

THE POTTERY Report by Mary Saaler

Site 1 (Fig. 23)

There was no stratification of pottery on this site.

1. Rim of a large cooking pot. Grey, tempered with sand and large particles of grit.
2. 4 pieces of cooking pot (or jug). Narrow, squared rim, irregular and misshapen, decorated with a single row of stabbing. A lip for pouring. Grey, with sand temper.

There were 33 other sherds of grey ware tempered with grit.

There were 180 sherds of cooking pots in red oxidized ware, generally rough textured with sand and grit temper. The edges are soft and worn. The colours range from pink to bright orange.

3. Rim of a cooking pot. Rough fabric, tempered with large particles of grit.
4. Rim of cooking pot. Rough fabric, tempered with sand and crushed pot.
5. Rim of a cooking pot. Smooth fabric, with traces of glaze inside.
6. Rim of a dish. Soft, sandy fabric worn at the edges.

There were 20 sherds of jugs in pink oxidised fabric with sand temper, generally cream slipped with green and brown glaze.

7. Part of a handle of a jug. Strap handle with a centre vertical ridge with alternate stabbing marks on either side.

There were 75 sherds of buff and white ware, generally smooth surfaced with sand temper.

They were mostly sherds of cooking pots with green and greenish brown glaze on the interior of the base.

8. Rim of a cooking pot.
9. Rim of a bowl.
10. Rim of a jug(?). Smooth fabric, tempered with fine sand.
11. Part of the lower junction of a strap handle of a jug. A single row of stabbing with distinct thumb marks at the base. Traces of green glaze.

Most of the pottery from this site was of the red oxidized ware. It was of fairly poor quality with a rough surface and with the edges soft and worn. The pottery of this site appears to be contemporary with that of the manor house but of an inferior quality.

Site 2 (Figs. 24-28)

Introduction

Most of the pottery consists of gritty red or greyish ware. There are three chief types of vessels, the commonest being a cooking pot or bowl with a flattened rim with a square profile; the second type being a shallow dish with sloping or occasionally upright walls and a flattened rim. The third group consists of both plain and decorated jugs.

Very few of the cooking vessels were decorated but some had vertical thumbed strips and a few had incised wavy lines.

The dark surfaced ware has been divided into two types, a soft reddish-brown ware with a patchy black surface, and a black-surfaced grey ware. In some cases it is difficult to distinguish between the two

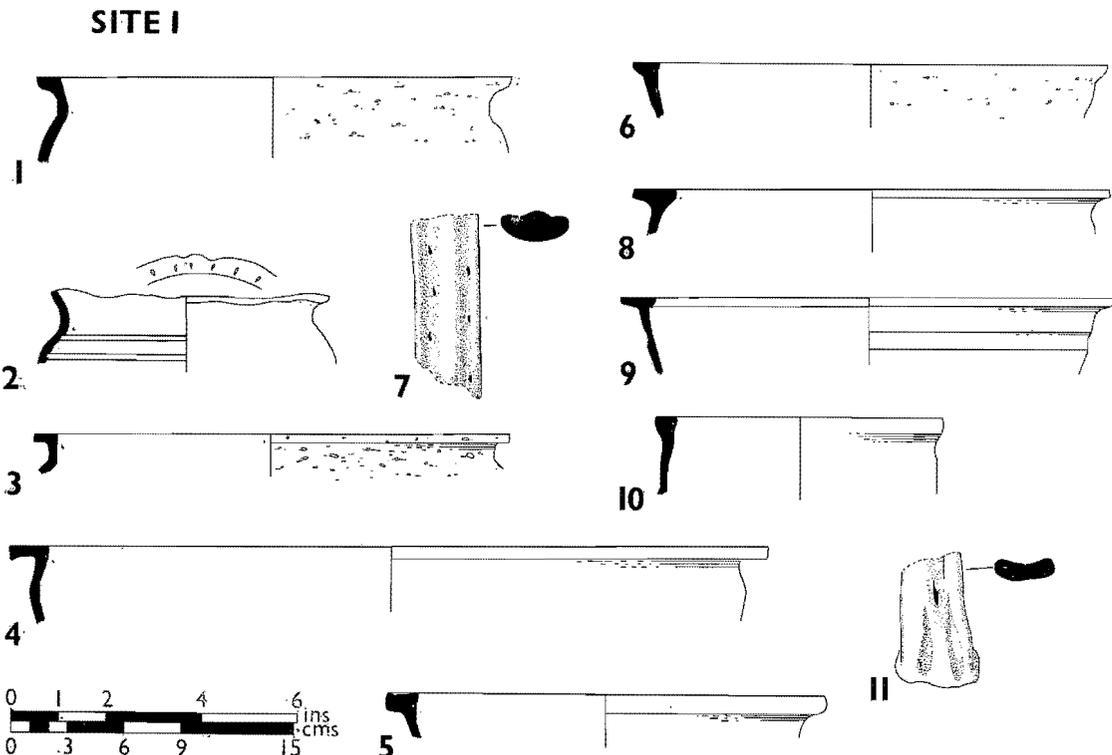


Fig. 23. Pottery from Site 1.

types but in general the black-surfaced grey ware is harder and thinner, with less grit temper. These types of fabric have not so far been dated with accuracy, but similar examples have been found at Reigate, Carshalton, Mitcham and Cheam.¹

There is a wide range of hard grey wares similar to the types produced at Limpsfield during the thirteenth and fourteen centuries.²

The majority of vessels on this site is of the red ware which is contemporary with the grey wares, possibly made at the kiln site at Earlswood, Surrey.³

The decorated French jug probably came from Rouen in the mid-thirteenth to early fourteenth centuries.

From about 1300 the red wares were gradually replaced by white or cream ware known as Surrey ware, but there is comparatively little of this on the site and what there is appears from the rim forms to be early in the series. This suggests that the occupation of the site was beginning to run down during the second quarter of the fourteenth century.

The standard of workmanship in the pottery varies a great deal. Some of the vessels are misshapen and irregular; many of the sherds are soft and friable. There are also a number of sherds of a harder fabric that probably come from well-made, good quality vessels.

There is a great variety in the shapes of the vessels; those figured were chosen to illustrate the range of forms, some of which are unusual for the site while others represent a small group.

Dark Grey Ware (Fig. 24) with patchy black surface, sometimes brown where it has been partly oxidised. Sand and grit temper. The fabric is generally thick and the rims tend to be rounded in shape. There were 41 rims in this fabric.

1. Rim and shoulder sherds of a cooking pot.
- 2-6. Rim sherds of cooking pots.
 2. Flanged, rounded outside (not illus.).
 5. Flanged, with incised decoration and shallow beading inside. There were two other rims of a similar type.
7. Rim sherds of a dish. Flat rim with beading inside and outside.
8. Rim sherds of a lid. Thickened rim with shallow beading outside, possibly fitting no.7.
- 9-11. Rim sherds of dishes.
 9. Simple flat rim, probably from an oval dish.
 10. Everted rim decorated with incised lines.
 11. Rounded rim with beading inside; the exterior is decorated with an applied strip.

Black Surfaced Ware (Fig. 24) was a variant of the Dark Grey Ware with a medium grey body. It was tempered with sand and grit and was generally harder and thinner than the Dark Grey Ware.

- 12-16. Rim and body sherds of cooking pots.

There were at least six other rims of a similar type.

17. Rim and shoulder sherds of a cooking pot or storage jar. Decorated with an applied strip. The fabric is hard and the walls are thinner than those of other vessels in this fabric.
18. Rim sherds of a cooking pot.

19. Lower junction of a simple rod handle of a jug.
20. Lower junction of a strap handle of a jug. This is decorated with slashing and with thumb impressions at the join.
21. Section of a strap handle of a jug, possibly part of 20. The handle is thumbed on both sides enclosing a row of slashing marks.

Hard Grey Reduced Ware (Fig. 24) of the Limpsfield type, sometimes with a buff surface. There was a wide range of thicknesses. Coarse grit and sand temper produced a surface which is rough to the touch. There were 102 rims in this fabric of which the sherds are worn and the edges abraded.

22. Rim sherd of a cooking pot. Decorated with shallow incised lines.
23. Rim sherds of a dish.
24. A small, everted rim. There is one other similar rim.
- 25-26. Rim sherds of cooking pots. 25. Rounded rim, unusual in this group, most of which are flat (not illustrated).
27. Rim and shoulder sherd of cooking pot. Flat rim, rounded outside, the fabric of which varies in thickness and shape. The shoulder is decorated with an applied strip.
- 28-32. Rim sherds of cooking pots. 28. Small, flat rim with the edges worn. This is a typical shape of many of the rims in this fabric. 29. This is a very coarse fabric with large pieces of grit standing out on the surface. 31. Flat rim with beading inside and squared outside. There are five other rims of a similar type. 32. Flat rim with beading inside and thumbed to give a pie-crust effect on the outside.
33. The upper junction of a strap handle decorated with two rows of stabbing. There are parts of four other strap handles similarly decorated and one with deep, diagonal slashing.
34. Part of the handle of a jug. The rod handle is decorated with lines of slashing in herringbone pattern.

Rough Grey Ware (Fig. 24) with a smoother surface. This fabric is a variant of the Hard Grey Reduced ware. The dark grit gives a mottled effect against the light grey surface. It has coarse grit and sand temper. The rims are generally better defined than the dark surfaced wares and the fabric is harder.

35. Rim sherds of a cooking pot. Flanged rim, rounded outside. This is a typical example of this type of fabric.
36. Rim sherds of a shallow dish or lid. The thickened rim is chamfered and beaded outside. The grey fabric has a bright orange core. The rim of this vessel fits exactly into the flanged rim of No.35.
- 37-41. Rim and shoulder sherds of cooking pots.
 38. The grey fabric has oxydised on the outside, giving a patchy red effect.
 39. Flanged rim, irregularly bevelled outside. The neck is sharply defined by a groove where it joins the shoulder.
 40. Thickened rim, rounded outside. This is an unusual shape as the other cooking pot rims in this fabric are more sharply everted.
 41. A

small, flanged rim with beading inside. The rim is not circular and may have had a handle or a spout attached. The fabric is similar to the others in this group but it has a dark brown surface.

42. Rim sherd of a wide dish, possibly oval in shape. (Not illustrated.)
43. Rim sherd of a cooking pot. Wide, flat rim, rounded outside. (Not illustrated)
44. The rim, neck, shoulders and handle of a jug. The fabric is hard and smooth with grit and sand temper. It is variable in thickness and has a grey core with red margins. The rim is slightly distorted, possibly by the weight of the handle which is decorated with deep slashing. The upper junction of the handle has been dowelled to the wall of the vessel. (Fig. 27.)

The Red Wares (Fig. 25) varied from red to pink, often with a grey core. The vessels were of varying thicknesses, generally made in a coarse ware tempered with grit and occasionally with crushed pot which was normally brownish-red and appeared darker than the clay with which it was mixed. The fabric that resulted was mostly softer than the sand and grit mixtures and could easily be marked with a finger nail. There were rims from 125 cooking pots and dishes of this fabric.

- 45-51. Rim and body sherds of cooking pots. 45. Tempered with crushed pot. 47. The surface has laminated, leaving particles of grit exposed. 48. Tempered with crushed pot. 49. Tempered with crushed pot. 50. Pinkish red ware with crushed pot temper. 51. Flanged rim, rounded externally, misshapen and irregular. Pinkish red surface, mottled with grey and with a grey core.
52. Most of a cooking pot. A simple, everted rim, misshapen and irregular. Bright orange with a grey core. The fabric rough and tempered with grit which stands out on the surface.
53. Rim sherds of a dish or bowl. Tempered with crushed pot. There were rims of at least six other vessels of a similar type.
54. Rim sherds of an oval bowl. Bright orange with patches of grey on the surface and a grey core. Traces of green glaze on the inside.
55. Base sherd of a small measure, probably biconical in shape. Smooth, sandy fabric.

Pink Sandy Fabric (Fig. 25) usually with a smooth surface.

- 56-69. Rim and body sherds of cooking pots. 58. A slightly flanged rim with a bevelled edge, beaded irregularly outside. 59. The fabric is soft and tends to laminate easily. 63. With crushed pot temper. 64. Flat rim, the outer edge of which is rounded and misshapen. 65. Curved rim with a shallow indentation cut into it, rounded outside. Hard, gritty, pink fabric with a brown surface. (Not illustrated.) 66. The hard, sandy fabric has a smooth surface and the colour varies from pink to brown. There are splashes of green glaze on the rim. 67. Varies from pink to brown and there are traces of brown glaze on the rim. There was one other similar rim. 68. A thickened rim, rounded outside with very distinct internal grooves below the rim. The hard,

sandy fabric was harder than most of the other cooking pots and the walls of the vessel are very thin. It is the only vessel of this type found on the site. 69. The rim and body are decorated with incised wavy lines and thumb applied strip.

- 70-72. Round dishes. 70. The sagging base is covered inside with a brownish glaze. About half the dish was found (Fig. 29). 71. A hard, sandy fabric with a smooth surface. The colour varies from pink to brown and the lower part of the walls and the base inside are covered with green glaze (not illustrated). 72. Most of a shallow, round dish. The flanged rim is decorated with an irregular pattern of incised wavy lines. The rim is pushed out to form a lip and the lower part of the wall and the base inside is covered with green glaze.
73. Part of a skillet with a tubular socket for a wooden handle, well-shaped and hollowed at one end. The inside of the base is covered with a patchy green glaze over a cream slip.

Buff Surfaced Pink Ware (Fig. 26). Mostly sand temper; some crushed pot temper. Generally of a better quality than the other red and pink wares, with a smoother surface and harder fabric. There were rims of 45 vessels of this fabric.

- 74-79. Rim sherds of cooking pots. 77. Buff surface with a grey core.
80. Rim and body sherds, base and handle of a cooking pot. A sharply angled handle with a single line of stabbing attached to a straight rim. The base inside and parts of the rim are covered with a pitted green glaze. One leg of a similar fabric probably belonged to this three-legged vessel.
81. A complete profile of a large cooking pot. The flat rim is bevelled and sharply undercut. There are a few splashes of brown glaze on the rim (Fig. 29).
82. Rim sherds of a large cooking pot, similar to 81. The fabric is slightly more reddish and laminates easily.
83. Rim and body sherds of a cooking pot. The coarse, heavy fabric contained large amounts of dark brown grit.
84. Most of a pipkin. The fabric is brownish, tempered with sand and dark brown grit. The base inside is covered with a pitted brown glaze.
85. Skillet handle with a tubular socket for a wooden handle, hollow at both ends. Thick, heavy material with spots of brownish glaze on the base inside and outside. There is one similar handle.
86. Cooking pot handle, sharply angled, attached to a straight-rimmed cooking pot with spots of brown glaze. There is one other handle and a leg of a similar fabric, probably from the same vessel.

Greyish-pink Oxidised Ware (Fig. 26). Pink surface on a grey core. This was a soft fabric with sand and grit temper and occasionally crushed pot. The vessels were of variable thickness, often with a smooth surface. Some of the vessels had narrow rims with beading inside. There were rims of 36 vessels in this fabric.

87-90. Rim sherds of cooking pots. 90. Flat rim bevelled outside and deeply undercut. Tempered with sand and crushed pot. This is the only rim of this type found on the site.

91-93. Rim and body sherds of dishes. 91. Oval dish with a flanged rim, rounded outside and irregular in shape. The fabric is soft and the edges worn. Traces of yellowish glaze inside. Tempered with sand and crushed pot. 92. Smooth, hard fabric, the outside decorated with incised wavy lines. 93. Small dish about six inches (152mm) in diameter. There were the remains of six other plain dishes in this fabric.

(For nos. 94-103 see below Jugs).
Surrey Ware (Fig. 26)

The pottery is hard and tempered with sand and grit. The coarse texture ware tends to be white or greyish in colour and the smooth surface ware cream. Green glaze, applied evenly, seems to have been used on the sagging bases of the cooking pots as a regular feature. The glaze on the jugs is patchy. There were 23 rims in this fabric.

104. Rim and shoulder sherds of a cooking pot. A wide, flat rim, rounded outside with a narrow neck below the rim. The rough join between the neck and shoulder can be seen very clearly from the outside. The rim, which is slightly distorted, and the inside of the vessel have splashes of green glaze which has run in trails down the inside of the pot. The fabric is cream.

There are four other rims of the same type.

105-113. Rim and body sherds of cooking pots. 105. The fabric is off-white and greyish in colour. 106. The fabric is cream. There is one other similar rim. 107. The fabric is off-white and greyish in colour with a very coarse surface. There are two other rims of a similar shape. 108. The fabric is cream and the inside is splashed with green glaze (Fig. 28). 109. The fabric is off-white and greyish with a very coarse surface. 110. The fabric is cream. 111. The fabric is cream with a rough, sandy texture. 112. The rim is distorted and the smooth-surface fabric is buff but very much blackened from use. 113. Cream fabric.

Jugs (Figs. 27 and 28).

There was a wide range of decorated jugs on the site. Most of the vessels were of the cream-slipped variety which is common in the south-east of England. The fabric is generally pink in colour with sand and grit temper and is rough to the touch but there were also some jugs in other fabrics. There were 42 rims.

94. Most of a jug in pink-buff ware. A simple, thickened rim, sloping inwards, the neck grooved inside. The decoration consists of large loops containing rows of short slashes giving the impression of very free-style leaves contained within a single row of small slashes around the neck and another row on the lower part of the vessel. Most of the vessel is covered in a cream slip with a greenish brown glaze, the drawing of the design showing brown through the lighter green. The inside of the neck is covered in cream slip. The glaze is still in a very good state of preservation.

95. Most of a jug in a pink-buff ware with a light grey core. It has a simple, flat rim and a thumbbed base. A greenish-brown glaze over the neck, shoulder and most of the body with applied white pellets in vertical rows between white strips. The neck is coated with a white slip inside and the rod handle has a single row of deep stabbing.

96. Most of a jug in pink-buff ware, the fabric similar to 95. It has a heavy flanged rim, undercut inside and a thumbbed base. Greenish-brown glaze covers most of the jug with a white slip brushed decoration. A white ring encircles the neck near the middle and another at the base of the neck. The strap handle has a single row of stabbing. The fabric and colouring of this jug and 95 are so similar, they could have come from the same source. The inside of the neck is coated in white slip.

97. Part of a bridge spout, the lower junction of a handle and the body sherds of a jug. The fabric is pink-buff tempered with sand and crushed pot. The exterior is covered with a cream-yellow slip under a transparent glaze. There are spots of green and brown colouring with a chestnut brown glaze on the thumbbed base. The vessel is decorated with brown sgraffito wavy lines between raised cordons on the base of the neck, the shoulder and at the bottom of the jug above the thumbing.

98. Rim and body sherds of a jug. The fabric is dark brown, thin, hard, smooth-surfaced with fine sand temper. A slightly flanged rim with narrow grooves below it on the whole of the neck. The vessel is covered with a glossy dark green glaze over a cream slip and the inside of the neck is also covered with cream slip. The body is decorated with vertical rows of small pellets zoned by narrow strips of rouletting. This is the only jug of this fabric on the site and the glaze is in exceptionally good condition. A larger jug with similar shaped rim and glaze is illustrated by J. and D. Thorn in *The London Archaeologist*⁴.

99. Most of a jug in a hard, smooth fabric with sand temper, grey and red mottled in colour, possibly the result of firing at a different temperature from normal. The vessel is covered with a cream slip with patches of green and brown glaze and the neck is encircled by rings of white slip. The body is decorated with broad white bands, possibly in the form of chevrons. The stabbed rod handle is thumbbed at the base. The base of the vessel is sparsely thumbbed. (Fig. 28.)

100. The rim and upper section of a handle of a small mug or jug. The fabric is soft with fine sand temper. There are two other similar vessels on the site. (Fig. 26)

101. Body sherds of a jug. The fabric is hard and smooth with fine sand temper. The interior has a buff coating on a pinkish fabric with a grey core. The exterior is covered with a cream slip and a thick, even, mottled brownish-green glaze and is decorated with incised wavy lines between cordons. (Fig. 28.)

102. Most of a jug in pink-red ware. The flat rim is bevelled outside and has a lip. There is a row of stabbing marks on the upper section of the handle and three irregular rows of stabbing down the shank of the handle, which is elliptical in section. The body of the vessel is decorated

with vertical stripes in brushed white slip covered with a transparent glaze. (Fig. 28.)

103. Most of a flask in buff fabric, hard and smooth with a fine sand temper. The rim is pulled out to form a large lip, but it has no handle. The vessel can be gripped quite comfortably round the neck for pouring. It has a patchy light green glaze. It is decorated with vertical and horizontal lines of small, closely set stabbing marks, those on the body being set within incised vertical lines. It has a thumbled base.

(For nos. 104-113 see Surrey Ware, p. 36)

114. Part of globular jug. The fabric is cream coloured with dark sand temper which gives it a coarse appearance. Parts of the jug are covered with a thick mottled brown and green glaze. The neck is decorated with grooved lines. (Fig. 28).
115. The rim of a jug, flat but distorted. The fabric is cream coloured and smooth with a sand temper. (Fig. 26.)

Handles

Strap handles appear to dominate. Of the eleven found which could not be associated with specific jugs there were only four rod handles and these were small ones.

The Boundary Wall and Gatehouse area.

116. Rim of a cooking pot. Buff fabric, tempered with sand and brown grit. Spots of green glaze on interior and exterior surfaces. (Fig. 26.)
117. Rim of a cooking pot, in buff coloured fabric, sand tempered. (Fig. 26.)

Site 3 (c. 1250-1405) (Fig. 29)

Introduction

There were two distinct periods of pottery on this site, the earlier being contemporary with both periods of the main Site 2, i.e. from c. 1250 to c. 1350 and the later consisting mainly of hard white, off-white and cream ware, including Cheam, of which there was very little on Site 2, but which can be dated by association with small finds on Site 3 to the turn of the 14th and 15th centuries.

Because of the possible interest in dating this material in relation to the wider question of dating the productivity of some Surrey pottery kilns the circumstances of the recovery of this pottery is given in some detail.

The lower levels of the bloomery area (Sq. III-1), periods 1a, 1b and 2a were sealed by the sequence of re-levelling for subsequent use. In 1a no pottery was found and in 1b and 2a only the local red ware, Limpsfield type grey ware and some off-white rather coarse Surrey ware appeared. In spite of the length of time when it is believed there was no occupation of the Site between periods 2b and 3 the pottery from both periods is mixed in these levels, presumably owing to some material containing 2b pottery from areas in proximity to the iron-working site being included with the later pottery when the area was being filled in to raise it to the height of the Yard (Sq. III-2).

In the Smith's House (Sq. V-2) there were only two discernible levels, period 2b (c. 1270-1340) and period 3 (c. 1395-1405) separated by a layer of sand.

Almost all of the pottery from the top level was of the Cheam type, while the Limpsfield type was absent. In the lower level only the grey and red wares were found.

Another method of separating the pottery into periods was noticed in the Forge area (Sq. III-2 and IV-2). No pottery was found in the construction of the Tank walls nor in the clay and flint foundation of the probable Tile Kiln, period 3a. However, when the Tank walls were raised to bring them up to the level of the last forge, period 3b, a large part of a cooking pot, Fig. 29: 126 was found in the top half of the rear wall. The fabric of this pot is identical with some sherds found in the Smith's House, period 2b, which in turn is very similar to examples from the Earlswood kiln³. Pottery from the fill inside the tank was all of the red and grey wares. There was, however, one piece of Cheam type pottery inside the Tile Kiln oven fill (not built into it) which suggests that it was thrown in when the Kiln was destroyed just before the Forge was built at the end of the 14th century.

No pottery at all was found with the pit-hearths of Period 1a.

The sherds from Periods 1b and 2 are very mixed and are identical with both Periods 1 and 2 of Site 2.

The pottery from Period 3 is finer and generally of better quality than most of that from the earlier periods.

Hard Grey Reduced Wares (Fig. 29). There were rims of six vessels in this fabric.

118. Rim sherds of a cooking pot. Hard grey reduced ware of the Limpsfield type, tempered with coarse grit and sand. There were three other rims of a similar type.
119. Rim sherd of a cooking pot. Dark surfaced grey ware, tempered with sand. There was one other rim of a similar fabric.
120. Rim and neck of a vessel, possibly a wide mouthed jug. The thickening at the neck may indicate the beginning of a spout of a handle. The exterior is decorated with parallel grooves. The fabric is dark surfaced with brownish patches showing through.
121. Handle of a jug, tempered with coarse grit and sand. The colour varies from pink to grey because of incomplete reduction.

Red Wares (Fig. 29). There were the rims of 19 vessels in this ware.

122. Rim of a cooking pot. The fabric is pinkish-red mottled with grey, tempered with grit and sand. It is coarse to the touch.
123. Rim sherds of a cooking pot. Reddish-brown fabric with a grey core. Sandy, smooth to the touch.
124. Rim sherd of a cooking pot, similar colour and fabric to no. 126.
125. Rim sherd of a cooking pot. The smooth, sandy fabric is orange-red with a darker slip.
126. Rim and body sherds of a cooking pot. The sherds of this pot were found embedded in the construction of the last Forge (Period 3).
127. Square handle from cauldron type pot. This was fixed to the body of the pot with a dowel.

- 127a. Square handle from a cauldron type pot fixed directly into the neck with no dowel.
128. Rim of a dish? Simple everted rim, probably of a small dish. Coarse orange-red fabric, tempered with sand and large grits.
129. Upper section of a handle of a jug in course red fabric with sand and grit temper. There are three rows of irregular stabbing. There were three other handles of a similar type. (Periods 1-2.)
130. The rim and upper part of a handle of a jug in well-made hard, red sandy fabric, covered with cream slip and traces of clear glaze. There was one other handle in the same fabric.
131. Part of a handle of a jug in a hard, sandy fabric with pinkish surface and a grey core. The handle is irregular in shape and concave in section.
132. Sherds of a jug in pink fabric tempered with sand and crushed pot. It was covered in cream slip and decorated with combing. Green glaze was applied after the decoration and the surface is heavily pitted. Similar to some vessels from Earlswood Kiln.³ (Periods 1-2.)
133. The base of a jug. A plain splayed base with a buff surface tempered with sand and grit. The surface is smoothed with a cream slip. There were rims and fragments of at least four other jugs in red and pink wares.
- Off-white and Surrey Wares* (Fig. 29). There were the rims of at least 63 vessels in this ware.
134. Rim sherds of a cooking pot. The buff fabric is tempered with sand and grit and crushed reddish-brown pot, which gives the surface a faint pinkish tinge. The fabric is coarse to the touch.
135. Rim sherds of a cooking pot. The fabric is off-white and tempered with sand. There is one other similar rim.
136. Rim and neck sherds of a cooking pot. Off-white fabric tempered with sand and grit. The vessel is similar in type to those found in the kitchen area of the Manor House (Site 2, nos. 104 and 105).
137. Rim sherd of a cooking pot. Cream coloured, tempered with sand and grit. Trails of green glaze inside.
138. Rim sherd of a cooking pot. There were two other rims of a similar type.
139. Most of a cooking pot. A grooved rim with an internal lid seating, bevelled outside, rounded underneath and beaded inside. A well-made rim, evenly shaped in cream fabric, sand tempered with a smooth surface. A patchy green and yellow glaze on the exterior of the rim and shoulder. The base is grey underneath from heating in use. There was one other rim of a similar type. (Period 3.)
140. Sherds of a lid which probably belonged to 139. The fabric is similar and the lid has a thickened rim, beaded on the outside. The knob on the top of the lid is roughly finished. Traces of green and yellow glaze. (Period 3.)
141. Rim sherds of a cooking pot, grooved with an internal lid seating. The fabric is greyish-white tempered with fine sand. The texture is soft, with a smooth surface. (Period 3.)
142. Fragments of a lid, possibly for 141. The fabric is identical. (Period 3.)
143. Part of a large, shallow dish with a slightly flanged rim, bevelled on the outside in a very hard fabric, tempered with fine sand. A coating of cream slip gives a smooth even surface.
144. Upper handle junction of a large jug. The concave strap handle is decorated with a single row of stabbing and two vertical incised lines. The upper surface is covered with a thick green glaze and the fabric is cream coloured, tempered with sand and brownish grit. This is the only jug of such size to be found on any of the sites.
145. Lower handle junction of a jug. The strap handle is decorated with a double row of stabbing and three vertical incised lines. The fabric is greyish, off-white, tempered with sand and grit and covered on the upper surface with a thick, brown glaze.
146. Upper handle junction of a jug showing four deep finger impressions to mask the join. The vessel appears to be slightly distorted. The fabric is greyish, off-white, tempered with sand and grit and there are traces of green glaze inside. (Period 2.)
147. Part of a handle of a jug. A strap handle decorated with an incised wavy line. The fabric is buff, tempered with sand, grit and crushed pot and is coarse to the touch.
148. Upper handle junction of a small jug. The simple rod handle is in buff fabric tempered with fine sand and a small amount of grit. The surface is smooth. There were parts of two other handles of a similar type.
149. Lower handle junction of a small jug in a similar fabric to 148.
150. Base of a 'butter pot'. The base is concave and the interior of the vessel is corrugated. The fabric is cream, tempered with fine sand. Found beside the large hearth (Sq. V-3, Period 3b). There was the base of one other vessel of the same type.
151. Bung-hole from a cistern or large jug. A thick, off-white fabric tempered with large grits. The rim of the hole is unevenly shaped. Part of one other bung-hole was found on the site.
152. Parts of a costrel. The vessel was probably shaped like a pocket watch with a flat back and a spout at the top. Cream fabric, tempered with fine sand, covered with a thick, greenish-yellow glaze. There was part of one other handle and base covered with a predominantly yellow glaze. (Sq. V-4, Period 3b). (Fig. 28.)

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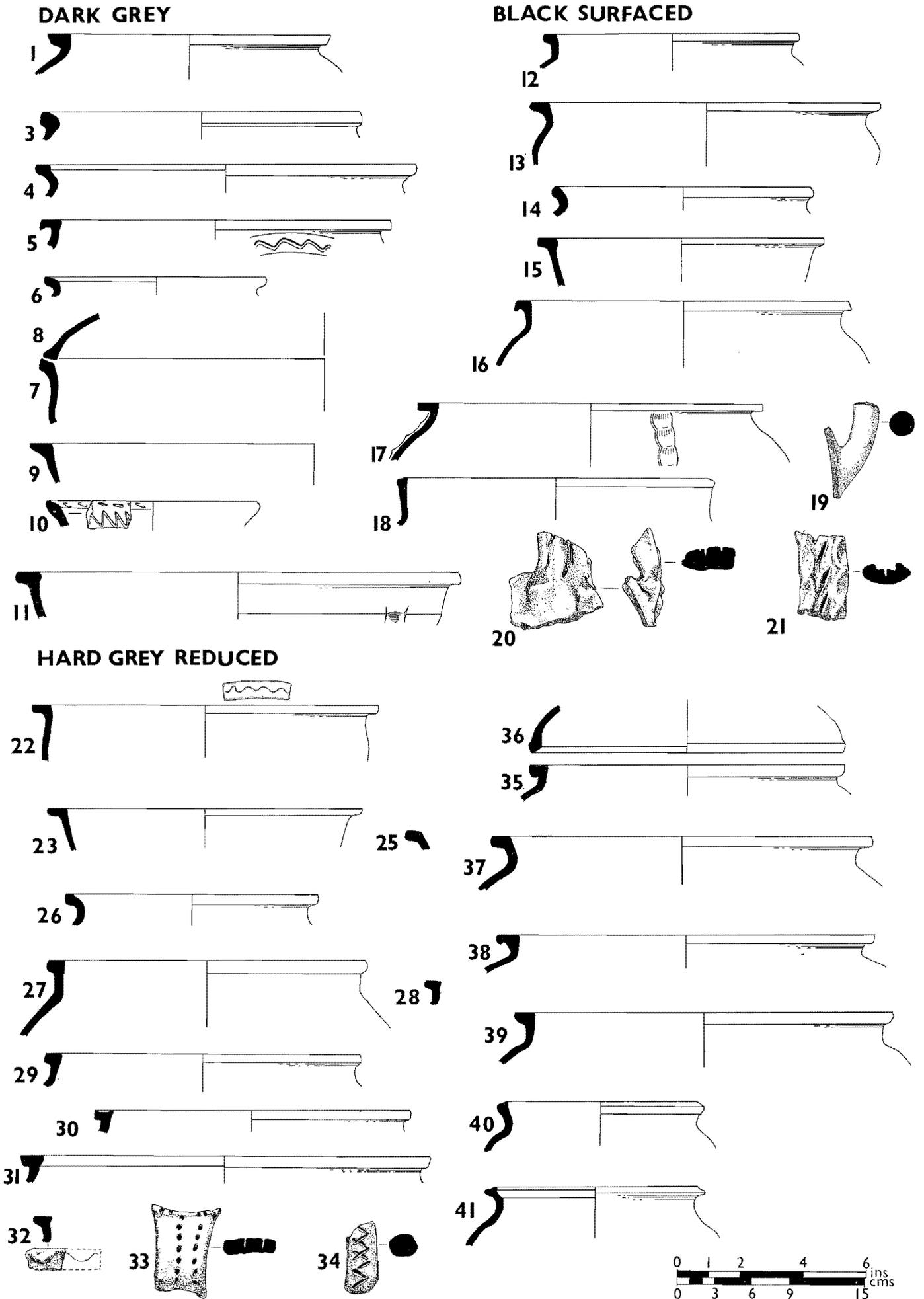


Fig. 24. Pottery from Site 2.

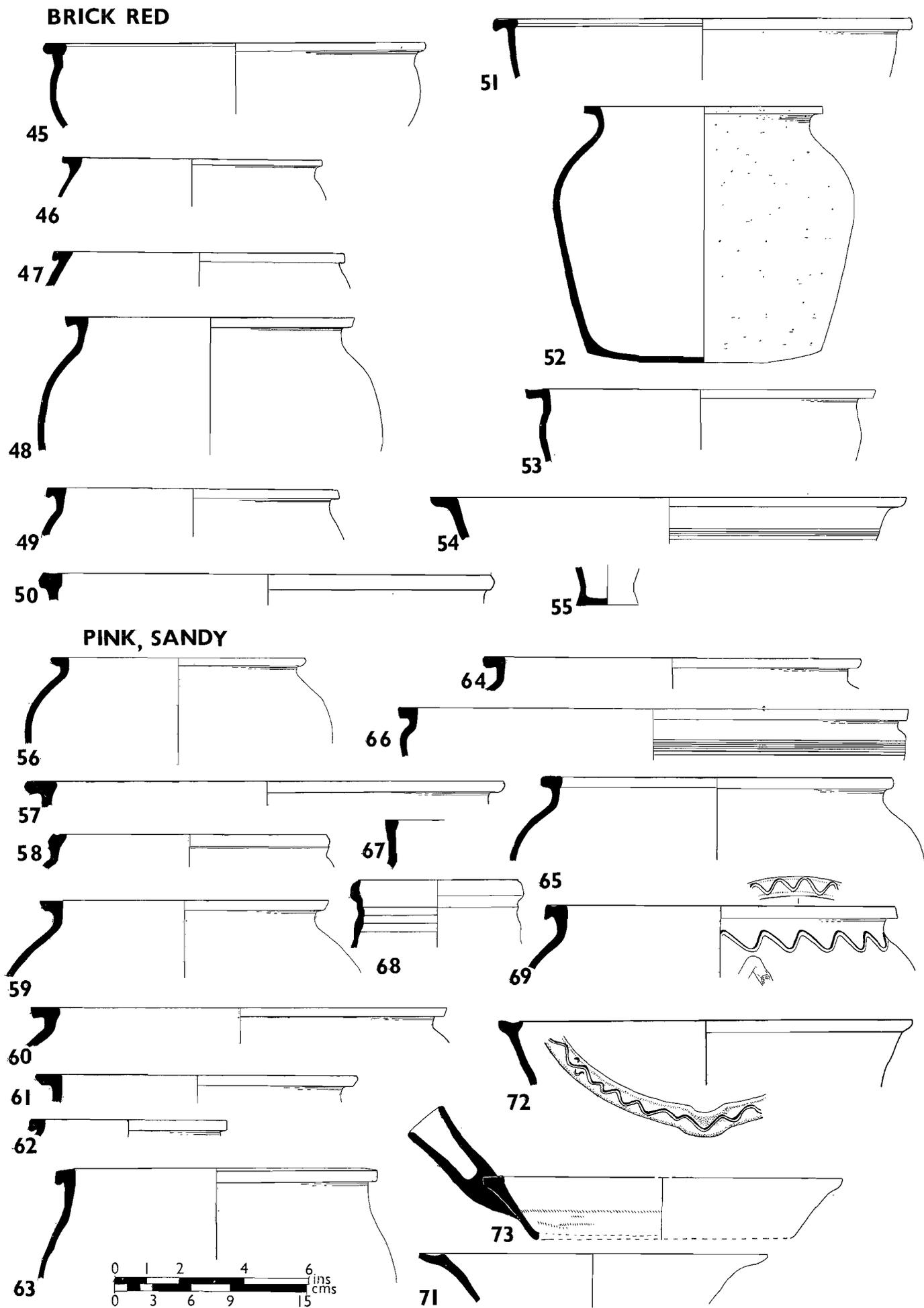
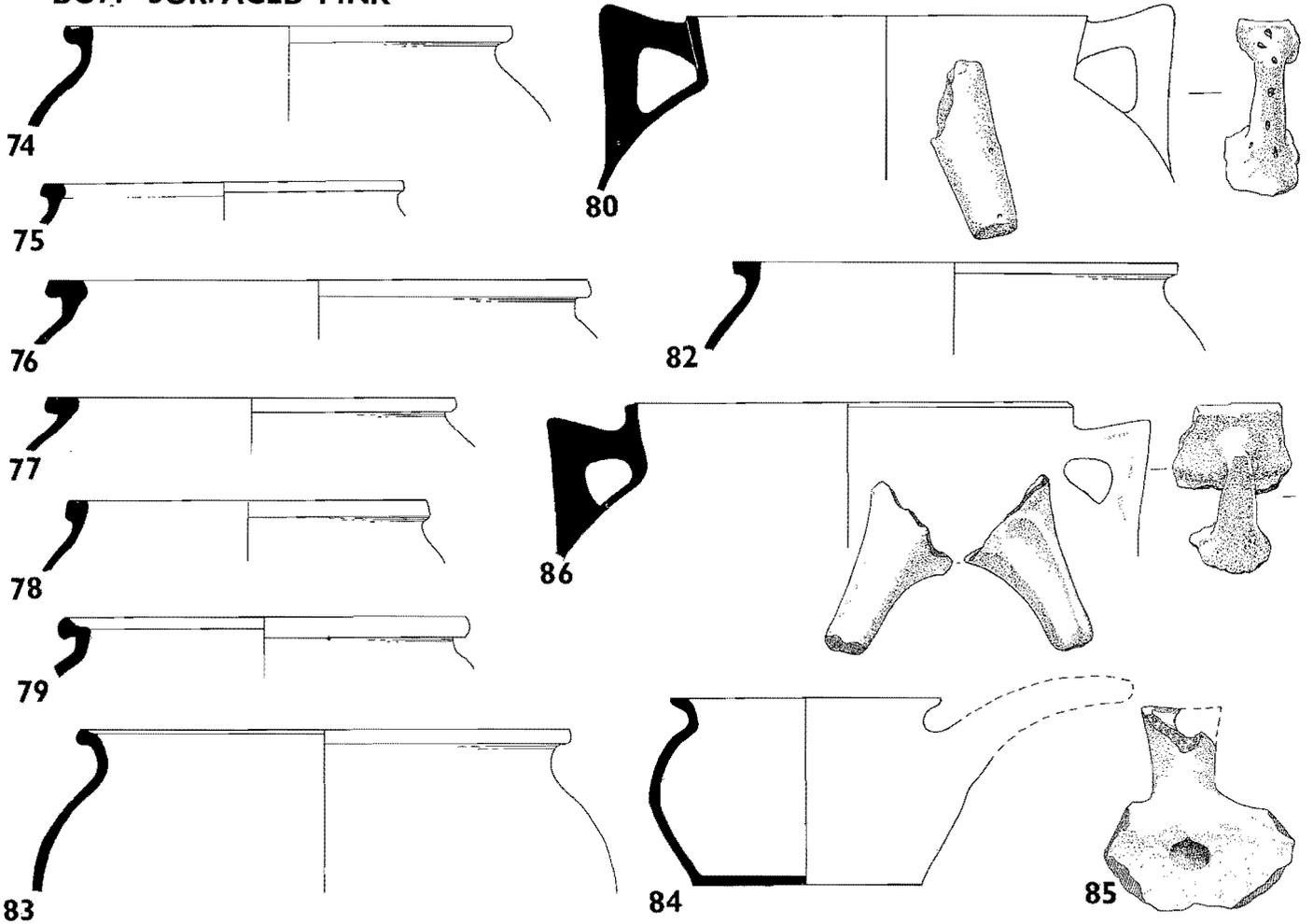
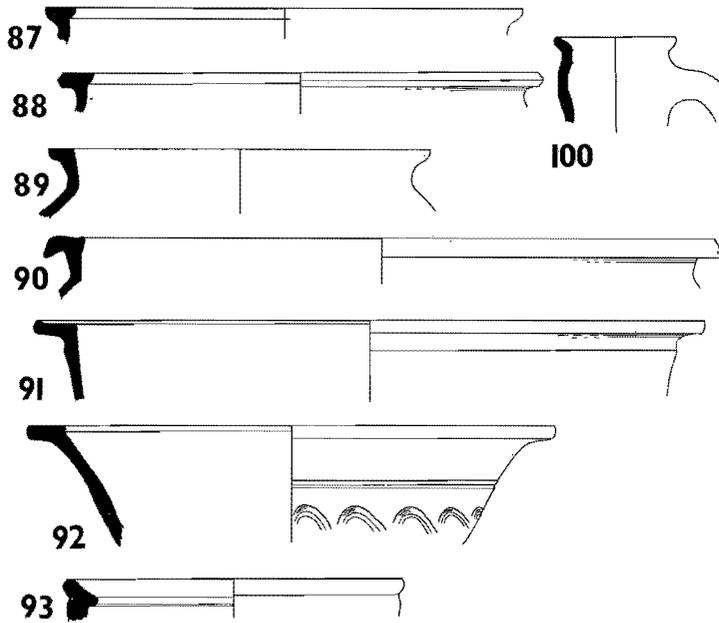


Fig. 25. Pottery from Site 2.

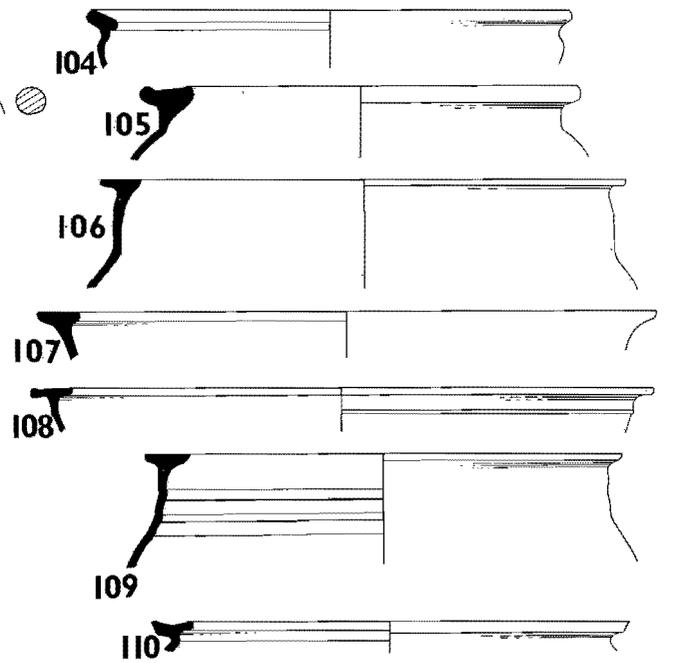
BUFF SURFACED PINK



GREYISH PINK OXIDISED



SURREY WARE, OFF-WHITE



94-103 see JUGS

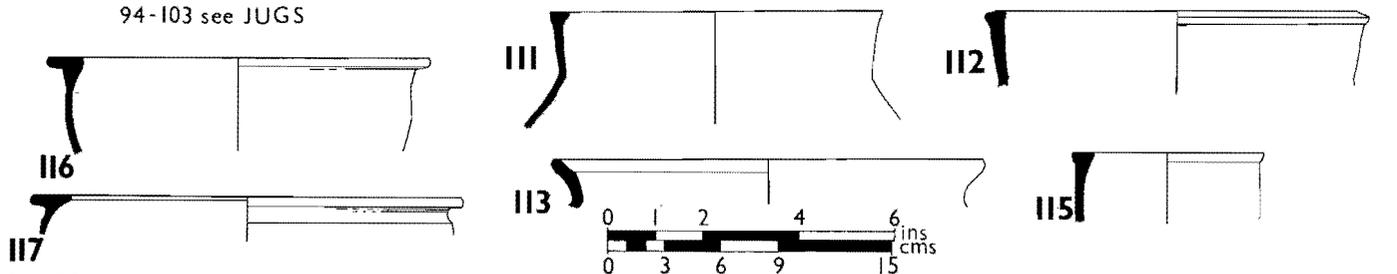


Fig. 26. Pottery from Site 2.

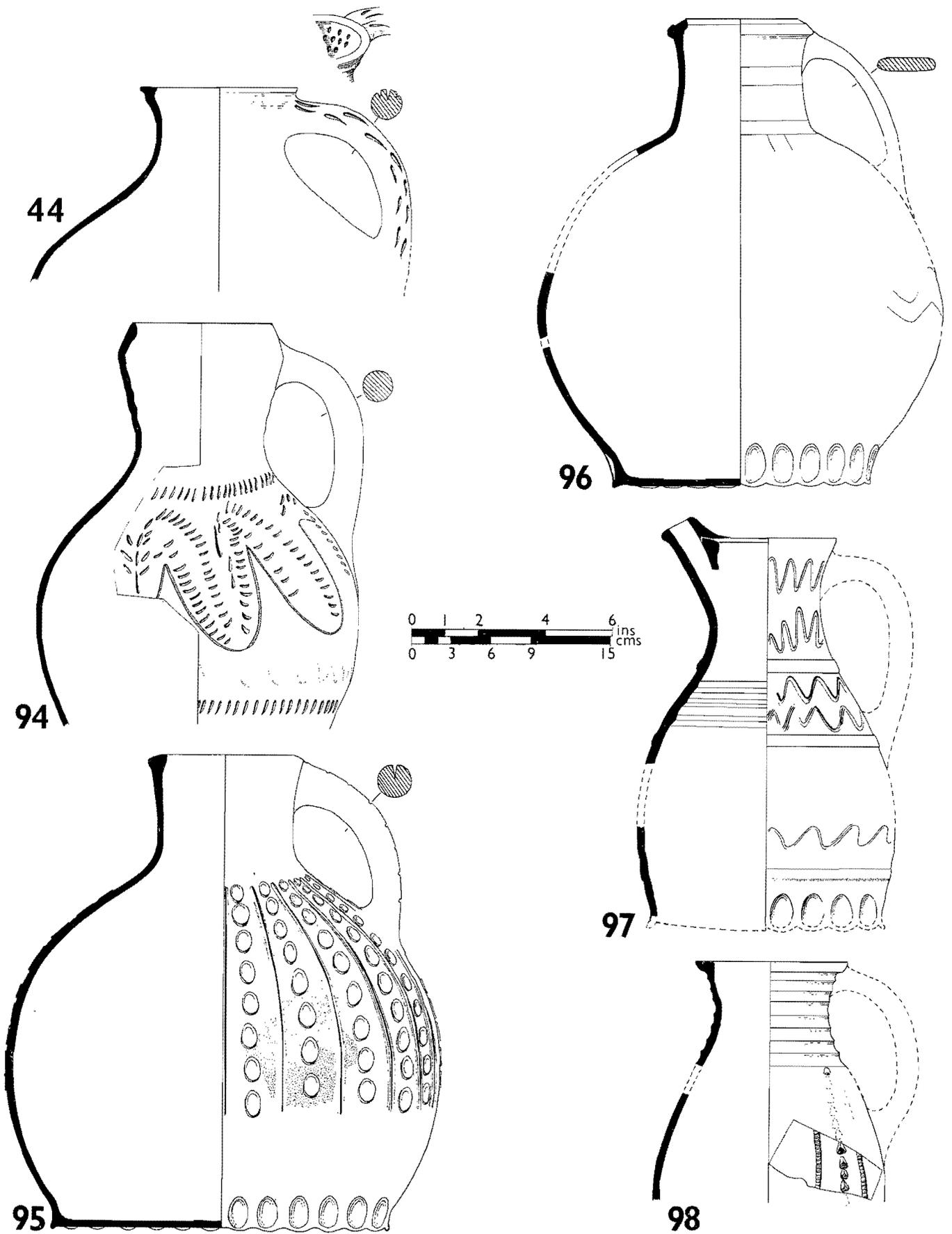


Fig. 27. Jugs, costrel and aquamanile, from Sites 2 and 3.

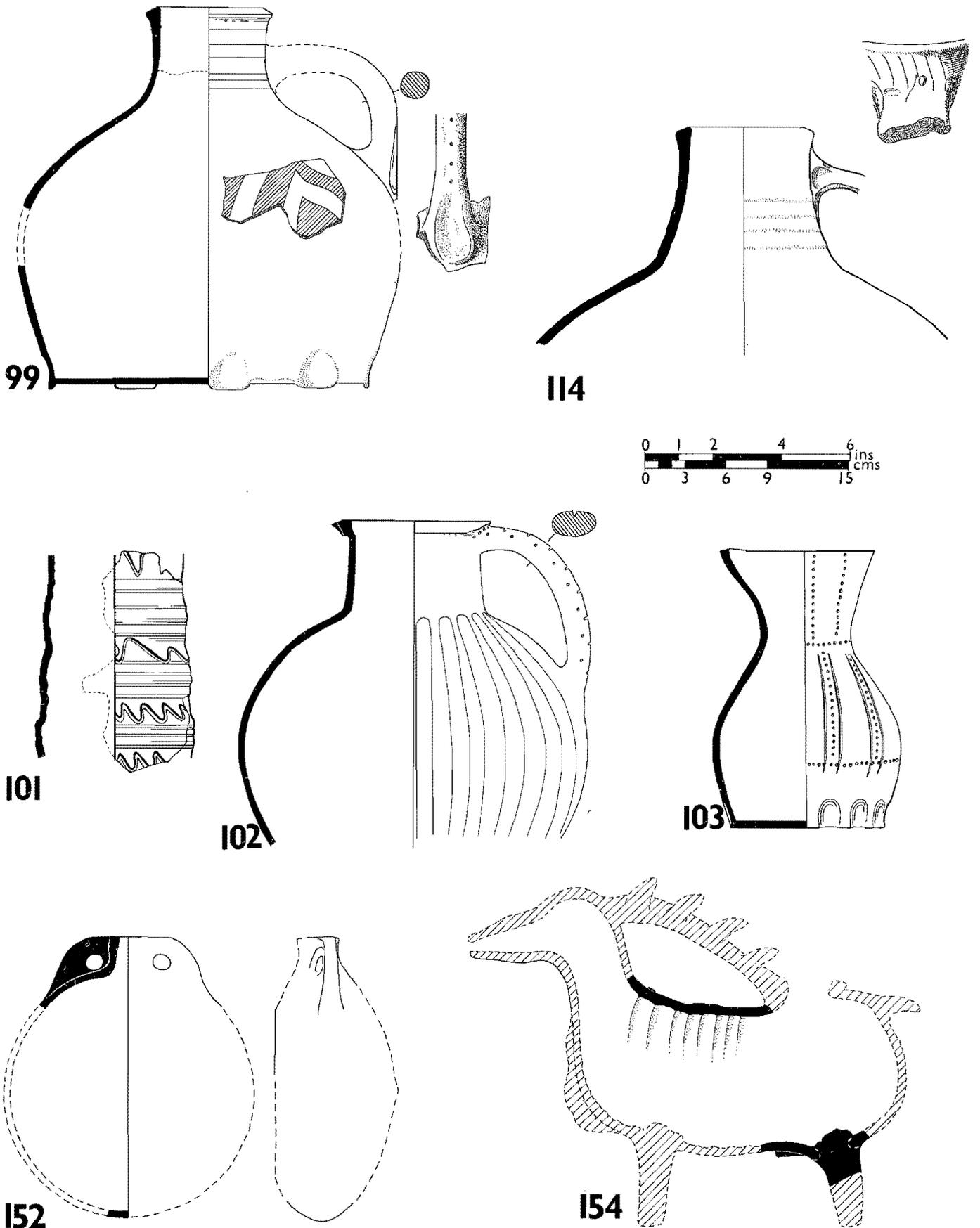


Fig. 28. Jugs from Site 2

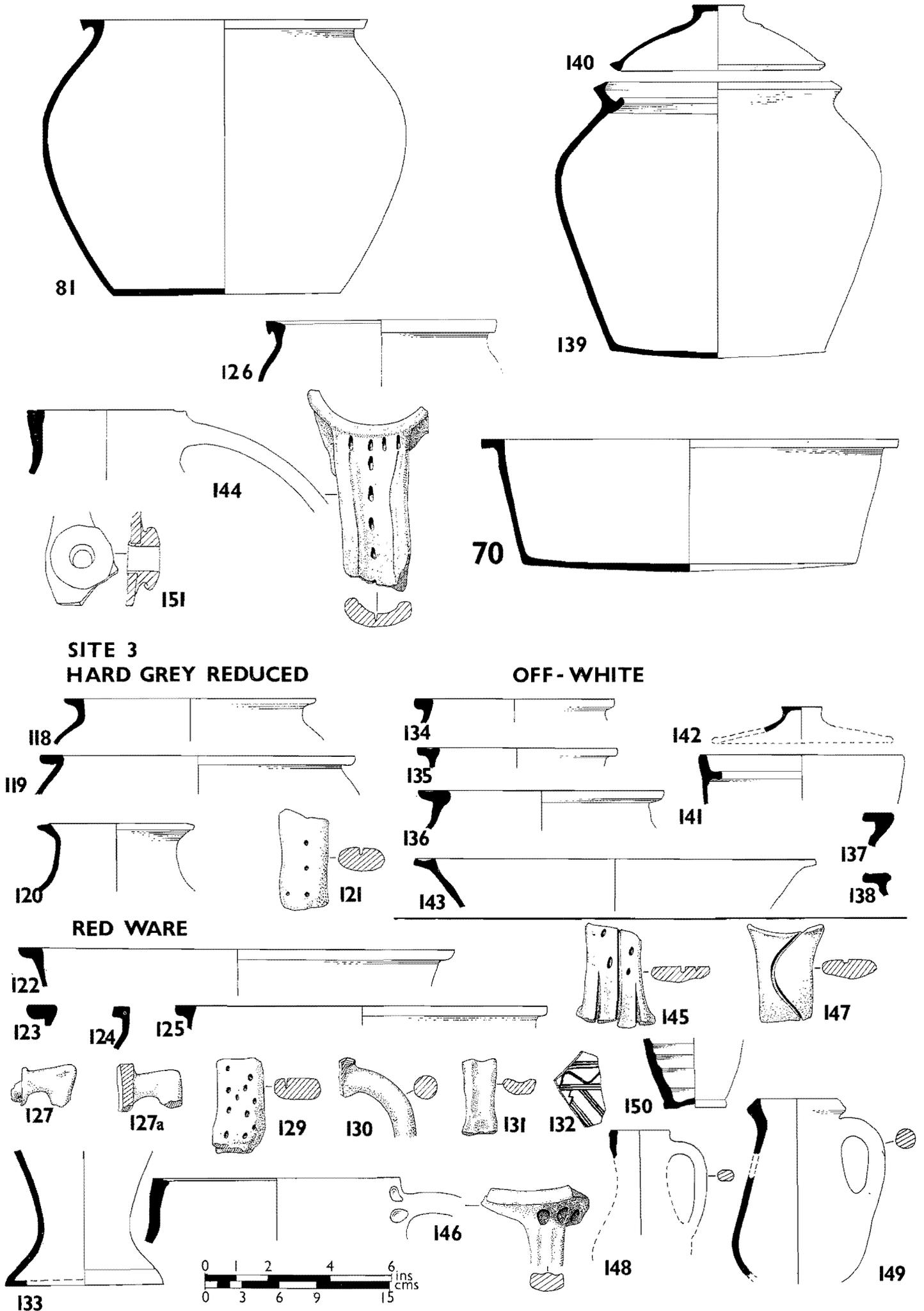


Fig. 29. Pottery. 70 and 81 from Site 2, the remainder from Site 3

The French Imported Jug by G. C. Dunning
(Fig. 30 and Plate IX)

About 45 sherds of the jug were found on Site 2 (Sq. 01-V and VI), scattered outside the east wall of the hall of Period 1 in a thin deposit which contained material from the probable date of the building of the hall, c. 1250 until its reconstruction, c. 1270.

DESCRIPTION

The fabric is fine and smooth in quality and white throughout, with a creamy tone on the inside surface. Microscopic examination shows minute dark brown inclusions in the core. The glaze is thin, greenish yellow, and covers the neck and handle and most of the body nearly to the base.

Sufficient of the rim and neck, joined sherds of the upper and lower part of the body reaching nearly to the base, and the lower half of the handle remain for an almost complete reconstruction of the form to be achieved. The jug is large in size; as restored with a flat base it is about 17 ins (43 cm) in height and 10.1 ins (25.4 cm) in diameter at the bulge.

The jug has a plain rim, flat on top and rounded on the outside. The neck is cylindrical and slightly tapering; it meets the body in a slight step above a cordon. The body is ovoid, well-filled in profile and is retracted towards the base. The handle is a plain, solid rod, circular in section.

The elaborate under-glaze decoration is in panel style on the neck and body. A variety of techniques were employed; narrow and broad applied strips, stamped pads and combing; and the use of three colours, yellow and green alternately on the designs and red filling the background.

On the neck are parts of two adjacent vertical panels. One contains circular pads, the largest about 1.1 in (2.6 cm) across, impressed by a rayed stamp with twelve wedge-shaped marks and glazed yellow. The spacing allows for three stamps; the background is red slip. The other panel has sloping applied strips, combed lengthways and coloured dark green overall.

On the body is a large, lozenge-shaped panel about 8 in (20 cm) high and 6 in (15 cm) wide, framed by a narrow ridged strip. It contains a prancing quadruped facing right composed of a broad flat strip for the body and narrow strips for the legs and tail. The body is finely combed to represent hair; and the limb joints, feet and tufts on the tail are pressed flat and also combed. The animal is glazed yellow in contrast to red slip filling the panel.

At both sides of the lozenge panel are pendant chevrons arranged in a vertical series and linked by a single plain strip. Each chevron is composed of combed strips, all glazed green. The general effect is like rows of fringes or tassels. The spacing of the sherds with chevrons above and at bulge level allows for four chevrons between the panels.

DISCUSSION

The fabric of the Netherne jug identifies it as an import from the region of Rouen. With minor variations, this oxidised ware is typical of the numerous and highly decorated jugs found there. In its form and rod handle, the Netherne jug is matched by the

larger jugs at Rouen, decorated on the neck and body with applied strips and pellets in linear patterns or panels and red slip as background to the designs.¹ Only one jug has large circular panels spaced round the body. A few of the smaller jugs of this series have stamps on applied pads, but the large rayed stamp on the Netherne jug has not yet been noticed at Rouen.

It may be added that on the large jugs the strips are rouletted and on the smaller jugs either rouletted or left plain; the combing of the strips and chevrons on the Netherne jug is thus unusual. The features in which this vessel differs from the standard types at Rouen may indicate a source for it other than that supplying most of the medieval jugs. In any case, no pottery kiln of this period has yet been located in the Rouen region.

Zoomorphic decoration in applied or plastic technique is uncommon on pottery in Normandy, and the few recorded examples differ in style from that on the Netherne jug. At Rouen is part of a large lid with a hunting scene of a stag attacked by hounds,² but the modelling is indifferent (all four legs are placed on the same side of the stag). However, the front part of an aquamanile and other fragments also at Rouen show that a vigorous animal style is well represented there.³

The excavations by Professor M. de Bouard at Caen Castle have produced numerous thirteenth-century glazed jugs. Some of the forms and the decoration with rouletted strips, pellets and rows of scales are analogous with the Rouen types.⁴ In the assemblage is one example of the zoomorphic style; a sherd from the body of a green-glazed jug with plastic decoration of a man's arm leading an animal by a halter.⁵

From Normandy we turn to Paris, where the series of jugs includes some closely comparable in form and decorative motifs with those at Rouen and Caen.⁶ The material found at these three places makes it evident that, with regional variations, close connections existed between the pottery industries in Normandy and the Île-de-France in medieval times.

The instances of the animal style in northern France cited above provide the general context for that on the Netherne jug, but not a close parallel.

Fortunately this is exemplified by another jug imported to England from France. I am greatly indebted to Mr. R. G. Thomson of God's House Tower Museum, Southampton for information in advance of his report on excavations on the Westhall site, French Street, in 1970. The jug was in the lower filling of a pit, stratified below late thirteenth-century polychrome ware imported from Saintonge; it is considered to date shortly before 1250, in the second quarter of the century.

Spaced round the body of the Southampton jug are three circular panels, about 3½ ins (9 cm) across each containing a quadruped with upraised head. The figures are glazed yellow with red slip as a background. At the sides of the panels are pairs of vertical strips, also glazed yellow, and rouletted on the body; the outer strips are continued plain up to the neck.

The form, applied strip decoration, and the three feet supporting the base of the Southampton jug have parallels both at Rouen and Paris.⁷ However, its buff fabric is distinctive, and details such as the rouletting of alternate strips also indicate Paris as a source.

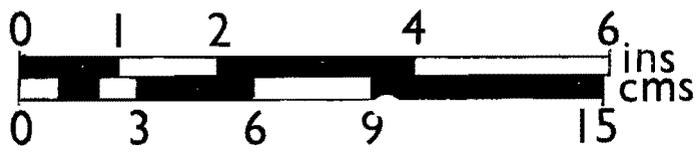
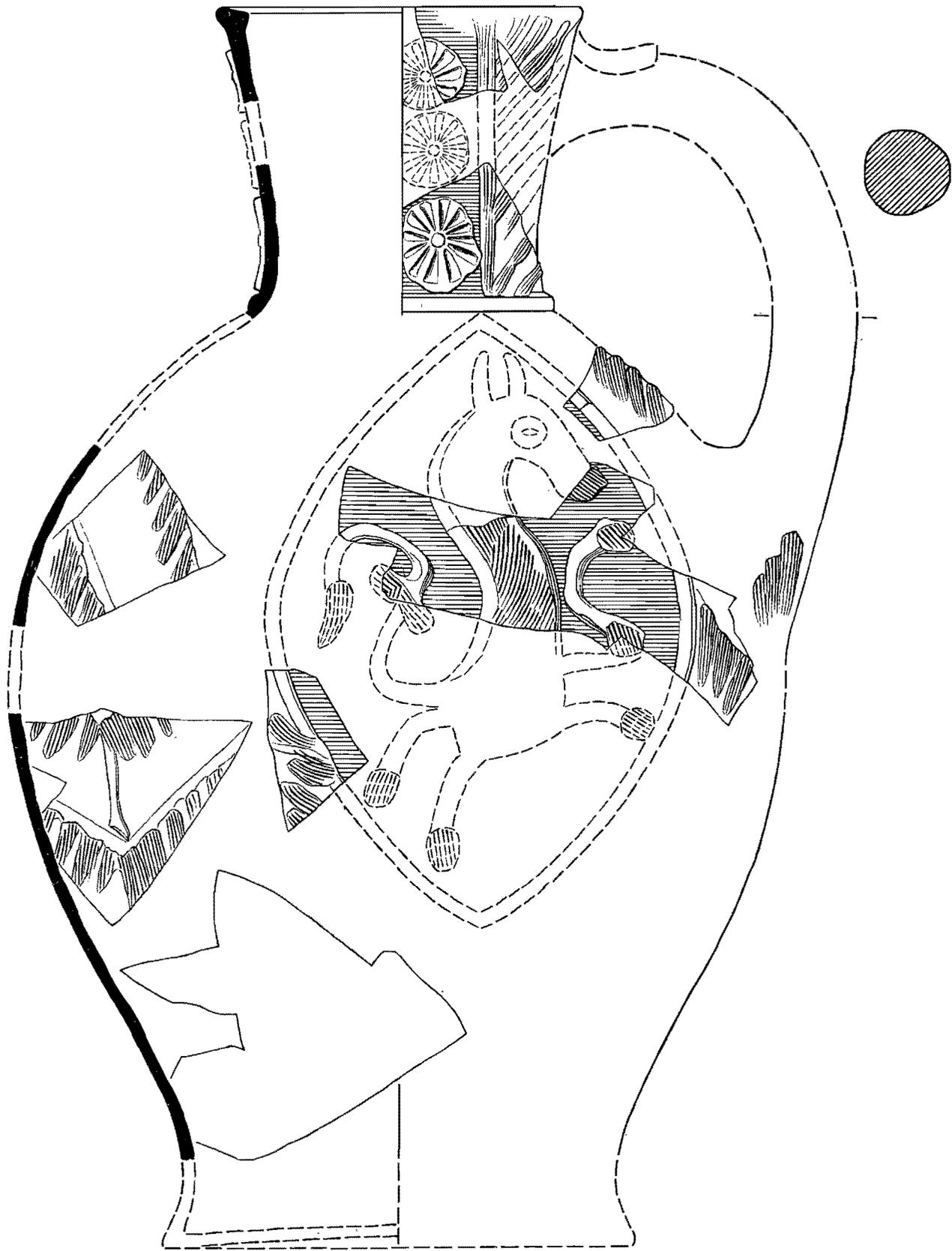


Fig. 30. The French imported jug from Site 2 (Scale $\frac{1}{2}$)

Thus the two imports found in England, at Netherne and Southampton, are additional evidence of zoomorphic decoration on jugs in Normandy and at Paris during the thirteenth century. This panel style existed alongside that of the more numerous jugs with linear or geometric decoration.

SURREY COPIES OF NORMANDY JUGS

For some time it has been recognised that a distinctive type of jug found in London was made in imitation of jugs imported to the City from Normandy.⁸ The shape is more precise and the decoration is more formal and limited in style than usually on London jugs. The applied patterns comprise one or two rows of pellets on the neck and a zone of large chevrons or triangles filled with pellets on the body. The yellow-glazed strips and pellets are set against a background of dark brownish-red slip. In contrast to the prototypes the strips on the London jugs are not rouletted.

A novel addition to this series is the jug found in Cannon Street, near London Bridge (Pl. X), in the British Museum.⁹ Spaced round the body are three large lozenge-shaped panels, each filled by a prancing animal, glazed yellow, with a background of brownish-red slip. Between the panels are two dark green chevrons with broad tool-marks vertically; the upper chevron has a central green strip, ending in red dot-and-circle stamps. On the neck at the side of the handle is a lozenge-shaped panel filled with sloping strips, glazed dark green; the front part of the neck is restored.

The Cannon Street jug is made of buff sandy ware and a source for it at kilns in East Surrey is now accepted. It is obvious that a close relationship exists between the panel and chevron decoration on the jugs from Netherne and London, the content of the panels and the colour scheme. But there are differences in detail; for instance the fine combing on the Netherne jug is more effective than the finger-nail marks on the animal's body and the coarse tooling of the chevrons on the other, and on the London jug small circular stamps are introduced on the animal and a chevron. In general, the technique, finish and glaze of the London jug are inferior to that from Netherne. Moreover, the form of the Surrey-made jug differs in its squat, ovoid shape and the foot-ring pressed out by hand.

The above comparison shows that a remarkably successful effort was made by the Surrey potter to copy the panel style represented on the Netherne jug and there can be little if any difference in date between the two. Thus the Netherne jug is notable in two respects; it is exceptional among the jugs imported to England from Normandy and it provides a new source of inspiration for some of the decorative motifs on pottery in the London region.

APPENDICES

1. **Report on the hones**, by S. E. Ellis, Department of Mineralogy, British Museum (Natural History) (Fig. 18D)

From Site 2

1. Dark slate-grey rectangular fragment of rectangular section, 7 × 2.5 × 1cm.

REFERENCES

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2. *Ibid.*, fig. 4, no. 24.
3. *Ibid.*, fig. 6.
4. Braat, W. C., 'Les fouilles du Donjon du Château de Caen,' *Oudheidkundige Mededelingen*, N.R. **40** (1959), 62-81, fig. 15, II, nos. 18-21; Bouïard, M. de 'La salle dite de l'Echiquier, au Château de Caen,' *Med. Arch.*, **9**(1965), 64-81. Fauverge, Hélène, 'La céramique caennaise du XIII^e siècle', *Annales de Normandie*, **18**(1968), 377-409, figs. 6-7.
5. Braat, *op. cit.* in note 4, fig. 15, II, no. 5.
6. Barton, K. J., 'The medieval pottery of Paris,' *Med. Arch.*, **10** (1966), 59-73, figs. 23-5.
7. Rouen: Barton, *op. cit.* in note 1, fig. 2, nos. 6-8. Paris: Barton, *op. cit.* in note 6, fig. 23, no. 24.
8. London Museum. *Medieval catalogue* (1940), 224, pl. LXIII, 1; Rackham, B., *Medieval English pottery*, 2nd edn., 1972, pls. 78, 79 and 90.
9. British Museum. *Catalogue of English pottery* (1903), 63, B 40, fig. 49; Rackham, *op. cit.* in note 8, colour pl. B.

The Aquamanile (Fig 28: 154)

The Aquamanile was found in Sq. 3-III of Site 2. Six joining sherds of the upper part of the body with part of the pouring-in hole in the back were found, together with the stumps of two hind legs, part of the belly and genitals. The legs were fixed by a dowel passing through a hole in the body. The animal has been restored as a stag after an example in the Victoria and Albert Museum.¹

The fabric is buff sandy ware with a few stone grits with distinct finger-rilling marks on the inside which is light red. The outside is coated with a white slip over which is a dark green glaze, thinner on the under side.

As restored in the drawing the length of the body is 9½ ins (23.6cm) and the total height about 9¼ ins (23.6cm). There is one applied pellet on the back of the neck.

All the sherds were found sealed beneath a chalk floor of Period 2 and can therefore be dated to the third quarter of the thirteenth century.

NOTE

1. No. C. 343-1919 is reported to have been found at Maresfield, Sussex. Unfortunately nothing further is known about it. See also Rackham, B. *Early medieval English pottery*, 2nd ed., 1972 19-20, 24

Slide Very fine grained silty and muddy limestone (calcite mudstone) containing much silt-grit quartz, carbonaceous matter and clay minerals.

Cf. Not matched against any of the types in my review of Saxon and medieval hones: the nearest is IVC(3) based on two hones from

Hamwih attributed to the Purbeck Beds. This stone could be from Purbeck but is more probably from one of the many limestone lenticles in the Weald Clay which outcrop a few miles S. of Netherne (the Wealden and Purbeck are closely related). It is mineralogically similar to samples of those represented in the Geological Museum collection, though much finer grained. (Fig. 18 D.1)

2. Dark purple worn fragment of oval section $4.5 \times 2.8 \times 1.6$ cm.

Slide. Medium grained ferruginous sandstone (carstone) type III B7 of my survey. (Fig. 18 D.2)

Cf. A type abundant in the Lower Greensand (Folkestone Beds) from Kent to Dorset. Outcrops occur within a few miles S. of Netherne. Obviously of local origin.

3. Worn fragment split along one S-plane, of rectangular section, $9 \times 1.7 \times 1.6$ cm.

Slide. A cleavage mullion in mica-quartz-schist. (Fig. 18 D.3)

Cf. It generally resembles the 'schist hones' (Type 1A(1) of my review which are abundant on medieval sites, but is not quite typical; it lacks the necessary calcite, chlorite and biotite found in most of them and is rather finer grained. Nevertheless it is probably from the same source, namely Eidsborg, Telemark, central Southern Norway.

4. Worn fragment, ovoid section $6 \times 1.6 \times 0.9$ cm; no visible schistosity.

Slide. Shows a mullion in lineated mica-quartz-schist, finer grained than the preceding but mineralogically identical with it. (Fig. 18 D.4)

Cf. Also resembles the common schist hones but its finer grain shows a transition from my type 1A(1) to the siliceous phyllites of type 1B(1). Like the last it is probably from Eidsborg.

From Site 3

5. Similar to No. 4. (Fig. 18 D.5).
6, 7 Similar to No. 2. (Fig. 18 D.6 and 7).

2. **Stone mortars** by G.C. Dunning (Fig. 31)

Substantial pieces of two stone mortars were found at Netherne, one each on sites 1 and 3. The first was on Site 1 (dated c. 1250-1270) in a pit together with broken building stones (see p. 6). The second was on Site 3 (the iron-working site), built into the wall at the SE corner of the main room with the hearth (see p. 29); it is thus dated to Period 2, c. 1270-1340.

Both mortars are made of the same stone, which has been identified by Dr. F. W. Anderson, formerly Chief Palaeontologist to the Institute of Geological Sciences. It is Merstham firestone, a soft friable sandstone, greenish grey in the fresh state, and weathering on the surface to light brown. Merstham firestone was formerly quarried from the Upper Greensand deposits in the region of Reigate, and used as a building stone.¹

The finds at Netherne are thus a new source for stone mortars of the medieval period. The evidence agrees with that of other and more major quarries, as in the Isle of Purbeck and at Caen, that mortars were produced in addition to the large-scale supply of building materials.

Mortar 1

Four pieces, comprising the front lug and side of the bowl, the rim and one side handle, the lower part of the other side handle, and a large piece of the lower part of the bowl, with fillet below the lug, and a sector of the base. Sufficient is present for the mortar to be reconstructed completely. The mortar has these dimensions: diameter of bowl, 16.2 ins (41 cm); width across side handles, 22.5 ins (57 cm); and height as restored, 10.7 ins (27 cm).

The bowl is curved in profile, with a slight rounded moulding on the outer side of the rim. The front lug is rectangular in plan, and has a runnel in the top surface, which is an open U in section. The back lug has the same form, but did not have a runnel.

The side handles are massive and solid, and undercut at each side. In profile they have a continuous curve from the rim of the bowl to the base. The handles are splayed at both ends, particularly so at the upper end, and narrowest in width at mid-height.

The outer surface of the bowl has rough tooling. The upper part has five zones of oblique tool-marks, and more haphazard lines on the lower part. At the sides of the fillet below the front lug the surface is tooled in a chevron pattern.

The inside of the bowl has deep tooling or rather grooving. The side is grooved vertically, and on the base are grooves in a radial direction; in depth the grooves reach 0.2 in (5 mm). These closely-set grooves do not result from the cutting out of the inside of the bowl by a chisel, but are deliberate and functional.

Their purpose was to increase the attrition, like the grooves on the grinding surfaces of millstones and rotary querns. Comparable scoring is seldom present on the inside of stone mortars, and only three instances can be quoted, all on mortars of Purbeck marble. Although several mortars in pottery are known, in form copying those of stone, the inside surface is only roughened. An instructive find is a large bowl from Gravesend,² with the side deeply scored vertically and the base partly scored, for use as a grater or mortar.

The outer part of the base is worn down by rotatory grinding with the pestle; the grooving extends across this wear, showing that originally it was much deeper.

The side handles of mortar 1 are also tooled all over. Down the outside the lines are horizontal, and at the sides they pass radially round the curve.

Mortar 2

Eight pieces conjoin to form rather more than half of the circumference of the bowl, and give a complete section from rim to base. The front lug is nearly complete, and both the side handles. The dimensions are: diameter of bowl, 16.7 ins (42.5 cm); width across side handles, 20.2 ins (51 cm); and height, 7.75 ins (19.6 cm).

In profile the bowl has a smooth curve to the base, which does not have any moulding at the edge. The surface of the bowl is quite smooth, and shows no sign of tooling. On the inside the base rises towards the centre; its outer part is worn down by rotatory grinding with the pestle.

The front lug is curved in plan, with a slight shoulder at each side. The runnel is an open U in section, and

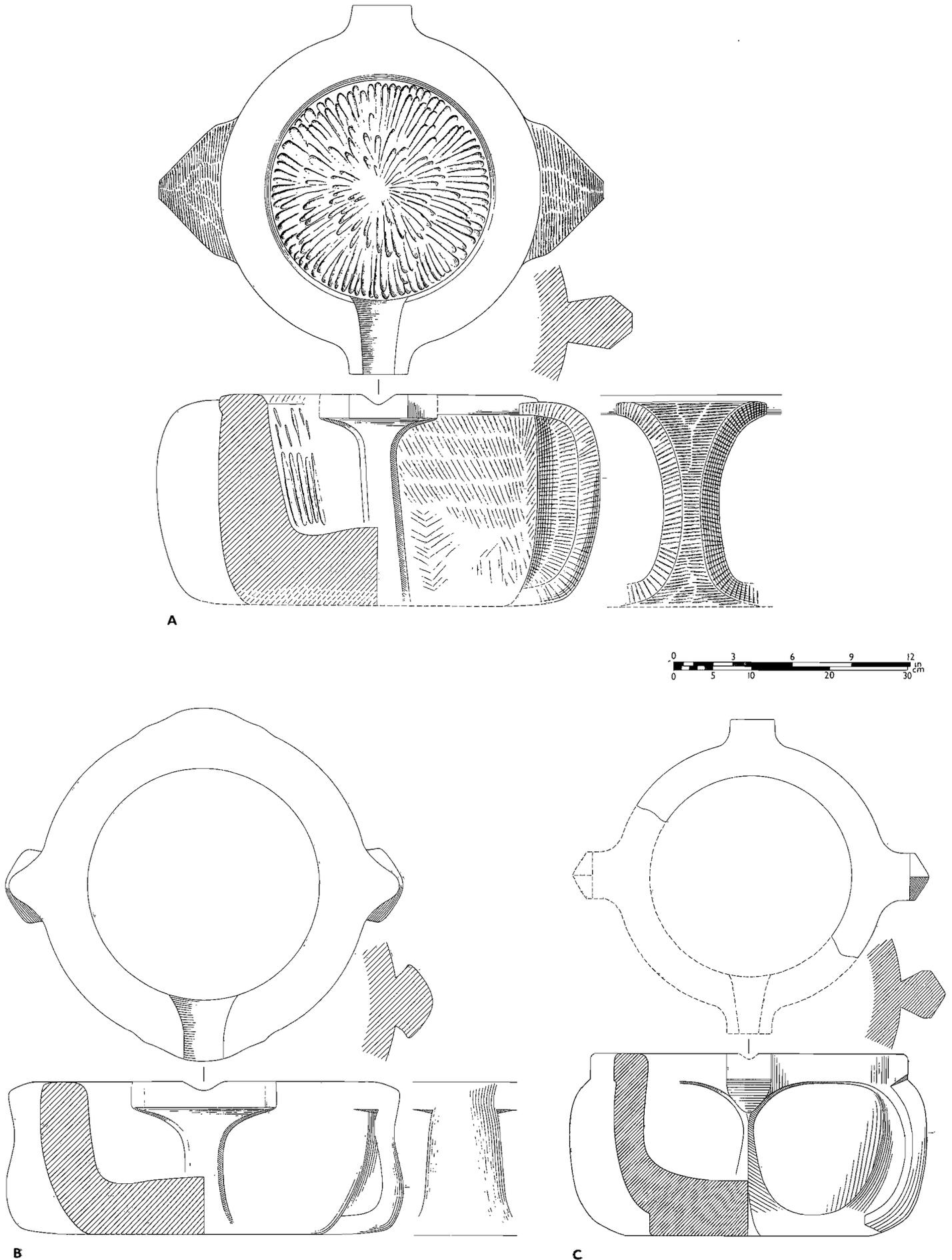


Fig. 31. A. Mortar from Site 1; B. Mortar from Site 3; C. Mortar from Milford St., Salisbury

widens out towards the inside of the bowl. Below the lug is a broad, flat fillet, as on mortar 1.

The side handles are solid and undercut at each side. In profile they have an S curve, with a slight cusp at the upper end; in plan the cusps are peaked. In cross-section the handles are rounded, in contrast to the sharp angularity of the handles on mortar 1.

Discussion

The two mortars from Netherne belong to the same type, with minor differences in detail. The type is defined by having the side handles solid, that is, not pierced by a hole between them and the side of the bowl. The profile of the handles differs on the mortars; on no. 1 they have a continuous curve outwards, while on no. 2 they are recurved, with a cusp at rim-level.

On both mortars the lugs at the front and back are the same in front view, in shape a long rectangle. In plan, the lugs on no. 1 are sharply defined and project well beyond the side of the bowl; on no. 2 they are curved with a slight shoulder at each side. The runnel in the top of the front lug is an open U in section, and splays out towards the inside of the bowl.

Below the lugs on both mortars is a vertical, flat fillet which extends down the bowl to the base; on no. 2 the fillet widens out at the lower end more than on no. 1.

Both mortars show signs of usage on the inside of the base, which is worn down slightly where it turns into the side. This wear results from the rotation of the pestle in grinding; both mortars, then, served the same purpose. The degree of wear is slight, showing that the mortars were in use only a comparatively short time. Had the mortars been used for pounding, the middle part of the base would be worn down, eventually making a hole through the base.³

Both of the Netherne mortars are somewhat larger than usual; the diameter of the bowls is about 3 ins (7.6 cm) greater than on other examples of this type. This excessive size is probably due to the coarse and friable nature of the stone. Even so, the finer details, such as the undercutting of the side handles and the angularity of the lugs on no. 1, have been effected with precision.

Mortars of this type with the side handles solid are known in England in various stones, both imported and insular. In Caen stone imported from Normandy, there are three examples, found at King's Lynn (type 3),⁴ St. Mary's Abbey at York, and Rievaulx Abbey respectively. In France this type is known at Caen itself, and at Rouen and Verdun;⁵ and in Belgium at Malines and at the Abbaye des Dunes, Coxyde, Western Flanders. The stone (or stones) of few of the mortars on the Continent has been identified exactly, though more than one source is likely.

It is probable that the mortars imported from Normandy served as the pattern for the mortars made in England, which have been found mainly in the southern counties and in East Anglia. A mortar from Milford Street, Salisbury (Fig. 31),⁶ in the Salisbury and South Wiltshire Museum, is made of regional glauconitic Upper Greensand, and serves as the type specimen. The base is square, 10 ins (25.4 cm) across, with the angles vertically below the lugs and side handles, which is a constant feature of the mortars imported from Normandy. The circular bases of the Netherne mortars are thus a departure from the usual form of the base.

Another mortar in the south was found at Dureford Abbey, Rogate, Hampshire.⁷ It is recorded by a drawing made by R. G. P. Minty in 1855; the present location of the mortar is not known.

In East Anglia about half a dozen mortars of this type are known, notably from Peas Hill, Cambridge, Linton and Whittlesford.⁸ The lower part of another, built into the wall of a late 13th or early 14th century farm at Thetford, has kindly been brought to my notice by Mr. B. K. Davison. It is made of oolitic limestone. Finally, Miss L. Ketteringham has made drawings of a complete mortar in the porch of Langham church, Leicestershire; this extends the distribution well into the eastern midlands.

Evidently mortars of this type were produced in several regions of England, and made of various stones. The Netherne mortars were made at a new source in east Surrey, and it is satisfactory to have close dating for them at this site.

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4. *Ibid.*
5. Liénard, F. *Archéologie de la Meuse*, 2 (1884), 39, pl. XXII, nos. 3 and 7.
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8. *Proc. Cambridge Antiq. Soc.*, 37 (1937), 47-9.

3. Coal

Six samples of coal were submitted to the National Coal Board for analysis and I am most grateful for Dr. G. J. Pitt's report as follows: (all specimens were examined microscopically and reflectance measurements were taken).

Site 2, Period 2 (specimen 4)

There were no signs of oxidisation or attack from heat in this sample whose reflectance measurements varied from 0.95 to 1.10%. This reflectance represents a volatile content (d.a.f) of between 27 and 31%.

Site 3, Periods 1 and 2 (specimens 1, 2 and 6)

1. The specimen was cut perpendicular to the bedding plane and examination showed no particles of vitrinite present. The main constituent appeared to be carbonaceous shale laminated with fine pyrite and small particles of fusinite. There also appeared to be some heat altered material in the form of coke structure. The specimen was quite porous and no reflectance measurements were possible.

2. This specimen was cut parallel to the bedding plane and was found to consist mainly of vitrinite of a reflectance of 1.03 and 1.10%. There was no evidence of oxidation layers or coke-like structure so it is

probably safe to take the reflectance as that of unaltered coal. It would then correspond with a volatile content (d.a.f) of between 28 and 30%.

6. Very similar to those characteristics of 1, 3 and 5. There were very small particles of vitrinite present in some of the coke pores. These had oxidation rings round them. The reflectance was shown at 1.05% approximately.

Site 3, Period 3 (specimens 3 and 5)

3. Very similar to specimen 1. Further evidence of heat was shown by the presence of a piece of clinker which appeared to be fused on to the carbonaceous shale. No reflectance measurements were possible.

5. Very similar to 1 and 3.

This coal probably came from South Wales or Durham ('sea coal'). Durham as the place of origin seems to be more likely as it would have been logical to use the carts which brought building stone from the Merstham quarries to the Thames for shipment to Windsor and London.

It will be noticed that coal was found throughout the period covered by the life of the manor, i.e. mid-13th century to the beginning of the 15th century, presumably used for forging only, which in the early years was carried on alongside smelting.

4. Miscellaneous soils and sediments by G.Hudson

Site 2

a. Note on decayed plaster along Kitchen Wall K

Analysis on dried material:-

Carbon and Organic Matter	3%
Iron as Fe ₂ O ₃	1%
Acid insoluble as Silica	72%
Calcium as CaCO ₃	24%

Calcium Carbonate (CaCO₃) was determined by Calcium (Ca) - 24.4% and by Carbon dioxide (CO₂) - 23.9%

The fact that the % CaCO₃ by the two methods were in agreement would signify that the Calcium was present in the form of Chalk.

Mortar contained slaked lime (Calcium Hydroxide) when first made. When hardening, the Calcium Hydroxide is slowly converted to Calcium Carbonate (Chalk) by atmospheric Carbon Dioxide. Whether this reaction would have reached completion to the extent of all the lime converting to chalk under the conditions which existed (i.e. being buried out of the atmosphere) is open to conjecture.

b. Note on the black soil from Pit-hearth No. 2, Sq. 2-III, Period 1

Carbon and Organic matter	- 30%
Iron as Fe ₂ O ₃	- 14%
Acid insoluble as Silica	- 52%

Site 3

c. Note on black layer in Sqs. 0-III and 0-IV, Period 2

Results on dried sample.

Carbon and Organic Matter	- 16%
Iron as Fe ₂ O ₃	- 13%
Acid insoluble as Silica	- 66%

d. Note on sample of sediment from the Tank-Period 2

Results on dried sample:

Carbon and organic matter	- 5%
Iron as Fe ₂ O ₃	- 5%
Acid insoluble as Silica	- 87%

e. Note on black soil from inside the furnace in Sq. 0-III, Period 2

Analysis on dried material:-

Carbon and Organic Matter	- 8%
Iron as Fe ₂ O ₃	- 22%
Acid insoluble as Silica	- 67%

5. Attached ventilator finial by G. C. Dunning (Fig. 32; Pl. XI).

The finial and the ridge-tile to which it was attached were found outside the Bath-house of Period 2. Since the assemblage is a structural roof-fitting which belongs to this building, it is dated c. 1270.

Description

The finial and ridge-tile are both made of coarse, grey sandy ware containing sparse flint grits and other inclusions. The outside surface is grey to light brown in patches. The finial is glazed overall; the glaze is green and fairly thick, and covers the whole of the finial and its stem, and a few patches also occur on the sides of the ridge-tile. The surface of the finial is lightly marked by shallow vertical grooves, probably made by the tips of the potter's fingers. Apparently the finial is hand-made, since no rilling marks can be detected on the inside. This surface shows much working and smoothing by fingers, which have made irregularities over most of it.

The finial is of much heavier make than is usual with this type of roof-fitting, many of which were thrown on the wheel. The thickness of the side varies from 0.6 to 0.8 in (13 to 22 mm), and the finial alone weighs about 14 lb (6.3 kg). The quality of the ware and its grit content show that the finial and ridge-tile were made in the locality.

In form the finial is ovoid, about 12 ins (30 cm) high and 10.75 ins (27 cm) in diameter. At the top it passes into a tubular part about 2 ins (5 cm) high and 1.5 ins (3.8 cm) in diameter internally. The body of the finial is pierced by round holes, about 0.7 ins (1.8 cm) in diameter, arranged in two zones; these holes were made from the outside, since their inner ends are burred. One hole remains in the upper series and four holes in the lower, of which three are consecutive and the other diametrically opposite. The hole in the upper zone is vertically above one of those in the lower zone. A horizontally projected plan of all the holes enabled the number in each zone to be determined geometrically. There were four holes in the upper zone and eight in the lower.

On the underside the finial passes in a smooth curve into the hollow stem, oval in cross-section; the structural junction of the two parts is marked by a thickening of the side. The remaining pieces of the stem allow its height to be determined within close limits. The largest pieces give a minimum height; but if it was made any higher than shown in the drawing, it would be inadequate to support the heavy finial. The restoration of this part of the structure may therefore be relied on to within 0.5 ins (1.2 cm). As

reconstructed, the top of the finial stands 18.75 ins (47.5 cm) above the crest of the ridge-tile.

The lower part of the stem widens out all round, and is attached to the summit and sides of the ridge-tile. At the front and back, the base of the stem extends the whole length of the tile, and laterally it reaches nearly to the lower edge of the tile. Thus the stem forms a pyramid, and provides a strong base for the finial.

On the inside surface, the junction between the stem and the ridge-tile is faceted all round by knife-trimming. This reduced the thickness of the joint, and also ensured a smooth surface from the inside of the tile into the hollow stem.

Three large conjoined pieces of the ridge-tile are present, and several loose fragments. Both ends of the tile are fairly complete, and these have the splayed base of the stem in position. The end-pieces of the tile do not meet, but are separated by a gap of about 1 in (2.5 cm). The original length of the tile is determined within close limits by the front-to-back diameter of the stem. It has thus been possible to achieve an accurate reconstruction of the ridge-tile, and to determine its shape and dimensions. In cross-section it is an inverted V, rounded on the top and splayed at the sides. It is 16 ins (40.6 cm) long, 6.3 ins (16 cm) high and 11.75 ins (30 cm) wide at the base. These measurements agree closely with those of the other ridge-tiles from the site. The total height of the structure is 25 ins (63.5 cm); it is thus the tallest known roof-fitting of this type of attached finial, other examples ranging from 15 to 21.5 ins (38 to 54.5 cm) in height.

The assembly of the pieces of the Netherne roof-fitting posed problems of some difficulty. The finial could be put together almost entirely, and the pieces of the ridge-tile placed closely enough in relationship for the drawings to be made. It was not found practicable to arrive at a complete physical restoration of the entire roof-fitting. However, the skilful work and patient efforts undertaken by Mr. J. Theodore Sturge in the Conservation Laboratory of the Institute of Archaeology, University of London, are gratefully acknowledged.

It remains to add that a few pieces of a second ridge-tile, with the base of the stem attached to them, were also found outside the Bath-house. These are sufficient to prove that the roof of this room was furnished with finials at both ends, over the gables. This fact can be deduced from the complete example, since the finial is not placed centrally on the ridge-tile but is 3 ins (7.6 cm) nearer to one end than the other. In this respect it conforms with the other attached ventilator-finials which will be mentioned below.

Discussion

The Netherne finial belongs to one of the main groups of medieval roof-fittings in pottery, both of which are represented by a score or more of examples found in southern England and the west country, and to a lesser extent in the midlands. This large assemblage of finials is divided into two groups, which have two essential features in common, namely the more or less globular body of the finial itself and the narrower part below called the stem. Within this definition, the finials are divided further into two types according to their function. In the first, the finial is closed at the lower end of the stem where it is attached to the ridge-tile; thus the finial was solely ornamental in function. In the second, the stem is open below, but

the body of the finial is not perforated by holes, so that it is still only an ornament. Finials of the latter type, either plain or decorated with knobs, horn-like processes, or the like, form the majority of the finds in southern England. Typical examples are recorded from Portsmouth, Salisbury and Winchester.¹

A different purpose is evident for finials of various types which are known in all the regions of England mentioned above. The feature in common is that the globular body of the finial was pierced before firing by a number of holes, arranged in one or two zones (Fig. 32B, nos. 1-2). Sometimes the finial also has an aperture in its top, larger in size than the holes in the side. Smoke-staining is often present on the inside surface of these finials, showing that they functioned in the removal of smoke from an open hearth in the hall or kitchen,² like the contemporary chimney-pots.³

Another main type of ventilator-finial is not attached to the ridge-tile, but is a separate component which fitted inside an open socket on the tile. This form is known best in Herefordshire and South Wales; the type specimen is from St. Giles's Chapel at Hereford (Fig. 32, no. 3).⁴ These may be simplified versions of separate finials in the midlands, known by two remarkable examples. One is the sub-globular finial with human masks on both sides, from the pottery kiln in Parliament Street, Nottingham.⁵ The second, 19 ins (48 cm) high and the largest of this type, was found in Jordan Well, Coventry (Fig. 32, no. 4). Both finials have an aperture in the top, but in addition that from Coventry has holes in the body in two zones, and the hole in the top is provided with a tubular extension about 4.5 ins (11.5 cm) high.

Fewer separate finials are known in the southern counties, where the attached type was prevalent. In fact, only three, from sites widely apart, can be mentioned. Pieces of a separate finial, together with its socket on the ridge-tile, were found recently by Mr. Jon Fairbrother in excavating the manor house of the shrunken village at Nethernton, in north-west Hampshire.⁶ A globular finial with open top and narrow stem, in form closely matched by one found in Cheap-side, London,⁷ comes from the excavations in Southampton.⁸

The last finial of this type and the most decorative of all those discussed here is, surprisingly, from East Sussex. It was found by Mr. David Martin at the manor house of Glottenham, near Robertsbridge (Fig. 32, no. 5).⁹ The body of the finial is of flattened spherical form; above the bulge is a circle of six large holes, surrounding a central hole in the top. The remarkable feature of this finial is the three pendants hanging down from the bulge, each expanded at the end into a four-lobed ornament. Although a few finials elsewhere in southern England have three horns in this position, these are much smaller and plain.¹⁰ It is likely that the pendants on the Glottenham finial are an elaboration of such horns, possibly influenced by the floral enrichment of architecture.

Distribution

On the maps (Fig. 33) are plotted the find-spots of roof-finials, both attached to the ridge-tile and separate fittings, to which the Netherne example is related. Those which were ventilators are marked by an additional symbol. As an attached finial, the closest analogues for the form of the Netherne finial are in Hampshire and Wiltshire, as referred to above.

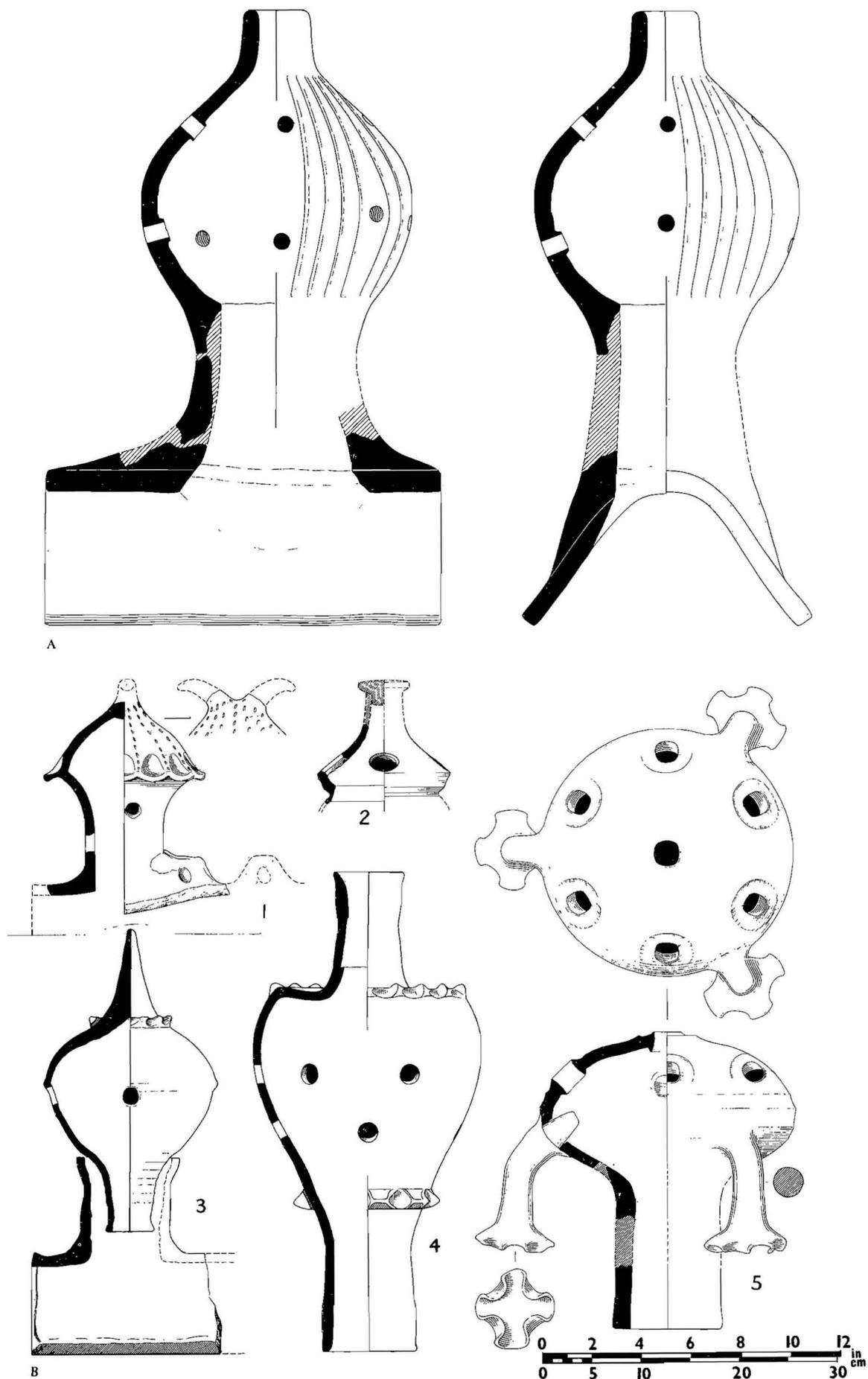


Fig. 32. A. Attached ventilation-finial from Site 2; B. Attached and separate ventilator-finials: 1, Castle Street, Cirencester; 2, Sherborne Castle, Dorset; 3, St. Giles's Chapel, Hereford; 4, Jordan Well, Coventry; 5, Glottenham moated site, Mountfield, East Sussex (18%)

The majority of these are simply decorative adjuncts to the roof, and did not function as ventilators. However, that from Cirencester (Fig. 32B, no. 1) and part of another from Sherborne Castle, Dorset (Fig. 32B, no. 2) are perforated by holes and so belonged to this category. An outlier of the few ventilator-finials in the southern counties is one found in the Midlands at Bedford.¹¹

Numerically, most of the finials of the ventilator type are separate fittings, and these occur in two regions, the first being further north in the midlands, at Coventry (Fig. 32B, no. 4) and Nottingham. The second group is apparently derived from the other, and is represented by several finials in Herefordshire (Fig. 32B, no. 3) and South Wales.

As yet isolated in East Sussex, and not easy to relate in any way to either of these groups, is the decorated separate finial from Glottenham in East Sussex (Fig. 32B, no. 5). This discontinuity in the occurrence of separate finials, in contrast to the regional coherence of attached finials, well illustrates one of the problems involved in the study of medieval roof-fittings in pottery.

The above recension of the evidence relating to ventilator and other types of finials, as regards their typology and distribution, serves to place the Netherne finial in the wider context of these fittings. The large opening in the ridge-tile and the corresponding size of the stem would facilitate the passage upward of steam-laden air from the bath-house, and the apertures in the finial would be adequate for the exit of the steamy air to the outside. It should be pointed out that roof-fittings of this design have seldom been found under conditions which enable them to be related to a particular room or building on a medieval site. In this respect, the certainty that at Netherne the ventilator-finial formed an integral part of the structure of the bath-house is worth emphasizing.

Contemporary illustrations of medieval bath-houses show that these were small buildings or even a tent, suitable for only one or two persons. Two such drawings in illuminated MSS, both Flemish of the early 14th century, namely *The Romance of Alexander* and a *Psalter and Hours*, depict free-standing bath-houses with tiled roofs and globular finials on the gable-end.¹² (Pl. XII B). The probability is that these finials were ventilators, and it is interesting to note that comparable roof-fittings have been found at Aardenburg, Zeeland, in the adjacent part of the Netherlands.¹³

Other types of roof-ventilators

Finials of this special design are not the only roof-fittings in pottery which acted as ventilators, and the two other forms should be mentioned. In the position and size of the holes, the closest analogies for the finials are the conical chimney-pots.¹⁴ These are most numerous on 13th-century sites in Sussex (hence the name 'Sussex type') and Hampshire. The concentration of finds in the counties south of the Thames probably explains the paucity of ventilator-finials in this region. The distribution of chimney-pots, though more sporadic, extends into East Anglia and as far north as the southern Midlands.¹⁵

Finally, the largest and in construction the most complex form of ventilator is the pottery louver. The apertures are arranged in tiers, ranging from one to as many as four in number, and usually the openings are covered by a canopy or hood.¹⁶ Louvers are the most widely distributed of all the types of ventilator in this country, and are known from the greater part of England as far as the northern midlands. Thus their incidence overlaps and includes the regions in which the other roof-ventilators are localised. In date they cover a longer span than the simpler forms of ventilator mentioned above, and range from about the middle of the 13th century down to the late 14th or early 15th century.

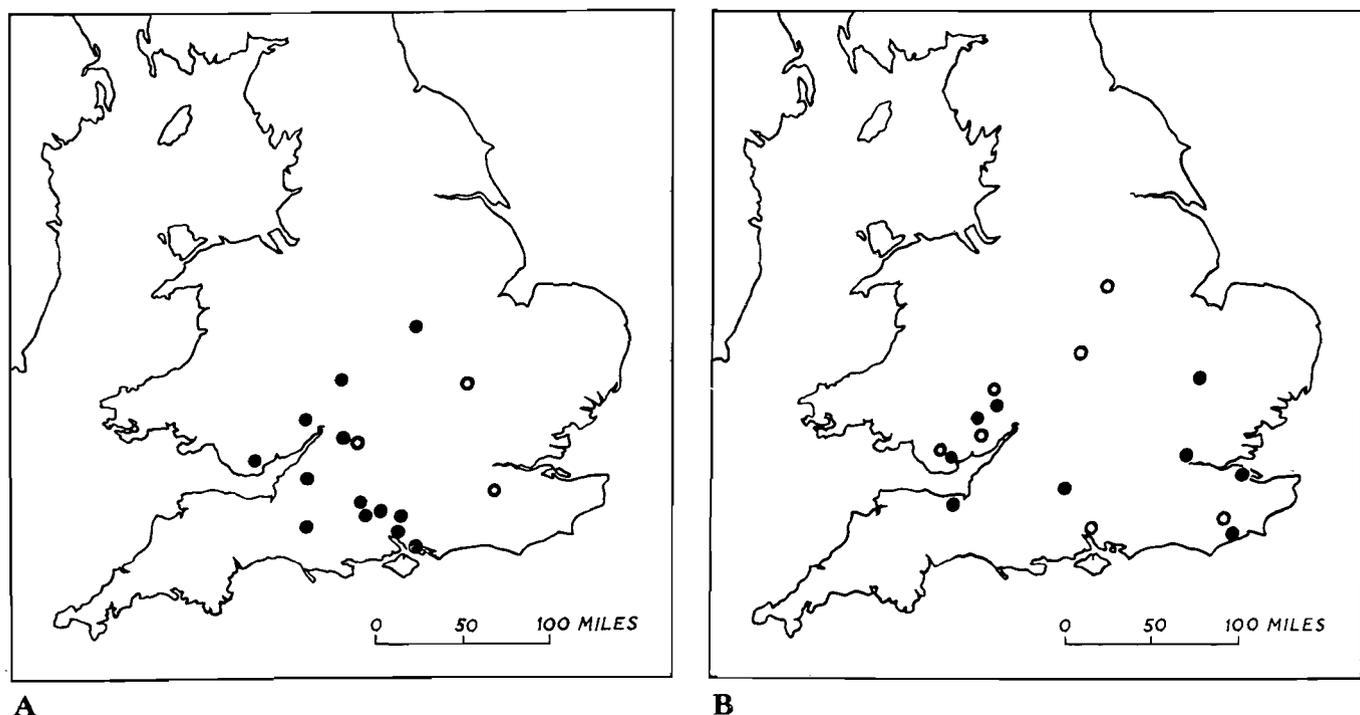


Fig. 33. A. Distribution map of attached finials. Open dots: ventilator-finials
B. Distribution map of separate finials. Open dots: ventilator-finials

Dynamics

The design of all the forms of roof-ventilator embodies the same principles of fluid dynamics, which were well understood in the medieval period. These principles may be stated as follows.

1. To increase the velocity of ascent of the smoke or steam by reducing the cross-sectional area of the outlet.
2. To minimize the effect of down-draught by reducing the area acted on by the wind.
3. To promote up-draught by lowering the pressure inside the upper part of the structure.

The first requirement was met by making the form of the structure conical or tapering, that is, its diameter decreased from below upwards. The second condition was met by having a comparatively small hole in the top, although this is not always present. The third requirement was met by providing a number of small holes in the side of the structure. These are least, only two, in the chimney-pots and greatest in the louvers, in which there may be from two to as many as twenty-six apertures.

In practice, the application of the three factors varied in emphasis, and this resulted in the considerable range in the forms and styles that make roof-ventilators so attractive in themselves and to study.

The first and third factors are the most important in governing the design of ventilators, and can now be explained in scientific terms. The higher temperature and less density of the smoke or steamy air in relation to the surrounding air in the room caused it to ascend into the roof and pass into the inside of the ventilator. The removal of this polluted air was effected by means of the holes or apertures in the side and top. The pressure inside the structure was lowered in accordance with the Venturi effect, that is, by the wind outside the roof flowing across the holes and not into them, and thus extracting the air within by suction.¹⁷ In order that the ventilator could operate in winds from any direction, the holes were arranged diametrically opposite each other, either in pairs or multiples thereof.

In conclusion, it may be added that ventilators of the various types discussed were placed on the roofs of buildings at all levels of medieval society. Chimney-pots, the simplest to make, would be the cheapest, and are known on upland farmsteads and a few manor houses and castles, as well as from the crowded dwellings in towns such as Lewes, Chichester and Winchester. Ventilator-finials and louvers evidently belonged to more substantial buildings, the larger manor houses, stone-built town houses, and castles, and are more frequent in the towns, such as London, Winchester, Southampton, Coventry and Nottingham.

Notes and References

1. *Proc. Hampshire Field Club*, 25 (1968), 95-101, fig. 29, fig. 31, nos. 1-3 and fig. 32.
2. For examples of open fireplaces in these rooms see Le Patourel, H. E. Jean *The Moated sites of Yorkshire* (Society for Medieval Archaeology. Mon. Ser., 5) 1973, 27-31, figs. 11-15 and p. 60, fig. 26.
3. Dunning, G. C. 'Medieval chimney-pots,' in *Studies in Building History* (E. M. Jope ed.) 1961, 78-93.

4. *Trans. Woolhope Naturalists' Field Club*, 1927, 102; Plan in RCHM, *Herefordshire*, 1, 130.
5. Rackham, B. *Medieval English pottery*, 2nd ed., 1972, pl. 14.
6. Information from Mr. Jon Fairbrother. For the site see Fairbrother, Jon. *Excavations at Neltherton, Hampshire in 1972-1974* (City of London Archaeol. Soc.).
7. *Op. cit.* in note 1, 98, fig. 31, no. 4. The moulded stem of a finial of precisely this type was found at the pottery kilns at Bohemia, Hastings; *Sx A C*, 12 (1860), 268.
8. *Excavations in medieval Southampton, 1953-1969* (C. P. S. Platt and R. Coleman-Smith eds.) 1975, 2, 186, fig. 214, no. 1405.
9. Information from Mr. David Martin, who kindly permits the drawing to be published in advance of his report.
10. *Op. cit.* in note 1, 95-8, fig. 29 and fig. 31, nos. 1 and 4.
11. *Bedfordshire Archaeol. J.* 5 (1970), 86, fig. 10.
12. Randall, Lilian M. C. *Images in the margins of Gothic manuscripts*, 1966, pl. LXXXIII, nos. 392-3, 3.
13. *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek*. Jaargang 18 (1968), 211-2, figs. 2-3.
14. Dunning, *Op. cit.* in note 3.
15. *Op. cit.* in note 11, 86-9, and distribution map, fig. 12b.
16. *Ant. J.*, 52 (1970), 348-9, with references.
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6. **Analysis of Iron Ore** (Site 3, Sq. III-0) carried out by R. T. Andrew, Chief Analyst, Central Materials Laboratory, Mullard & Mitcham Ltd., Mitcham, Sy.

(Spectrographic)

		Wt. %
Major	Fe ₂ O ₃	59.2
	SiO ₂	3.0
	MnO	8.3
	CO ₂	10.5
	H ₂ O	11.5
Impurities	Ni	
Traces	Cu, V, Al, Sn, Na.	

7. **Iron objects** by Ian H. Goodall (Figs. 34-36)

Site 2

Note: It was not usually possible to tell from which period these objects were derived, but where this was possible it is indicated.

1. Pivot for gate in boundary wall G. The rectangular sectioned part was set in the ground, leaving exposed that part of circular section which fitted into a socket in the hanging stile of the gate. A dog-leg-shaped pivot with a rectangular sectioned tang for insertion in the ground, separated from the circular sectioned guide arm by a horizontal bar, is known

from Rievaulx Abbey, North Yorkshire (West Riding, Yorkshire).¹

2, 3. Hinge pivots with rounded guide arms and flat tangs bent down at the end. This type was set with lead in a mortice in masonry: three other medieval examples come from Berry Court, Cornwall.² (Period 2).

4. Latch rest, tang incomplete. A slightly more elaborate rest, with lead caulking on its tang, is known from Winchester.³

5-7. Hinges, no. 5 complete, no. 6 a similarly sized, recurved pivoting end, and no. 7 an incomplete C-shaped hinge with a closed loop to fit over the hinge pivot. A small strap hinge not unlike no. 5, but with a closed pivoting loop, is known from Griff Manor House, Warwickshire.⁴ (Nos. 5 and 7, Period 2.)

8. Window bar, broken at one end. Such bars may have been used alone, or have fitted through the eye of bars such as those from Griff Manor House, Warwickshire or Kirkcudbright Castle, Dumfries and Galloway (Kirkcudbrightshire).⁵

9, 10. Knives, blades and whittle tangs incomplete, the cutting edge of no. 10 sharpened.

11. Hammer head, claws and hexagonal sectioned butt incomplete, part of wooden shaft, held tightly in the downward expanding hole by a nail, preserved.

12. Spoon bit with bit set at slight angle to tang, which tapers gently to upper, broken end. There is no indication of the flattened, lozenge-shaped terminal usually found on these bits, as on two from Clough Castle, Co. Down.⁶ (Period 2.)

13. Sickle, tang and narrow blade incomplete. Medieval sickles are not uncommon: cf. examples from Writtle, Essex and Hangleton, West Sussex (Sussex).⁷

14, 15. Socketed arrowheads of differing types.

16. Incomplete support, not unlike a more substantial beam stirrup which held together two members which crossed at right angles. Both ends of no. 16 are broken, but the straight arm bends at right angles to the curved length.

17, 18. Two incomplete, U-shaped staples. (Period 2.)

19, 20. Chain links, one broken and distorted. (No. 20, Period 2.)

21. D-shaped buckle frame, pin missing.

22. Looped bar, incomplete.

23. Rowel spur, note by Blanche Ellis. Overall length approximately 150 mm. Length neck 47.5 mm. Span uncertain, sides compressed. Sides deeply curved under ankles forming point, though not a crest, at junction with straight neck which projects slightly downwards. Badly corroded; attachments for leathers rusted into terminals are now unclear. Rowel: two complete points, probably originally seven. General form of spur shown on monumental effigies and brasses of last three-quarters of 14th century, site occupied *c.* 1220-*c.* 1350, spur dates second quarter of 14th century.

24. Horseshoe arm with countersunk nailholes, slightly sinuous outline and thickened calkin. (Period 2.)

25. Slender horseshoe. (Period 2.)

26. Horseshoe nail with trapezoidal head expanding in side view. (Period 2.)

Site 3

Note: as with Site 2, it is almost impossible to state with certainty which of the two later levels these objects came from. There was no more than six inches of soil between the surface and the bottom of Period 2, and this soil had been disturbed throughout. The time spanned about one hundred and thirty years between *c.* 1270 and 1400.

27-30. Keys, no. 27 with hollow stem, others solid. All have been X-radiographed. No. 27 was shown to have a bit of differing thicknesses, and nos. 29 and 30 to have non-ferrous plating. No. 29 was seen to have a moulding at the head of the stem and two incised decorative lines just below it.

31. The most complete of three similarly sized hinge pivots with tapering tangs for insertion in wood.

32. Latch rest, tang incomplete.

33, 34. Incomplete hinges with closed and recurved pivot loop respectively.

35, 36. Knives, blades and whittle tang of no. 35 incomplete.

37. Wedge.

38. Punch, rounded section stem becoming rectangular. Compare an example from Seacourt, Oxfordshire (Berkshire).⁸

39. Spoon bit, stem incomplete.

40. Circular sectioned awl with flattened plate in tang to prevent it turning in the handle.

41. Rectangular sectioned reamer, similar to one from the late 14th, early 15th century smithy at Goltho, Lincolnshire.⁹

42. Candleholder with short tang.

43. Eyed hook.

44. Suspension loop with adjustment plate.

45. Gate fastener, probably of recent date.

46. Incomplete link.

47, 48. Rings, no. 48 one of two held by loop staples.

49. One of four perforated plates found together.

50. Collar with internal flange.

51. Heart-shaped handle with support loop. Similarly shaped handles occur on chafing dishes and furniture.¹⁰

52. Rectangular framed buckle with swivelling baluster bar, comparable with one from Brandon Castle, Warwickshire.¹¹

53. Swivel bar from buckle with groove in which pin rested. Cf. no. 52 and an example from Upton, Gloucestershire.¹²

54. Socketed arrowhead.

55. Rowel-spur body fragment consisting of part of each side, bold pointed crest over junction with fairly long, straight neck. Overall length 113 mm. Rowel and rowel box missing except for indentation at end of neck. Early 15th century date indicated by length of neck, presence of crest and abandonment of site *c.* 1405. Sides unusually straight for period. Probably product of site.

Small, corroded piece of iron found close by may be part of spur.

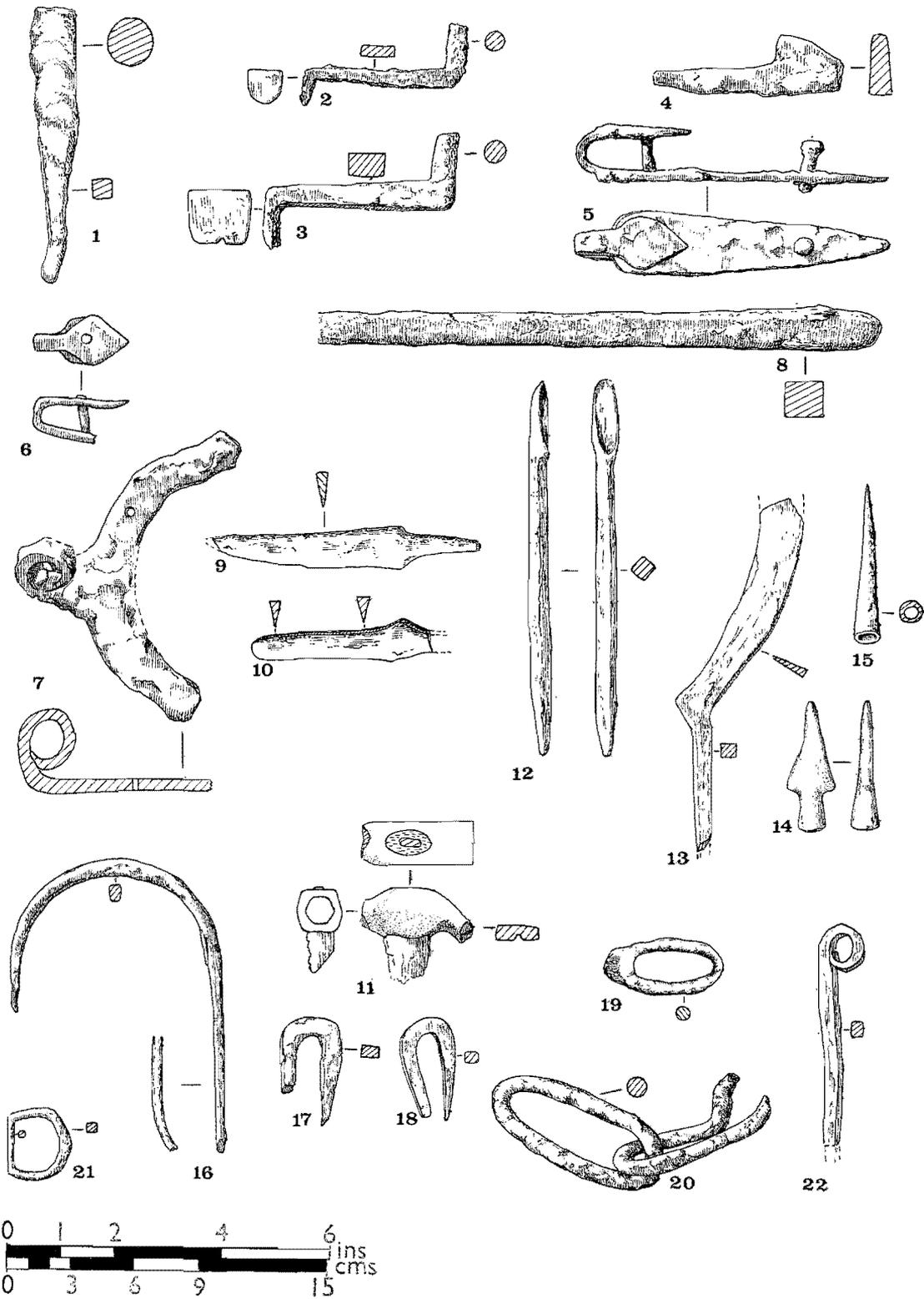


Fig. 34. Iron objects.

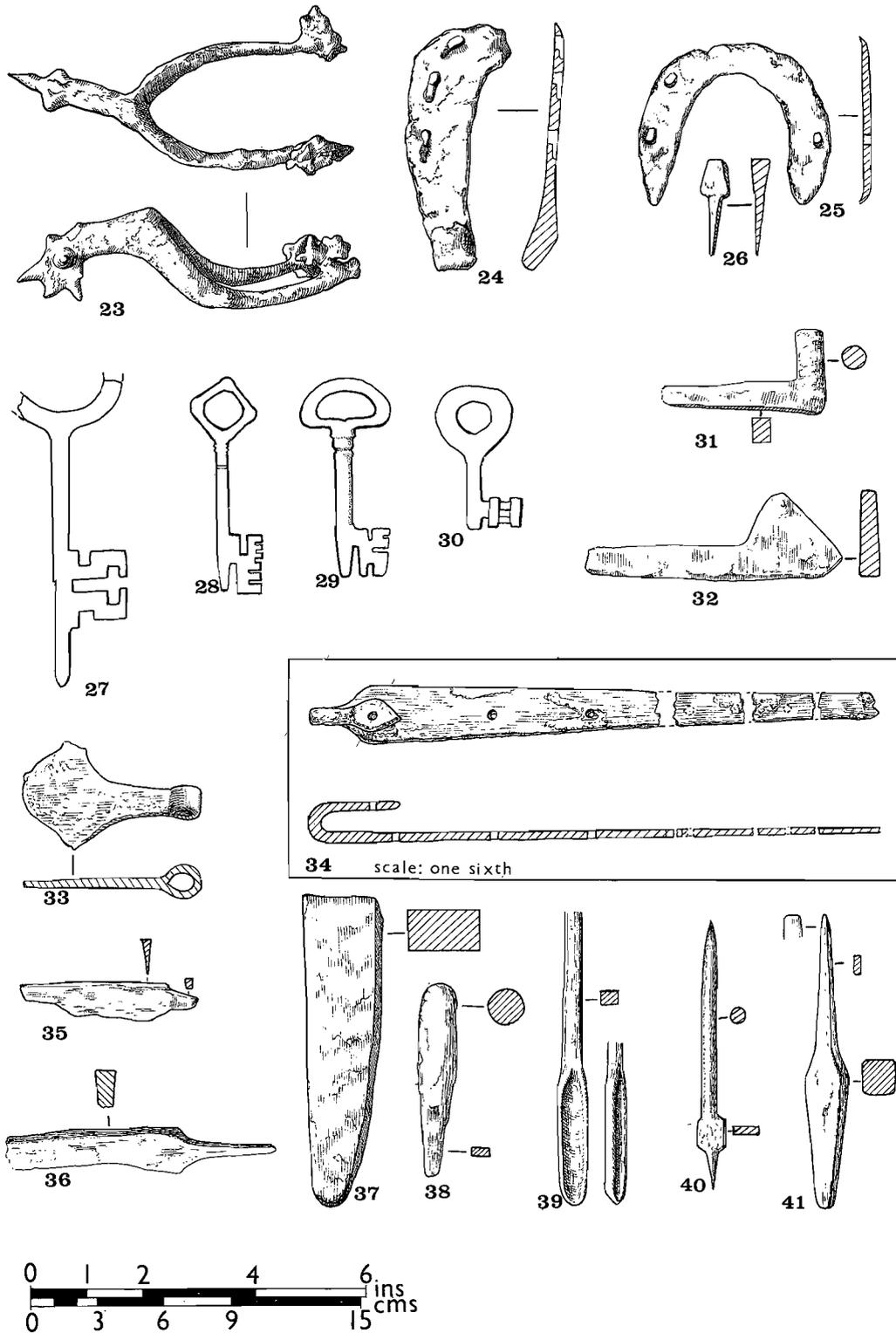


Fig. 35. Iron objects.

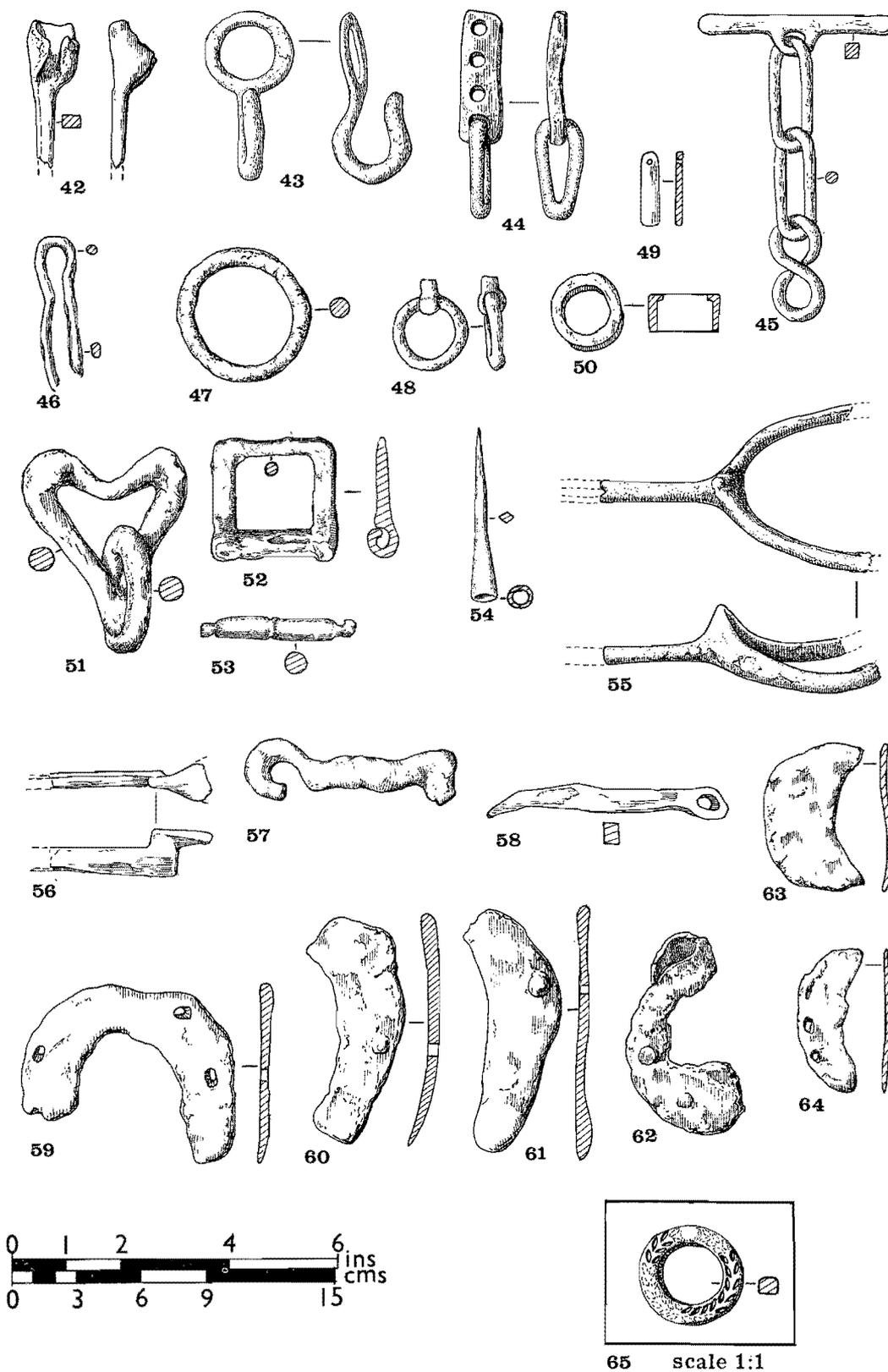


Fig. 36. Iron objects.

56. Object with flattened terminal and incomplete blade. Possibly part of a latch lifter. (Period 3.)
57. Link from mouthpiece of bridle bit.¹³ (Period 2.)
58. Looped bar, incomplete.
- 59-61. Typical horseshoes with plain outlines.
- 62-64. Oxshoes, no. 62, one of two of similar size, retains its clip. (Period 3.)
65. Square sectioned ring with apparent decoration on one face. John Cherry suggests that it may have been plated with tin to give it a bright finish. (Period 3.)

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1. Department of the Environment collection.
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3. Cunliffe, B. *Winchester excavations 1949-1960*, Vol. I, 1964, 154, fig. 54. 2
4. West, S. E. 'Griff Manor House (Sudeley Castle), Warwickshire', *J. Brit. Archaeol. Assn.*, **31** (1968), 87, fig. 4. 7.
5. *Ibid.*, 87, fig. 4. 9; Dunning, G. C., Hodges, H. W. M., and Jope, E. M. 'Kirkcudbright Castle, its pottery and ironwork', *Proc. Soc. Antiq. Scotland*, **91** (1957-58), 138, fig. 7. 3.
6. Waterman, D. M. 'Excavations at Clough Castle, Co. Down', *Ulster J. Archaeol.* **17** (1954), 135-37, fig. 11. 1, 2.
7. Rahtz, P. A. *Excavations at King John's Hunting Lodge, Writtle, Essex, 1955-57* (Soc. for Med. Archaeol., Monograph Ser. no. 3, 1969), 87, fig. 48. 81, 82; Holden, E. W. 'Excavations at the Deserted Medieval Village of Hangleton, Pt. I', *Sx A C*, **101** (1963), 171, fig. 37. 7, 8.
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13. *London Museum Medieval Catalogue* (1967 ed.), 81.

Nails by L. Ketteringham. (Fig. 37)

One advantage of a site upon which no subsequent building has taken place is that all objects are datable to the occupation of the site, including nails which are so often difficult to date from other medieval sites where later building may have introduced intrusions.

A chart was therefore kept of all nails and their provinces from Site 2.

A total of 161 nails were found and are categorised as follows:—

From the Hall area:		From Wall W.:	
inches	millimetres	number	number
3½	89	2	
3	76	1	
2¾	70	2	
2½	63	1	4
2¼	57	2	
2	51	8	5
1¾	44	8	
1½	38	60	4
1¼	32	34	
1	24	14	5
horseshoe		11	
		143	18

Nails which were obviously broken are not included in this table.

In addition there was one large stud with a 1¼ in (3 cm) square head, length of shank unknown (Fig. 37:1.) and one pyramid headed nail (Fig. 37:2), both of which came from the vicinity of the west door into the Undercroft and may have belonged to that door.

Most of the numerous 1½ in and 1¼ in nails came from the area between the north wall of the Hall and the south extension of the Kitchen. This may indicate that the Kitchen extension wall, which had very narrow footings, consisted only of a light slatting, or they may have come from the laths of the kitchen roof, though this is not so likely as they were not found in such numbers where other tiled roofs had collapsed. Six of the horseshoe nails were found close to the walls of the Kitchen and two more were inside it.

From Site 3 only the larger nails were kept and these included:—

Fig. 37:3 a large headed, square shanked nail at least 5 in (12.7 cm) long (total length unknown) with a 2¼ in (5.7 cm) square head. This was found by the east wall of the Hearth House.

Fig. 37:4 a heavy nail with a round shank 2¼ in (5.7 cm) long and a 1½ in (3.8 cm) square domed head.

Fig. 37:5 a thick 3 in (7.6 cm) nail with a rectangular shank and head 1½ by ½ in (3.8 by 1.2 cm).

Fig. 37:6 a 2¼ in (5.7 cm) nail with a square shank and a round head 1 in (2.5 cm) diam.

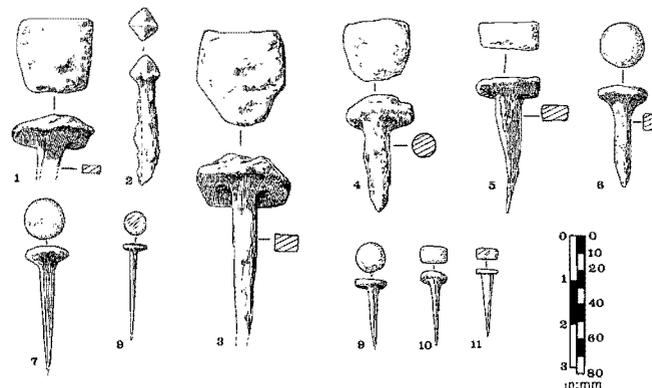


Fig. 37. Nails

8. **Fragment of Copper Alloy** (Site 3 Sq. III-1) by H. W. M. Hodges, Institute of Archaeology, University of London.

Semi-micro methods of analysis showed this fragment to be an alloy of copper with tin and zinc. No lead was detected. The metal had the outward appearance of being a spill from a casting process and it was, therefore, sectioned for metallographic examination. This showed an excessively porous metal, best described as blister metal. The metal would have required heavy poling before it could have been used for casting. (Pl. XIV)

9. **Copper Alloy Objects** by Ian H. Goodall (Fig. 38)

1-3. Strap-ends, no. 1 with forked core and triangular incised decoration on one plate. Nos. 2 and 3 have only a single rivet, but no. 2 has an inner spacing-plate and has lost its terminal. No. 1 is similar to an example from Hangleton, West Sussex.¹ All from Site 2, no. 1 from beneath the dais in the Hall.

4, 4a. Crescentic forked core with acorn terminal and damaged oval plate found within three feet of each other and probably from the same strap-end. The second side plate is missing. Brian Spencer notes that the somewhat clumsy method

of assembling the component parts by soldering them together is characteristic of a distinctive and comparatively large group of rectangular buckle plates and tags for straps and narrow belts. These almost invariably have the cut-away opening, arched or ogival, on the top edge and in some cases the strap-ends also have the acorn terminal. The circular form represented by this example may belong to the end of the 14th century. Site 3.

5-8. Strap-end buckles and plates. No. 5 lacks its pin, although a single rivet holds a fragment of the leather strap, and no. 6 is a buckle frame without its former fittings. Nos. 7 and 8 are the distorted plates of strap-ends which did not have pinned buckles: instead a stud on the opposing belt end located in the frame. No. 7 was double riveted and is decorated on one face with a border of criss-cross lines, whilst no. 8 has a dome-headed rivet which passed through eccentrically-placed holes. Nos. 7 and 8 may be compared with examples from Hambleton Moat, Lincolnshire and St. Neots Priory, Hunts. and with a stud attachment from the Thames at London.² Nos. 5 and 8 from Site 3, others from Site 2.

9. Rectangular buckle. Site 3.

10. Frame of circular brooch, cf. examples from London.³ Site 3.

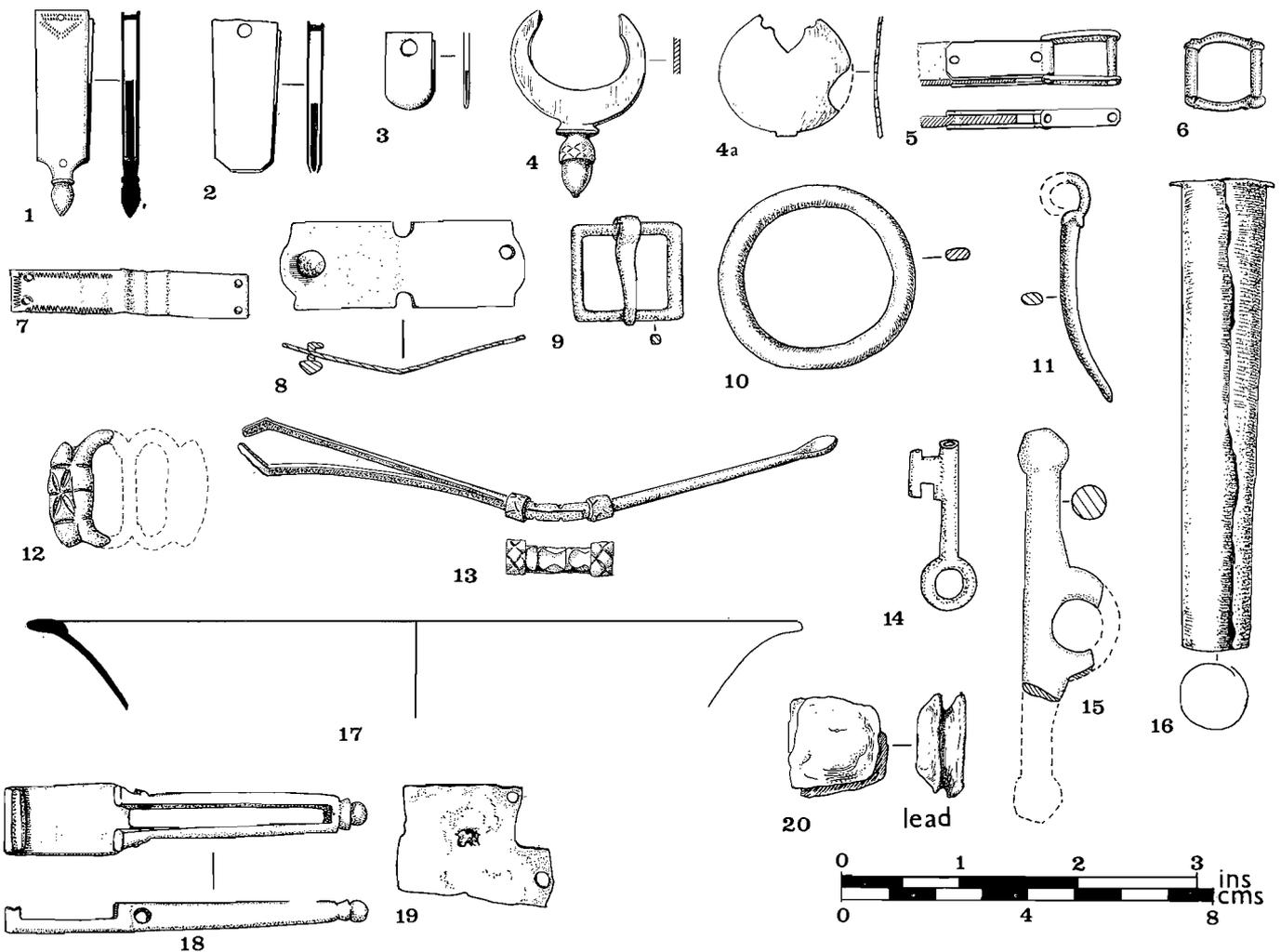


Fig. 38. Copper alloy objects.

11. Buckle or brooch pin, loop incomplete. Site 3.
12. Fragment of decorated double buckle frame, not unlike one from London.⁴ Site 2.
13. Toilet instrument combining tweezers and scoop joined by a decorated clamp. Tweezers are more commonly found without any other attachment, compare a pair from Shifnal, Salop (Shropshire).⁵ Site 2.
14. Key with ring bow and hollow stem. Site 2.
15. Incomplete cheekpiece from a bridle bit.⁶ Site 2.
16. Gently tapering tube with flange at broader end, formed by wrapping sheet metal round and overlapping it. Though rather slight to be from bellows, the tube may be a funnel, a use suggested for a similar object from Cambokeels, Co. Durham.⁷ Site 3.
17. Fragment of skillet rim, 330 mm. diameter. Site 3.
18. Tray and beam of coin-checking balance, 73 mm. long. See Appendix 10. From beneath Solar Undercroft floor, Site 2.
19. Possible patch with two rivet holes. Site 2.

LEAD OBJECT

20. Plug like others used to repair holes in pottery vessels. Site 2.

References

1. Hurst, J. G. and D. G. 'Excavations at the Deserted Medieval Village of Hangleton. Part II', *Sx A C*, **102** (1964), 135, fig. 13. 2.
2. Butler, L. A. S. 'Hambleton Moat, Lincolnshire', *J. Brit. Arch. Assn.*, **26** (1963), 65, fig. 13. C; Tebbutt, C. F. 'St. Neots Priory', *Proc. Cambridge Ant. Soc.*, **59** (1966), 53, fig. 5f; *London Museum Medieval Catalogue* (1967 ed.), 268-9, fig. 85. 3.
3. *London Museum Medieval Catalogue* (1967 ed.), 274-6, pl. LXXVII. 1, 2.
4. *Ibid.* 279, pl. LXXVII. 10.
5. Barker, P. A. 'Excavation of the moated site at Shifnal, Shropshire, 1962', *Trans. Shrops. Arch. Soc.*, **57** Pt. 3 (1964), 204, fig. 44. M1.
6. *Op. cit.* in Note 3, 80. fig. 19a. C, fig. 21. 1
7. Hildyard, E. J. W. and Charlton, J. 'A medieval site in Weardale', *Arch. Aeliana*, Ser. 4. 25 (1947) 195, fig. 3. 12, amplified in E. J. W. Hildyard, 'Further excavations at Cambokeels in Weardale', *Arch. Aeliana*, Ser. 4. 27 (1949), 193.
10. **The Thirteenth Century Trebuchet-Type Coin Balance** (Site 2, Period 1) by M. Dolley & L. Ketteringham (Fig. 38. 18; Pl. XIII)

Perhaps the most intriguing of all the objects discovered in the excavation is that drawn at Fig 35:17. It is a beam of bronze with a length of 75mm, a breadth of 8mm and a depth of 4.5mm. For approximately 43mm of its length there runs a slot and in the sides of this are two opposing holes obviously designed to accommodate a pin or axle. This pin is missing and with it the pillar on which the beam was clearly intended to pivot, which may be supposed to have folded back into the slot when the device was not

in use. The shorter arm of the beam obviously constitutes some sort of platform, the lip at the extremity being accompanied by a clearly defined shelf, while the vertical terminals of twin flanges adjoining the pivot seem designed to prevent the object seated on the platform approaching too closely to the point of suspension. Restoration of the pin and pillar (Pl. XIIIa) leaves little room for doubt as to the object's function. The device was found in a context closely dated to the period c. 1250-1270. beneath the Period 2 floor of the Solar (Site 2) and if an unclipped English Long-Cross penny current from 1247 to 1279 is laid on the platform it will be found to sit on the flange while the beam takes up a horizontal position. What we have in fact is a hitherto unpublished but entirely predictable type of 13th century coin-balance. A portion of the beam of what may be supposed to have been a comparable instrument was found by Professor Martyn Jope, in a war-time rescue excavation at Pembroke College, Oxford, but the context was unstratified and pending the discovery of a more complete example the object could not be identified.¹

On later analogies the lower end of the pillar can be shown to have terminated in a spike and the accompanying sketch shows the manner of the object's use (Pl. XIIIb). With such an instrument the owner of coin could very rapidly determine whether or not a given penny measured up to the legal requirement where its weight was concerned. Already in the sixth century balances of this description had been employed in Byzantine Egypt.² and the principle was re-discovered at the beginning of the 19th century and adapted to brass sovereign and half-sovereign balances small enough to be carried in the pocket. From the later middle ages, though, we know of only three parallels, all apparently of slightly later date. Two are Danish and belong, it is believed, to the second quarter of the 14th century. One is without provenance and today reposes in the Royal Coin and Medal Collection housed in the National Museum at Copenhagen. It was first identified and published by Dr. Georg Galster in 1931.³ A second example, almost identical, came to light in the course of archaeological excavations at Ålborg in northern Jutland in 1961.⁴ It is to Dr. Galster, too, that must go the credit for having recognised a representation of a balance of precisely this description in a panel of 13th century stained glass in the Cathedral at Le Mans which records the memory of a certain Franco of Alonnes actually described as a *cambiator*. Intermediate in type and probably in time between the Netherne and Oxford examples on the one hand and the Danish specimens on the other seems to be an unpublished variety in the Heberden Coin Room at the Ashmolean Museum, Oxford. The gift of Sir John Evans, it is believed to have been found at Faversham in Kent almost exactly a century ago.⁵

Clearly these miniature steelyards are of the greatest rarity and enquiries addressed to the British and Science Museums, the National Museum of Ireland, the London and Guildhall Museums, the Cabinet des Médailles at the Bibliothèque Nationale and the Musée de Cluny have failed to establish the existence of further examples. The explanation of the paucity is doubtless that the use of such instruments outside a mint or official exchange was not only illegal but sinful. Somewhere about the year 1310 a French Dominican by the name of Guy of Toulouse in a well-known *Penitential* denounced the use of *trébuchets* or *banquettes* whereby light money could be easily and handily distinguished.⁶ The element of sin consisted

either in the immediate passing of coin known to be light while the heavier pieces were retained, or in the clipping of the latter, secure in the knowledge that if due restraint was exercised the pieces would not obviously be light. It should be borne in mind in this connection that mediæval coins were normally struck not to an absolute standard but within limits a grain or so above and below the legal requirement. This margin was known as the remedy and the requirement was simply that no coins should fall outside the specified bracket and that the average weight of a longish run should be of that standard. We may perhaps presume, too, that within a mint these *trébuchets* or *trutinæ momentanæ* performed a very useful function in establishing which blanks could be struck and which should be rejected. It would be necessary only to have two of these devices, one set to the legal minimum and the other to the maximum and any flan which failed to depress the platform on the latter but which tipped that on the former could be allowed to go forward.

It is unlikely, though, that the Netherne specimen is 'official', though it is just possible that as a member of the judiciary in eyre the owner of the manor may have been furnished with a portable *trébuchet* to enable him to perform his very extensive duties of peregrinatory supervision and detection. More likely is the supposition that it had been confiscated by him from an unfortunate delinquent and a hint of the object's illegality is perhaps afforded by its very insignificance. The spike had only to be pulled from the crack in the table or bench where it had been set up, folded back into the slot and the whole contrivance, as small as a modern penknife, slipped into the owner's pouch.

It only remains for us to express our gratitude to those of our colleagues who have gone out of their way to assist in our enquiries, more particularly Miss Marion Archibald and Mr. Stephen Castle (British Museum), M. Arnaud Brejon de Lavergnée (Musée de Cluny), Mme Françoise Dumas-Dubourg (Cabinet des Médailles), Dr. Gerald Dunning (London), Mr. Patrick Finn (Spink & Son, London), Mr. Anthony Gunstone (Lincolnshire Museums), Inspektør Jørgen Steen Jensen (Royal Danish Coin Cabinet), Professor E. M. Jope (The Queen's University of Belfast), Mr. Nicholas Mayhew and Dr. Michael Metcalfe (Ashmolean Museum, Oxford), Advokat Ernst Nathorst-Böös (Stockholm), Mr. Breandán Ó Ríordáin, Dr. Joseph Rafferty and Mr. John Teahan (National Museum of Ireland), Mr. Brian Spencer (London Museum) and Mr. D. Vaughan (Science Museum, London).

Notes

- Information from the excavator.
 - Kisch, B. *Scales and weights*, 1965, 62, figs. 26, 65, 70. Curiously the object, now in the Turin Museum, is illustrated upside down, the pillar being treated as a handle and not a spike.
 - Galster, G. 'En Seiger', *Nationalmuseets Arbejdsmark*, 1931, 53, 54.
 - Galster, G. 'En Seiger fra Ålborg', *Kuml*, 1961, 116-124.
 - Information from Mr. Nicholas Mayhew.
 - Yvon, J. 'Un texte médiéval sur la thésaurisation et la spéculation', *Bull. de la Société Française de Numismatique*, 24, 4 (April, 1970), 521, 522. We owe the references to the kindness of Dr. Michael Metcalf.
- Coins** by M. M. Archibald, Department of Coins and Medals, British Museum.
 - Edward I of England, 1272-1307* (Site 2, Sq. 5-V, Period 2)
Silver penny; London Mint.
Obv. round crowned facing bust (new style). Rev. plain long cross, pellets in angles. This coin has been clipped but is in good condition.
 - Edward I of England, 1272-1307* (Site 2, Sq. 01-VIII, Period 2)
Silver penny; Canterbury Mint.
Obv. bifoliate crown, long narrow face. Rev. plain long cross, pellets in angles. This coin has been slightly clipped and the condition is good. Class Xb (1302-10). Ref. Seaby 840: J. North 1039
 - Edward III of England, 1327-77* (Site 3, Sq. V-3, Period 2b)
Halfpenny; Florin type 1344-51; London mint
As English coins of this type remained in circulation for a long period it is not possible, in the case of an isolated coin where condition may be deceptive, to suggest its date of deposition within narrow limits. Several florin halfpence of Edward III were, for example, present in the Attenborough (Notts) hoard buried c. 1420. The present coin is rather worn but has not been clipped and could have been deposited at any time between c. 1350 and c. 1400, but certainly before the reduction in the weight of the silver coins in 1412.
 - Venice* (Site 3 Sq. V-2, Period 3. Found close to the hearth but 3 ins (7.6 cm) below the floor)
Doge Antonio Venier 1382-1400; Soldino; Mint master: Pietro Viaro, appointed 1385.
Owing to the shortage of small change these *soldini* or 'galyhalpens' i.e. 'galley halfpence' (so-called because they arrived with the Venetian wool-galleys) made their way into circulation in England. They do not appear to have been widespread until c. 1400 when the government took steps to end their circulation, firstly by forbidding their currency and secondly by ordering an increase in the output of halfpence and farthings. Galyhalpens appear to have remained in circulation however despite parliament's protests for another 10-15 years. With the usual caveat of possible abnormally long survival, this coin is likely to have been deposited c. 1400-1410.
 - Charcoals** by A. C. Western, Ashmolean Museum, Oxford.
Site 2. Charcoal was not very common on this site but the following woods have been identified:—

<i>Quercus</i>	oak
<i>Fraxinus Excelsior</i>	ash
<i>Corylus</i>	hazel
<i>Prunus Avium</i>	wild cherry

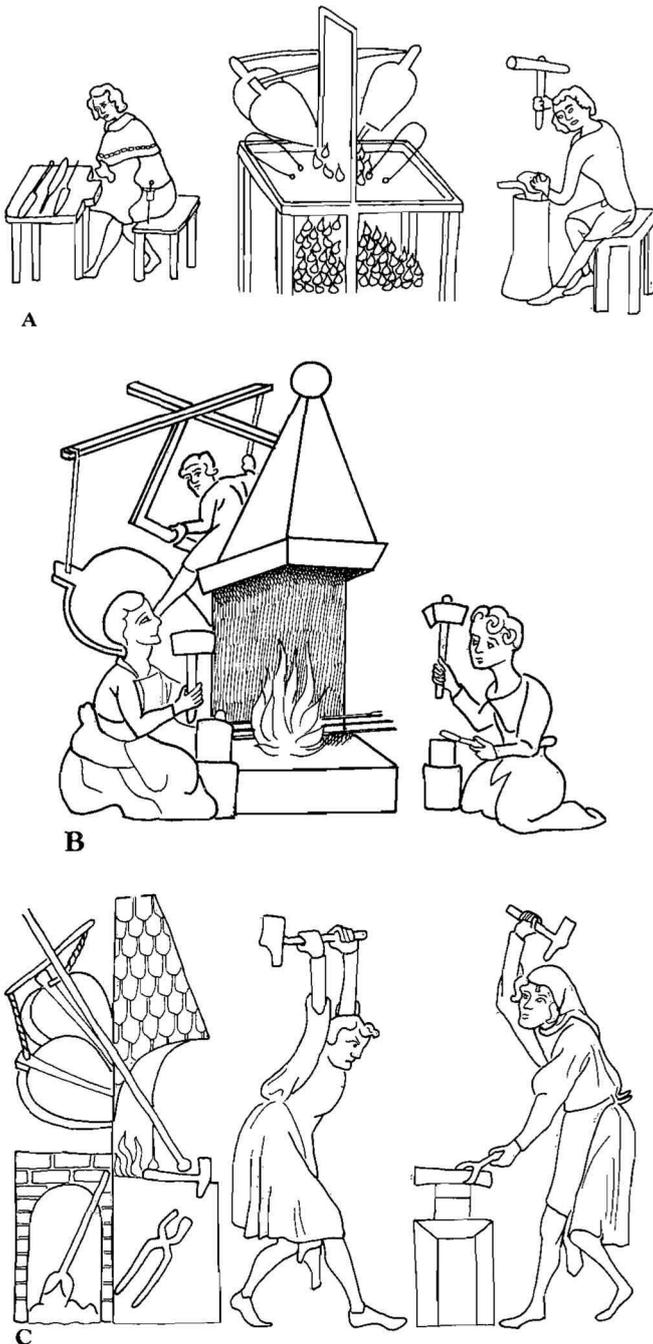


Fig. 39. Contemporary metal working: drawings based on MS. illuminations.

- A. Romance of Alexander, 1340, Bodl. Lib. MS 264 f. 84T
 B. Ibid. f. 171r
 C. Brit. Mus. MS Sloane 3983 f. 5r

Site 3. In contrast to Site 2, charcoal on this industrial site was quite prolific, particularly in the smelting and forging areas.

Periods 1 and 2:

Quercus—oak, from the smelting area.

Period 3:

<i>Casternea Sativa</i>	sweet chestnut
<i>Viburnum opulus</i>	guelder rose
<i>Prunus avium</i>	wild cherry
<i>Salix</i>	willow
<i>Quercus</i>	oak

Oak, ash, hazel, wild cherry and willow still grow in the vicinity. The sweet chestnut and guelder rose are no longer in evidence.

It is interesting that all pieces of charcoal submitted from the early smelting hearths were oak, whereas from the later forging hearths the type of wood varied and was mixed with coal.

13. Animal Bones by B. A. Noddle, Department of Anatomy, University College, Cardiff

Of the bones presented, 98 were identifiable and comprised 39 from cattle, 30 from sheep, 20 from pig, 2 from dog and 6 bird bones. Besides this there were a number of rabbit bones from each site, but these may of course have come from any period. Obviously this small number of bones can only be a fraction of the potential total and few conclusions can be derived from it.

Cattle bones

18 bones were identified from site 2 comprising 5 from trunk and upper limb, 7 from the less edible parts of the skull and lower limbs and 5 loose teeth. Using the concept of minimum number of individuals (Chaplin, 1969) which may not be justified with such small quantities of bone there were two individuals, both adult. Measurements obtained: length lower third molar 34 mm, distal tibia maximum width 48 mm, proximal metatarsal 41 mm.

21 fragments of bovine bone were represented from Site 3 comprising five bones from trunk and upper limb, six from head and feet and 10 loose teeth. The minimum number of individuals is 7, of which 6 were mature and 1 immature. Measurements obtained:—length lower third molar, two each at 34, 35 and 36 mm, maximum width distal metacarpal at epiphyseal junction 48 mm, maximum distal tibia 69 mm. The teeth in one mandible were badly cramped together, probably as a result of youthful malnutrition (Young & McCance, 1973). There was a considerable difference in the tibia size between the two sites, but the large animal in Site 3 might have been a bull rather than a different type from the animals in Site 2.

Sheep bones

(14 fragments from sheep (or goat) were identified from site 2 of which 5 were from the trunk and upper limbs, 3 from head and lower limbs and 6 loose teeth. There were a minimum of 5 x 3 individuals, all mature. Measurements comprise length lower third molar 20, 24 mm, width radius mid shaft 14 mm, humerus mid shaft 16, 16 mm.

17 bone fragments from sheep were identified from Site 3 of which 4 were from trunk and upper limb, 2 from head and foot and 11 loose teeth. There were a minimum of 7 individuals, of which 4 were immature. The other three could not be determined. Measurements obtained: length lower third molar 18, 21, 21, 22 mm, width humerus shaft 16 mm.

Pig bones

12 fragments were identified from site 2 comprising 3 upper limb or trunk, 6 head or lower limb and 3 loose teeth. Here were a minimum of three individuals, one piglet, one immature and one mature. Again no measurements were possible.

8 fragments were identified from site 3 of which 3 were trunk and upper limb, 2 were head or foot and 3 were loose teeth. They came from a minimum of 3 individuals, one immature, one mature and one very old. No measurements were possible.

Dog bones

2 dog bones were found, one from each site. Both came from medium sized animals.

Bird bones

Site 2 contained 3 goose bones and 1 from chicken. Site 3 contained 2 chicken bones.

Comment. It seems likely that these bones were the remains of middens which were carted away, perhaps for field fertiliser. There was a high proportion of lower third molars, a tooth which does not readily fall out of the mandible unless it is smashed, as might well happen in the formation and clearing of a midden.

Other rural medieval sites occur where the animal bones are scanty, including the Deserted Medieval Village of Upton, Glos (Noddle, 1968).

References

Chaplin, R. E. 1969 *The study of animal bones from archaeological sites.*
 Yonge, C. H. and McCance R. A. 1973 *J. Anat.* 115, 1-22.
 Noddle, B. A. 1969 *Trans. Bristol & Gloucestershire Arch. Soc.* 88, 124-6.

period 2). This was examined by a potter, who said it is a manufactured article, not a fossil or a single natural stone of any kind. The marble has a slightly uneven surface as though rolled by hand with traces of brownish purple colouring remaining. The apparent fleur-de-lis pattern on one side of the marble, though clear and symmetrical is probably fortuitous since there are patches of the same colouring on other parts of the marble.

2. A spherical object, diam. $\frac{5}{12}$ " (13mm) similar to No. 1 above, but with a slightly rougher surface.

Both objects show signs of handling.

It may be relevant to note that the 16th century marbles in the London Museum are stoneware, as are the 16th century marbles in the Horniman Museum (one of them specified as 'grés de Flandres').

Four Flint Balls

Four flint balls, similar in size to a ping-pong ball, i.e. $1\frac{3}{5}$ " (40mm) were found close together at the base of Wall D on the inside of the Solar Undercroft (Site 2, period 2). These balls are not uncommon in the clay-with-flints and are a natural phenomenon, but the fact that three of them lay so that they were actually touching seems to indicate that they had been collected and may have been used as toys.

A board game scored on a stone.? (Fig. 40 and Pl. XV)

One surface of a shaped stone was found to be scored with lines in a manner similar to Merrills, or Nine Mens Morris. Part of the stone was burnt so the design is incomplete. The remaining part measures 7 ins (17.7cm) by 4 ins (10cm).

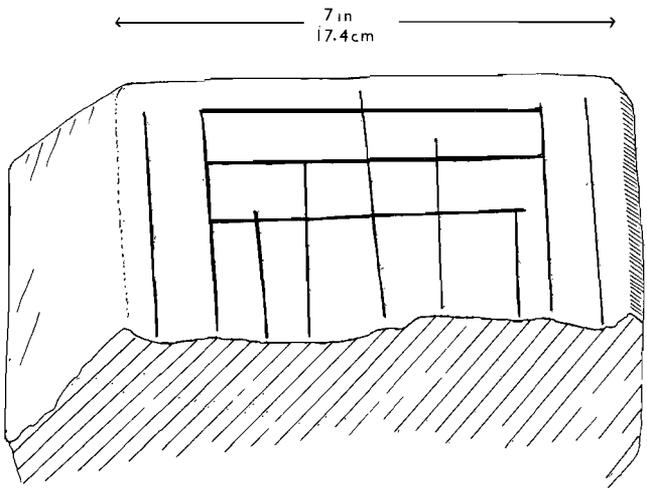


Fig. 40. Stone with scored lines, possibly for a game

If this was a game it was not the usual Nine Mens Morris design, as there are too many lines. It can best be described as a chequers board of 36 squares bordered on all four (presumably) sides by plain strips crossed in the centre by the continuation of the four central lines, as at the cardinal points of a compass. Also the left and right hand borders were carried out to the edges of the board in the manner of a tennis court, while the top and (presumably) bottom borders were drawn between them.

14. **Note on Mussel Shells found in the Services** (Site 2, Period 2) by Miss G. Hudson

A mussel shell was analysed for Sodium Chloride (salt) to try to decide whether it originated from salt water or fresh water.

The shell was dissolved in dilute nitric acid and the resulting solution, after neutralisation with dilute ammonia, was titrated with silver nitrate solution.

The sodium chloride found was 0.2%. Mussel shells were obtained from Cornish and Scottish beaches and similar analyses were carried out to obtain comparative figures.

Cornish mussel shell	Salt - 0.3%
Scottish mussel shell	Salt - 0.2%
Netherne mussel shell	Salt - 0.2%

The result obtained would therefore indicate that the mussel shell from the site originated from salt water.

15. **Mollusca** (Site 2, Periods 1 and 2)

- Mytilus edulis*—the edible mussel at least 30
- Ostrea edulis*—the edible oyster 25
- Chlamys opercularis*—the queen scallop 1
- Cerastoderma edule*—The common cockle 1
- Buccinum undatum*—the common whelk 1
- Roman snail*—edible snail 11

16. **Games**

Children's Marbles by Iona Opie

1. A spherical object, dia. $\frac{7}{10}$ " (17mm) was found beside the central hearth in the Great Hall (Site 2,

THE HISTORICAL BACKGROUND:

Brief accounts of the history of the manor of Merstham and its sub-manor of Alderstead will be found in Manning and Bray¹ and VCH². Further interesting details of the De Passele family, who owned the sub-manor in the 13th and 14th centuries have been brought to light by N. H. McMichael during his researches into the manorial history of Evegate in Kent. Most of the following summary is based on his article in *Archaeologia Cantiana*.³

The Manor of Merstham of which the sub-manor of Alsted was part in the 13th century, and possibly earlier, was held of the Prior of Canterbury as a Peculiar of the Cathedral Priory of Christchurch. It had been held of ancient demesne of the Crown before it was given to the Abbey by Ethelstan, son of King Ethelred II, AD 1018 for the clothing of the monks, and it was thereafter administered by a bailiff appointed by the Prior. This bailiff was sometimes a local man, according to the names of the various holders of the title, but sometimes was a foreigner to the district and in any case the appointment was not hereditary. It follows, therefore, that the lords of the sub-manors who were local families and whose holdings were hereditary, must have been regarded as important persons in the manor, though they had to attend the manor court at Merstham and did not, in the 13th century, hold manor courts themselves.⁴

At this time there were three sub-manors to our knowledge: Alderstead or Alsted on the hills, Alderbury in the valley south of the village and Charlwood in the Weald near Horley, an outlier about nine miles to the south. Alsted and Alderbury both belonged to the de Passele family in the 13th and 14th centuries.

Extensive documentary research has been carried out, particularly among the records of Christchurch Priory, Canterbury, and for this I am indebted to Mrs K. Percy, but nothing has been discovered to suggest that the acreage of the land of the Alsted estate as described in the 'Rentall of the Mannor of Merstham' dated 1522⁵ had changed since the mid-14th century and if this assumption is correct the land held by the de Passeles of Alsted comprised by far the largest single holding. The events in the family history coincide remarkably with the building periods as revealed in the excavation and it seems probable that the buildings excavated were the manor house of the sub-manor of Alsted at this time and that the family originated there.

The earliest mention of the name 'Aldestede' so far known is in 1211⁶ and the first firm trace of the family which held the sub-manor is that of Ralphe de Aldested de Merstham whose son, Robert, was born c. 1250 and was educated sufficiently to become Parish Clerk at the Church of St. Leonards, Hastings. At this time the family would have lived in the Period 1 first-floor stone hall. It is possible that Ralphe had married a daughter of the neighbouring Gatton family whose coat of arms, chequy azure and argent, appears quartered with the Aldersted/De Passele lion in the 15th century.

Robert married Sarah de Passele, described by Manning and Bray as 'an heiress' and evidently took his wife's name, as he is described in a deed in which he grants a meadow in Merstham to the Prior and Convent of Canterbury as 'Robert, son of Ralph de Aldersted de Merstham, called de Passele'. This

deed is undated but his name appears as a witness in several other deeds, one of which is dated 1287 and in two of which he is described as 'Sir Robert Passele, Knight'. He had a son Edmund, who must have been born about 1270. Sarah was alive in 1272, but must have died shortly after, as Sir Robert married again a lady called Custance, but he apparently had no further children.

Sir Edmund de Passele became a figure of some eminence, being a Baron of the Exchequer and Justice of Assize, and during his life he acquired considerable property in Kent, Sussex, Surrey and London. It is noticeable that much of the land he held was in the iron ore producing districts of the Weald.

In about 1295 he married Maud de Kechenour, i.e. Kitchenor in Beckley, Sussex, by whom he is known to have had two sons, William and John, and two daughters.

In 1314 he became betrothed, in the presence of the Bishop of London, at St. Mary Magdalene 'next Oldfysshstreete' to one Joan, family unknown, who subsequently sought dower from his heirs. By 1318, however, he seems to have been regarded as married to Margaret, widow of Sir William de Basing, Sheriff of Canterbury Castle, who died in June 1316. Born in 1283, she already had five sons. Her first son by Sir Edmund was another Edmund, born in 1319. Two further sons were born, Robert and Thomas.

In 1327 events occurred which may be the reason for the abandonment of the manor house shortly afterwards. On 11 February Sir Edmund made his will, leaving all his goods to Margaret. To Margaret and their son Robert he left his property in London. At about this time he also settled more of his real estate on Robert, including the reversion of the manor of Alsted, which was held in dower by his grandfather's widow, Custance. Custance paid tax in 1332 in the name of Custance de Alsted.

A few days after making his will Sir Edmund died and three weeks later one of his sons was waylaid and murdered, with his servant, while riding in the neighbouring manor of Coulsdon. Margaret was accused of harbouring the assassins and was eventually brought to trial on various charges, including resisting arrest and inciting her retainers to maltreat the King's officers. The trial lasted from 1329-1332 and ended with the collapse of the case against her. At about this time Joan, whom Sir Edmund had betrothed and dowered in 1314, addressed a petition to the King and Council in support of a suit for dower, in which she accused Margaret not only of the crimes for which she was brought to trial but also of poisoning her husband and his eldest son William. There followed a series of disputes among the family for land. In 1335, Custance died and there was a dispute between Robert and John over property in Merstham. The case was heard at the Court at Merstham, but it was not properly conducted and the Prior of Canterbury sent his agent to call the case again. Margaret had referred the case to the King's Bench where she may have thought she would have more influence.

Margaret de Passele died in 1341, having obtained most of the land for which she fought, including the Manor of Parrock in Hartfield where iron ore was being mined and smelted.

Robert de Passele married Joan Ockingham, the daughter of a London merchant in 1344 and they had a son, Robert, born about 1346.

1349 was the year of the Black Death, after which most of the feudal land-owners were forced to find means of financing themselves other than by the old fashioned wasteful method of open farming after the loss of so many of their villeins, serfs, cottars, etc. Merstham was probably less severely affected than some of the neighbouring parishes, but the labour force may have thinned out when the peasants realised that their services were being sought and movement to other manors could no longer be prevented.

The archaeological evidence suggests that, after Margaret's death the old house had been abandoned and stripped of its timbers which may have been conveyed to the small farm house now called Alderstead where they were used for its enlargement. When Robert and Joan's son Robert was married, by October 1366, he received 'Alderstede'. This is the last mention of Alderstede until 1480 when the Best family held it, and any later references to it always refer to the new Alderstede.

In the early years of the manor, early to mid-13th century, a certain amount of iron had been smelted in bowl hearths and forged into objects needed on the demesne. It is not at all certain from where the ore was obtained as there is no known source of iron ore in the vicinity. Towards the end of the 13th century it is believed that iron was forged but not smelted at Alsted indicating that the blooms were being purchased from elsewhere. At about this time the de Passeles were becoming wealthy and an enlargement and modernisation of the ironworking site took place, including the building of a good timber-framed house for the smith. As previously noted, much of the land held by the de Passele family was in parcels on the iron bearing areas of the Weald of Kent and Sussex and it is possible that iron was mined and smelted there and sent up to Alsted in the form of blooms.

In 1362 ironstone was found in Charlwood, which was still an outlying sub-manor of Merstham and permission to dig it was granted by the Prior of Canterbury to the Earl of Arundel who then held the land. In the same year Robert de Passele died and shortly afterwards his son, also Robert, married Anne Howard of Norfolk. In due course they too had a son named Robert, who married, in 1394, the granddaughter of Sir Edmund de Arundel, the bastardised elder brother of the Earl of Arundel and of Thomas Arundel who was Archbishop of Canterbury in 1396 and 1399-1414. In 1396 the manor of Merstham was divided and rented to three local men, except for the digging of stone in the famous quarries and the mining of iron at Charlwood, which was the reserved right of the Prior of Canterbury.

Young Robert de Passele, or Pashley as he was now called, was related by marriage to the powerful Arundel family who had an interest in iron. It seems a reasonable conjecture that the Alsted land needed to be cleared for sheep running, or perhaps more land was to be put down to sheep and this new land was around the old Manor demesne. Trees and undergrowth were to be cleared, as no cultivation had been carried out on that land since c. 1348 and the wood was to be converted into charcoal. The old smith's

house was repaired and a new forge was constructed. New sheds and stables were erected. It seems likely that the iron products of the forge which functioned for a short period, probably not more than five or six years, were in excess of those intended for use on a manorial estate, especially if that estate was now given over chiefly to the production of wool. It is possible that it served the town of Merstham, but it must have been most inconveniently placed as Merstham was two miles away along the valley.

A possible connection with the wool trade with Italy is suggested by the soldino found by the smith's hearth. Although soldinos found their way into English currency, it is reasonable to suppose that wool from the sheep for which the hills had been cleared of timber was sold to the Italian galleys and that some of the money which purchased it filtered back to the smith who used the charcoal made from that timber to produce his iron.

The de Passele family had become wealthy and well connected in little over 150 years through a somewhat curious mixture of shrewdness in acquiring land, brilliance in the art of law, social climbing and trade in wool and iron.

Although it cannot be proved conclusively that the building excavated is the manor house of Alsted, the probability is supported by the following considerations:-

1. In all the records which have been examined only the three sub-manors mentioned above have been found. Of these, the positions of Charlwood and Alderbury are known. The present Alderstead Farm, known in the 16th century as Aldersted Manor, stands on land included in that described in the 1522 Rental.
2. Alderstead Farm, old though it is, is not the original manor house. Mr. K. W. E. Gravett, M.Sc(Eng) FSA, examined the oldest part of the house and reported it to be mid-15th century. Some of the timbers had apparently been re-used and may have come from elsewhere.
3. One of the details of the 1522 Rental referred to six fields and crofts called Ladylands and these were located in the north-west corner of the Parish surrounding the site of the excavation. It is considered that these fields were the dower lands of Custance de Passele which, with the manor house, she held in dower for her grandson, Robert in the first part of the 14th century.
4. The correlation of historical events in the de Passele family and the archaeological periods found on the site.

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REPORT ON THE FLINTS

by Elizabeth Healey

The flint described in this report was recovered during the excavation, in a residual context either in the top soil or in a collapsed wall suggesting that some of the worked flint may have become incorporated as part of the building material. It was distributed randomly over Sites 1 and 2.

Most of the worked flint varies between light and dark grey in colour and is mottled; the cortex is unweathered and it is likely that the flint was obtained from the clay-with-flints in the immediate vicinity. A few examples of light honey-coloured flint are also present, e.g., F6. The use of previously worked material is attested by the retouch of flakes or nodules carrying a heavy patina on an old fracture. Thermally fractured flakes were also selected for retouching, e.g. F19. A light whitish grey patina was observed on some flints. One flake only had been burnt; and a group of 50 fire crackled flints or pot boilers, all apparently unworked, were found on site 1 but none were recovered from the other areas.

The flints recovered number 232 and seemingly represent a Mesolithic Industry, although a few other elements may be present. They may be classified as follows:-

Cores and other struck nodules	7
Unretouched waste flakes	12
Scrapers and associated forms	12
Spurred implement	1
Notched flakes	35
Points	28
Microliths and obliquely-blunted points	7
Serrated flake	1
<i>Petit tranchet</i> derivative arrowheads	2
Axe	1
Tanged flake	1
Composite tools (i.e. flints showing more than one tool specific. Their classification is: scraper and point, scraper and notch, scraper and saw edge and notch and point. In the following discussion each tool specific is described under the relevant category and included in the figures for the sub-classification of that category)	4
Knives and variously trimmed and backed flakes and blades	121

As the assemblage is small and found in a secondary context and without association no detailed trait analysis has been undertaken, but simple metrical data of all the measurable flakes and blades (including retouched flints) are given in the tables below:¹

Length	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	mm
Flakes and blades with retouch	—	3	17	34	13	17	6	1	—	—	
Notched flakes	—	—	3	11	8	4	5	1	—	—	
Points	—	—	6	7	9	6	2	1	—	—	
Scrapers	—	—	1	5	4	4	—	—	1	—	
Totals	—	3	27	57	34	31	13	3	1	—	

Breadth	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	mm
Flakes and blades	4	21	28	30	5	2	—	—	—	1	
Notched flakes	1	5	8	11	6	1	—	—	—	—	
Points	2	5	6	6	2	5	5	—	—	—	
Scrapers	—	1	4	5	4	1	—	—	—	—	
Totals	7	32	46	52	17	9	5	—	—	1	

Breadth to length Ratio	0:5-1:5	1:5-2:5	2:5-3:5	3:5-4:5	4:5-5:5	
Flakes and blades	—	14	21	28	15	13
Notched flakes	—	3	7	12	7	3
Points	—	4	7	6	4	10
Scrapers	—	—	3	5	3	4
Totals	—	21	38	51	29	30

It is clear then that the majority of the flakes are under 60 mm in length and that about half of these are under 40 mm; in breadth most flakes are under 40 mm, 20-40 mm being the preferred range. The breadth to length ratios indicate that most of the flakes produced were squat, and suggest that blades were not an important feature of the industry. Inspection reveals that many of the flakes have an irregular outline.

Because the assemblage is small it is difficult to draw conclusions about blank production. The three regularly worked cores, the core rejuvenation flakes and the flakes which have a series of regular, and usually parallel, flake beds on the dorsal surface, e.g. F24 and F35 indicate that some cores were methodically struck to produce blanks. However, as well as the more formal cores, the nodules with random flake beds and the high proportion of flakes with one or two flake beds and much cortex on the dorsal surface suggest that single flakes were struck to fulfil an immediate need. The use of thermally fractured flakes also indicates the temporary nature of some artefacts. The *ad hoc* nature of much of the assemblage is confirmed by the large number of virtually unclassifiable retouched flakes.

Cores. There are four regularly worked cores present and a thermally detached flake which appears to have come from a thermally shattered core. One of these, F1, is consistent with the manufacture of microblades and has been worked from two directions. The other cores show that squat flakes have been detached. Two are of the multi-platformed type, although the other platforms have been truncated by subsequent flaking. The cores had apparently been flaked beyond their useful life for blank production as the largest flakes bed measures 28 mm in length whereas the flakes selected for retouch were normally between 30 and 60 mm. One core has retouched edges and one may have been used as a hammerstone (see below). In addition to the more regularly worked cores there are two nodules with scars of randomly detached flakes.

Core-rejuvenation flakes. Five rejuvenation flakes were distinguished in the assemblage. Three remove the face and apex of the core and the other two have been struck at 90 degrees to the core striking platform, one to remove step-fracturing on the core face. Two large squat flakes (the largest being 64 mm long and 100 mm broad) were probably struck to prepare a nodule as a core. Four other flakes seem to have been struck to renew the face of the core but are not classic core-rejuvenation flakes. Two of the rejuvenation flakes, F20 and F21 have lateral notches and all have been retouched.

Waste material. Flakes without retouch or utilization are rare, there being only 12 present in the assemblage.

Hammerstones. No complete hammerstone either of flint or other stone was recovered; but heavy, concentrated abrasion on the distal end of an edge retouched bladelet indicates that it had probably been struck from a hammerstone. There is also slight abrasion on the beaked end of one of the cores, presumably occasioned by hammering but it could have been caused by recent accidental damage in the soil rather than by percussion.

Scrapers and associated forms. The flakes in this category which exhibit retouch characteristic of scrapers may be subdivided according to the position and extent of the retouch and the shape of the working edge in relation to the arc of a circle; the following forms are present:

End scrapers:	rounded	: 2
	straight	: 4
	pointed	: 3
End-and-side scrapers		: 6

The scrapers which have retouch confined to the distal end have rounded, F3, or straight, F8, or pointed, F9, contours or outlines; the pointed ones have small business ends with a minimum of retouch. The scraping edge of F3 is on a long flake and shows additional retouch along the right hand margin.

The composite tools, F11, F31 and F44, exhibit straight scraping edges combined with a saw edge, F44, a notch F11, and a point F31. F31 and F44 have been inversely retouched, and the scraping edge of F31 is at the butt end of the flake.

The end-and-side scrapers (i.e. those which have the scraping edge continued from the distal end along the margins of the flake without a marked change in profile) all show semi-convergent retouch and F4, F5, F6 and F7 are indistinguishable from Neolithic and Bronze Age types. All show undercutting or step-fracturing on the working edge and wear can be detected on F3.

Three flakes have a scraper-like profile but only the minimum of non-specialised retouch, they have been included in the total for scrapers. Others amongst the variously trimmed flakes and blades may also have been utilized as scrapers.

Spurred implement. One flake, F10, has steep scraper-like retouch on its distal end and a typical scraper contour and profile, but a spur projecting at the right hand corner of the working edge; this has been offset by two notches both of which exhibit undercutting. The butt end has been modified by retouch and the margins also show retouch.

Notched flakes. This is a heterogeneous group of flakes having in common a notch or notches usually on the side of a flake. The flakes themselves vary considerably in size and shape from small bladelets like F14 to long flakes like F22 (two of which, F20 and F21 are core-rejuvenation flakes) to irregular squat flakes like F17. Thermal flakes have also been notched, F.19. The notches themselves may be subdivided as follows:-

(i)	small notches on the side of a flake	27
(ii)	wide shallow notches	5
(iii)	Small notches on the distal end of a flake	5

(i) The notches in this group are under 10 mm in diameter and 3 mm in depth. The majority of the flakes are squat and irregularly shaped and carry a single notch, but six longer and narrower flakes, F20, F21, F22 and F23 have notches on opposite sides of the flake. One, F19 has steeply retouched lateral notches and resembles a waisted core tool but lacks any other retouch and as such seems best classified with the notched flakes. The two composite tools in this category show additional retouch as a scraper, F11, and a point, F27.

The retouch in the notches is continued along the margins of the flakes for a short distance in a number of instances and all but two flakes show some sort of marginal retouch four having scraper-like edges with a small amount of irregular retouch. Only two of these flakes, F14 and F15, have been notched in the manner typical of the production of microliths, but five other truncated small narrow flakes with small notches, e.g. F16, may have been intended for this purpose. No microburins were found.

(ii) This group, exemplified by F11 and F18, has wider and relatively shallow notches, between 40 and 50 mm wide, and 6 to 10 mm deep, which alter the contour of the flake. They tend to grade into flakes which have retouch in a concave edge.

(iii) The distal end of these flakes has been deliberately modified to form a concave area which has been steeply retouched, F12 and F13.

Points. This category embraces three main forms which tend to grade into each other:

(a) This type, numbering some 18 flints, is characterized by steep, often light, retouch on (usually) the distal end of a pointed flake such as F25. The shape of the flake is rarely modified by the retouch except in the case of F29, where the point is offset by notches. One awl, F27, with retouch from opposite faces, is present. A sub-group of this type has thicker triangular sectioned points like F28. The two composite tools in this group have additional retouch in a notch, F27, and on the butt end of F31, to form a scraping edge. A further five small flakes, under 35 mm long, have obliquely blunted points, F36, F37, F38, F39 and F40, and may be analogous to the microliths (see below).

(b) The five flakes in this group, F32 and F33, one of which is thermally fractured have a wide, short but well defined rounded projection which has been extensively retouched, seemingly for use as a boring tool. The less well defined points in this category grade into (c) a series of five leaf-shaped flakes or foliates with edge retouch and a blunt point, F34 and F35.

Microliths and obliquely blunted points. The two microliths, F41 and F42 are both simple, obliquely blunted points; using Clark's system of classification,² F41 is of Class C and F42 is of Class A.

In addition to the microliths there is a group of five micro-flakes and bladelets with obliquely blunted points, F36-F40. F38 carries the characteristic steep blunting and is like F42. The others have only minimal retouch. These flakes and possibly some of the bladelets amongst the variously backed and trimmed flakes and blades probably served the same function as the microliths.

Serrated flake. One bladelet, F43, has minute denticulations along one long edge. There are about 13 teeth per cm.

Saws. Two flakes with coarse denticulations may be classified as saws. F41 is a composite tool with the distal end inversely retouched as a scraper.

Axe. The only axe from the site is F47, which is seemingly the butt end of a small axe; there is careful retouch on part of the butt end, the rest being covered with cortex. A certain amount of subsequent trimming along the truncated edge suggests an attempt to convert it into another tool.

Arrowheads. Two arrowheads of *petit tranchet* derivative type were found. F45 is unfinished but probably belongs to Clark's³ Class D. The other example, F46, is a crude chisel-ended type (probably of Class C) with a thick cutting edge but also having characteristic steep retouch on the edge.

Tanged flake. One damaged flake, F48, has a tang at the butt end formed by a notch with flattish slightly invasive inverse retouch. The straight edge has been steeply retouched. The rest of the circumference shows steep nibbling edge retouch.

Knives and flakes and blades variously backed and trimmed. Apart from the more regularly retouched forms there are 121 flakes with edge retouch. Nine of these flakes have regular trimming and may perhaps be described as knives, F49, F50, F51, F52, F53, F54 and F55. Three, F49, F50 and F51, have one or both margins trimmed and also have retouch on the distal end. F49 and F50 have been steeply retouched, but the long edge of F51 has flatter invasive retouch executed inversely, and only nibbling retouch on the distal end. The other six have only marginal retouch; F54 and F55 have been retouched towards the butt end of the flake in the manner of a tanged flake (cf. no. 170 at Thatcham⁴). This retouch may be bifacial. F56 and F57 are irregular flakes but carry regular invasive retouch on one edge.

The rest of the flakes have not been worked in any traditional or consistent manner, but rather the trimming appears to have been carried out to serve some immediate purpose, the outline of the flake being rarely modified. Some 20 regularly shaped flakes and blades struck from methodically worked cores, and 14 bladelets are present, but the rest are irregular flakes, often with a considerable area of cortex on the dorsal face. Nine thermally detached flakes with obviously deliberate edge retouch have been included in the total. F58 and F59 are two of the better examples; F60 may be an unfinished artefact. The retouch is frequently irregular and crude, some of the worst examples being difficult to distinguish from accidental damage. It is possible that these variously trimmed flakes and blades were used as *ad hoc* implements.

Date

The flint was not associated with any other pre-historic material and as described above, is from a residual context. Most of the internal evidence, e.g. the axe, the microliths, the obliquely blunted points, the micro-blade core, the notched flakes, some of the scrapers, and perhaps the *petit tranchet* derivative arrowheads and the serrated flake, points to a Mesolithic date. However a Late Neolithic date could be postulated for the arrowheads,⁵ the spurred implement⁶ and for F19,⁷ which may be a wasted core tool although neither end has been worked. Other possibly non-Mesolithic material includes some of the scrapers which are indistinguishable from Neolithic and Bronze Age specimens. Notched flakes persist over a long period,⁸ and are not therefore diagnostic, but F14 and F15 and others associated with the manufacture of microliths seem to be of Mesolithic origin. The assemblage is too small to validate detailed trait analysis either to test for the homogeneity of the industry or for comparison with other industries. On balance, however, and despite the possible intrusion of a few later types it seems that the assemblage is basically homogeneous and of Mesolithic tradition.



Fig. 41. Flints 1-31. Scale $\frac{1}{2}$.

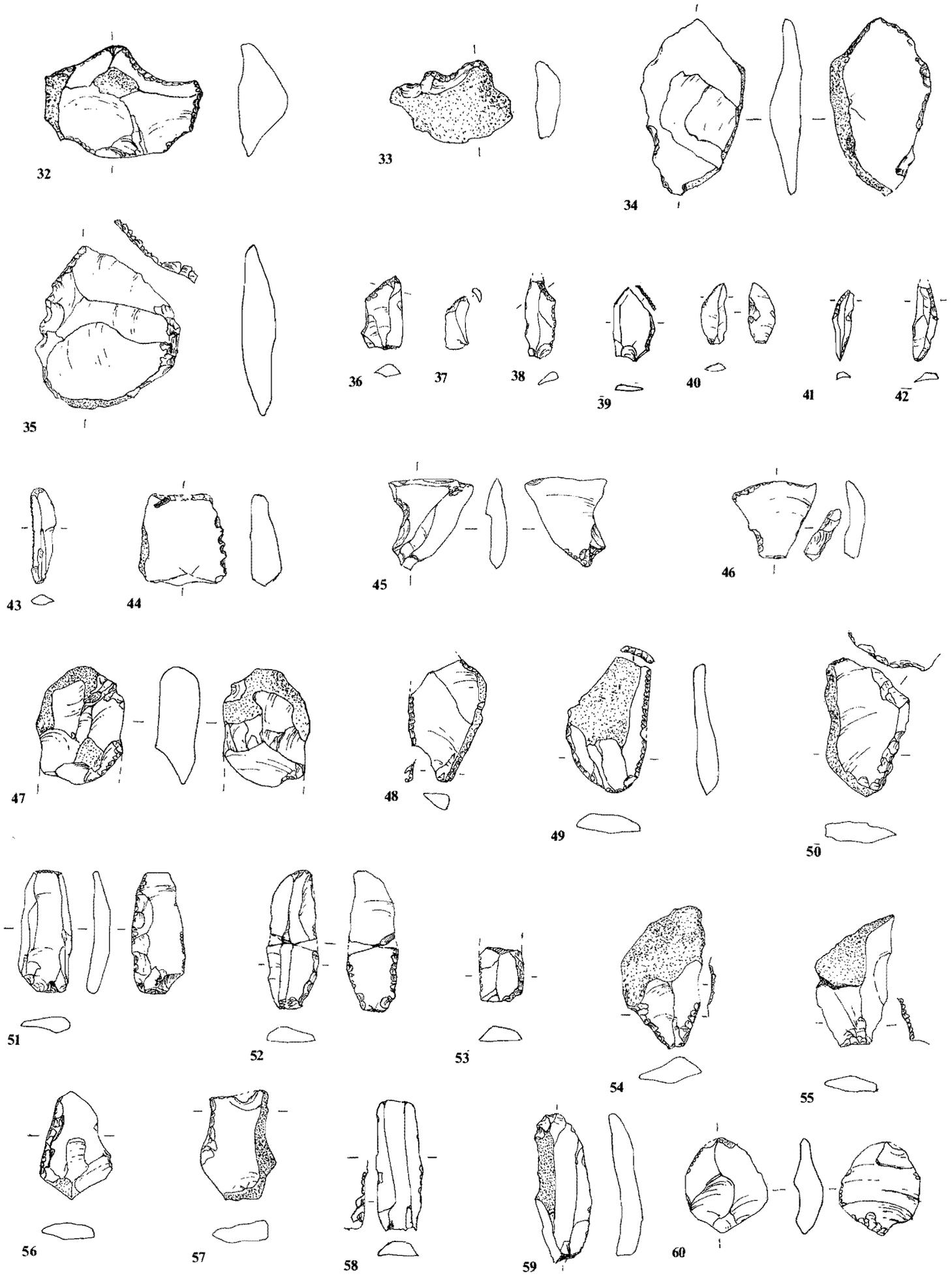


Fig. 42. Flints 32-60. Scale $\frac{1}{2}$.

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