

New Research on a Late Bronze Age Enclosure at Queen Mary's Hospital, Carshalton

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Summary

This paper brings together the evidence for the Late Bronze Age enclosure at Queen Mary's Hospital, Carshalton. Material from the 1937 and 1939 excavations has been studied and compared with the material from the 1903–4 investigations, which has only recently become available for study. The resulting analysis includes the redating of the site, an assessment of the diagnostic importance of the pottery and other finds, and a suggestion of the original function of the perforated clay slabs. The detailed catalogue of the pottery is given on microfiche.

Previous investigation

The Late Bronze Age site at Queen Mary's Hospital has been well known since A W G Lowther's excavations of 1937 and 1939. Comparatively little was known of the material found earlier in 1903–4, since it was not accessible for much of the intervening period. However, it proves to be a striking assemblage of unexpected size containing an increasingly familiar range of LBA domestic artefacts. Of particular importance is the pottery, which includes a good quantity of sizeable sherds as well as reconstructable vessels. These provide us with a broad and diagnostic assemblage for the region centred on the North Downs of East Surrey, a region known to abound in LBA metalwork finds. Finds from the 1903–4 work were deposited in the Grangewood Museum, Thornton Heath, but went into store before the outbreak of World War 2. They have just been made available once more and are now in the care of Croydon Borough Council. The opportunity has been taken to reassess the site in the light of this material and all other available evidence, notably the relevant material in the Lowther collection now in Guildford Museum.

The enclosure is situated at TQ 279 622 on the dip slope of the North Downs. It lies on Thanet Sand overlying chalk at 100 m above sea level and overlooks much of the surrounding area. The initial discovery was due to the construction of hospital buildings when some finds were brought to the attention of N F Robarts. He then salvaged more material and made notes on the site during 1903 and 1904. Some excavation by Robarts also took place in Area C (fig 1) in 1904 with H C Collyer. In 1937 and 1939 a total of four weeks of excavation was directed by A W G Lowther under the auspices of the Surrey Archaeological Society in order to elucidate the nature of the site (Lowther 1944–5). That excavation investigated our Areas C, D, E, F, I and J.

Any surviving section drawings have been redrawn in fig 2 and all recorded layers have been renumbered as a single sequence (see caption) for ease of reference. Investigated areas have been treated similarly (Areas A–L; fig 1).

The most notable discovery in 1903–4 was a ditch forming an enclosure. The whole site had apparently been levelled at some stage and prior to the construction of the hospital was being used as meadow land; there were no signs of an accompanying bank. The ditch was located in several places in 1903–4 (Areas A, B, C and L) and again in 1937 and 1939 (Areas D and E). Robarts deduced that the ditch formed part of an enclosure 150 m in diameter. He initially described the ditch as V-shaped with three layers (1905, 389), but with subsequent excavation he recognised a layer of primary silting (1910, 146) (see fig 2). The ditch was deepest in Area C where it was about 2.1 m deep and 3.6 m wide (Robarts 1905, 389). In Area B the ditch petered out and hence an entranceway was postulated (Robarts 1905, 390). No Roman pottery was found in the ditch fill and Robarts concluded that the ditch must have silted up at a much earlier date

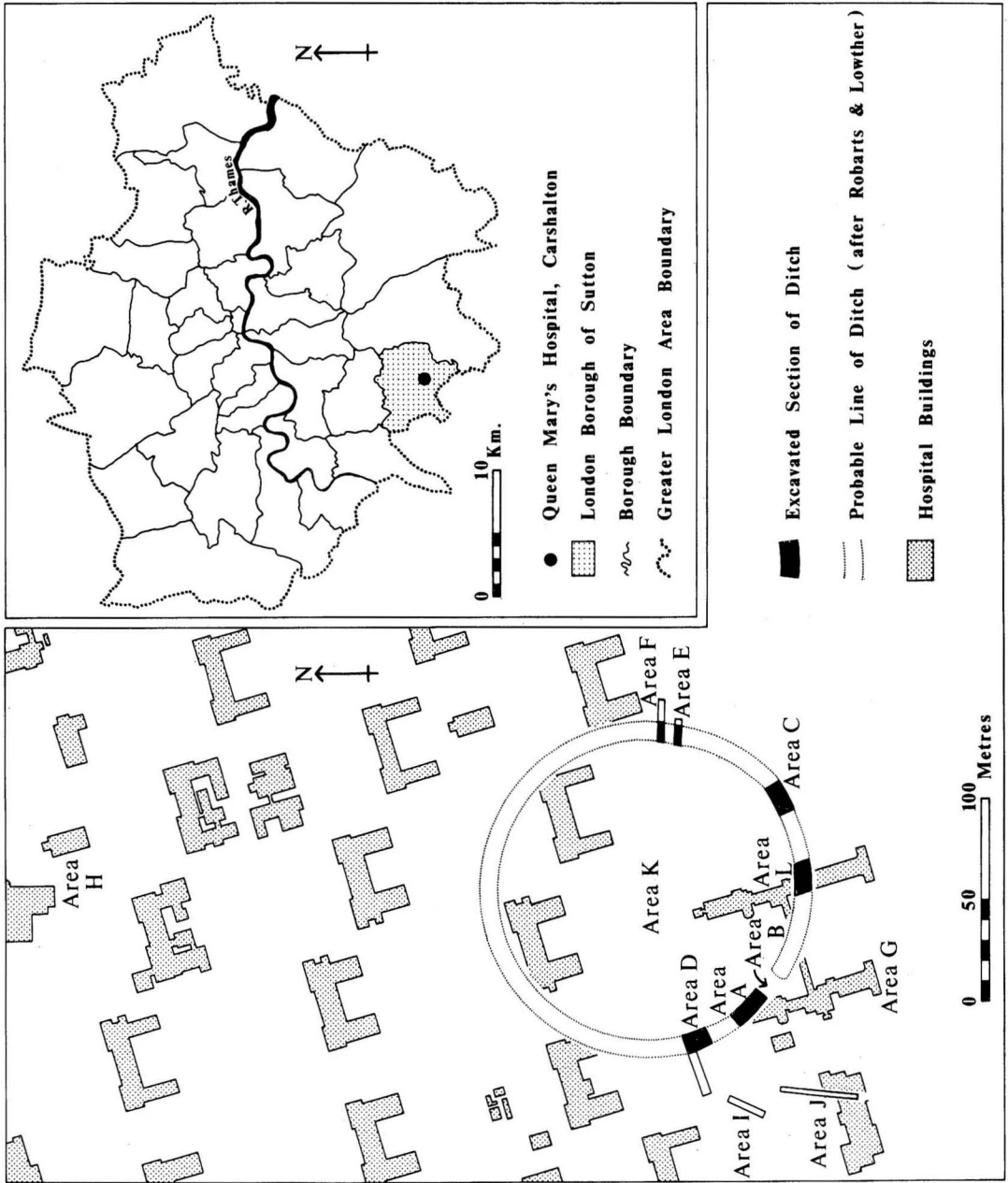


Fig 1. Queen Mary's Hospital, Carshalton. Location map and site plan showing areas of excavation

(1905, 388; 1910, 147). He also conjectured that the ditch was used as a cooking place (1905, 392; 1910, 146).

Lowther excavated a six metre length of the ditch in Area D. He interpreted the large flints and chalk blocks from layer 9 as being the collapsed revetment from the original bank (1944-5, 58), a conclusion which Robarts had previously reached due to a similar layer in Area C (1910, 149). Lowther found Area C to be very disturbed, presumably by the 1904 excavation, while he located the ditch in Areas E and F, but excavated very little due to the greater depth of overburden. He obtained numerous finds from the ditch, mostly from the black sooty deposit (see fig 2, layers 7 and 8), as had Robarts.

In Area G, outside the enclosure, what he took to be seven to eight burials were noted by Robarts (1905, 391-2), presumably the same ones later referred to as being found at a depth of 45 cm. There is confusion in the text as to whether or not three further burials are part of this group. A crouched calcined skeleton of a child was found (see below), and also one or two cremations '... to the north' (Robarts 1905, 392), presumably meaning to the north of the enclosure. None of the cremations was inurned, and there was no sign of any barrows (Robarts 1905, 395).

Lowther also looked at two areas outside the enclosure. Area I produced few finds apart from one large sherd of a bowl (14), and calcined flints found in a small hollow (Lowther 1944-5, 58, 60). Nothing was reported from Area J. Outside the ditch in Area D, in the continuation of layer 6, was found a piece of bronze ingot (Lowther 1944-5, 60). Numerous other finds were discovered outside the enclosure, but no precise provenance can be attributed to them (see below).

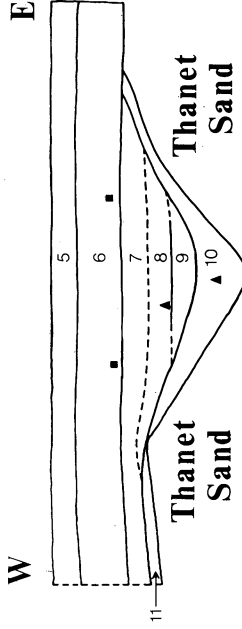
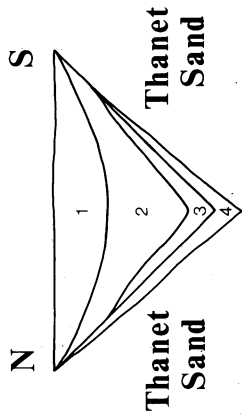
Inside the enclosure (Area K) there was evidence of more recent building activity, namely a tower and ornamental stag, but also two presumed ancient hearths (Robarts 1905, 390-1). Twenty-one metres to the north of the enclosure (Area H) a straight bank running east-west was recorded which may have been a lynchet (Robarts 1905, 390).

A minority of the finds from the respective explorations were mentioned individually in the original reports. Robarts' descriptions generally lacked any useful provenance and were sometimes ambiguous. It is therefore necessary to tabulate previously listed finds and, wherever possible, to indicate correlations with the catalogue of extant finds which follows (microfiche & pp 18-44).

Finds Recorded from the Ditch, or from Layers above the Ditch

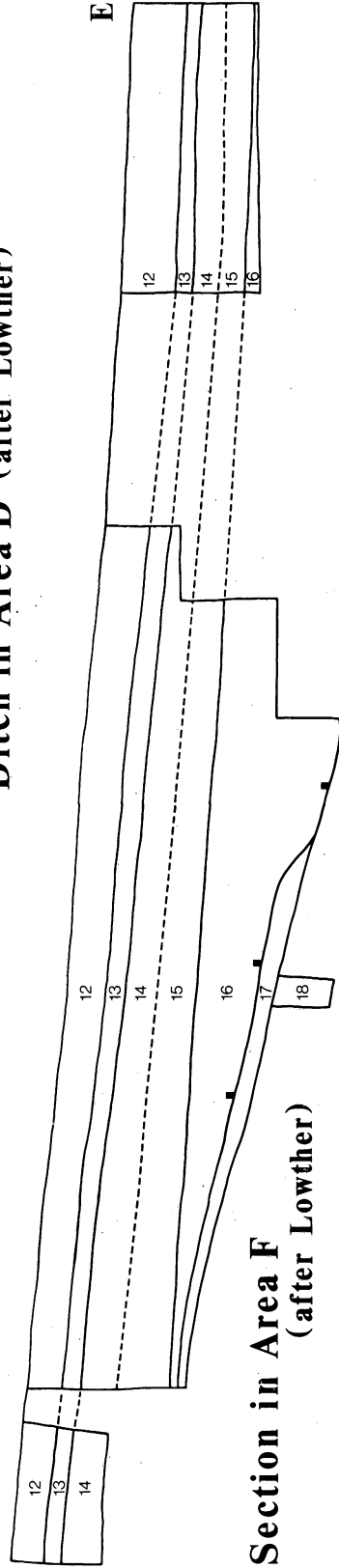
(Finds catalogue numbers are given in brackets)

Area	Description (wherever relevant the author's descriptions have been preserved)	Reference
?	Earthenware food vessel about 46 cm high and 30 cm diameter with finger-nail impressions on the shoulder, containing seeds of wheat (<i>Triticum sativum</i>), barley (<i>Hordeum vulgare</i>) and one seed of Good King Henry (<i>Cheopodium bonus-benricus</i>). Wheat and barley seeds were also obtained from at least two other vessels.	Robarts 1905, 393, 396
3 ?	Earthenware vessels.	Robarts 1905, 397
Mostly 3	Quantities of pottery including coarse wares.	Robarts 1905, 392
?	Base of a thick-walled vessel with diameter of base 14 cm; containing carbonised wood.	Robarts 1905, 396
?	Rim of a coarse vessel with finger-nail impressions.	Robarts 1905, 396



Section in Area D (after Lowther)

Ditch in Area D (after Lowther)

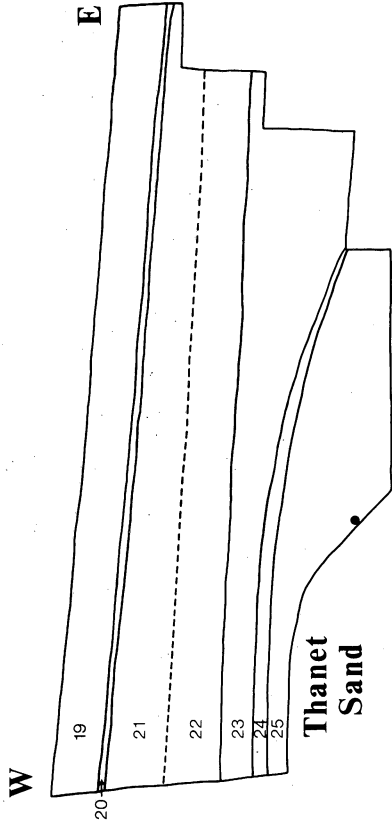


Section in Area F (after Lowther)

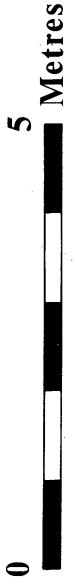
▲ 'Iron Age A' Pottery

• 'Iron Age' Pottery

• 'Roman' Pottery



Section in Area E (after Lowther)



Area	Description (wherever relevant the author's descriptions have been preserved)	Reference
?	Several loomweights approx 13 cm diameter and 10 cm high with a 2 cm diameter perforation. A complete example was illustrated, although it appears to have only been half a loomweight (400).	Robarts 1905, 394, 396, fig 6
?	Many perforated tiles, burnt. Illustration is probably imprecise.	Robarts 1905, 394, figs 7 & 8
?	(Ditch provenance uncertain). Saddle quern, sandstone, oval, broken, approx 35 cm long.	Robarts 1905, 392, 396
?	(Ditch provenance uncertain). Saddle quern, sandstone, ?broken, ?sandstone, approx 20 cm wide and 35 cm long (? 409).	Robarts 1905, 392, 396
?	Bones of ox or horse, too decayed to keep.	Robarts 1905, 392, 396
Throughout	Numerous flint flakes.	Robarts 1905, 389
?1	(Ditch provenance uncertain). Neolithic flint hoe.	Robarts 1905, 387, 391
?C	Perforated tiles found with a hearth. Whimster also mentions hearths found in the ditch with seeds of wheat and barley and perforated tiles resting on them.	Robarts 1910, 149; Whimster 1931, 93
?C	A number of baked loomweights.	Robarts 1910, 148
?C	Two baked clay spindle whorls (406, 407).	Robarts 1910, 148; Clinch 1907, 235
?C	Large number of quernstones of sandstone.	Robarts 1910, 148
?C1	(Robarts says 'near the surface' when possibly talking of the ditch). Broken celt (415).	Robarts 1910, 148
?C	A borer and one or two scrapers.	Robarts 1910, 148
?C	Small portions of perished bronze and a bronze brooch (418). Clinch calls the latter a circular bronze buckle with a simple pin or tongue.	Robarts 1910, 148; Clinch 1907, 235

◀ Fig 2. Queen Mary's Hospital, Carshalton. Section drawings after Robarts & Lowther. The layers were described as:

- | | | | |
|----|----------------------------------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------|
| 1 | soil indistinguishable from the surrounding soil (? = 6 Roman or post-Roman) | 11 | Dark 'earthy' sand (Bronze Age) |
| 2 | soil lighter in colour than 3 (Bronze Age) | 12 | (=19 Roman or post-Roman) |
| 3 | Black sooty soil (=7 and 8 Bronze Age) | 13 | (=20 Roman or post-Roman) |
| 4 | Slightly yellow sandy clay (=9 and 10 Bronze Age) | 14 | (=21 Roman or post-Roman) |
| 5 | Topsoil (?=19 Roman or post-Roman) | 15 | (=22 Roman or post-Roman) |
| 6 | Dark sand (?=1 Roman or post-Roman) | 16 | (=23 Roman or post-Roman) |
| 7 | Black silt (not as dark as 8) (=3 Bronze Age) | 17 | (=24 Roman or post-Roman) |
| 8 | Intense black silt with charcoal (=3 Bronze Age) | 18 | (=25 Bronze Age?) |
| 9 | Chalk-speckled silt with large flints and chalk blocks (?=4 Bronze Age) | 19 | Topsoil (=25 and 12 Roman or post-Roman) |
| 10 | Light sand (=4 Bronze Age) | 20 | 19th century debris and humus (=13) |
| | 21 | Same as 22 but with less pebbles (=13 Roman or post-Roman) | |
| | 22 | Light sandy soil 'hillwash' (=15 Roman or post-Roman) | |
| 23 | Dark mottled grey and rust red clay 'sludge silt' ?waterlaid (=16 Roman or post-Roman) | | |
| | 24 | Large flints, pebbles, potboilers etc (=17 Roman or post-Roman) | |
| | 25 | Yellow clay (=18 Bronze Age?) | |

<i>Area</i>	<i>Description</i> (wherever relevant the author's descriptions have been preserved)	<i>Reference</i>
C4	A little pottery.	Robarts 1910, 146
C4	Bones of wolf, horse and ox.	Robarts 1910, 146
C4	Flint flakes and cores.	Robarts 1910, 146
C	Quantity of potsherds, several with finger-nail ornament along the top of the rim (?225, 226).	Lowther 1944-5, 60, 65
∅C	'Disturbed layer'. Worn fragment of a cylindrical loomweight (? 405).	Lowther 1944-5, 71
D10	Bones of a dog.	Lowther 1944-5, 58, 74
D10	Fragments of a bowl C2 (86). Lowther's drawing is not accurate. An Iron Age A pot is marked on his section drawing, probably this pot.	Lowther 1944-5, 58, 64, fig 4
D8	Animal bones - horse, pig, sheep and ox.	Lowther 1944-5, 60, 74
D8	Calcined flints.	Lowther 1944-5, 60
D8	Two pots C3 (320) and C5 (324 + 325) found together. Lowther's drawings are not accurate. 'Iron Age pot' is marked on his section drawing, probably these pots.	Lowther 1944-5, 60, 65, figs 2, 5 & 6
D7	Saddle quern fragments.	Lowther 1944-5, 60
D7	Flint flakes and implements (416).	Lowther 1944-5, 60
D7	Piece of haematite ware (245).	Lowther 1944-5, 65
Near bottom of D7	Only pot found by Lowther with pie-crust ornament - C6 (3).	Lowther 1944-5, 65, fig 7
Near bottom of D7	Rim sherd C7 (229).	Lowther 1944-5, 65, fig 7
Near bottom of D7	Rim sherd C8 (337).	Lowther 1944-5, 65, fig 7
Near bottom of D7	Rim sherd with lug C9 (321).	Lowther 1944-5, 65, fig 7
Near bottom of D7	Rim sherd C10 (233).	Lowther 1944-5, 65, fig 7
Near bottom of D7	Rim sherd C11 (236).	Lowther 1944-5, 65, fig 7
Near bottom of D7	Rim sherd C12 (87).	Lowther 1944-5, 65, fig 7
Near bottom of D7	Pot base with perforation C13. Another also found (99 & 370).	Lowther 1944-5, 65, fig 7
Near bottom of D7	Large jar with cable ornament round neck C14 - LBA (8).	Lowther 1944-5, 64, 65, fig 7
D6	Several fragments of Iron Age C pot.	Lowther 1944-5, 60, 67, fig 10
D6	Fragment of a bronze implement originally identified as an axe, probably a bar (422).	Lowther 1944-5, 60, 67, fig 10
D6	Numerous fragments of LBA pot.	Lowther 1944-5, 60
D6	Some Roman pottery - recorded in 2 places on his section drawing.	Lowther 1944-5, 60, fig 2
D6	Several flint scrapers of Bronze Age type, two Mesolithic cores, a few Neolithic-type implements - many described as Mesolithic by Wymer (416).	Lowther 1944-5, 60, 71; Wymer 1977, 198
E2:	Iron Age sherds - marked on Lowther's section drawing.	Lowther 1944-5, 63, fig 3
F17	Roman pottery - upper part of jar C15, piece of jar rim C16, fragments of a small flagon, all found at a depth of 2.25 m.	Lowther 1944-5, 67, fig 9

Area	Description (wherever relevant the author's descriptions have been preserved)	Reference
F16	Haematite sherd (23).	Lowther 1944-5, 65
F16	One complete saddle quern of sandstone 35.5 x 16.5 x 5 cm (412). Pieces of other saddle querns of gritty greenish-brown sandstone, one piece of a sarsen stone (410).	Lowther 1944-5, 62, 68-9, fig 15
F16	Small abraded Roman sherds - Roman pottery is marked in three places on Lowther's section drawing.	Lowther 1944-5, 62, fig 3
F16	Small abraded Iron Age sherds.	Lowther 1944-5, 62
F16	Piece of Roman tegula.	Lowther 1944-5, 62
F16	Calcined flints.	Lowther 1944-5, 62
F16	Worked flakes (416).	Lowther 1944-5, 62

Finds from elsewhere on the site

Area	Description	Reference
G	About seven cremations were found, marked by ashes, calcined bones and flints, flint flakes, and fragments of pottery. They are also described as being found with perforated tiles at a depth of 45 cm. The following three burials may belong to this group, but Robarts is not clear in his text:- Burial 1 - ashes, two flint flakes, fragments of one pot with rim diameter of 39 cm; found at a depth of 1.2 m. Burial 2 - various pieces of pottery; found at a depth of 1.05 m. Burial 3 - ashes, burnt flint, broken pottery with wheat and barley grains (<i>Triticum sativum</i> and <i>Hordeum vulgare</i>). Also in Area G was a crouched calcined skeleton of a child of c 6 years, lying on a calcined sandstone saddle quern 32 cm x 52 cm x 10 cm. At one point the quern is said to be on top of the skeleton, but this is probably incorrect. Under the quernstone was a molar of <i>Bos</i> sp and other bones.	Robarts 1905, 391, 392, 395, 396, 397
Near G	Small cake of copper (?420).	Robarts 1905, 391, 395, 396
Near G	Numerous flint flakes.	Robarts 1905, 391
Outside enclosure	Several flint implements.	Robarts 1905, 391, 397
Outside enclosure	Few fragments of Roman pottery including samian.	Robarts 1905, 389, 393
Outside enclosure	Four-handed cup approx 10.5 cm high.	Robarts 1905, 391-2, 396, fig 2
Outside enclosure	Fragment of Aylesford type pedestal urn.	Robarts 1905, 393, figs 4 & 5
Outside enclosure near camp	Stone sickle.	Robarts 1910, 148
K	Two hearths with burnt pebbles and pot boilers.	Robarts 1905, 391; Robarts 1910, 150
I	Potsherd C4 (14). Lowther's drawing not accurate.	Lowther 1944-5, 60, 65, fig 5
I	Calcined flints.	Lowther 1944-5, 60

<i>Area</i>	<i>Description</i>	<i>Reference</i>
D6	In western extension of ditch layer (ie outside enclosure) – piece of bronze ingot (421).	Lowther 1944–5, 60
?	Cup (similar to 372) 9 cm high, 11.5 cm diameter, fine black glossy fabric.	Robarts 1905, 393, 396, fig 3
?	Shoulder of a vessel of very dark ware with basket or wattle marks on exterior (?106).	Robarts 1905, 396
?	Base of an earthenware pipkin.	Robarts 1905, 396
?	Rim and shoulder of a dark vessel with rim 15.5 cm diameter containing burnt wood and grains of wheat and barley.	Robarts 1905, 396
?	A fragment of a handled jar with cordon markings.	Robarts 1905, 393
?	Base of a coarse thick reddish vessel with base diameter of 14 cm.	Robarts 1905, 396
?	Large amount of reddish-brown hand-made ware with finger-print decoration on the rim and holes below.	Whimster 1931, 93
?	Large amount of rough black ware with a very definite shoulder and slanting marks incised below.	Whimster 1931, 93
?	Four little cups of LBA date approx 7.5 cm high, one with nine knobs round the shoulder and one with a clear ridge and blackish smooth ware (?369 or 372).	Whimster 1931, 93; Robarts 1905, 396; Robarts 1910, 149
?	Fragments of La Tène soapy ware.	Whimster 1931, 93
?	Pot C1 (101); Lowther's drawing of it is not accurate.	Lowther 1944–5, 64, fig 4
?	Lance head (423).	Robarts 1910, 148

Catalogue of Surviving Finds

The surviving finds consist mostly of a large quantity of pottery, but also perforated clay slabs, loomweights, spindle whorls, quernstones and bronze artefacts. Where possible, contexts are included. Labels accompanying the Lowther material were found to be at variance with the published records, and so could not be used. See the correlation table for the present location of artefacts (microfiche 18–23)

Most of the finds were examined macroscopically, but the stone finds were examined microscopically; only the stone axe has been thin-sectioned. The percentage of inclusions was assessed by visual inspection, as were the colours since there is a high degree of colour variation on bonfire-fired clay objects.

Abbreviations used:- E exterior surface; I interior surface; C core; BFG burnt flint grit inclusions; < less than.

POTTERY

The best method of categorising the pottery comprehensively was found to be by fabric type. The fabrics were divided into eight main types on the basis of visual examination. Consequently the divisions between the fabrics may not be clear cut. The fabric groups are described below followed by discussion of the pottery. The detailed catalogue is on microfiche 2–16.

Fabric 1 pottery catalogue 1–83; figs 3–6

This is a very coarse, heavily flint gritted fabric. It appears to have been used solely for jars. Some are carinated with concave necks (for example 12 and 14), while others have high rounded shoulders (for example 10 and 17), and others have slack profiles (for example 1 and 7). There are no handles or lugs, and only one instance of a perforation (6). Most rims are plain or decorated

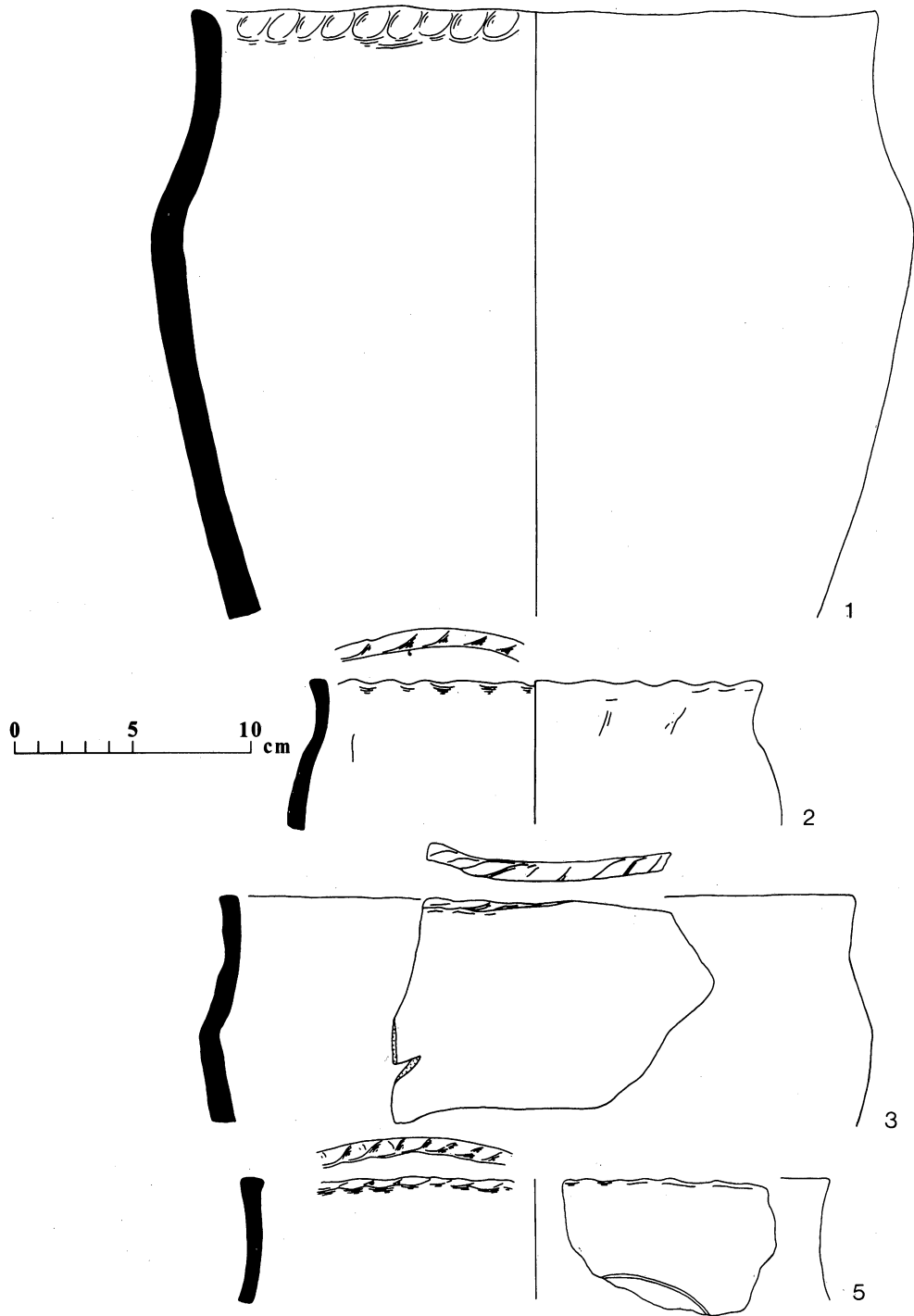


Fig 3. Pottery from Queen Mary's Hospital, Carshalton. Fabric 1

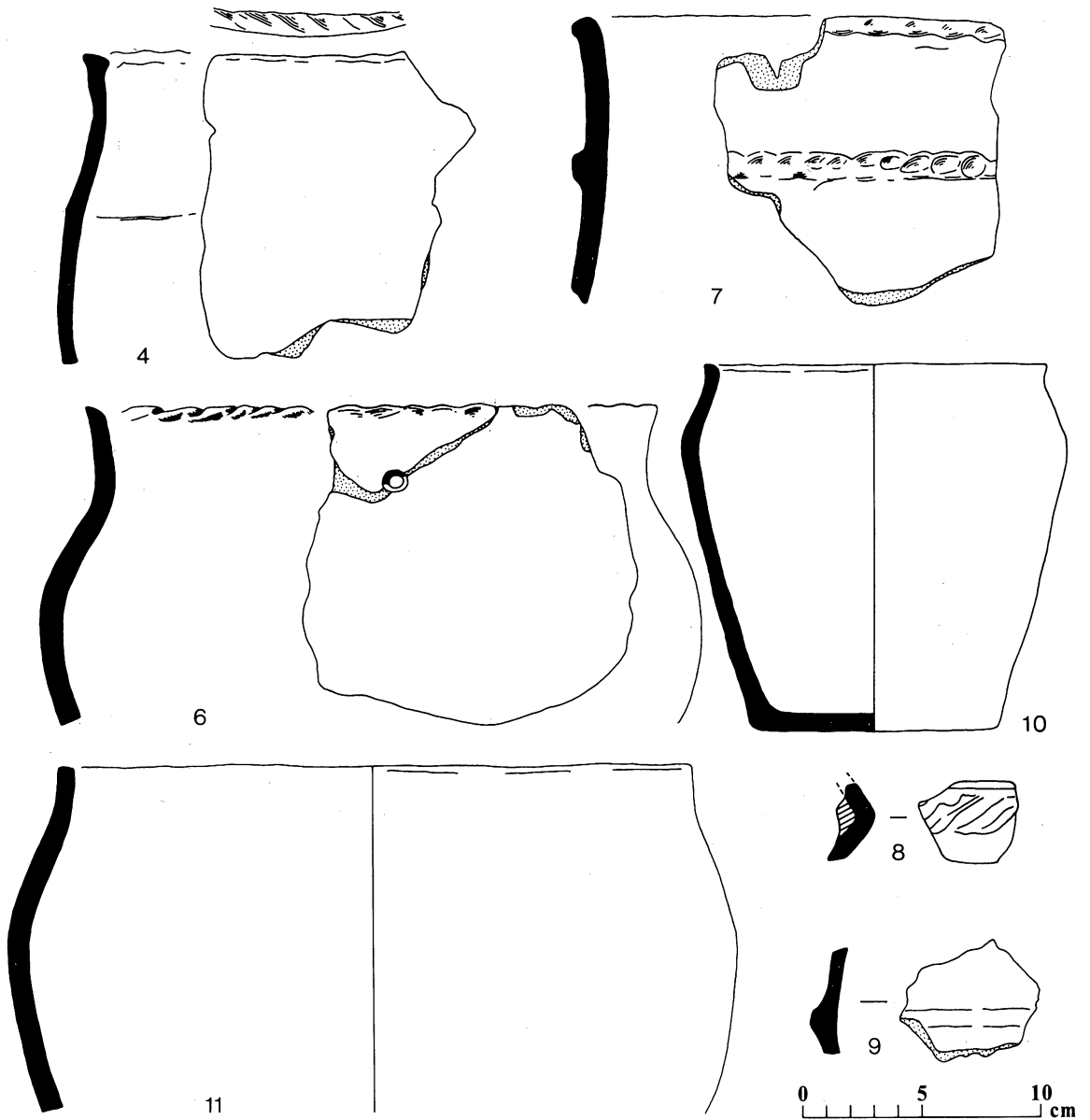


Fig 4. Pottery from Queen Mary's Hospital, Carshalton. Fabric 1

with impressed and finger-tipped decoration. There are two examples of a decorated applied cordon (7 and 8) and one plain applied cordon (9).

Pot 14 was found outside the enclosure in Area I (Lowther 1944-5, 60), and pots 3 and 8 were found at the bottom of D7 associated with pottery of finer fabrics, but no definite provenance can be attributed to other fabric 1 pottery.

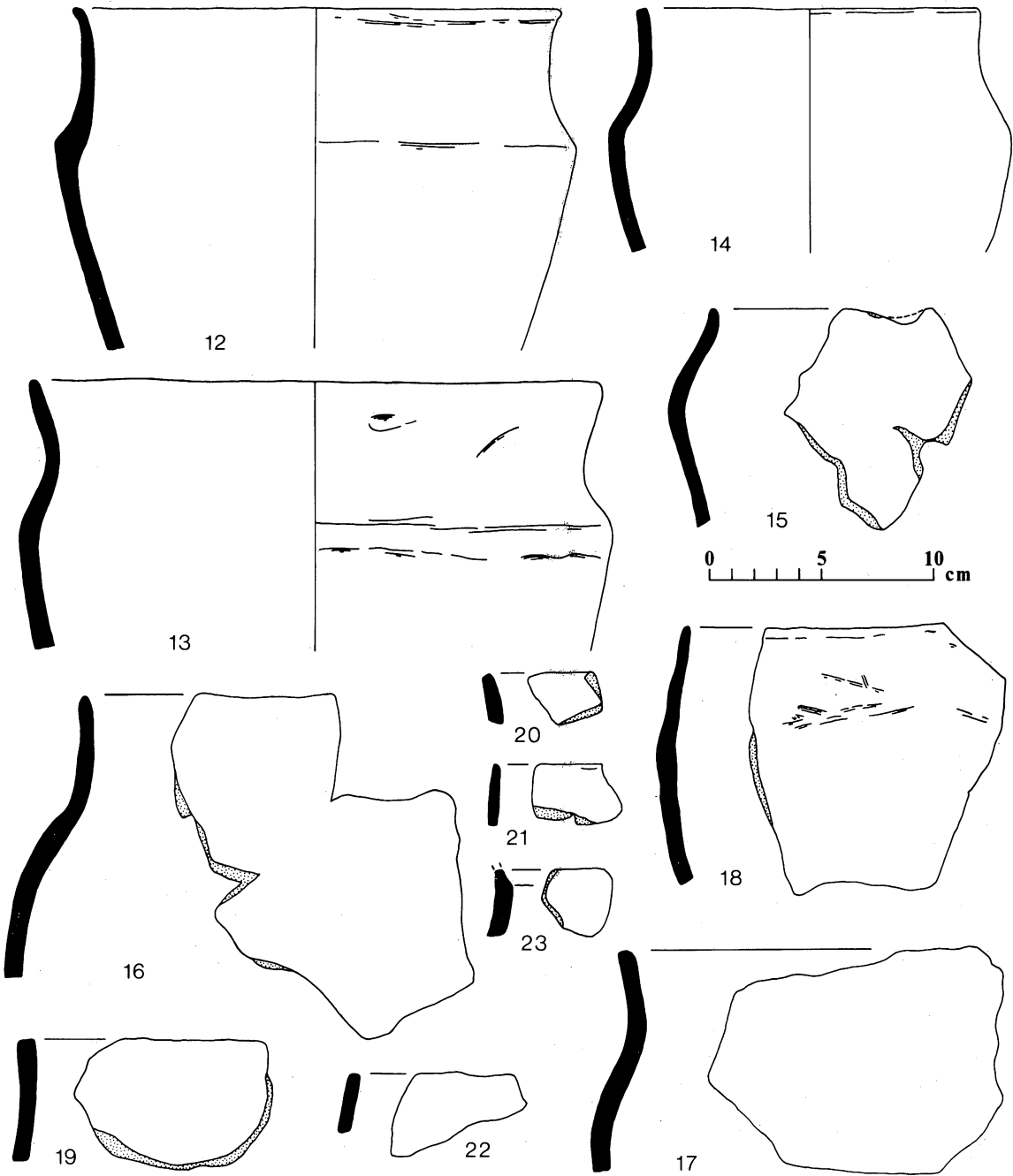


Fig 5. Pottery from Queen Mary's Hospital, Carshalton. Fabric 1

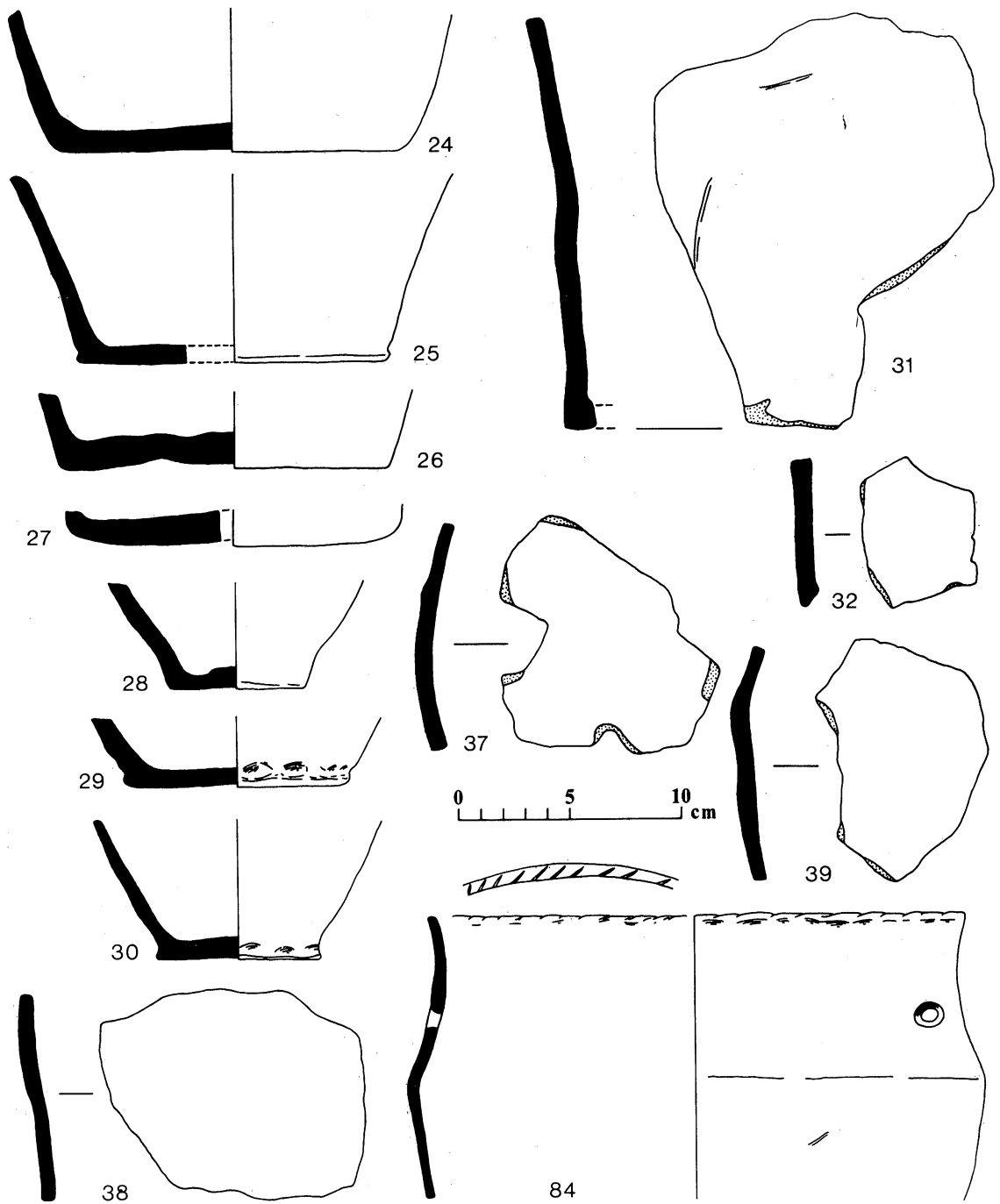


Fig 6. Pottery from Queen Mary's Hospital, Carshalton. Nos 24-39 fabric 1; no 84 fabric 2

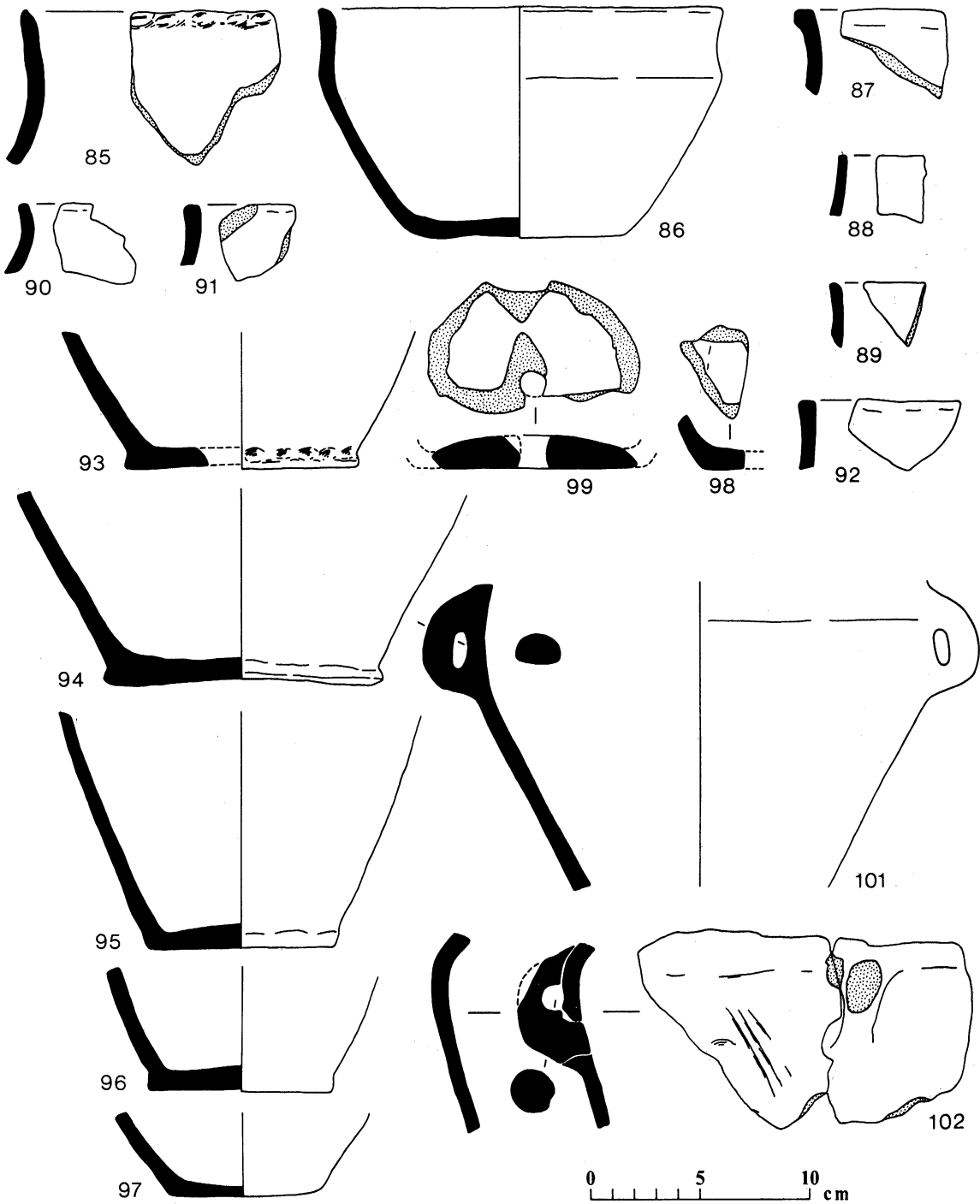


Fig 7. Pottery from Queen Mary's Hospital, Carshalton. Fabric 2

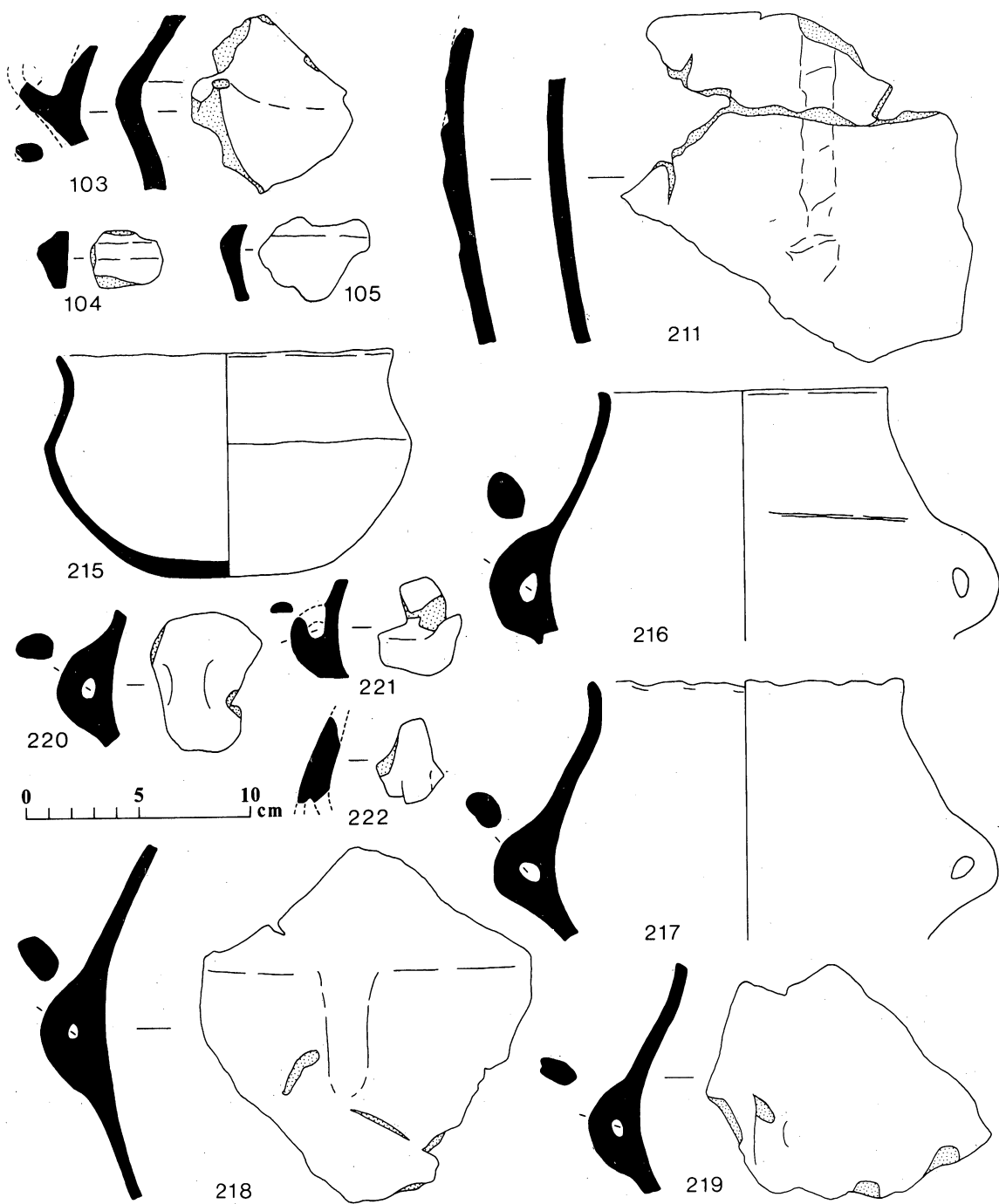


Fig 8. Pottery from Queen Mary's Hospital, Carshalton. Nos 103-105 fabric 2; no 211 fabric 3; nos 215-222 fabric 4

Fabric 2 pottery catalogue 84–210; figs 6–8

Fabric 2 is less coarse than fabric 1, usually with less dense flint gritting, and the surfaces are usually roughly wiped and smoothed. The pottery walls tend to be less thick. However, there is no sharp division between fabrics 1 and 2. The identifiable forms include one bowl (86) and a few jars, mainly of the handled variety (101–103). Most rims are plain, although there are some decorated ones (84 and 85). The only other possible decoration (on 102) may be modern. There is one example of a base with a central perforation (99).

Pot 86 was an isolated find in layer 10 of area D (the earliest silting of the ditch). 87 and 99 were found at the bottom of D7 (the black layer of the ditch) associated with pottery of other fabrics (see below).

Fabric 3 pottery catalogue 211–214; fig 8

This is a fairly coarse fabric, similar in texture to fabric 2. There are very few grit inclusions. Most tempering was vegetable tempering which has burnt out. The distinctive sherd (211), with its vertical cordon, may well be medieval, in which case fabric 3 would not be relevant to the Bronze Age phase.

Fabric 4 pottery catalogue 215–312; figs 8–9

This is a fine fabric with smoothed surfaces but with no burnishing, unlike fabric 6. The forms mostly have plain rims. There is an unusual scalloped rim (217), as well as a rim with slashed decoration (225), and a rim with impressed decoration (226). Almost all the jars in this fabric have handles. Two bowls are represented in the group. Some sherds come from the upper ditch silts, D7.

Fabric 5 pottery catalogue 313–316; figs 9–10

Fabric 5 consists of a small group of pottery with ironstone (or grog) inclusions as well as burnt flint grits. The pottery consists of high-shouldered jars and shows no decoration. It is similar to fabric 6 in being evenly burnished on the exterior.

Fabric 6 pottery catalogue 317–370; figs 10–11

Fabric 6 is a fine fabric, and unlike fabric 4 is burnished on the exterior surface and usually on the interior as well. Burnt flint filler is still present and equally finely crushed. There is a variety of forms – carinated bowls, round shouldered bowls and jars, biconical jars and high shouldered jars. One bowl has a slight omphalos base (369), and there is an example of a base with a central perforation (370). The globular jars often have handles. One carinated jar (324) may have had a perforation (see 325). The fabric seems to represent a change from the preferred colour of orange, to predominantly greys and black. 319 is unusual since it is a very fine fabric but deliberately uneven, resembling a leather vessel. 327 has an unusual buff colour and incised lines for decoration.

320, 324 and 325 were found in D8, the black layer of the ditch, and 321 and 337 were found at the bottom of D7 (the layer above D8) associated with pottery of other fabrics.

Fabric 7 pottery catalogue 371, fig 11

This is an extremely fine fabric, similar in texture to fabric 8, but the fabric is very micaceous. Although probably not burnished, it is much finer than fabric 4. The one sherd extant, although a base fragment, is almost certainly to be identified as a bowl.

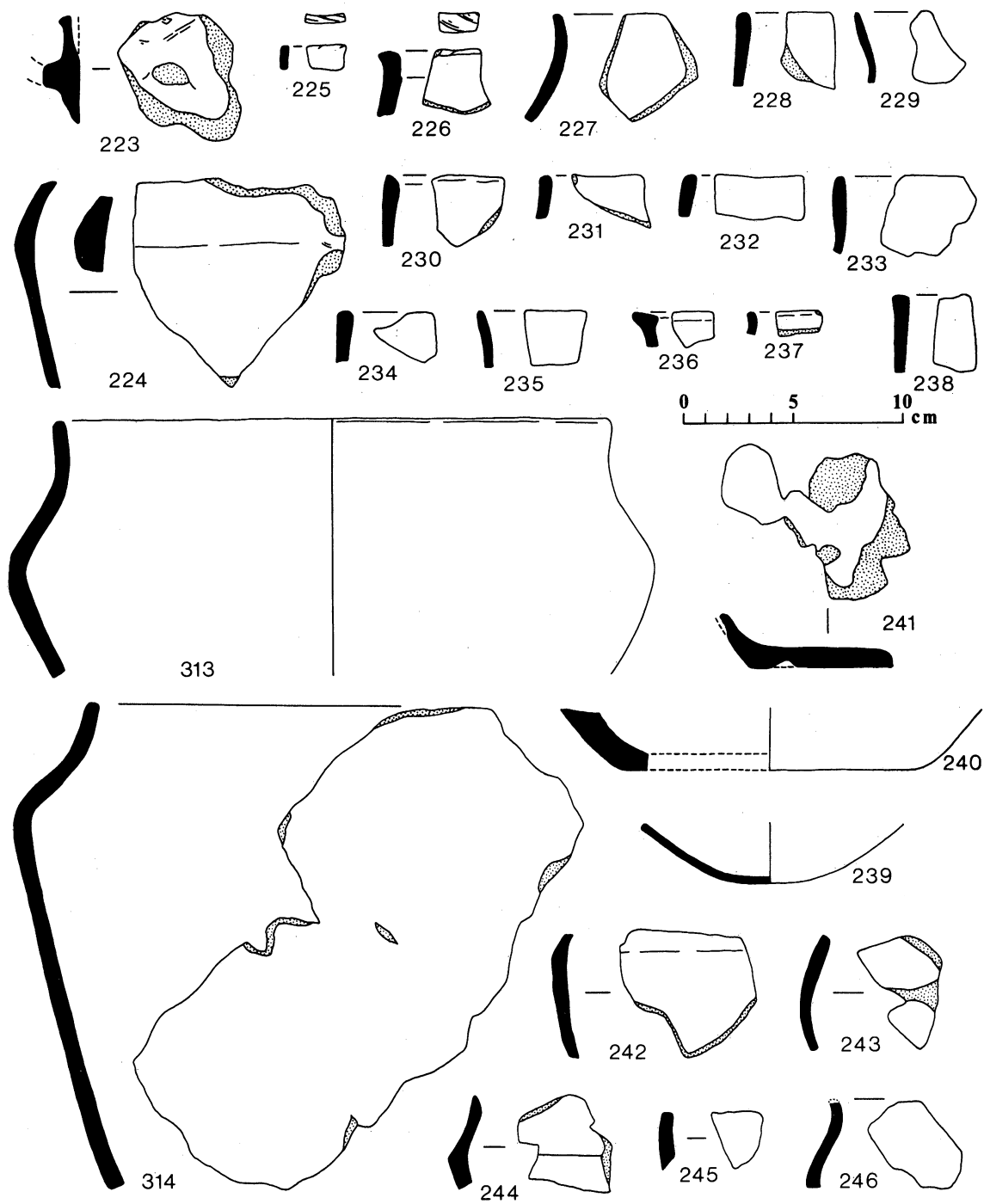


Fig 9. Pottery from Queen Mary's Hospital, Carshalton. Nos 223-246 fabric 4; nos 313-314 fabric 5

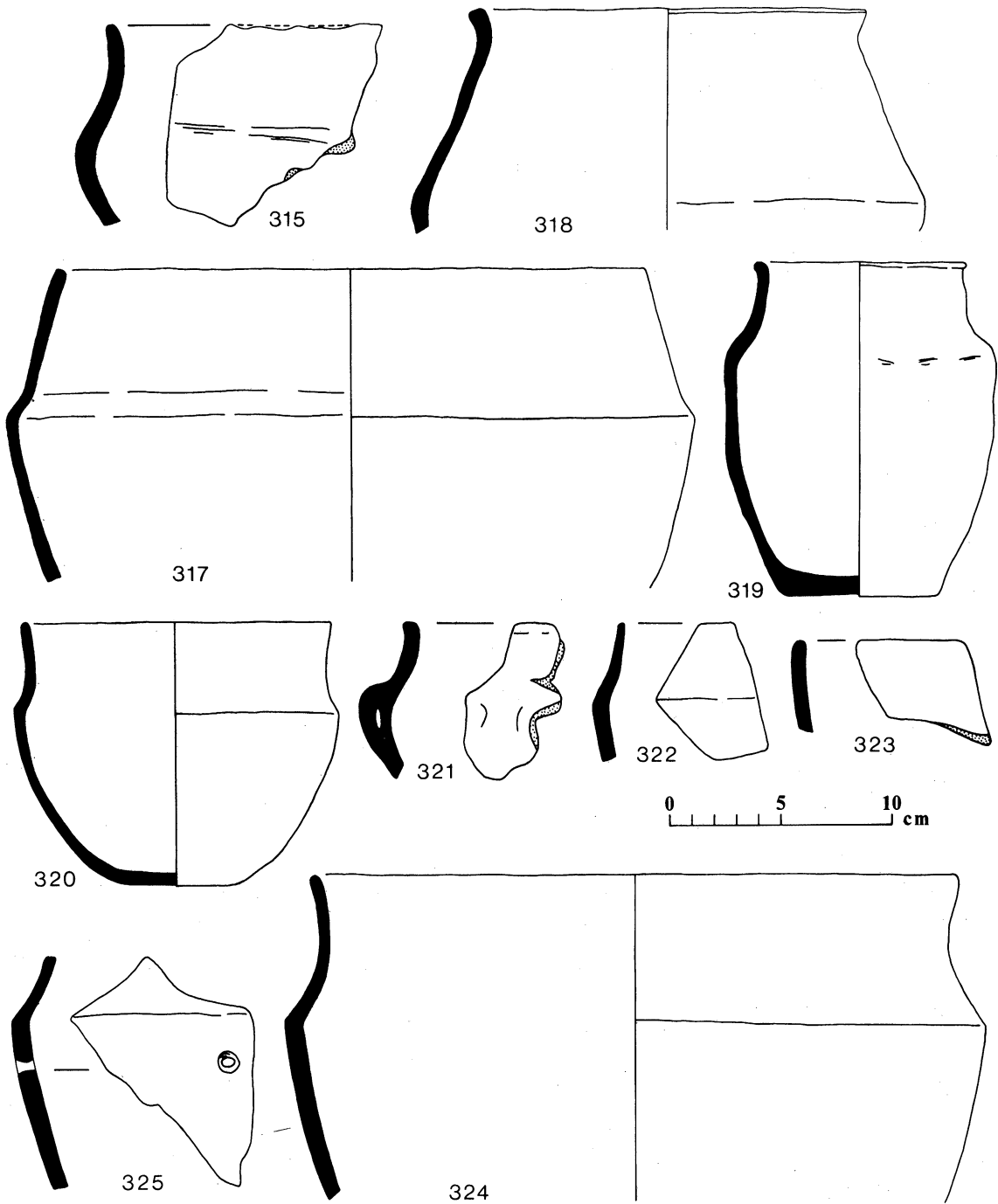


Fig 10. Pottery from Queen Mary's Hospital, Carshalton. No 315 fabric 5; nos 317-324 fabric 6

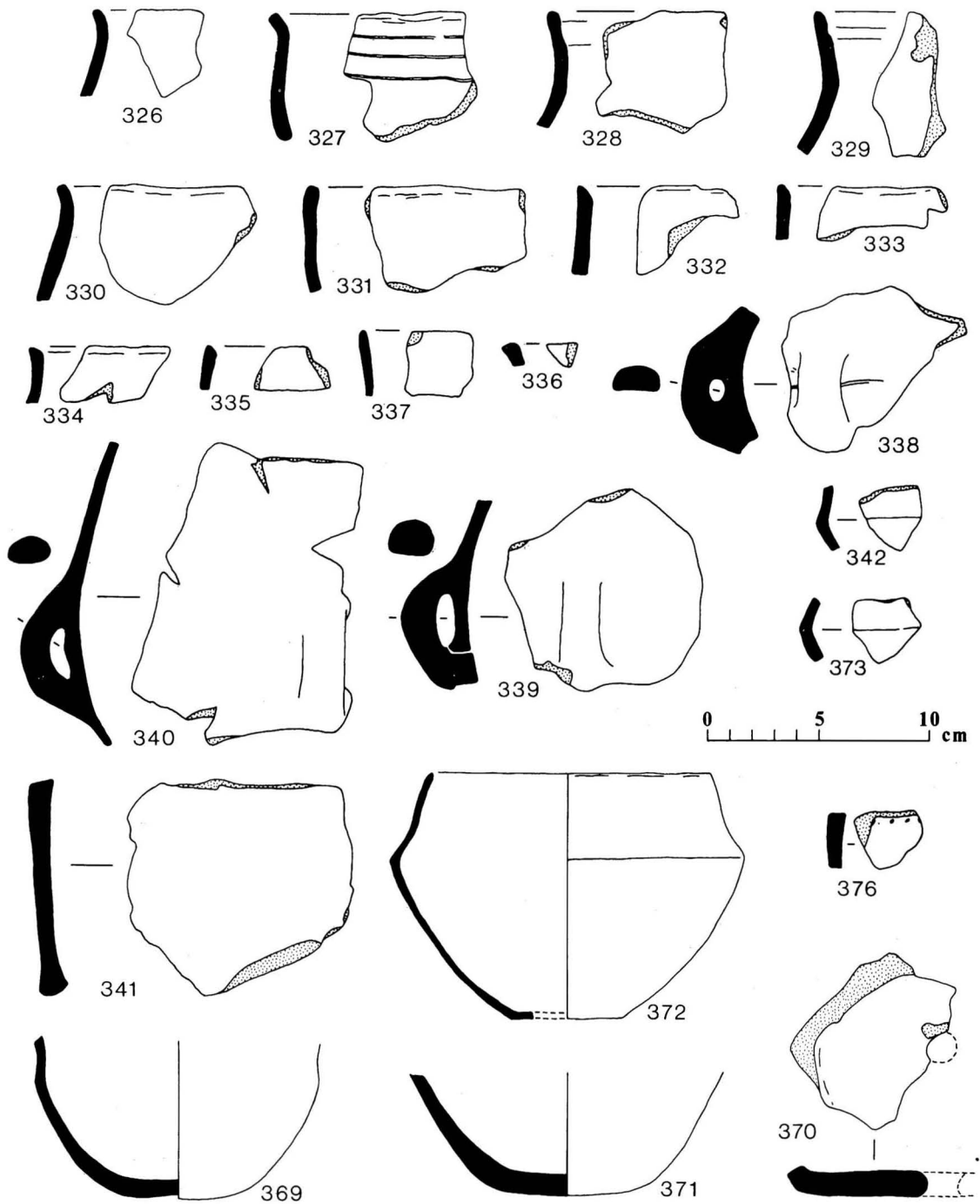


Fig 11. Pottery from Queen Mary's Hospital, Carshalton. Nos 326-370 fabric 6; no 371 fabric 7; no 372 fabric 8; no 376 unclassified

Fabric 8 pottery catalogue 372–375; fig 11

This is an extremely fine fabric, highly burnished on the exterior and interior. The flint filler is even more finely crushed than in fabrics 4 and 6 and vessel walls are very thin. The identifiable vessel (372) is a thin-walled bowl.

Other Pottery pottery catalogue 376–378; fig 11.

One sherd of grog-filled fabric with stabbed decoration (376), and two burnished sherds of a virtually gritless fabric (377–8) do not match the above categories. There were also several potsherds which can be dated to the Roman period and are therefore not detailed or numbered here.

Discussion of the pottery

With a total of 130 diagnostic sherds the combined Queen Mary's assemblages provide good material for characterisation. In view of the mode of recovery of the 1903–4 finds, some caution must obviously be advanced regarding whether the collection is truly representative for the site. For example the high proportion of diagnostic sherds extant (over one-third of the total), might suggest that they were preferentially retained over body sherds. On the other hand it is difficult to envisage that there was biased selection of any one rim form over another and we might therefore be inclined to take the composition of the assemblage as broadly representative in terms of vessel forms.

The assemblage presents a good range of forms which in general terms match classic post Deverel-Rimbury ceramics. It appears to be essentially homogeneous with a reasonably limited chronological span. Questions concerning internal relative chronology arise from some pottery, but as there was little stratigraphic control over finds no firm conclusions are possible.

In terms of fabric the pottery includes, as would be expected, a mixture of fine and coarse wares with occasional sherds in very fine fabrics, and surviving pottery can be divided into eight types. Most of the pottery is flint-tempered as is typical of the later Bronze Age. Many of the pots have been manufactured by the coil technique, with several instances of joins being visible (for example, numbers 3, 4, 13 and 319). Elsdon (1982, 128–9) suggests that the pottery from Green Lane, Farnham, was constructed by the slab technique, following Barrett's observation (1975, 104) that the technique is noticeable in many groups of pottery of this date, particularly those in southern England. Indications of this technique are thin walls and vertical smearing or rippling on the exterior surface of the vessels as well as observed junctions. Many of the Carshalton sherds could fit this model, but similar patterns could result from smoothing of coils, and coil forming has been suggested for the pottery from South Rings, Mucking (Jones & Bond 1980, 477). Until experiments in hand-made pottery have conclusively proved a particular method of manufacture, it is probably wise not to extend the argument. It seems likely that the joins on some pots represent joins of coils at awkward parts of the pot (for example, at shoulders). However, many bases show signs of being formed by the slab method, these being subsequently joined to the body of the pot; at times the pinching of the clay at the join resulted in a splayed form, the finger-tipping verging on decoration (for example, on nos 29 and 30). However, a few of the bases were made by the coil method (for example, no 28). Many of the bases have a concentration of flint grits on their exterior surface which is thought to have prevented them sticking to a surface (for example, 25) (Longley 1980, 65). This was probably during manufacture of the base – nos 96 and 216 were subsequently turned over when joined to the body of the pot, resulting in a concentration of flint grits on the interior surface of the base. Some of the pots may have been formed inside a basket, or come into contact with basketwork when leather-hard, since basket-like impressions have been noted (on no 106; Robarts 1905, 396).

Some of the pots have perforations, presumably for applying organic handles or for securing

lids or coverings (for example, 84 and 325), and these seem to have been drilled, probably at the leather-hard stage, and in the case of 325 after burnishing. There are two examples of pot bases with a centrally drilled hole, probably drilled at the leather-hard stage or possibly after firing. Other pots have small handles or perforated lugs, for which the method of manufacture is sometimes discernible (in particular 102). It would appear that the standard technique was to fit a plug-like extension at one end of the handle into a wall perforation. The other end of the handle was then simply luted against the wall above.

The pottery forms found at Queen Mary's Hospital may be discussed conveniently under five headings. These cover the material with the most complete profiles up to the rim.

1 *Bucket- and barrel-shaped vessels, and cordoned sherds*

Two vessels (7, 18) stand out from the prevailing shouldered and carinated jar forms. No 7 with its near-vertical wall appears to come from a bucket-like vessel; a slight concavity suggests a slack S-profile. Both the external lip of the rim and the horizontal cordon below carry finger-tip impressions. Form and fabric are reminiscent of Deverel-Rimbury bucket urns, but can also be matched in later contexts, as at Mill Hill, Deal (Champion 1980, 236, fig 6), Scarborough (Smith 1927, 7, 187), or Mucking (Jones & Bond 1980, 476, figs 14–15). This pattern suggests that sherd no 7 is not simply residual from earlier activity. Cordons occur at Queen Mary's Hospital on four other sherds. Two have plain cordons (9, 104), one has a cable-moulded cordon sited in an angular neck (8), while the fourth sherd (211) is probably medieval. The neck cordon is becoming familiar in LBA assemblages and is generally strongly cabled as at Mucking South Rings (Jones & Bond 1980, 476, fig 13).

The thin-walled bowed profile of sherd no 18 indicates a barrel-shaped vessel. This conforms to Barrett's convex-sided rather than hooked rim jar form (1975, 103–4). Such plain jars are not particularly sensitive chronologically, but begin late in the second millennium BC.

2 *Round-shouldered and slack-profile jars*

Most jars in the assemblage have more or less pronounced shoulders which are rounded or vestigial and are thereby distinguished from the carinated forms treated below. There is a considerable variation in the profiles dealt with here, depending principally on rim angle, neck form and shoulder accentuation, but it is difficult to sub-divide the group effectively.

Amongst the slack-profile jars three have upright rims and sinuous S-profiles (1, 10, 11). On two others and a likely third (2, 4, 5) a weak shoulder is accompanied by a slightly hollowed neck with a cable-decorated thickened rim. Slightly out-turned but plain rims occur on vessels with moderate (17, 246) and pronounced (313, 315) S-profiles. A variant here is pot 6 with its more globular body and straightish neck with rim cabling. The form of vessel 16 is similar. High pronounced shoulders in two cases give more biconical bessels (15, 314).

The range of round-shouldered jars at Carshalton may be well matched amongst classic LBA plain-ware assemblages such as Runnymede Bridge (Longley 1980, 33–70), Aldermaston Wharf (Bradley *et al* 1980, 232–42) and Puddlehill (Matthews 1976, 49–59).

3 *Carinated jars*

Jars with fairly angular carinations high on the body fall into two main groups. Most at Queen Mary's Hospital have good concave necks above the carination (3, 12, 13, 14, 84, 324/325 and probably 244) leading to an out-turned, or in one case (13) an inturning rim. The small crudely made jar 319 might be better grouped here than with the round-shouldered forms. The second group of carinated jars is characterised by essentially biconical profiles, the upper body being slightly concave (322) or slightly convex above a sloped ledge at the carination (317).

In LBA plain-ware assemblages carinated jars tend to be outnumbered by the shouldered

forms discussed above, whereas the form is commonly associated with finger-tipping in the slightly later groups, eg Heathrow (Canham 1978, 24 fig 15:41), or Petters Sports Field (O'Connell & Needham 1977, 129 fig 5:1). These two sites also have plain carinated jars as do Ivinghoe Beacon (Cotton & Frere 1968, nos 1, 12, 80, 81), Mucking South Rings (Jones & Bond 1980, nos 9–12), Runnymede Bridge (Longley 1980 – many examples) and Highstead Site B enclosure (P Couldrey pers comm). Some of these jars are clearly in relatively fine wares as are nearly half of the Carshalton examples.

4 *Handled globular and biconical jars*

The handled jars stand apart from other jar forms on account of their profiles as well as the presence of strap handles or pierced lugs. Their swollen bodies have a low placed maximum girth, or belly, rather than a high shoulder. The belly may be rounded (217, 219, 321, 340) or lightly carinated (101–103, 216, 218, 224). Sherd 318 with its strong low carination is best accommodated in this class even though no handles survive. It has, along with all the extant rims on the handled versions, an out-turned lip. A number of handle fragments in the assemblage lack any appreciable body portion (220–223, 338, 339). The handles are often thick with small perforations, but can also be more strap-like (223) or slender (222). Rims may be simple (216, 318, 321) or scalloped (217), while body forms probably range between squat (321) and tall jars (101).

Handled jars are known in a number of other LBA assemblages from the south-east, for example Mill Hill, Deal (Champion 1980, 237), Runnymede Bridge (Longley 1980, 65), Mucking South Rings (Jones & Bond 1980, 476, fig 17, 477), Aldermaston (Bradley *et al* 1980, 236, fig 12:21D), Brooklands (Hanworth & Tomalin 1977, 34, fig 22:195), Kingston Hill (Field & Needham forthcoming no 25), Heathrow (Canham 1978, 22:21) Ivinghoe Beacon (Cotton & Frere 1968, 223:46–51) and Puddlehill (Matthews 1976, 53:9).

5 *Bowls*

No two bowls in the assemblage are quite alike, although most (six examples) are plain carinated forms of fairly fine fabric with burnished or smoothed surfaces. Four vessels have weak carinations with hollow necks leading to everted rims (86, 215, 320, 369). Minor differences are seen in the concavity of the neck and overall proportions. The shallower neck and wider mouth of vessel 86 give a noteworthy contrast with the others since the pot is recorded as coming from primary ditch silts (D10; Lowther 1944–5, 48, 64 fig 4), while no 320 came from upper silts (D8). Whether these stratigraphical positions indicate a valid chronological development in carinated bowls locally remains to be seen from better recorded groups. Vessel 86 is hard to parallel closely but a similar bowl occurred in pit 177 at Brooklands associated with LBA/EIA transitional pottery (Hanworth & Tomalin 1977, fig 21:180). The more developed forms are well matched at Runnymede Bridge (Longley 1980, 69–70 type 17 and later excavations), Mucking South Rings (Jones & Bond 1980, 476 fig 12) and Kingston Hill (Field & Needham forthcoming, nos 5, 9, 23), while casual finds of such bowls are known at Strand-on-the-Green (Canham 1976, 44 fig 6:12) and St Martin's-le-Grand (Museum of London no 412). Recent excavations at Beddington sewage works, on the site of the Roman Villa, have also turned up a plain burnished bowl of this form with some contemporary material (Adkins & Adkins 1983, 329).

Another carinated bowl form is represented by vessel 372 which is in a very fine fabric (8) with highly burnished surfaces. Here the upper part of the profile is essentially straight, making it biconical, but there is a slight kink just above the carination not unlike that on the biconical jar 317. A small burnished jar from Kingston Hill has a similar profile, but somewhat thicker walls (Field & Needham forthcoming no 12). The kinked upper profile distinguishes these vessels from the great majority of biconical bowls with their straight upper cones which are well known in LBA/EIA groups (eg Longley 1980, type 4; Worsfold 1943, 36 fig 6; O'Connell & Needham 1977, 129:7–8). The rim may be simple or beaded on this latter type.

The bowl represented by sherd 327 differs from the others in its buff colour, in having a gentle S-profile with out-turned lip and, furthermore, in bearing horizontal decorative grooves. These features are reminiscent of bowls from Mill Hill, Deal (Champion 1980, 236 fig 6:8-9), although the grooving is less well executed and the profile slacker in sherd 327. Another parallel for form and decoration comes from Puddlehill (Saunders 1971, 5 fig 2:14). Bands of horizontal grooves are commonplace on Darmsden Ware, but again pot profiles do not match sherd 327 (Cunliffe 1968).

Some other thin-walled sherds with upright or slightly flaring necks (229, 337) may belong to either bowls or small fine-ware jars. The necks have a slight cigar-like profile which may be matched for example in slack tripartite jars at Mucking South Rings (Jones & Bond 1980, 476:1). More obviously belonging to bowls, but of unknown profiles, are two bases, one thin with widely flared walls (239), the other also flared but thicker (371).

Summary of the pottery

The Carshalton assemblage presents a good range of jar forms and a rather more limited range of bowls. Numerous parallels for specific forms have been cited with pottery of established LBA date, often coming from modern excavations. The formulation of more refined chronologies on a local level, to counteract regional effects, is still in its infancy due to a general lack of material critically dated by independent means. A trend thought to apply generally to the south-east of Britain is the replacement of a predominantly *plain-ware* assemblage by a *decorated* assemblage, which developed from the eighth century BC onwards into the Early Iron Age (Barrett 1980). In this scheme of development Carshalton ranks as a plain-ware assemblage, since decoration is restricted. On the coarse ware jars there is no sign of the finger-printed shoulders or bodies that are frequent in transitional LBA/EIA groups (eg West Harling; Clark & Fell 1953). Instead finger treatment is virtually confined to the cabling of some rims, often giving a pie-crust or scalloped effect. In addition, two applied cordons are embellished, one being finger-tip impressed, the other being cable-moulded. Apart from these rude ornamental devices there are only three isolated instances of other simple techniques, horizontal grooves on one bowl (327), a possible arc groove on a jar (5) perhaps the curvilinear motif noted by Harrison (1968, 137), and a row of pricked impressions on a body sherd (374). In addition, mention might be made of two sherds which have iron-rich surfaces (23, 245) described by Lowther as haematite coating (1944-5, 65). The surfaces do appear to have been deliberately coated or enriched, but they are not the deep red characteristic of true haematite.

The plain-ware character of the Carshalton assemblage suggests a date in the 8th century BC or earlier. Its form range is far more diverse and developed than that identified for the earliest post Deverel-Rimbury ceramics dating to the end of the second millennium and perhaps lasting into the first. The pottery may consequently be dated within the period 10th-8th century BC. Inevitably, some of the pot forms if taken individually would prove to have a longer currency, but the fine-ware bowls might be the most sensitive chronological indicators. It is worth noting in this context that the plain burnished hollow-neck bowls, which are predominant at Carshalton, seem to be diagnostic of the 10th-8th centuries BC, giving way to other forms towards the LBA/EIA transition. Attention has already been drawn to the stratigraphically early carinated bowl (86) with its short upright and little-hollowed neck, features which might be seen to evolve into the classic hollow-neck bowls. The bowls discussed here must be distinguished from the later concave-neck group with pedestal bases which Barrett has recently discussed in connection with the Orsett pottery from Essex (1978, 286-7). Apart from this potential sequence in bowl forms there is no firm evidence for development within the Queen Mary's Hospital assemblage of the sort formerly postulated (Needham & Burgess 1980, 459).

One striking feature of the pottery assemblage is the good number of handled jars present. Although it has been possible to list many contemporary sites which have pieces of handled jar,

these are invariably represented by very few sherds. Some indication of the validity of the high percentage at Carshalton may be won through comparison of the two assemblages: amongst Robarts' material 12 handled jar fragments come from a total of 69 diagnostic sherds, ie 17.5%; the respective figures for Lowther's material are 4 out of 61, ie 6.5%. Although there is a large disparity between these two figures, even the 6.5% (based on controlled excavations) is at complete variance with, for example, the Runnymede Bridge 1976 assemblage in which less than 0.5% of diagnostic sherds show handles. A similar low figure is obtained from the Aldermaston Wharf assemblage (Bradley *et al* 1980, 232-42). On the other hand, another hilltop site, that of Ivinghoe Beacon on the Chilterns, may have a moderate percentage of handled vessels (4.2% of catalogued sherds; Cotton & Frere 1968, 219-34). In the absence of any useful economic data for the Queen Mary's Hospital enclosure, it is impossible to assess whether the handled jars reflect a specific economic, or indeed, social, function rather than say a local stylistic preference.

Despite the broad morphological groups defined for the pottery, significant differences appear in their fabric distributions (table 1). Some are not surprising, for example the bowls are predominantly of finer wares. More noteworthy is the set of fabrics used for the handled jars, mainly the semi-fine fabric 4, but also a number with burnish, fabric 6. Occasionally these jars are in a coarser ware, but they use fabric 2 in contrast to the other jar forms. Fabric 1 is prevalent in the three other classes of jar but two subsidiary associations are noteworthy. Carinated jars alone join the handled ones in using fabric 6, while a minor group of the S-profile jars use fabric 5, which has a similar quality of surface finish but different inclusions. Three of the seven jars represented in these two fabrics have essentially biconical profiles (314, 317, 322). It is clear then that there was a degree of selection in the use of fabrics for each class of pottery.

Table 1: Summary of pottery forms by fabric

	FABRIC							
	1	2	3	4	5	6	7	8
No of sherds represented:	83	127	4	98	4	54	1	4
1: Buckets, convex jars and cordoned sherds	4	1						
2: Round- and slack-shouldered jars	10			1	3			
3: Carinated jars	4	1				4		
4: Handled jars		3		9		5		
5: Bowls		1		2		3	1	1
Total of diagnostic sherds	18	6	0	12	3	12	1	1

CLAY ARTEFACTS

Perforated Clay Slabs figs 12-13

There is no definite 'interior' and 'exterior' of a clay slab, and so the sides have been labelled E(1) and E(2). The illustrated side is E(1).

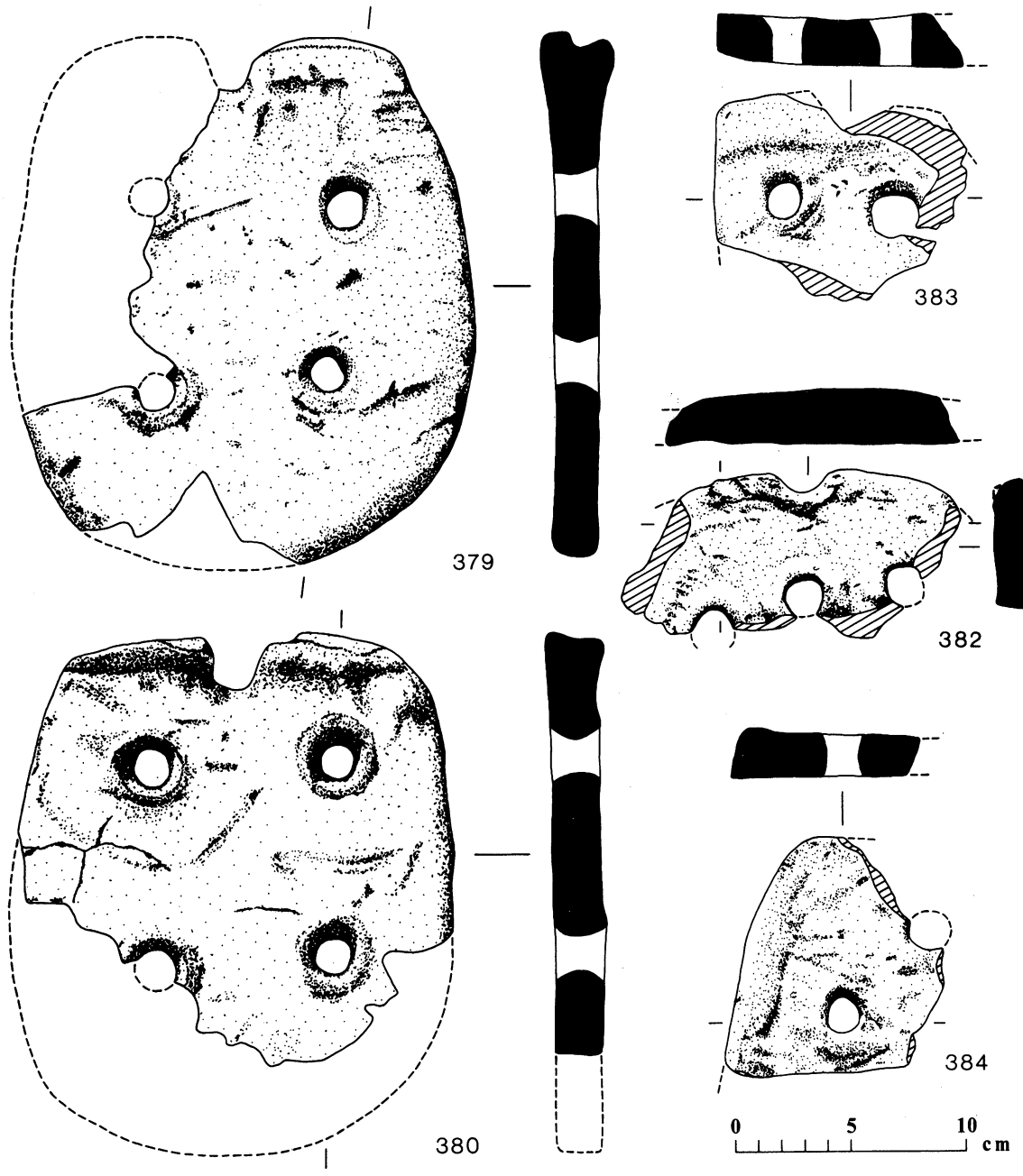


Fig 12. Queen Mary's Hospital, Carshalton. Perforated clay slabs

379	27% BFG, 3% other grits <3 mm. E(1) dark grey-brown. E(2) light brown-orange. Restored; core not visible. Four perforations minimum. Groove and indentation at one end.	387	25% BFG <2 mm, 15% ironstone/grog and pebbles. E(2) has 45% inclusions. E(1) and (2) light brown-orange. C light-medium orange-light brown. One perforation minimum.
380	30% BFG <3 mm. E(2) has 50% BFG. E(1) medium brown-orange. E(2) medium grey-brown. Restored; core not visible. Four perforations minimum. Groove and indentation at one end.	388	40% BFG <4 mm. E(1) (2) and C medium orange. One perforation minimum. Groove and indentation at end.
381	40% BFG <3 mm. E(1) medium orange. E(2) dark grey and medium orange. C light grey, medium orange. Six perforations minimum.	389	30% BFG <3 mm. E(1) (2) and C medium orange.
382	25% BFG <3 mm. E(1) medium orange, light grey. E(2) medium orange, light brown. C black-light brown. Three perforations minimum. E(1) has 40% BFG (but not on raised areas). Three perforations minimum.	390	20% BFG <3 mm. E(1) (2) and C medium orange. One perforation minimum. Groove at end.
383	35% BFG <3 mm. E(1) and (2) medium orange and brown. C medium orange-brown-grey. Two perforations minimum. Seed and finger impressions. Shaped by a knife.	391	40% BFG <2 mm. E(1) has 50% BFG. E(1) and (2) dark grey-light brown. C dark grey-orange. One perforation minimum.
384	35% BFG <3 mm. E(2) has 40% BFG. E(1) and (2) medium orange-brown. C medium orange. Two perforations minimum.	392	25% BFG <3 mm. E(1) and (2) medium dark orange-dark grey. C medium orange. Four perforations minimum.
385	30% BFG <3 mm. E(1) and (2) medium orange-brown. C medium orange. One perforation minimum. Groove and indentation at one end.	393	30% BFG <3 mm. E(1) and (2) light-medium brown. C medium orange. One perforation minimum.
386	35% BFG <5 mm. E(1) dark grey-light brown. E(2) light brown and medium orange. C medium orange. One perforation minimum.	394	25% BFG <2 mm. Denser BFG on few surviving areas of E(2). E(1) (2) and C medium orange, dark grey. Five perforations minimum.
		395	30% BFG <3 mm. E(1) (2) and C medium brown-orange. One perforation minimum.
		396	35% BFG <3 mm. E(1) and (2) light brown. C medium orange-dark grey. Too small to illustrate.
		397	25% BFG <4 mm. E(1) (2) and C medium orange. Too small to illustrate.

Loomweights fig 14

Eight fragments from different loomweights survive. Most represent cylindrical loomweights and three small fragments represent pyramidal loomweights (403, 404 and 405). Their colour ranges from medium-dark orange to dark brown to black.

398	5% grits and ironstone inclusions <0.5 mm. Fairly well fired.	403	Badly fired. 30% grits and vegetable tempering <0.5 mm. Fairly well fired. Pyramidal.
399	15% grits <1 mm. Badly fired.	404	20% grits and ironstone inclusions <1 mm. Fairly well fired. Pyramidal.
400	10% grits and ironstone inclusions <1 mm. Badly fired. Score marks on one side.	405	5% grits <0.5 mm. ?Burnt. Possible abraded top of a pyramidal loomweight (possibly from Area C). Not illustrated.
401	5% grits <0.5 mm. Badly fired. Resembles daub.		
402	5% grits and vegetable tempering <1 mm.		

Spindle Whorls fig 13

There are two biconical spindle whorls of flint tempered baked clay.

406	35% BFG <2 mm. (Possibly from Area C).	407	20% BFG <1 mm. (Possibly from Area C).
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Crucible Fragment

408	A small amorphous lump of ceramic with a grey, slightly vesicular and sandy fabric (not illustrated). Length 25 mm; width 16 mm; thickness 15.5 mm.
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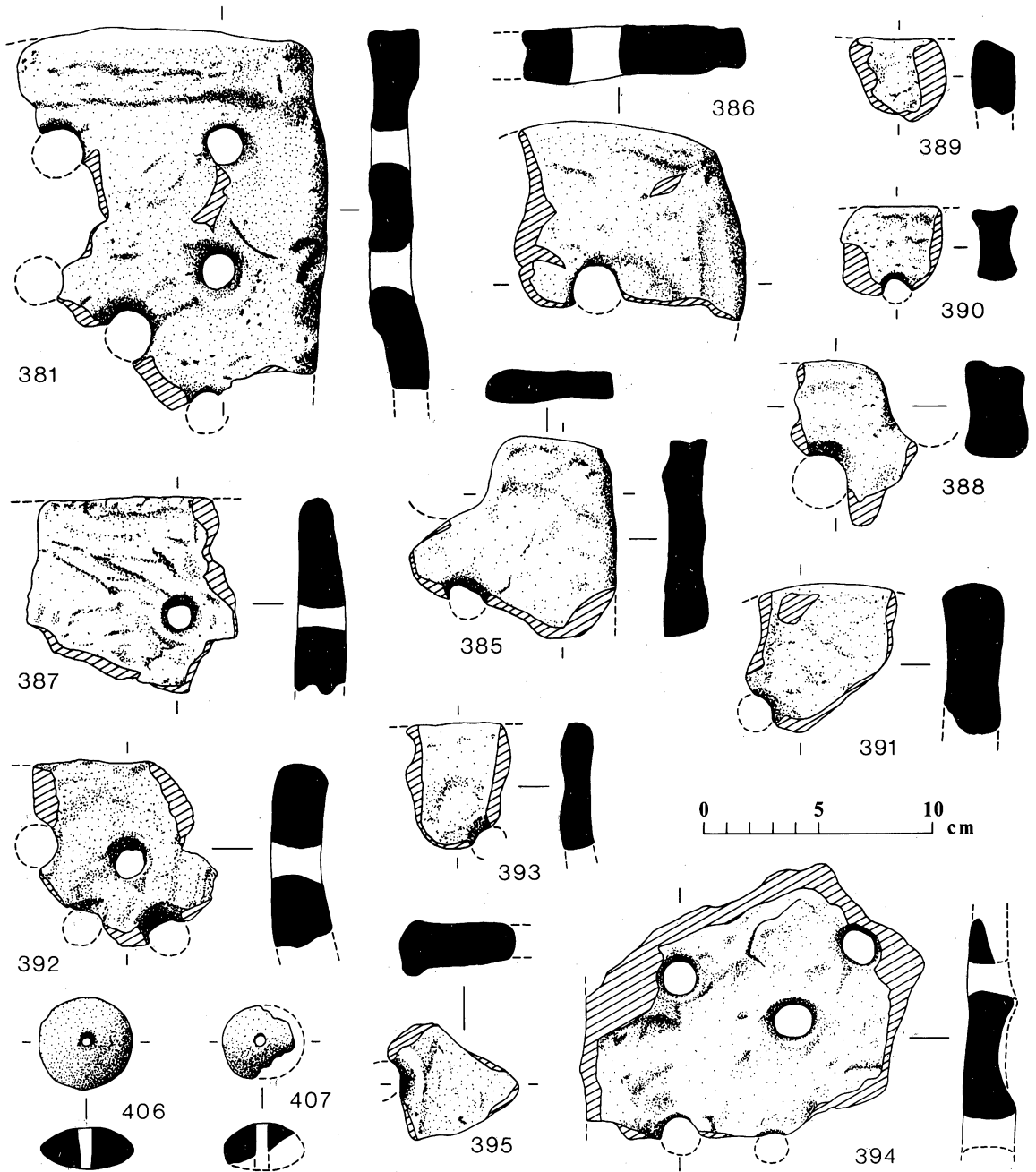


Fig 13. Queen Mary's Hospital, Carshalton. Nos 381-395 perforated clay slabs; nos 406-7 clay spindle whorls

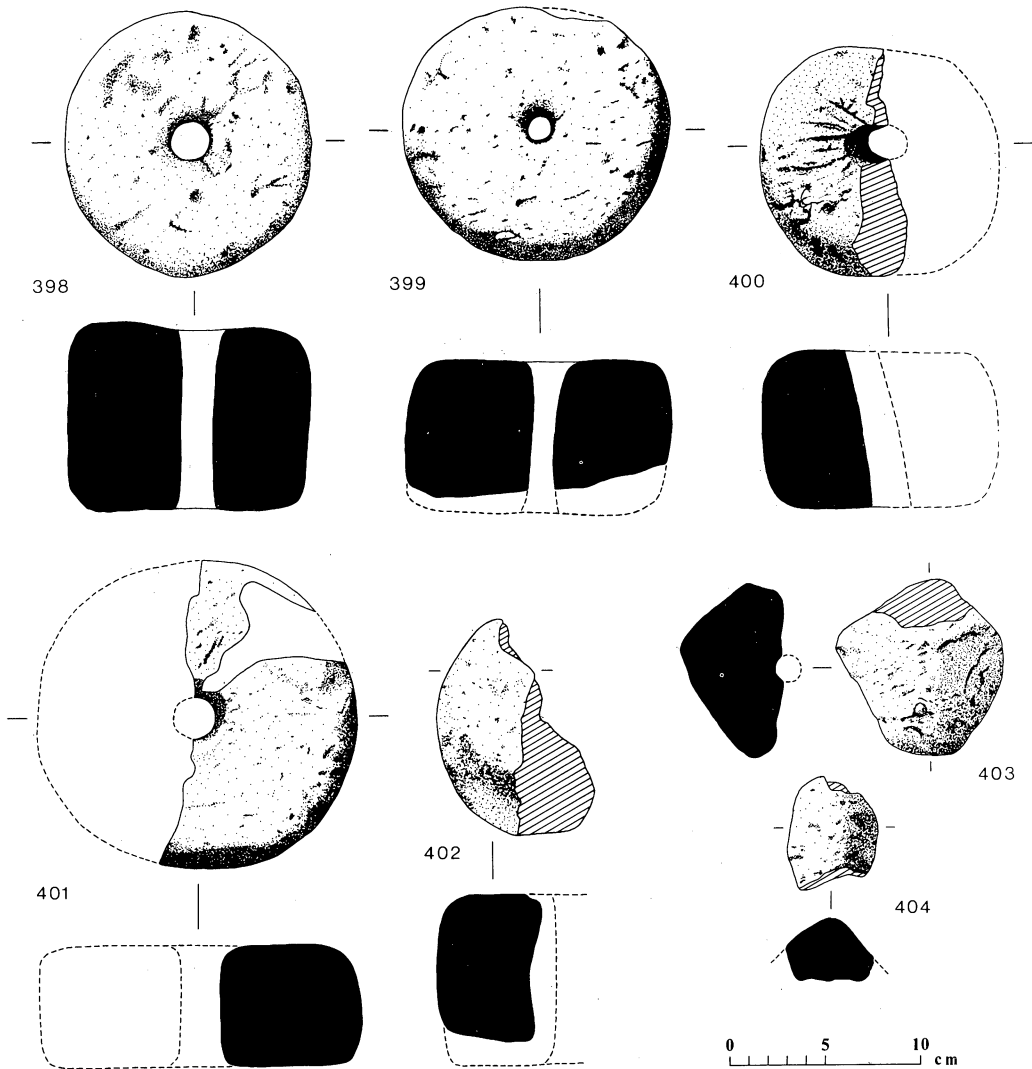


Fig 14. Queen Mary's Hospital, Carshalton. Baked clay loomweights

Discussion of the clay artefacts

There are 19 clay slab fragments, most of which have fairly dense burnt flint filler. Clay slab 379 has a minority of non-flint grits, while 387 has ironstone (or possibly grog) as well as other grit inclusions. A few of the clay slabs have a smoother surface and less burnt flint grits (382, 387 and 394). Some have one surface with up to 50% burnt flint grits (380, 382, 384, 387, 391 and 394). However, this concentration of flint grits is not found on the raised areas around the perforations of 382 and 394 and so it seems likely that the perforations, which vary in number, were made at a subsequent leather-hard stage. Seed and finger impressions are visible on 383. There is also evidence that this slab was shaped by a cutting tool.

Perforated clay slabs are known from several Later Bronze Age sites in the Thames Valley, usually with five or six perforations, although some of the Queen Mary's Hospital examples may

have had more than this number (such as 381 and 394). The central indentation in numbers 379, 380, 382, 383, 385 and 388 is unusual. The function of these slabs has yet to be established. Various ideas have been put forward such as their use for cooking, salt production or as parts of ovens (Champion 1980, 238; Jones & Bond 1980, 475–7). Robarts believed they were used with hearths because he found some associated with what he interpreted as hearths (1910, 149), and it is possible that they were used to control the draught in ovens or furnaces. However, it is much more likely that they were used in the firing of pottery in bonfire kilns, since there are some very close similarities with what have been described as perforated baked clay plates found at pottery kiln sites of the Roman period (Swan 1984, 64–6). Their precise function is not clear, but it is thought that they may have been used in conjunction with clay bars to provide a raised floor for an oven, or else to span the gap between vessels and to aid the stability of the load. There were two types of Roman plate – long, oval ones with two or three perforations, and sub-rectangular ones with several perforations. A few had a notch on one edge, the purpose of which is unclear, but it may have enabled them to be linked together.

There are no useful contexts for the Carshalton-clay slabs although Robarts records some as being found with a hearth (1910, 149), possibly in the ditch in Area C, and Whimster mentions that hearths were found in the ditch with seeds of wheat and barley and perforated tiles resting on them (1931, 93). Deposits interpreted as cremations are also described as being found with perforated tiles at a depth of 45 cm (Robarts 1905, 397), probably in Area G.

Some of the loomweights may have been excavated from the ditch fill in Area C (Robarts 1910, 148; Lowther 1944–5, 71), and the spindle whorls seem to have come from the same context (Robarts *op cit*). Cylindrical loomweights are represented on Later Bronze Age sites such as Green Lane, Farnham (Lowther 1939, 190), Heathrow (Museum of London) and Kingston Hill (Field & Needham forthcoming). Like those from other sites, the Queen Mary's Hospital examples are poorly fired and basically free from inclusions. It has been suggested that cylindrical weights are essentially a Middle Bronze Age type, pyramidal ones Late Bronze Age in date, and triple perforated ones belong to the Iron Age (Needham & Longley 1980, 411; Jones & Bond 1980, 475). Although this dating is broadly applicable, there may not be a simple succession of styles. Queen Mary's Hospital only has two certain examples of pyramidal loomweights (403 and 404) which are outweighed by the number of cylindrical weights. The loomweights from Green Lane, Farnham, are all cylindrical (Lowther 1939, 190; Elsdon 1982, 137) whereas Aldermaston, Berkshire, thought to be contemporary (11th–9th centuries BC), has clay weights which are mainly pyramidal (Bradley *et al* 1980, 243–4). Until well stratified sequences demonstrate otherwise, it may therefore be prudent not to take loomweights as particularly sensitive chronological indicators.

There are two examples of biconical spindle whorls from Queen Mary's Hospital, a type which is seen at other Later Bronze Age sites, for example Ivinghoe Beacon (Cotton & Frere 1968, 216) and Runnymede Bridge (Longley 1980, 31).

The small abraded lump of ceramic (408) has a slightly vesicular and sandy fabric which is unmistakably that appropriate to refractory materials, and especially crucibles (Howard 1983, 483–4). Since the piece is small and does not appear to have any unabraded surfaces, it adds nothing to our meagre knowledge of crucible morphology in the Bronze Age. However its thickness suggests a thick-walled vessel as is known elsewhere at this date (eg Needham 1980b, 185, fig 4).

STONE AND FLINT ARTEFACTS fig 15

- | | | | | |
|-----|--------------------------------------------------------------------------------------------------------------------------------------|-----|--|----------------------------------------------------------------------------------------------------------------------|
| 409 | Saddle quern. Weight 7,000 g. Made from a tough quartzitic sandstone, probably a sarsen. | | | stone as an area of high polish is visible. Found in F16. |
| 410 | Fragment of a saddle quern. Weight 300 g. Made from a tough quartzitic sandstone, probably a sarsen. Possibly reused as a sharpening | 411 | | Small saddle quern. Weight 1,740 g. Made from a glauconitic sandstone from the Lower Greensand of the western Weald. |

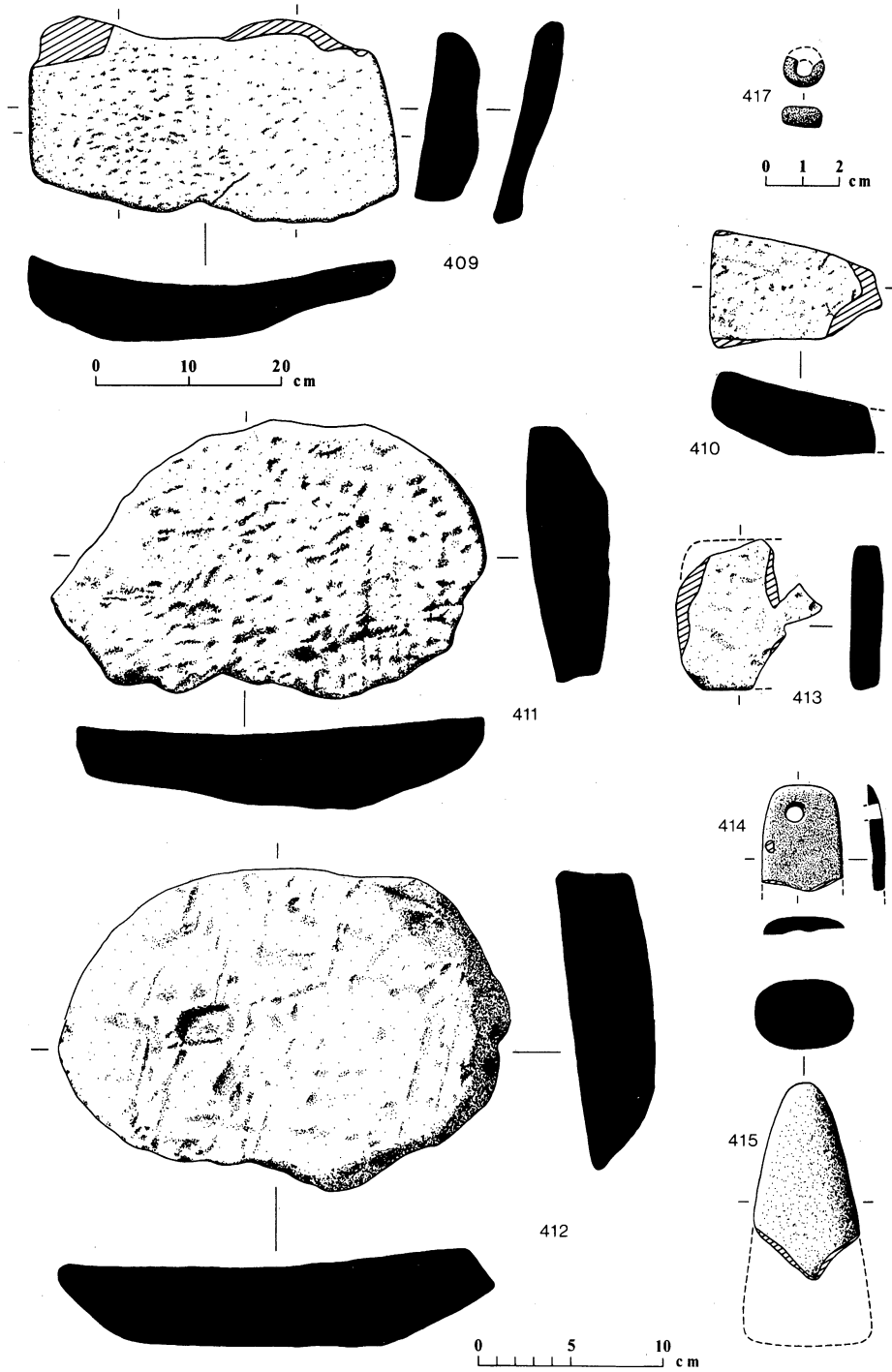


Fig 15. Queen Mary's Hospital, Carshalton. Artefacts of stone and amber

- 412 Small saddle quern. Weight 2,200 g. Made from a glauconitic sandy limestone from the Lower Greensand, probably the Hythe Beds of the Weald. Found in F16.
- 413 Smooth grinding stone. Weight 110 g. Made from a glauconitic sandy limestone from the Lower Greensand, probably the Hythe Beds of the Weald. Too thin and wrongly shaped to be used as a rubbing stone.
- 414 Whetstone. Weight 30 g. One end of a sub-rectangular whetstone with a drilled perforation. As well as having broken transversely, the stone seems to have split longitudinally so that only one face survives. The stone is a dark brownish grey micaceous siltstone with abundant biotite, and subordinate chlorite flakes. The quartz grains measure <0.05 mm across. There are very minor quantities of green tourmaline and opaque iron ore. The stone is a Lower Palaeozoic type common in Wales, the Welsh Borders and the Lake District. Erratic fragments also occur in glacial deposits of the Midlands and further south.
- 415 The butt end of a ground axe which has been reutilised. Weight 360 g. It has been thin-sectioned:- the rock is a medium grained epidiorite of petrological Group I. It is composed of plates of neutral coloured augite slightly altered and overlain by green secondary actinolite, with large somewhat skeletal grains of opaque ore (magnetite) set in a uraltised groundmass. This rock type occurs throughout Devon and Cornwall. Possibly from Area C layer 1.
- 416 120 worked flints. Not numbered individually. Found in various contexts by Lowther.

Discussion of the stone and flint

Saddle querns are familiar on late prehistoric sites including those belonging to the Late Bronze Age (eg Green Lane, Farnham – Lowther 1939, 192, pl 19; Elsdon 1982, 137). Some of the Carshalton querns are lost, but three of those extant are evidently complete lower stones. Two made of sandstone were found by Robarts, possibly in the ditch, as may have been further examples in Area C. Some fragments come from ditch layer 7 of Area D, while in Area F the disturbed layer 16 overlying the ditch yielded a complete sandstone saddle quern (412) along with similar fragments and one of sarsen stone (410). The final context to be noted is the association of a calcined saddle quern with a crouched inhumation in Area G.

In view of the probable occurrence of sarsen amongst the quern material (409–410), it is of interest to note that sarsen stones have been observed in the Croydon area as remnants of the Tertiary formation which overlaid the chalk (Peake 1982, 106). Tabular siliceous sarsens are recorded as having lain on the floor of Croham valley into modern times and are believed to have been transported by periglacial solifluction from higher on the Downs. Croham valley lies just 7 km from Queen Mary's Hospital and presents a clear case for the sarsen querns having a local source.

Whetstones and grinding stones are also represented. Fragment 413, for example, has the wrong shape for a grain rubbing stone, while quern fragment 410 was probably reused as a grinding/sharpening stone. 414 may be more specifically identified as a portable whetstone fragment. Its form differs from most of the perforated whetstones associated with EBA Wessex graves (eg Annable & Simpson 1964, nos 163, 267, 328, 345, 377), but a few of this date are similar in shape (Smith 1956, GB15.10; Annable & Simpson 1964, no 362). The EBA pieces are generally more neatly shaped. Occasional perforated whetstones are known in Late Bronze Age contexts. A slender tapering example occurs in the Isle of Harty hoard, Kent (Smith 1956, GB18.31) while another, which tapers instead towards its lower end, comes from the Thames at Syon Reach and is probably to be related to eroded LBA settlement debris (Wheeler 1929, pl 2 fig 1:6; Needham & Longley 1980, 426). A nearly complete and perforated whetstone in the Nottingham Hill hoard, Gloucestershire (Hall & Gingell 1974, fig 2:4), is probably the best parallel for the Carshalton fragment, which might therefore be accepted as part of the LBA assemblage.

The butt end of a reutilised ground stone axe was apparently found near the surface of the ditch in Area C, which could be a Bronze Age deposit or a disturbed level. The axe could indicate earlier occupation (Needham & Longley 1980, 417), but it is more likely that it represents reutilisation of a chance find from the vicinity in the Later Bronze Age. There are scatters of

Neolithic flint artefacts from the locality and probably also from the site itself, including reutilised flint axes (Adkins & Adkins forthcoming).

A final fragment in the Lowther collection is inadequately documented and therefore not catalogued, but ought to be mentioned. It appears to be a piece of burnt stone, possibly basalt (Dr Ian Freestone pers comm). Thin-sectioning, which would be required to confirm this, was thought to be inadvisable, since the piece cannot now be dated.

A collection of 120 struck flints survives in Lowther's collection (Guildford Museum), but evidently no flints were kept from the earlier investigations. Only a few of the flints represent diagnostic artefacts, most of which have been illustrated and discussed (Lowther 1944-5, 70-3), while the much larger collection of debitage remained unanalysed. This selectivity has led to the unfortunate emphasis of pre-LBA elements. For example, two cores which belong to narrow-blade industries are regarded as Mesolithic (Lowther 1944-5, 71; Wymer 1977, 198). A sickle flint and a broad scraper were attributed to the Neolithic or Early Bronze Age. The identification of a thin retouched flake as a petit tranchet derivative arrowhead of late Neolithic date is doubtless correct, despite the fact that part is snapped off.

For the rest of the flint, there is an overwhelming preponderance of unretouched flakes which are characterised by broad and thick proportions. Recent research has begun to demonstrate important changes in the character of flint debitage from the Neolithic into the Bronze Age (Pitts 1978; Fasham & Ross 1978; Pryor 1980, 106-25). The general conclusion is that as the Bronze Age wore on, standards of flintworking declined, and this is seen primarily in the production of broader flakes from less well prepared cores (see also Richards 1978, 19). Existing assemblage analyses however only document this process as far as the Middle Bronze Age, probably because of the lack of sizable and well stratified later assemblages. It is likely that the bulk of the Carshalton flintwork belongs with the LBA occupation for its character is certainly consistent with that observed in other late groups. Another factor in the decline is an increase in hinge fractured flakes (Fasham & Ross 1978, 54) and we may note a number of such fractures at Carshalton.

AMBER BEAD fig 15

- 417 About three quarters of an amber bead of simple doughnut form. Probably from the fill of the ditch in Area C (Robarts 1910, 148).

Amber beads have been reported in several British LBA contexts mainly in northern hoards (Pearce 1976-7, 126). However, closer to Carshalton, the Thames-side settlement site at Runnymede Bridge has yielded several examples (Longley 1980, 33 - and subsequent finds). LBA associations for amber are rather more common in Ireland (Pearce 1976-7, 127).

METALWORK fig 16

- 418 *Ring with suspension loop*

Context: unknown, possibly from the ditch fills of Area C; relocated amongst the 1903 material; mentioned by Clinch, 'a circular bronze buckle with a simple pin or tongue' (1907, 235).

Condition: the milky green surface is mainly rough-textured with fragments of a smooth patina; flaking and chipping of the patina have revealed light green dusty surfaces or coppery-brown metal core; the ring is restored from four fragments; the loop has suffered lamina

corrosion causing the loss of some chips; both of its terminals are damaged, their original length being unknown; corrosion has fixed the loop in a skewed position relative to the ring.

Morphology: the ring has a round section, while the loop has a basically triangular one; there are consistent indications that the outer facets of the latter are slightly hollowed and the broad interior facet is gently convex; the projecting terminals are narrower than the loop and they

are separated by a narrow gap; they have rectangular sections and taper slightly towards their ends.

Dimensions: ring – diameter 35.0–35.5 mm, breadth band 3.7–4.9 mm, thickness band 4.0–4.5 mm; loop – extant length 24.2 mm, diameter 16.5 mm, breadth loop 9.2 mm, thickness loop 5.0 mm, breadth terminals 4.5–5.2 mm; weight 9.9 g.

Identification

Simple rings are well known in Late Bronze Age contexts, but the suspension loop associated with the Queen Mary's example is not easily paralleled in Britain. Rings are occasionally found in situ suspended from bronze implements, for example on Irish horns or on fleshhooks. The rings on at least two fleshhooks are suspended by loops, but these are distinct from the Queen Mary's version. A series of rings along the underside of the Dunarverney fleshhook, Co Antrim, are attached by small coiled strips of sheet metal (British Museum 1920, 104 fig 109; Jockenhövel 1974, no 14). Another at its butt end is suspended by a cast loop which is a separate component from the ferrule. A similar arrangement is found at the terminal of the fleshhook from Little Thetford, Cambs, although this has lost its ring (Jockenhövel 1974, no 11). Other fleshhooks have terminal loops cast as one with the ferrule. It is possible that the Carshalton ring and loop came from such a terminal suspension unit, but other functions might be envisaged.

The form of the suspension loop may be paralleled in four French hoards, in two cases being associated with rings. The best match comes from La Prairie de Mauves à Nantes, Loire Atlantique, where an almost identical but slightly larger loop still retains its ring (Briard 1965, 226 fig 83). The ring is also a little larger and does not have the round section of the Carshalton specimen. A second loop in the Prairie de Mauves hoard has no ring.

A round-sectioned ring of comparable size to that of Carshalton occurs in the Dreuil-lès-Amiens hoard, Somme, again passing through a suspension loop (Gaucher 1982, 180 fig 8:143). The loop has rectangular-sectioned terminals which survive to a length of some 70 mm. Their sinuous form, if original, might have been repeated on two loops with broken terminals in the Vénat hoard, Charente (Coffyn *et al* 1981, 175 figs 13, 14). These pieces are described as *boucles de ceintures* of 'hair-pin' form and they have no accompanying rings. One (no 13) is similar to the Carshalton example, but its outer facets show more pronounced hollowing. Less certainly relevant is a loop with one long terminal described as a *sorte de crochet* in the Azay-le-Rideau hoard, Indre et Loire (Cordier *et al* 1959,

63, 65, pl 6; 113). If, as one suspects, a second terminal has broken off this object, then it would be another good parallel for the Carshalton example.

Each of the four French hoards mentioned is dated to *Bronze Final III*, equivalent to the Ewart Park phase in Britain, and each includes Carp's Tongue material. It is possible that the Carshalton suspended ring was of French manufacture, but the lack of British parallels should not necessarily be taken at face value. British hoards of this period seem to follow a basic pattern by which ornament and small trappings were only exceptionally included, thus contrasting with the comparable French deposits. On the other hand the growing number of bronze assemblages from LBA settlement contexts is demonstrating categorically that a good ornamental range was, as might be expected, very much current in LBA Britain (Needham 1980a, 24–5). This component of the metalwork was until recently hidden by our enforced dependence on hoard finds and strays. In this light it may well be significant that the Carshalton type of suspension loop should first have emerged from a settlement context here.

419

Flat bronze fragment

Context: unknown, found amongst 1903 material. The report of small fragments of perished bronze found, probably in the ditch fills of Area C, might include this piece (Roberts 1910, 148).

Condition: the surface is almost entirely chalky green and powdery; a localised area is of a brighter green colour.

Morphology: the fragment is of constant thickness except for a slight thickening toward one edge (uppermost in fig 16); this edge is rounded and slightly out-turned in profile and it may be as cast, whereas the rest appear to be fractures; an axial rib runs down one face and has been virtually obliterated at the bottom end, perhaps due to hammering.

Dimensions: length 20.0 mm, width 16.0 mm, thickness top end 2.5 mm, thickness bottom end 1.5 mm, weight 1.1 g.

Identification

While it is not possible to identify this fragment with any certainty, it might most obviously belong to a socketed axe. Its thickness is of the right order for the socket wall and ribs are a familiar decorative element on that tool type. The thickened top end could represent the base of a secondary mouth moulding, but if this is in the as-cast state, as suspected, then a miscasting would be implied, the metal not having risen high enough to fill the mouldings.

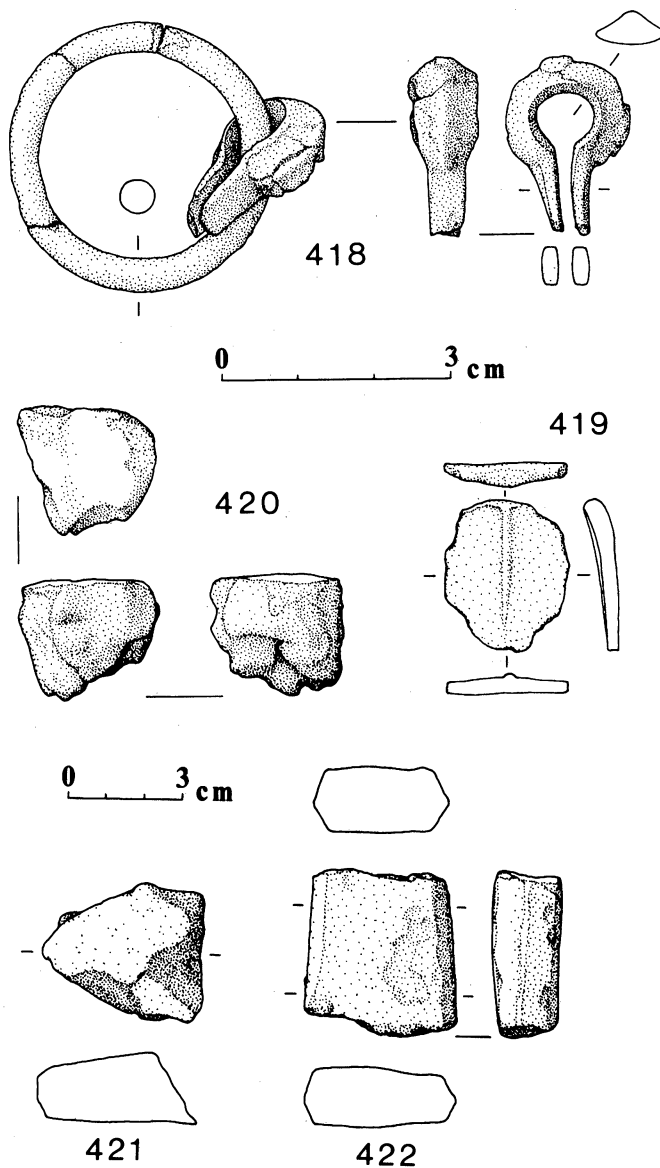


Fig 16. Queen Mary's Hospital, Carshalton. Artefacts of copper and bronze (scale: nos 418-420, 1:1; nos 421-422, 1:2)

Other possibilities are small personal implements such as a razor, some form of ornamental plaque, or a piece of the enigmatic plate-scrap which often carries ribs on one surface (Northover 1982, 100).

420

Copper lump

Context: presumably the 'small cake of copper . . . found under the turf' in the vicinity of some burials located outside the enclosure on the south-west side (Robarts 1905, 391, 396)

and Clinch's 'cake of copper of the regular Bronze Age type' (1907, 235). Our Area G.

Condition: a varied green surface is much discoloured by embedded deposits of a yellow-brown soil; chipping at some corners has revealed a dark purple-brown and coppery brown metallic core.

Morphology: the roughly cuboid lump has just one flat face, the others being more or less irregular, occasionally with deep cavities; some

of these faces could be the result of fracture; in profile the lump tapers to one edge.

Dimensions: maximum dimension 21.5 mm, flat face approx 16.5 x 16.5 mm, depth 16.0 mm, weight 14.2 g.

Identification

The wedge-like profile of the piece would be consistent with the edge of a plano-convex ingot of the familiar LBA form. Alternatively the lump may represent nondescript forms of raw metal, for example those at the Egham sites of Runnymede Bridge (Needham 1980, 18: 30–31, 23) and Petters Sports Field (Needham forthcoming, nos 4, 9, 10) which cannot obviously be related to those ingots.

421 *Ingot fragment*

Context: 'A piece of bronze ingot' was found in the western end of trench E–F (D6 extension here) in the continuation of level 1, a Roman ploughsoil (Lowther 1944–5, 60). The findspot lay outside the enclosure ditch, as was that of the formerly found ingot piece (no 420) a little to the south. Lowther presumably refers to both finds when he talks of 'the pieces of ingots' (1944–5, 67), since otherwise he only notes one find from his own excavations.

Condition: a dry varied green surface; the breaks all appear to be ancient.

Morphology: two roughly flat faces converge slightly in cross-section but do not meet; the piece has a sub-triangular plan, the product of fracture on all sides.

Dimensions: length 43 mm, width 36 mm, thickness 18 mm, weight 122 g.

Identification

This piece of rough metal is entirely compatible with the often fragmented plano-convex ingots of the Late Bronze Age. These ingots are circular when complete and may be heavy, up to 2 kg at least. Whenever analysed they have been found to be of unalloyed copper composition (eg Craddock 1979, 370–1). Plano-convex copper ingots are not represented in the hoard record before the Ewart Park phase, LBA 2, but they abound at this stage in south-eastern England.

422 *Bronze bar*

Context: found in trench E–F of the 1937 excavations (D6 here), in level 1, a Roman ploughsoil (Lowther 1944–5, 60).

Condition: most of the surface is green and dry, but not powdery; there are a few isolated lumps of corrosion; both ends were broken in antiquity.

Morphology: the faces are somewhat undulatory, although basically smooth, and they converge slightly in profile towards the broader end; the cross-section is hexagonal with the well angled sides carrying the remnants of central casting flashes, which represent the junction of a bivalve mould.

Dimensions: length 44 mm, width upper break 36 mm, width lower break 40 mm, thickness upper break 17.5 mm, thickness lower break 15.5 mm, weight 168 g.

Identification

This object has formerly been regarded as part of a bronze axe by Lowther, but he was perhaps not wholly happy with the identification. His initial suggestion, that it was 'part of a palstave' (Lowther 1939, 180) was superseded by a cautious 'possibly part of a flat axe and, if so, of Early Bronze Age date. . .' (Lowther 1944–5, 67, 69 fig 10). Both of these suggestions may be discounted. The gradual taper of this solid piece and its strong hexagonality are not appropriate to the blade of any type of British bronze axe, nor indeed is it recognisable as part of any other kind of implement. Given its context the bar need not be Bronze Age at all. It might be noted for example that the legs of medieval cooking pots are usually chunky bars of similar proportions. Equally, however, it is worth drawing attention to a miscellany of bronze bars or ingots scattered across Bronze Age Europe. One very similar in shape and dimensions to the Carshalton example comes from a Tumulus hoard from Ittlesburg, Bavaria (Krämer 1952, Abb 1.7). Jockenhövel (1973) has drawn together a small series of miscellaneous metal bars found in Urnfield graves, also noting examples from hoards and settlements (footnotes 10 & 11). Bars are also known in France, for example in the Malassis hoard, Cher, where two forms are represented, one a broad rectangular sectioned bar not dissimilar from the Carshalton piece (Briard *et al* 1969, fig 20: 205). If the latter belongs with the LBA assemblage from the site, it is likely to be a nondescript bar of this general sort.

423 *'Bronze lance-head'*

The primary source for such a find having come from Queen Mary's Hospital is a passing reference by Robarts (1905–6, 148) '... and I have heard of a bronze lance-head, but have been unable to obtain a sight of it.' Lowther, presumably drawing on this mention, supposed the object to be a socketed spearhead (Lowther 1939, 180), but there is no evidence that he ever saw the object.

Discussion

The ditch from which most of the LBA artefacts came was observed in 1903–4 and 1937–9 in enough places to allow its interpretation as a circular enclosure (Lowther 1944–5, 57, fig 1). Indeed Robarts had already noted the overall diameter of the enclosure (1905, 391) suggesting that he observed, but did not record, stretches of the ditch in its northern sector. Much weight is now added to the basic plan suggested there by the recognition of a tradition of circular defended enclosures in the British Late Bronze Age. Excavations over the past twenty years have established beyond question the LBA date of circular 'mini-forts' at Mucking South Rings, Mucking North Ring and Springfield, all in Essex, at Thwing in Humberside and Rathgall in Co Wicklow (Jones & Bond 1980; D Buckley pers comm; Manby 1980; Raferty 1970; 1976). Much earlier but poorly reported excavations at Mill Hill, Deal, Kent, yielded a similar enclosure along with pottery now regarded as Late Bronze Age in date (Champion 1980, 233–7, 242, fig 10). The larger and roughly circular enclosure on Wimbledon Common, known as Caesar's Camp, could belong to this period or the LBA/EIA transition on the basis of a small group of pottery which serves as a *terminus ante quem* for the rampart construction (Lowther 1945). Two other enclosures in the Lower Thames area which may be essentially contemporary are those at Highstead (Site B), Kent, and Heathrow, Greater London (Tatton-Brown 1976, 236–8; Grimes 1960). These differ in having a quadrangular layout. Where any evidence for the rampart survives on these sites it is consistently placed inside the ditch; there are no grounds for believing that the Queen Mary's Hospital enclosure would have deviated from this pattern. There is apparently some variation in the number of entrances found in the circular forts, usually a single entrance or two opposed, but six interrupt the ditch at Springfield Lyons; they are not necessarily all functional (D Buckley pers comm). At Carshalton an entrance in Area B has been postulated (Robarts 1905, 390), but it need not have been the only one.

The Carshalton site is well dated, in terms of the overall artefactual remains, but due to the paucity of recorded associations these cannot be used to examine the development of the settlement and its structural cladding. The ditch silts may tell us something of the history of the site. The earliest silting was sand, presumably from the erosion of the ditch profile as dug, and is only known to have contained a plain bowl (86). Above this was a layer of chalky silting with large flint and chalk blocks from which no finds are recorded. This layer seems too insubstantial to represent a completely collapsed rampart yet some explanation of the intrusive chalk is required. As far as is known the ditch did not reach the bottom of the hill-top's Thanet Sand capping and the chalk would therefore have been extracted from the slopes of the hill. As Lowther suggested (1944–5, 58), it is possible that chalk blocks (and flint nodules?) were required to face the rampart and that dilapidation of this facing, rather than the whole rampart, accounts for the character of layer 9. This deposit was evidently not encountered in all excavated segments of the ditch.

The silts overlying this putative collapse comprise two layers of very black soil which produced most of the cultural material. The layers above seem to be Roman or later and are regarded as a hill-wash which probably developed after the levelling of the earthworks (Lowther 1944–5, 56, 60). The origin of the black layers should be considered. They do not seem to be confined to one stretch of ditch and may indicate that the ditch was a preferred location for hearths and ovens, being sheltered from the wind. Alternatively, the layers could represent clearance following a fire, which would explain their widespread occurrence and the presence of so many well preserved artefacts. It is to be assumed that the settlement was inside the enclosure, although little evidence has been found to support this, possibly due to the disturbance of the area by ploughing, which must also have levelled the supposed bank. The area outside the enclosure is likely to have been utilised as well, in particular for activities which produced fumes, such as metalworking.

Only one of the surviving bronzes is diagnostic and datable, the ring and suspension loop,

which has good parallels in French Carp's Tongue hoards. These would date the piece to the 9th and 8th centuries BC, the Ewart Park phase in Britain. In the light of recent studies of pottery of the early first millennium BC the large assemblage of pottery at Carshalton now assumes an important role for dating. There is still much imprecision, which is exacerbated by sites such as Carshalton where stratigraphic control was minimal, but we have seen that in broad terms the pottery belongs to the 10th–8th centuries BC. More than that, it is important to stress that Carshalton has produced a whole range of artefact types which are seen, because of recent excavations, to be absolutely typical of the Late Bronze Age in the south-east (eg Champion 1980; Needham & Longley 1980, 403–9). Critical within the range are the perforated clay slabs, apparently a type-fossil of the LBA, whose known British distribution is curiously restricted (Champion 1980, 241 fig 9). The chronology of the loomweights is less refined but still important. The cylindrical type, which predominates over pyramidal forms at Carshalton, is a hangover from the Middle Bronze Age Deverel-Rimbury assemblage and might, after further research, be taken to indicate an early LBA date.

Other artefacts are becoming familiar, or are at least known, in LBA settlement contexts: biconical spindle whorls, amber beads, the thick-flake flint industry, saddle querns and the group of small bronze pieces. The latter includes ingot and waste material, while a possible piece of crucible reinforces the likelihood of bronze metalworking on the site. This is hardly unexpected, for all the comparable circular enclosures cited above also have positive evidence in the form of clay refractories for the practice of metallurgy in their immediate vicinity. The whetstone at Carshalton may be simply associated with the day-to-day replenishment of cutting edges on bronze implements.

Somewhat unsatisfactory are the reports of several burials from outside the Carshalton enclosure. The only convincing record is that of a partially calcined child's skeleton found lying on a saddle quern. Although this is not a diagnostic artefact, its association with the LBA site, itself with a number of similar querns, encourages the view that the burial was contemporary. If the date were more certain this burial would be an important addition to the small number of LBA burials known (Burgess 1976). It has become clear from the present study that none of the pottery has particularly close affinities with the Ardleigh urns of Essex (*pace* Champion 1980, 238), nor indeed with any other Deverel-Rimbury group, thus eliminating the possibility of an urn cemetery of MBA type on the site. Although some of the so-called cremations were accompanied by pottery, this was probably sherd material, and other associations including calcined flints, flint flakes and cereal grains suggest domestic activities, perhaps the remains of hearths and ovens. The presence of formal cremation burials should therefore be treated with great caution.

Whatever the exact functions of the site, it is clear that there was a certain amount of agricultural and domestic activity from the numerous quern finds and from the finds of grain. There is evidence for barley, wheat and Good King Henry (now a weed of cultivation). The faunal evidence is scanty, but there are indications for the rearing of cattle, and it is not unlikely that sheep may also have been reared for wool. If the clay weights were not used as thatch weights (cf Bradley *et al* 1980, 275), but for use with a loom, they could be associated with the spindle whorls as evidence for the production of woollen cloth on the site.

The likely role of the Carshalton enclosure in a regional capacity has been examined in some depth elsewhere (Needham & Burgess 1980, 458–61). In summary, it was concluded that the site was likely to be a regional focus, perhaps wielding control over a tract of downland some 10 km or more across. The rediscovered material which we have reported here does much to reinforce that argument. A few other LBA finds have since been made in the area (fig 17). In particular, a small amount of roughly contemporary pottery, perforated clay slab fragments, bronze awls and an axe fragment have been retrieved from the site of the Roman villa at Beddington Sewage Works (Adkins & Adkins 1983, 329). No clear structural evidence has yet come to light, however, to illuminate the nature of the supposed LBA occupation. The site lies at the head of

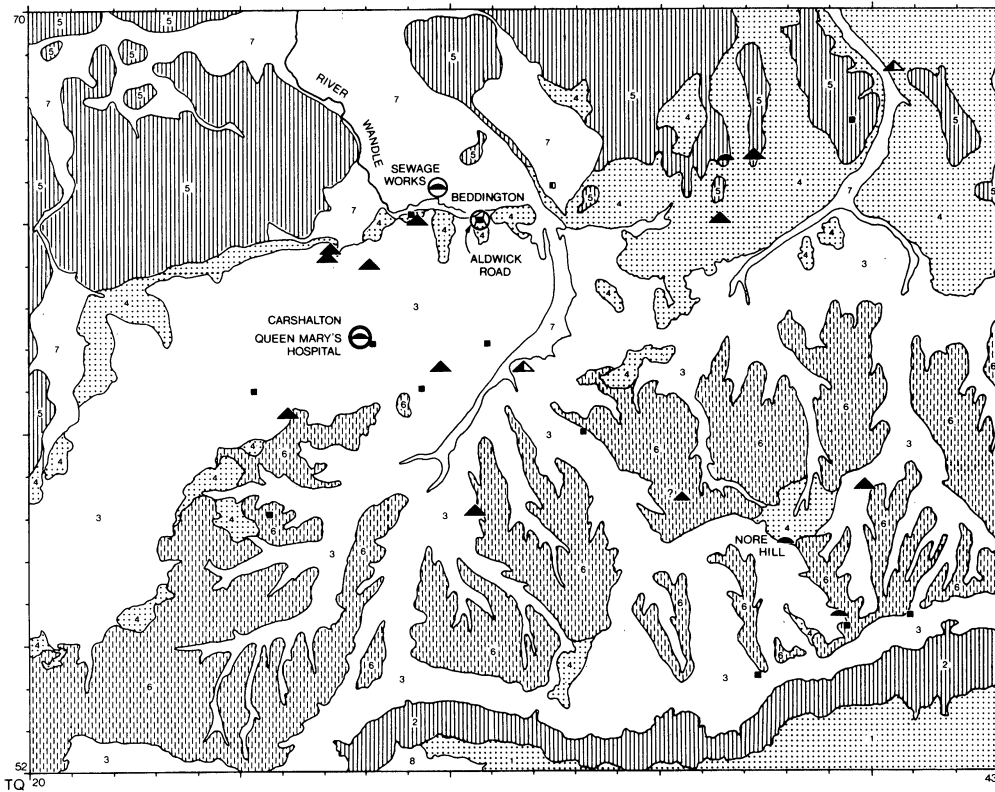


Fig 17. Queen Mary's Hospital, Carshalton. The distribution of Late Bronze Age metalwork in the Carshalton district in relation to drift geology

- | | | | |
|-----|---------------------------------------------|-----|------------------------------------|
| ▲ a | Bronze hoard | ■ d | Single bronze |
| ▲ b | Bronze hoard, vague provenance | ○ e | Association with domestic material |
| ▲ c | Area find, 2 or more bronzes | ○ f | Association with enclosure |
| 1 | Lower greensand | 7 | Gravel terraces |
| 2 | Gault clay | 8 | Brickearth |
| 3 | Chalk | 9 | Alluvium |
| 4 | Thanet, Reading, Woolwich & Blackheath beds | 10 | Coombe deposits |
| 5 | London Clay | 11 | Plateau gravels |
| 6 | Clay with flints | | |

the Wandle on gravels abutting the northern edge of the North Downs. Less than a kilometre away is the findspot of the Beddington Park hoard (Flower 1874).

Close to Queen Mary's Hospital itself is the recent find of a small fragment of bronze sword at Little Woodcote, while to the south-east of Carshalton and high on top of the North Downs pieces of LBA bronze have recently been found at five locations. Most are single finds, but at Nore Hill, Warlingham, a scatter of six pieces was recovered by metal-detector users (details of all these unpublished finds are in the National Bronze Implements Index, British Museum). These finds, when added to one or two older discoveries, create a new cluster of LBA metalwork on the periphery of the formerly recognised 'Croydon cluster' (Needham & Burgess 1980,

458–9). The continued finds of metalwork in this zone leave little doubt of its comparative wealth and power, in the accruing of which Carshalton may well have had a pivotal place.

Taken as a whole, the evidence now available places the enclosed settlement at Carshalton squarely amongst a group of Later Bronze Age sites which, between them, can be seen to produce a fairly homogeneous range of material goods dating broadly to the 10th–8th centuries BC.

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