica matrix), both generally less than 0.5mm across. These are added to a clay matrix containing abundant subangular quartz, and sparse angular flint or chert, both up to 0.2mm across, and rounded opaque iron ore and white mica (muscovite), both up to 0.1mm across.

The clay matrix is usually optically isotropic, implying a higher, or longer, firing than Coarse London-type ware. In a few samples the inner margin was anisotropic, showing that there was a temperature gradient within the vessel during firing. This suggests that the difference between the firing of coarse and fine London-type ware is one of temperature rather than time. By way of comparison with this evidence, it is worth considering that in a sample of over 40 thin-sections of medieval vessels from Hereford, chosen to be representative of the diverse sources supplying the town, not one had an optically isotropic matrix. The London-type vessels are either fired at a higher temperature than most medieval pottery, or there is some fluxing agent in their fabric which lowers the melting point of the clay minerals.

The following list of thin-sectioned London-type sherds in the DUA fabric collection gives fabric codes, identification and provenance:

T-S.No.	Fabric Code	Common name	Site & Context
9	Hy 2379	LCOAR	SH74 467
250	ISgnw 1099	LOND	SM75 163
251	ISgnw 585	LOND	ACW74 A2
252	ISgnw 1240	LOND	SM75 91
253	ISgnw 2159	LOND	AL74 1248
254	ISgnw 1112	LOND	SM75 62
255	ISgnw 1118	LOND	SM75 163
256	Skw 540	LCOAR	ACW74 A5
257	Skw 542	LCOAR	ACW74 A2
258	ISgw 558	LCOAR	ACW74 A5
259	ISgw 559	LCOAR	ACW74 A5
260	Skw 972	LCOAR	SM75 146
261	Skw 541	LCOAR	ACW74 A5
516	LSkw 1202	LALC	AFR73 53

[Note: The fabric codes are explained in the DUA Pottery Archive handbook (Orton, 1978b). The common name codes are those used in the Museum of London

computerised record. LOND is fine London-type ware, LCOAR is Coarse London-type ware and LALC the light-coloured, calcareous London-type ware.

LLON is the code for Late London-type ware, while the early light-coloured variant is not distinguished in the computer record, since it is difficult to make a clear distinction between this variant and the typical fine London-type ware.]

2. X-RAY FLUORESCENCE ANALYSIS OF LONDON-TYPE WARE GLAZES

Four samples of glazed London-type ware vessels were submitted to Justine Bayley of the Ancient Monuments Laboratory. They were analysed using a semi-quantitative technique in which counting took place until the lead count reached an arbitrary 7000 counts. The relative counts for six metals were then recorded, and the interior surface of the sherds analysed for comparison, although, apart from high iron and a trace of lead, none of these metals was detected. This shows that other elements present were additions in the glaze, rather than taken up from the body. It should be noted that the relative intensity of the XRF count is not directly proportional to actual relative frequency in the glaze, but comparison can be made between samples to determine the relative proportions of the elements.

The samples were taken from a Rouen style vessel with a band of thin brown slip (A), a green-glazed, unslipped jug (B), a green-glazed, white-slipped jug (C) and a 'polychrome' jug with brown slip lines and green paint used on an overall white slip (D). The brown slip on sample A was composed solely of iron compounds without any manganese. Analysis of samples B and C, shows that the green glaze is very similar in composition, regardless of whether it overlies an iron-rich or a white clay surface. Tin appears to be a regular constituent of this glaze, but such low tin counts have no effect on the opacity of the glaze, nor are they high enough to demonstrate the use of copper alloy, as opposed to pure copper as a source of colorant. The green paint on sample D has a higher concentration of copper than the overall green glaze. Green paint used on Saintonge jugs was found to have a higher iron content than normal, whereas a count of 800 is within the range found in other samples of medieval pottery (Vince, 1983b, table 5.1).

The constituents of the glaze samples submitted for analysis are as follows:

SAMPLE	Pb	Fe	Cu	Zn	Sn	Cd	Mn
A	7000	800	—	—	—	—	—
B	7000	435	622	124	20	—	—
C	7000	350	550	—	20	—	—
D	7000	855	980	—	—	tr	—

3. KEY TO FIGURES 1-5. List of find spots of London-type ware and other relevant sites (see Figs. 1-5).

Inner London

- 1) City (DUA excavations)
- 2) Westminster Abbey (Platts, 1976)

- 3) Tower of London (Redknap, 1983)
- 4) Tottenham Court, Euston Rd (Blackmore, 1983)

Greater London

- 5) Southwark (Celoria and Thorn, 1974)
- 6) Brentford (Wheeler, 1929)
- 7) Kennington (Dawson, 1976)
- 8) Hammersmith Mall (Gunnersbury Park Museum)
- 9) Alperton Cemetery (Gunnersbury Park Museum)
- 10) Stepney High St. (Blackmore, 1982)
- 11) Northolt Manor (Hurst, 1961)
- 12) Lesnes Abbey (Dunning, 1961)
- 13) West Drayton (C. Orton, pers. comm.)
- 14) Merton Priory (C. Orton, pers. comm.)
- 15) West Ham (Passmore Edwards Museum)
- 16) Beredens (Passmore Edwards Museum)
- 17) Barking Abbey (Passmore Edwards Museum)
- 18) Ilford (Passmore Edwards Museum)
- 19) Beckenham (Thornhill, 1975)
- 19a) Staines (MOL Acc. No.A10919)

Essex

- 20) Colchester (Colchester & Essex Museum)
- 21) Harlow (Passmore Edwards Museum)
- 22) Hadleigh Castle (Drewett, 1975)
- 23) Weald Hall (Passmore Edwards Museum)
- 24) Sible Hedingham (C. Cunningham, pers. comm.)
- 25) Mill Green (Pearce *et al.*, 1982)
- 26) Chelmsford (Chelmsford Archaeological Trust)
- 27) Harwich (Chelmsford Archaeological Trust)
- 28) King John's Hunting Lodge, Writtle (Rahtz, 1969)

Herts.

- 29) St. Albans (Verulamium Museum)
- 30) Berkhamstead Castle (Verulamium Museum)

Kent

- 31) Otford, Archbishop's Palace (Ward, 1974; Maidstone Museum)
- 32) Joydens Wood (Dunning, 1958)
- 33) Eynsford Castle (Rigold and Fleming, 1973)
- 34) Dartford (Mynard, 1973)
- 35) Rochester (Dunning, 1968)
- 36) Moat Farm, Leigh (Parfitt, 1976)
- 37) New Romney (Rigold, 1964; Maidstone Museum)
- 38) Hoo St. Werburgh (Harrison and Swain, 1963)
- 39) Pivington Manor, Pluckley (Rigold, 1972)
- 40) Canterbury (Wilson, 1983; N. Macpherson-Grant, pers. comm.)
- 40a) Tyler Hill

Surrey

- 41) Guildford (Castle Arch Museum, Guildford)
- 42) Brooklands, Weybridge (Hanworth and Tomalin, 1977)
- 43) Hookwood, Charlwood (Turner, 1977)
- 44) Reigate (Turner, 1975; Williams, 1983)
- 45) Kingston upon Thames (Kingston excavations)
- 46) Titsey (Castle Arch Museum, Guildford)
- 47) Banstead Churchyard (Nelson, forthcoming)
- 48) Pachenesham Manor, Leatherhead (Lowther, Renn and Ruby, 1983)
- 49) Earlswood (Turner, 1974)

Beds.

- 50) Dunstable (Manshead Archaeological Society)
- 51) Grove Priory (E. Baker, Beds. C.C.)

Berks.

- 52) Windsor Castle (M. Burch, pers. comm.)
- 53) Reading (Newbury Group C; Vince, 1983b)
- 54) Newbury (Vince, 1983b)

Bucks.

- 55) Brill (Jope, 1953-4)

Other sites

- 56) Rye (Barton, 1979)
- 57) Exeter (Allan, 1984)
- 58) Hereford (Vince and Brine, 1984)
- 59) Gloucester (Vince, 1983b)
- 60) Stamford (Kilmurry, 1980)
- 61) King's Lynn (Clarke and Carter, 1977)
- 62) Perth (L. Blanchard, pers. comm.)
- 63) Aberdeen (Murray, 1982)
- 64) Elgin (W. Lindsey, pers. comm.)
- 65) Inverness (W. Lindsey, pers. comm.)
- 66) Ipswich (P. Blinkhorn, pers. comm.)
- 67) Henley Rectory (B. Durham, pers. comm.)

4. KEY TO FIGURE 6. List of DUA excavations mentioned in the text (preceded by their site codes ●), and find-spots in Inner London of illustrated, provenanced London-type ware from museum collections ▲.

- 1) BIS82 76-80, Bishopsgate St.
- 2) LIM83 23-6, Lime St.
- 3) TL74 Trig Lane, Upper Thames St.
- 4) PEN79 Peninsular House, 112-16, Lower Thames St.
- 5) PDN81 Pudding Lane, 118-27, Lower Thames St.
- 6) ER1076 Guildhall Extension
- 7) LUD82 42-6, Ludgate Hill/1-6, Old Bailey
- 8) SH74 Seal House, 186-8, Upper Thames St.
- 9) CUS73 Custom House Wool Quay, Lower Thames St.

- 10) SWA81 Swan Lane Carpark, 95-103, Upper Thames St.
- 11) BIG82 Billingsgate Market Lorry Park
- 12) OST82 7-10, Foster Lane
- 13) POM79 G.P.O. Middle Area, Newgate St.
- 14) OPT81 2-3, Cross Keys Court
- 15) ER1522 St. Swithin's House, Walbrook
- 16) SM75 St. Magnus House, New Fresh Wharf, Lower Thames St.
- 17) BYD81 Baynard's Castle, City of London Boys' School
- 18) ER799 40, Basinghall St.
- 19) Prudential Assurance, Holborn
- 20) 86-94, Leadenhall St.
- 21) Paternoster Row
- 22) Gateway House, Cannon St.
- 23) Cheapside
- 24) Crutched Friars
- 25) 35-9, Fenchurch St.
- 26) 112, Fenchurch St.
- 27) Blossoms Inn Yard
- 28) 13, Little Britain
- 29) 195-7, Aldersgate St.
- 30) King William St.
- 31) Garlick Hill
- 32) Wood St.
- 33) Coleman St.
- 34) Lloyds, Billiter St.
- 35) Mercers' Hall, Cheapside
- 36) Threadneedle St.
- 37) Tenter St., Moorgate
- 38) Mason's Avenue
- 39) Little Trinity Lane
- 40) Fleet St.
- 41) Baltic House, St. Mary Axe
- 42) Basinghall St.
- 43) Salters' Hall, Walbrook
- 44) St. Swithin's Lane
- 45) Ironmonger Lane
- 46) Mark Lane
- 47) Lloyds, Lime St.
- 48) Christ's Hospital, Newgate
- 49) Plantation House, Eastcheap
- 50) Monkwell St.
- 51) Steelyard
- 52) St. Martin's-le-Grand
- 53) Liverpool St.
- 54) Bank of England, New Change
- 55) Green Dragon Yard, Bishopsgate
- 56) Mansion House
- 57) Finsbury Circus
- 58) St. Bartholomew's Priory, Cloth Fair
- 59) St. Paul's Churchyard
- 60) St. Michael Bassishaw
- 61) King St.
- 62) Bishopsgate St.
- 63) Fore St.
- 64) Austin Friars
- 65) Bury Place, St. Mary Axe
- 66) Lothbury
- 67) Ivy Lane
- 68) Great Tower St.

- 69) Old Broad St.
- 70) Moorgate St.
- 71) Watling House, Cannon St.
- 72) Gresham St.
- 73) SW of St. Mary-le-Bow, Cheapside
- 74) Commercial Union Building, Undershaft
- 75) Old Bailey
- 76) Crosby Square
- 77) Clifford's Inn
- 78) 36, Gracechurch St.
- 79) Whitefriars St.
- 80) Phoenix House, King William St.
- 81) Billiter St.
- 82) Friday St.
- 83) St. Bartholomew's Hospital
- 84) St. Stephen's, Walbrook
- 85) Tower of London

5. QUANTIFIED DATA

The frequency of occurrence of London-type ware forms and fabrics in the Seal House/Trig Lane waterfront sequence and in the Ludgate Hill City ditch fill has been analysed by two statistical methods; weight and Estimated Vessel Equivalents (EVEs). The latter method is based on the total percentage of rim fragments present in a group. The form codes used in this appendix and their expansions are as follows:-

COAR-JUG	Coarse London-type ware jug
COAR-CP	Coarse London-type ware cooking pot
COAR-OTHER	Coarse London-type ware miscellaneous forms
JUG-E. RNDED	Early rounded jug
JUG-ROUEN	Rouen style jug
JUG-N. FRENCH	North French style jug
JUG-RNDED	Rounded jug (large and small)
JUG-BAL	Baluster jug
JUG-W. SLIP	White slip decorated jug
JUG-POLY	Polychrome jug
JUG-SQUAT	Squat jug
JUG-MISC	Miscellaneous jug forms (<i>i.e.</i> unidentified)
JUG-CON	Conical jug
CP	Cooking pot
PIPKIN	Pipkin
TRIP	Tripod pipkin
DRIP-DISH	Dripping dish
CHAF-DISH	Chafing dish
BOWL	Bowl
DISH	Dish
D-JUG	Drinking jug
RF-FURN	Roof furniture (<i>i.e.</i> unidentified)
LOUV	Louder
FINIAL	Finial
MISC	Miscellaneous forms (<i>ie.</i> all other and unidentified)
NON-LOND	All other fabrics

* Forms considered likely to be intrusive

a) Seal House Waterfront 1

	EVES	WT	% EVES	% WT
COAR-JUG		64		1.06
COAR-CP	0.10	5	2.84	0.09
JUG-E.RNDED	0.15	502	4.09	8.32
*JUG-N.FRNC		13		0.22
*JUG-BAL		92		1.52
*JUG-W.SLIP		148		2.45
NON-LOND	3.42	5280	95.91	87.49
TOTALS	3.67	6035		

b) Seal House Waterfront 2

COAR-JUG	0.23	534	9.33	9.04
COAR-CP	0.20	93	5.83	1.57
JUG-E.RNDED	1.86	1667	26.53	28.23
JUG-N.FRNC		2		0.03
JUG-MISC		32		0.54
NON-LOND	2.14	3584	62.39	60.70
TOTALS	3.43	5904		

c) Seal House Waterfront 3

COAR-JUG		58		0.28
COAR-CP	0.05	17	0.51	0.08
COAR-OTHER		10		0.05
JUG-E.RNDED	0.10	323	1.03	1.57
JUG-ROUEN	1.46	2035	14.97	9.87
JUG-N.FRNC	1.38	4475	14.15	21.71
JUG-POLY		5		0.02
JUG-BAL	0.10	286	1.03	1.39
JUG-SQUAT		216		1.05
JUG-MISC	0.19	3073	1.95	14.91
PIPKIN	0.09	252	0.92	1.22
TPIP		7		0.03
DRIP-DISH		97		0.47
CHAF-DISH		222		1.08
D-JUG		10		0.05
LOUV		10		0.05
NON-LOND	6.38	9527	65.44	46.22
TOTALS	9.75	20613		

d) Seal House Waterfront 4

JUG-E.RNDED		45		0.12
JUG-RNDED	0.10	90	0.49	0.26
JUG-ROUEN	0.44	689	2.17	1.97
JUG-N.FRNC	4.29	5906	21.11	16.87
JUG-POLY		65		0.19
JUG-BAL	3.25	5319	15.99	15.19
JUG-W.SLIP	0.22	423	1.08	1.21
JUG-CON	0.14	10	0.69	0.03
JUG-MISC	1.10	2846	5.41	8.13
CP	0.16	148	0.79	0.42
PIPKIN	1.16	482	5.71	1.38
DRIP-DISH	0.07	734	0.34	2.10
D-JUG		303		0.87
LOUV		202		0.58
FINIAL		94		0.27
MISC		120		0.34
NON-LOND	9.39	17529	46.21	50.08
TOTALS	20.32	35005		

e) Trig Lane Group 2

COAR-JUG		31		0.07
JUG-ROUEN		53		0.12
JUG-POLY		167		0.39
JUG-BAL	5.32	8527	21.96	19.99
JUG-W.SLIP	0.10	231	0.41	0.54
JUG-MISC	1.15	3556	4.75	8.34
CP	0.69	1605	2.85	3.76
DRIP-DISH		439		1.03
D-JUG	0.10	295	0.41	0.69
DISH	0.10	45	0.41	0.11
LOUV		241		0.56
FINIAL		44		0.10
MISC	1.00	144	4.13	0.34
NON-LOND	15.77	27280	65.08	63.95
TOTALS	24.23	42658		

f) Trig Lane Group 3

COAR-JUG		79		0.22
COAR-OTHER		129		0.37
JUG-ROUEN		70		0.20
JUG-POLY	0.07	96	0.35	0.27
JUG-BAL	3.14	6646	15.71	18.93
JUG-W.SLIP	0.33	197	1.65	0.56
JUG-CON		34		0.10
JUG-MISC	1.01	2337	5.05	6.66
CP	0.57	901	2.85	2.57
DRIP-DISH	0.05	560	0.25	1.59
D-JUG	0.05	529	0.25	1.51
BOWL	0.09	15	0.45	0.04
DISH	0.10	16	0.50	0.05
FINIAL		109		0.31
MISC		21		0.06
NON-LOND	14.58	23374	72.94	66.57
TOTALS	19.99	35113		

g) Trig Lane Group 7

COAR-JUG		112		0.33
JUG-ROUEN		27		0.08
JUG-POLY		2		0.01
JUG-BAL	0.82	2768	5.01	8.27
JUG-W.SLIP		19		0.06
JUG-MISC		469		1.40
CP	0.08	105	0.49	0.31
D-JUG	0.91	753	5.56	2.25
BOWL	0.05	17	0.31	0.05
DISH	0.02	8	0.12	0.02
FINIAL		250		0.75
NON-LOND	14.49	28940	88.52	86.47
TOTALS	16.37	33470		

h) Trig Lane Group 10

COAR-JUG	0.15	72	0.71	0.17
JUG-BAL	0.53	2719	2.51	6.33
JUG-MISC	0.15	479	0.71	1.11
CP		45		0.10
DRIP-DISH		22		0.05
D-JUG	0.20	249	0.95	0.58
DISH		20		0.05
LOUV		479		1.11
MISC		16		0.04

NON-LOND	20.09	38880	95.12	90.46
TOTALS	21.12	42981		

i) Trig Lane Group 11

COAR-JUG		38		0.04
COAR-CP		17		0.02
COAR-OTHER		33		0.03
JUG-POLY		47		0.05
JUG-BAL	0.15	843	0.21	0.82
JUG-MISC	0.25	678	0.35	0.66
CP	0.19	309	0.27	0.30
DRIP-DISH		211		0.21
D-JUG		83		0.08
DISH	0.12	14	0.17	0.01
LOUV		193		0.19
FINIAL		94		0.09
NON-LOND	70.10	99765	99.00	97.50
TOTALS	70.81	102325		

j) Trig Lane Group 12

COAR-JUG		33		0.22
COAR-OTHER		5		0.03
JUG-POLY		6		0.04
JUG-BAL	0.57	951	6.71	6.33
JUG-MISC		232		1.54
CP		114		0.76
DRIP-DISH	0.03	27	0.35	0.18
D-JUG		30		0.20
DISH	0.05	6	0.59	0.04
LOUV	0.12	993	1.41	6.61
FINIAL		243		1.62
MISC		40		0.27
NON-LOND	7.73	12341	90.94	82.16
TOTALS	8.50	15021		

k) Trig Lane Group 15

COAR-JUG		189		0.14
COAR-OTHER		52		0.04
JUG-POLY		43		0.03
JUG-BAL	0.35	698	0.37	0.50
JUG-MISC	0.85	1137	0.91	0.81
CP	0.17	101	0.18	0.07
PIPKIN	0.20	67	0.21	0.05
TPIP		42		0.03
DRIP-DISH		51		0.04
D-JUG	0.23	63	0.25	0.05
BOWL	0.05	18	0.05	0.01
LOUV		436		0.31
FINIAL		223		0.16
RF-FURN		38		0.03
MISC		148		0.11
NON-LOND	91.53	136473	98.02	97.63
TOTALS	93.38	139779		

l) Ludgate Hill City Ditch

COAR-JUG		213		0.45
COAR-OTHER		108		0.23
JUG-E.RNDED		129		0.27
JUG-RNDED		92		0.20

JUG-ROUEN	0.32	1146	2.09	2.43
JUG-N.FRNC	4.86	8234	31.68	17.46
JUG-POLY	0.58	3191	3.78	6.77
JUG-BAL	2.58	21638	16.82	45.88
JUG-W.SLIP	0.97	454	6.32	0.96
JUG-CON		819		1.74
JUG-SQUAT	0.19	1472	1.24	3.12
JUG-MISC	1.25	3787	8.15	8.03
CP	0.68	585	4.43	1.24
PIPKIN	0.95	800	6.19	1.70
TPIP	0.72	568	4.69	1.20
CAULD	0.36	1110	2.35	2.35
DRIP-DISH	0.78	1430	5.08	3.03
D-JUG		868		1.84
BOTTLE	1.10	443	7.17	0.94
LOUV		71		0.15
NON-LOND	31.24	70428		
TOTALS	15.34	47158		

6. THE CAPACITY AND FUNCTION OF DRINKING JUGS AND BOTTLES

Measured capacities of bottles and the two forms of drinking jugs (conical and baluster-shaped; see pp.40-41) were found to predominate around the wine measures defined in the 1266 'Assize of Bread and Ale' 51, Henry III (Figs.91-92; Skinner, 1967, 92-3; Zupko, 1968, 189). Based on the Henry III wine gallon of 3.540l, the clusters with the smallest standard deviation occur around the wine half pint (221 ml), and just below the wine pint (443 ml). A further cluster is centred on the Customary ale gill (144 ml), standardised in 1820. These correspond with group 3 conical drinking jugs, group 5 baluster drinking jugs and group 8 baluster drinking jugs respectively. As the capacities increase, so the standard deviation increases, notably in group 9 conical drinking jugs (442.4 ± 48.4 ml) and in group 11 baluster drinking jugs (813.1 ± 44.9 ml) below the Henry III wine quart. This increase in the standard deviation as the vessels become larger may be the result of less consistent weights of clay, varying degrees of potting skills and greater differential firing shrinkage. The vessels in groups 3, 5 and 8 may have been made as deliberate measures. The small size of group 7 and the larger standard deviations in capacity in groups 9 and 11, suggest that these vessels may not be deliberate measures. White slip and clear glaze is used on vessels of groups 9, 10 and 11, and this degree of surface treatment, together with greater standard deviations, suggests that these groups may represent actual drinking vessels. The vessels defined as bottles may well have been made for use as measures, rather than as drinking vessels. The necks of the baluster-shaped bottles (group 4) are narrower than those of the baluster drinking jugs (group 5), and in both of these groups the capacities overlap.

A number of distinct groupings may be recognised on the basis of weight: three of baluster-shaped drinking jugs; three of baluster-shaped bottles; and five of conical drinking jugs. These groupings may reflect the use of roughly standard balls of clay, a greater weight being more difficult to estimate consistently without the use of scales.

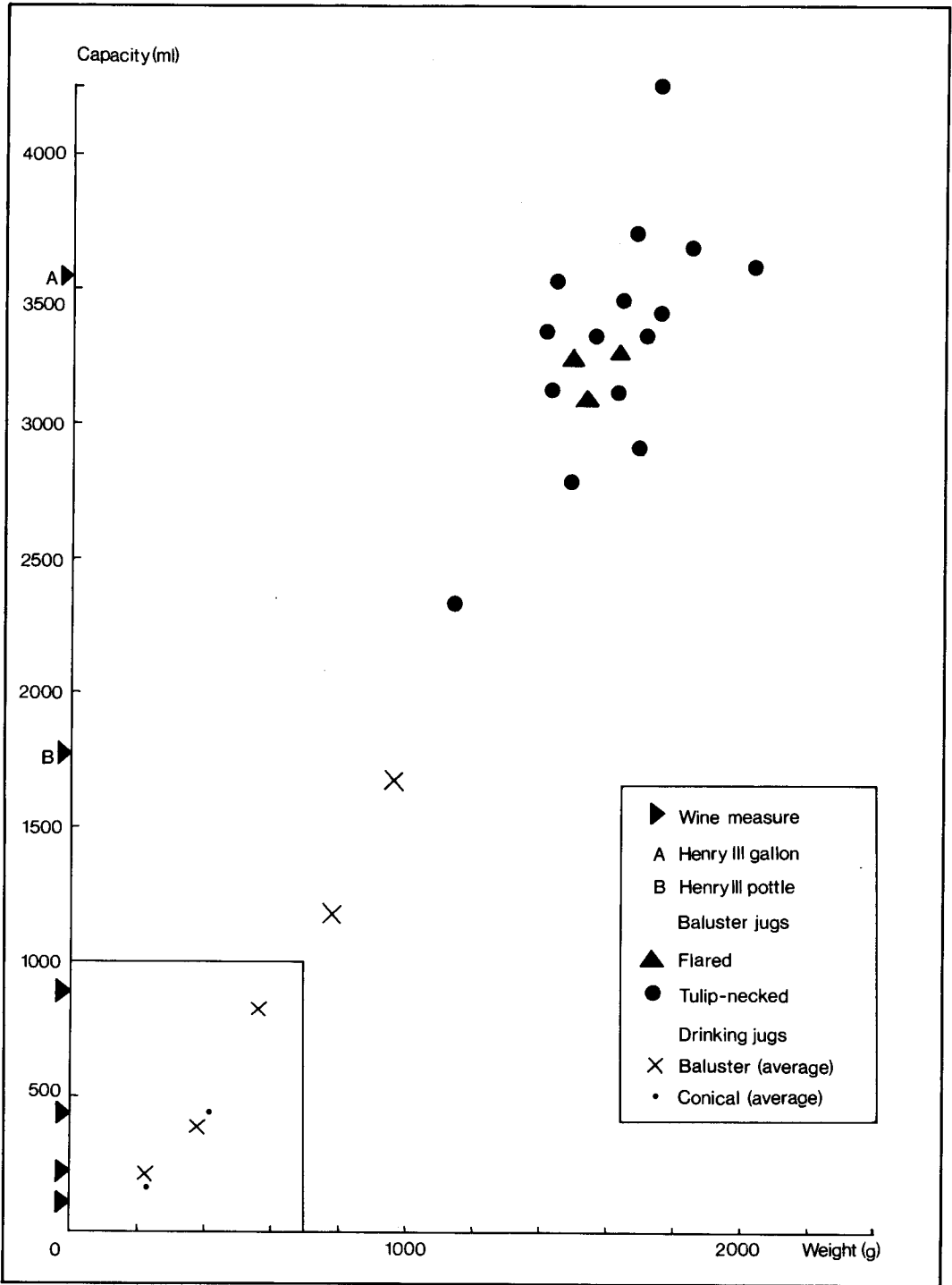


Fig.91. Diagram to show the relative capacity (in ml) and weight (in gm) of drinking jugs and baluster jugs. The inset is illustrated in Fig.92.

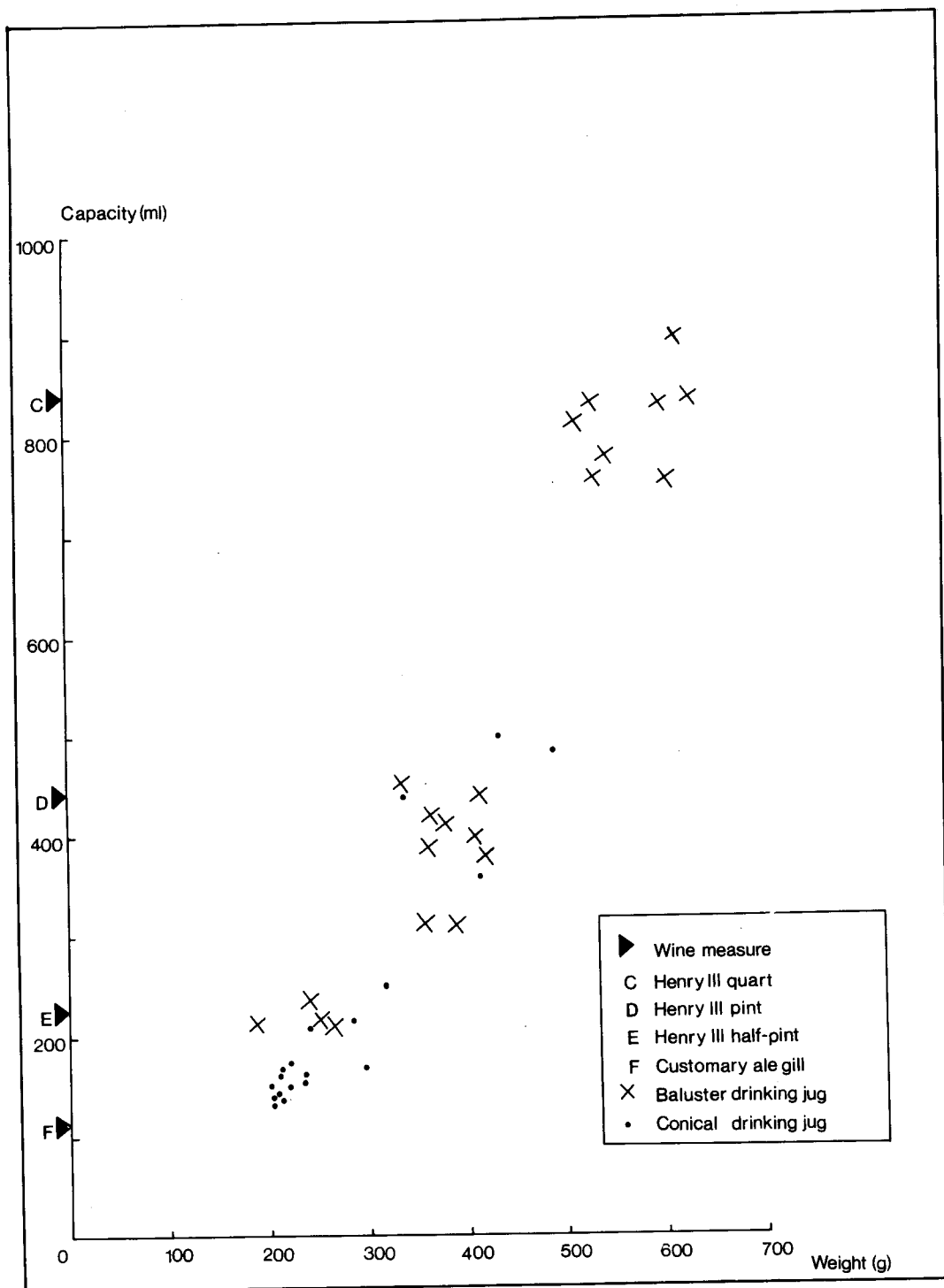


Fig.92. Diagram to show the relative capacity (in ml) and weight (in gm) of drinking jugs and bottles (inset from Fig.91).

GROUP	HT	RIM D	GIRTH	BASE D	CAP	WT
1 BOT CON	145	60	—	55	86	276
2 DJ CON	143	48	—	61	110	175
3 DJ CON	138-160	46-58	—	48-62	124-175	193-231
4 BOT BAL	134-172	44-53	63-87	47-67	150-300	190-287
5 DJ BAL	125-155	48-52	65-72	47-53	194-234	187-264
6 DJ CON	155-171	59-61	—	57-62	170-250	243-319
7 DJ BAL	172-195	41-58	77-82	58-63	310	356-389
8 DJ BAL	121-205	60-71	75-83	56-70	380-450	339-419
9 DJ CON	157-210	68-85	—	68-86	360-500	336-487
10 DJ CON	177	93	—	97	700	522
11 DJ BAL	152-285	73-92	88-116	70-92	755-1180	512-780

Table showing groups of drinking jugs and bottles based on measurements of height (mm), rim diameter (mm), girth (mm), base diameter (mm), capacity (ml) and weight (g). The abbreviations used in column 1 refer to the classification of complete vessels discussed earlier (see pp.40-41), and are expanded as follows: BOT CON – conical bottle; BOT BAL – baluster-shaped bottle; DJ CON – conical drinking jug; DJ BAL – baluster-shaped drinking jug.

7. CONCORDANCE LIST FOR FIGURES AND PLATES.

Unless otherwise stated vessels are in the collections of the Museum of London. Vessels from DUA excavations are referred to by their site code (see appendix 4) and context number(s). The provenance of museum finds is illustrated in Fig.6 and a full concordance is present in the DUA archive.

Abbreviations:

BoE = Bank of England Collection Catalogue Number

BM = British Museum Dept. of Medieval and Later Antiquities Accession Number

CHAG = Cecil Higgins Art Gallery, Bedford Accession Number

CM = Cuming Museum Accession Number

ER = Guildhall Museum Excavation Register Number

GPM = Gunnersbury Park Museum Accession Number

MM = Maidstone Museum Accession Number

V&A = Victoria and Albert Museum Accession Number

a) Colour Plates

- I. L146/2
- II. 78.181/6
- III. 24287
- IV. C676
- V. A27515
- VI. A16774
- VII. A1444
- VIII. 5579
- IX. A2002
- X. CHAG C5

b) Black and white Plates

1. From left to right:

A7649

5638

23111

11386

11216

2. From left to right:

5655

C154

3. From left to right:

Bottom row:

A7551

12625

POM79 2048

Top row:

5588

18931

5643

12396

23334

A25757

10760

a) TL74 47

b) BIG82 2244

c) BIG82 4449

ER1076C

a) A26839

b) LUD82 1078

c) A11937

d) LUD82 1080

8.

9.

10.

11.

e) A20354

f) A26239

a) 11968

b) A27218

c) A21003

d) no number

e) no number

f) no number

a) A23613

b) LUD82 1000

c) 5598

d) SH74 386

e) A27542

f) LUD82 1046

a) SH74 394

b) LUD82 1050

c) LUD82 1060

d) SH74 376

e) SH74 386

f) SH74 394

a) A2002

	b) A20354 c) LUD82 unstrat d) SH74 59 e) SH74 386 f) A27132 a) BIG82 2224 b) BIG82 2889 c) 78.159/3 d) A22988 e) A22988 f) BIG82 2012		53 A27515 54 18756 55 A1445		123 LUD82 1046 124 TL74 2416 125 TL74 2423
12.		Fig.26	56 83.837/1 57 18759 58 11530 59 A21003 60 SH74 394 61 83.837/2	Fig.37	126 5568 127 A5002 128 22773
c) Figures		Fig.27	62 83.462/41	Fig.38	129 18291
Fig.10	1 24281 2 1095 3 A22348 4 78.181/1 5 P332 6 24280	Fig.28	63 18450 64 5655 65 BM B16 66 A27498 67 SH74 484 68 78.159/81 69 78.159/87 70 13007	Fig.39	130 26508 131 A1442
Fig.11	7 24283 8 A24285 9 L146/3 10 A1446	Fig.29	71 MM unaccessioned 72 MM OPB5 74 MM OPB5 75 11505 76 BIG82 3961 77 BM 1915 12-8 192	Fig.40	132 5598 133 SH74 394 134 BIG82 4102 135 A26665 136 A27542 137 SH74 303
Fig.12	11 24282 12 5638 13 5660			Fig.41	138 16224 139 BM B37 140 BM 55 7-2 43 141 BM 56 9-5 9 142 A227218
Fig.13	14 A22349 15 11386 15 A25351	Fig.30	78 BM B46 79 A27498 80 78.159/86 81 78.159/2 82 78.159/8	Fig.42	143 A11299 144 14445
Fig.14	17 A39221 18 11216 19 A27722 20 83.415	Fig.31	83 A27480 84 A27497 85 68.11/8 86 BM B47 87 SH74 484 88 A10984	Fig.43	145 A27132
Fig.15	21 24390 22 24286 23 BM 1955 7-7 2			Fig.44	146 A27240 147 A21262
Fig.16	24 83.462/42	Fig.32	89 A17200 90 LUD82 580 91 A27498 92 BM unaccessioned 93 A17129 94 78.159/82 95 SH74 59 96 SH74 484 97 5691 98 18451 99 LUD82 1078 100 SH74 310	Fig.45	148 1344 149 14563 150 1357
Fig.17	25 78.181/6 26 GPM P336 27 24287 28 BM 1335			Fig.46	151 A5055 152 BM B50 153 26532 154 15950 155 BIG82 5703
Fig.18	29 68.11/6 30 A21045 31 1333 32 23508 33 83.837/4 34 TL74 324 35 BIG82 4047	Fig.33	101 A27797 102 17728 103 C154 104 A20115 105 20741 106 A24994	Fig.47	156 A1440 157 A25724 158 A5069 159 A11900 160 LUD82 1145
Fig.19	36 24426 37 83.837/3 38 A25850	Fig.34	107 18756 108 A24972 109 A5003 110 20737 111 A11889 112 10631	Fig.48	161 11387 162 23577 163 A22496 164 C677 165 A22488
Fig.20	39 23111	Fig.35	113 BM B10 114 14564 115 BM B59 116 78.159/28 117 78.159/51	Fig.49	166 15301 167 LUD82 1078 168 A16773 169 BYD81 17
Fig.21	40 5885 41 11691 42 83.414 43 BoE 423 44 A27646			Fig.50	170 170 A23660 171 10760 172 78.159/50 173 A387 174 OST82 190 175 SM75 163 176 BIG82 4102 177 A23243 178 A300
Fig.22	45 15946 46 BM 1915 12-8 191	Fig.36	118 78.177/4 119 A14444 120 LUD82 1142 122 78.177/2 121 LUD82 1078	Fig.51	179 V&A C.75-1947 180 78.177/3 181 BIS 82 216 182 BM B45 183 V&A 1446-1901 184 BM 1915 12-8 193
Fig.23	47 78.159/37 47a C676			Fig.52	185 A27218 187 BM B24
Fig.24	48 78.159/42 49 A7649 50 83.462/30				
Fig.25	51 A20356 52 BM B29				

	188 A2324	Fig.61	259 A26928	334 5590
	189 BM 1928 7-20 1		260 A27175	335 5575
	190 A2002		261 BIG82 4014	
	186 BM B42		262 A27498	Fig.67
Fig.53	191 A16774		263 BIG82 3791	336 ER1076C
	192 23610		264 A25778	337 1942.48
	193 5644		265 TL74 191	338 ER1076C
	194 23334		266 SH74 386	339 24113
	195 LUD82 1060		267 36.146/13	340 ER1076C
	196 LUD82 1060		268 SH74 484	341 TL74 274
	197 A8019		269 SH74 394	342 ER1115
	198 68.11/4		270 TL74 1971	343 TL74 99
	199 BM B111		271 SH74 484	344 TL74 415
			272 SH74 382	345 TL74 47
Fig.54	200 13270(A)		273 BIG82 4563	346 TL74 191
	201 A6375		274 SH74 301	347 BIG82 4593
	202 LUD82 1060		275 SH74 301	348 SM 75 163
	203 23610		276 LUD82 1077	Fig.68
	204 LUD82 1078		277 BIG82 2424	349 TL74 2428
	205 1129		278 BIG82 1982	350 TL74 2455
	206 23613A		279 BM 96 2-1 24	351 TL74 47
	207 A16776	Fig.62	280 LUD82 1060	352 LUD82 1078
Fig.55	208 A27220		281 A26839	353 TL74 2455
	209 LUD82 1060		282 A26239	354 TL74 368
	210 A20354		283 5647	355 TL74 2467
			284 83.416	356 TL74 373
Fig.56	211 BM B55 9-5 6		285 LUD82 1060	357 TL74 306
	212 11529		286 LUD82 1060	358 TL74 2415
	213 A5202		287 LUD82 1080	359 LUD82 1078
	214 BIG82 2186		288 A27134	360 ER556
	215 A16816		289 A20788	361 CS 75 5
	216 ER556		290 A16854	362 LUD82 1048
	217 BIG82 4030	Fig.63	291 LUD82 1060	363 BIG82 4587
	218 SH74 355		292 LUD82 1060	Fig.69
	219 24692		293 A25267	364 OST 82 190
	220 BIG82 3526		294 SH74 394	365 LUD82 1046
	221 BIG82 4094		295 26712	366 A28364
	222 BIG82 2012		296 A27498	367 18931
			297 A27760	368 LUD82 1078
Fig.57	223 LUD82 1078			369 LUD82 1078
	224 BM 56 7-1 1591 CRS	Fig.64	298 5717	370 TL74 2532
	225 CM BM66		299 A1231	Fig.70
	226 BIG82 1982		300 17438	371 POM79 2048
	227 BIG82 3196		301 A25849	372 LUD82 1046
	228 BIG82 3196		302 A25757	Fig.71
	229 BIG82 3231		303 5677	373 TL74 416
Fig.58	230 BIG82 4182		304 A20382	374 TL74 2516
	231 BIG82 5703		305 5646	375 TL74 2442
	232 BM unaccessioned		306 A301	376 TL74 2942
	233 BM B52		307 5642	377 TL74 2524
	234 BIG82 2617		308 A26302	378 TL74 2423
	235 BIG82 2848		309 BM B11	379 TL74 2467
	236 BIG82 3284		310 A5115	380 TL74 47
	237 BIG82 2614	Fig.65	311 5643	381 TL74 2422
	238 BIG82 3394		312 A2342	382 TL74 1590
	239 BIG82 4103		313 P341	383 TL74 175
	240 A5285		314 A10978	Fig.72
Fig.59	241 5786		315 A11869	384 ER1076C
	242 P323		316 A25645	385 BIG82 3671
			317 5574	386 TL74 291
Fig.60	243 A17129		318 37/194/4	387 TL74 818
	244 A20976		319 5645	388 BIG82 4714
	245 MOL unaccessioned		320 5589	389 TL74 364
	246 LUD82 1060	Fig.66	321 A27674	390 TL74 2532
	247 LUD82 1078		322 P314	391 BIG82 5549
	248 A26670		323 21044	392 12370
	249 A27227		324 5649	393 16621
	250 LUD82 1075		325 A5072	394 1931.133
	251 A25816		326 Z4506	395 12456
	252 BIG82 4021		327 78.159/25	396 TL74 886
	253 BM B56 7-1 1572		328 A5223	397 TL74 1347
	254 SH74 468		329 5571	398 SWA 81 2053
	255 TL74 2472		330 BM B163	399 A755
	256 BIG82 4280		331 A14997	Fig.73
	257 SH74 435		332 A10919	400 BIG82 4272
	258 A27227		333 15218	401 BIG82 4128
				402 BIG82 4120
				403 BIG82 3540
				404 A24952

Fig.74	405 BM 1915 12-8 201 405a A22338 405b BM 56 7-1 1554	424 BIG82 5577 425 BIG82 4354 426 TL74 2417 427 BIG82 4277 428 BIG82 3620 429 BIS 82 967	444 MM unaccessioned 445 5745
Fig.75	406 CM unaccessioned 407 A15268 408 A16880 409 BIG82 3526 410 BIG82 4128 411 SH74 484 412 BIG82 4339 413 BM B95 414 BM B94	Fig.76	446 TL74 2806,319,2363,1632
Fig.76	415 A27900 416 BIG82 5365 417 BIG82 3817	Fig.77	447 TL74 2230,2743,2749,2730 448 BM B93 54, 11-30, 85
Fig.77	418 21176 419 BM 173, 56-71, 1599 420 TL74 368 421 TL74 368 422 BIG82 4339 423 BIG82 3505	Fig.78	449 TL74 549 450 BIG82 4003 451 SH74 484 452 MOL unaccessioned 453 TL74 452 454 TL74 416
		Fig.79	455 TL74 818 456 TL74 2455 457 TL74 818 458 TL74 1458 459 TL74 378
		Fig.85	1 21903 2 5885 3 6042

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