

INTRODUCTION

The Thames Valley is an area with a rich succession of archaeological landscapes. Aerial photography has demonstrated this graphically on the gravels of the upper and middle Thames and now the results of field work and excavation show that the pattern can be repeated along the lower reaches of the river (Benson and Miles 1974; Gates 1975; Johnson 1975; Jones and Jones 1975; Longley 1976). A riverine distribution pattern of the archaeological material tends to confirm the view that the banks of the Thames and its tributaries were heavily settled in prehistoric times. A number of factors combined to attract early settlement on the gravel terraces. The soils are light and easily worked, the gravels ensure good drainage, and the rivers themselves were the means of communication, linking regions and enabling certain centres to prosper directly or indirectly through trade. The factors that encouraged early utilisation of these areas have, however, ensured their continued exploitation to the present day. These archaeological landscapes are being eroded in the Thames Valley by agricultural practices and large-scale mechanical gravel extraction. In north-west Surrey the threat is compounded by the proximity to London and the proliferation of light industry and suburban residential development. This is no new process. Indeed, gravel extraction, albeit manual, succeeded in at least partially destroying, inadequately recorded, the potentially important Anglo-Saxon cemetery at Shepperton in the 19th century (Longley and Poulton, forthcoming). The outcome is that while a lot of material is on record for the north of the county, much of it is unassociated, uncovered in the course of construction work, gravel extraction or river clearance.

There are indications of intense activity in the lower Thames Valley during the Bronze Age and particularly the Later Bronze Age (Burgess 1968b, distribution maps), but associated settlement evidence is lacking. On the other hand while the large number of Bronze Age implements dredged from the Surrey reaches of the Thames may reflect a preoccupation with a watery religion, a reaction to a deteriorating climate (Burgess 1974, 196, 209), Barrett (1975a, 36–7) has pertinently drawn attention to the possibility that some of the material may derive from eroded riverside settlements. Such a settlement in all probability existed at Old England, Brentford (Wheeler 1929), and other finds of a domestic character from the river (Barrett 1975a, 36; Canham 1976, 42–5) suggest that this is not an isolated instance. At Runnymede Bridge we were fortunate in being allowed the opportunity of excavating *in situ* an occupation deposit which must throw light on the more indirect evidence from other stretches of the Thames.

Postscript 1979

During the summer of 1978, further excavations took place at Runnymede Bridge. A river frontage was excavated producing Late Bronze Age occupation debris which, on preliminary analysis, appears to be contemporary with, and represent a continuation of, the 1976 site. Other than a brief notice on p 12 it has not proved possible to incorporate the results in the present report. Pending full publication, two interim accounts (Longley and Needham 1979; Needham and Longley 1980) have been published.

SUMMARY

The Egham area is low lying as the Thames enters the London Basin, flanked by the Chiltern ridge to the north and the Chalk Downs to the south. The river meanders across a predominantly flat landscape to its estuary some 90 kilometres distant. The site (TQ 018718) is situated on the south bank, opposite the confluence of the Thames and the Colnbrook

(Fig 1). Finds of Late Bronze Age metalwork from the river point to marked activity in the lower Thames Valley, and although direct evidence is largely lacking the extent of contemporary settlement may have brought about an increase in land under cultivation. A deteriorating climate (Burgess 1974, 195–8) may have emphasised a situation where top soil erosion was contributing to the silt load of the river and both these factors may be manifest at Runnymede, in, on the one hand, the riverine erosion and subsequent inundation which brought an end to the settlement and, on the other hand, the depth of alluvium covering the site. Unfortunately conditions were not suitable for the recovery of pollen. The molluscan evidence, however, points to damp conditions with perhaps some light woodland in the vicinity. The presence of wild pig bones and red deer antler at the site is in accordance with this conclusion.

It was not possible to estimate the total extent of the settlement and while it seems unlikely that the area excavated was occupied for a long period, the possibility of continuing occupation over a wider area, or even of a shift of settlement away from the river, should not be ruled out, and the results of recent excavations at Petters Sports Field, Egham, may be expected to throw further light on this matter. While occupation was not prolonged there is no evidence for seasonal or periodic use of the site. There was opportunity for the rebuilding of some structures and, perhaps more significantly, the importance of pigs suggests some permanency of occupation.

It is suggested that the process of erosion and inundation, once begun, brought an end to occupation over the area excavated after a relatively short period of time, and that the small finds and pottery represent a coherent group of material consistent with a single tradition.

Cattle formed an important part of the economy, for their meat and presumably for draught. Pigs, too, provided an important source of meat, while it is suggested that sheep/goats were valued more for their wool and possibly their milk. Spindle whorls and loom weights attest the spinning of yarn and weaving of cloth while a shortfall in the number of sheep metacarpals reflects the popularity of this skeletal material in the manufacture of small tools. Wild boar and, it would seem, red deer were hunted, while the river was exploited for wild-fowl and perhaps fish. The proximity of the river no doubt influenced the location of the settlement, perhaps on account of its inherent trade potential. A vase-headed pin and notched razor in particular may be isolated as manifestations of long distance 'trade', while it is conceivable that certain pottery vessels might not have been made locally. Type 18 jars stand apart from the vast majority, forming a coherent group characterised by the quality of their fabric and the manner of their decoration. That much of the pottery was, however, produced locally is suggested by the uniformity of fabric over a wide range of vessel forms. Bronze, too, was worked on site, amply testified by casting debris and a miscast bifid razor of indigenous type with mould fragments adhering. Unfinished implements and possible waste material provide evidence for the manufacture of bone and antler objects. Small tools proliferate in the bronze assemblages of this period and no doubt reflect developments in craftsmanship in less well preserved material such as wood and leather.

At least three horses were present on the site and these, with the elements of horse harness discussed below (catalogue nos 22, 23, 24, 25, 37, 38 and 40) raise the interesting question of equitation at Runnymede. The great age of the horses suggests that they were valued and looked after, and the estimate of size at 138 cm (13 hands 2) may indicate, on the analogy of Pazyryk (Littauer 1971), an improvement on the native breed through efficient stable management and the provision for winter feeding that this implies.

The occurrence of human long bones scattered over the site may suggest the unceremonious disposal of at least some of the dead. These bones had been gnawed, possibly by the dogs whose skeletal remains make an appearance among the animal bones.

The best indicators of date for the settlement are the bronzes and the pottery. In addition the two radiocarbon determina-

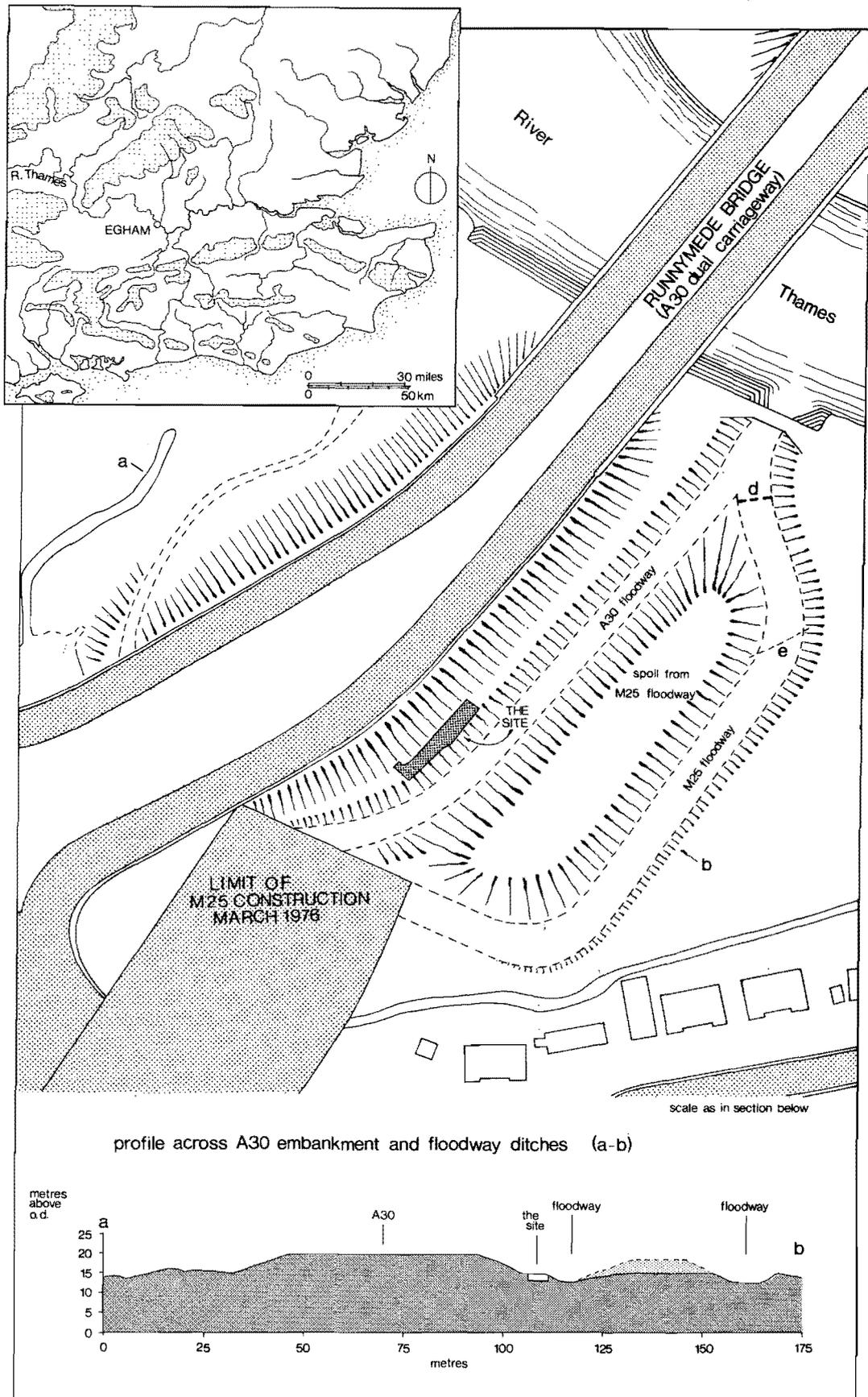


Fig 1 Location map. d-e locates spread of material plotted on Fig 9

tions from F31 are consistent with the conclusions reached on typological grounds. The bronze assemblage has been firmly assigned to the Ewart Park phase of the British Late Bronze Age. The metalwork of the Later Bronze Age has been well studied in this country and a sequence is tolerably well established (Burgess 1968b; 1974). The reliance on hoard associations and the rarity of stratigraphically related occupation deposits of the period has, however, posed problems in relating the sequence to an absolute chronological framework. The most recently published statement (Burgess 1976a, fig 4:9) would have the Ewart Park phase developing out of Wilburton traditions around 800 BC, and a small but growing number of radiocarbon determinations suggest that it begins at least this early, if not earlier (Fig 47).

Pottery developments of this period are imprecisely understood. The recognition of certain distinctive vessel forms, which stand at the head of the Iron Age series, in contexts with imported HaC metalwork, has led commentators to look to the continent for their origins. This, and the apparent break with the preceding tradition, has encouraged disregard to the possibility of any native initiative to the point of invoking 'new peoples' and the blanket ascription of all such forms to an 'Iron A' phase whenever these new developments occur (eg Cotton and Frere 1968, 200-3). This has sometimes involved postulating a prolongation of Late Bronze Age metalworking to explain the association of late bronze types with these pottery forms. The situation has recently been clarified, however, by the isolation of 'post Deverel-Rimbury' and 'innovatory' forms occupying the hiatus following the closing phases of the urn tradition around the turn of the millennium and by the recognition that certain 'Iron A' forms may have an earlier currency than hitherto accepted (Barrett 1975b; 1976a). Although the sequence, as with metalwork, rests largely on typological grounds it does find support in a series of radiocarbon determinations which point more objectively to the origins and development of innovatory forms during the first part of the 1st millennium bc and allows us to accept the chronological implications of the occurrence of this pottery in association with certain established Late Bronze Age metal types.

The importance of the Runnymede site lies in this demonstrable association of metalwork, pottery and organic artefacts in a settlement context, and in the evidence for indigenous metalworking on site. For this reason an exhaustive discussion on the metalwork and pottery is entered into in order to define the affinities and dating of both series independently before attempting to draw this evidence together and place Runnymede Bridge in its chronological context.

A large quantity of Late Bronze Age material has been recovered from the lower reaches of the Thames. Ritual deposition is a possibility and a veneration of water deities in an increasingly wet climate an attractive hypothesis (Burgess 1974; Coombs 1975) with well documented parallels (Ross 1967). The possibility that some of this material may derive from eroded riverside settlement has been raised, however, and in such circumstances the more distinctive metalwork would have a higher recovery potential than smaller domestic material; these points have been discussed in detail by Barrett (1975a; 1976b). Pottery and domestic bronzes from Old England, Brentford (Wheeler 1929), suggest a settlement context for some of the material from the river at this point, while pottery of comparable date from the Thames, notably at Mortlake (Canham 1976, fig 6), indicates further sites now lost. At Runnymede erosion had set in during the Late Bronze Age, while at Wallingford, Berks, the erosion of a Late Bronze Age settlement is of more recent origin.

Certain bronzes at Runnymede Bridge, which were almost certainly imported from the continent, draw attention to the advantageous siting of the settlement in terms of commercial and social interchange, and contribute further to our knowledge concerning use of the river Thames as a highway. One of the most closely comparable metalwork assemblages to Runnymede Bridge comes from Ivinghoe Beacon, Bucks, situated on the north fringe of the Thames Valley (Cotton and

Frere 1968). Good parallels for these bronzes are not confined to this region, however, for both the ridged buttons and bifid razor in the Llangwyllog hoard, Anglesey (Lynch 1970, fig 68), provide the best parallels for the Runnymede Bridge examples and taken in conjunction with other common types they evidence a most striking similarity between the two groups which are, geographically, relatively remote. It is suggested below (p 23) that these buttons may have formed elements of horse harness and it may be that a new mobility, represented by dispersed finds of equestrian material at this date, provided the mechanism for the dissemination of such material over wide areas. There would seem no need to invoke 'new peoples', let alone 'chariot-owning . . . Celtic overlords from the continent' (Savory 1976, 46-7) to account for this, however, and class I cheek pieces and concentrically ridged buttons may be insular innovations.

The increasing evidence for small tools and decorative attachments in the metalwork repertoire during the Late Bronze Age suggests new developments in craftsmanship and a certain flamboyance, reflected also in a range of new pottery forms and a variety of decorative techniques displayed thereon. The occurrence of these developments on both sides of the Channel and the recognition that the origins of much that is new can be traced through a long sequence in native contexts highlights the reciprocity of cross-Channel connections during this period.

THE EXCAVATION

Discovery

Skirting suburban London, the projected route of the South Orbital Motorway cuts east-west across central Surrey before swinging north to bridge the Thames alongside the A30 at Egham. Between 1971 and 1975 the motorway route was the subject of an archaeological survey under the direction of Bernard Johnson. In the course of this survey Johnson recognised prehistoric pottery in the spoil of a machine-cut trench beside the original A30 embankment (Johnson 1975, 15). This discovery led to the revelation that Neolithic occupation material had been disturbed in the construction of the A30 Runnymede Bridge in 1960. In the winter of 1975 a new floodway was excavated to serve the M25 as its construction neared the Thames (Pls I, VII). David Barker, a member of the Egham-by-Runnymede Historical Society and aware of the previous discoveries in the area, carried out a field inspection of the workings and in December 1975 located coarse pottery and burnt flint in the walls of the newly cut floodway. A further inspection of the area by Mr Barker and the present writer led to the discovery of an apparent occupation deposit at the base of the A30 embankment. The berm at the base of the embankment seemed to be all that survived of the original land surface. Construction of the remaining stretch of motorway in this area was scheduled to begin in the spring of 1976. A small trial excavation was, therefore, desirable to establish a context for the pottery so far found and to determine the extent to which the A30 embankment and its attendant flood drain had disturbed the archaeological levels.

Area 1 (Trial Trench) (For location of Area 1 and key to sections see Fig 4)

Flood water, pumped from the motorway workings, had cut a narrow channel down the side of the A30 embankment (Pl II). Cleaning of this 'natural' section revealed a sequence of deposits, some evidently of modern origin (Pl III and interpretation). Much of the archaeological material was clearly contained in the dark brown silt-like layer, but one or two pottery sherds were visible in the upper layers. Some

disturbance was evident and doubts were raised concerning the security of the prehistoric deposit. A trial trench 6 m x 1 m was excavated manually to establish the stratigraphy and the degree of disturbance (Fig 4 and Pl IV). It was found on excavation that the prehistoric occupation levels were, in fact, intact and sealed by up to 1 m of clean alluvium (Fig 2: section d-c). Features were recognised but not fully excavated at this stage and the archaeological material from Area 1 will be better discussed in consideration of the site as a whole. A turf line (12) had formed on the alluvial deposition and this represented the land surface prior to the construction of the A30 embankment, datable by modern pottery. During construction of the embankment successive layers of hard core raised the ground level a further 75 cm, and in some instances the operations had cut through the pre-existing turf line. The small amount of prehistoric pottery in the topmost layers was found to derive from the flood drain which had cut through the occupation levels. The material from this operation had been redeposited over the modern make-up.

The sequence is as follows, in chronological order (Fig 2: section d-c):

- 5 Occupation deposit (unexcavated on Fig 2: d-c).
 - 10 Thin grey layer, few finds — wash over occupation deposit, merging into
 - 11 Sterile — brown alluvium.
 - 12 Pre-embankment turf line.
 - 13 Grey gritty silt.
 - 14 Orange clay/sand.
 - 15 Black bituminous deposit.
 - 16 Close packed gravel.
 - 17 Disturbed gravel and sand.
 - 18 Dirty yellow clay.
 - 19 Dirty sand, some brick.
 - 20 Orange yellow sand — some brick.
-] Make-up at base of embankment
- Floodway excavated —
- 21 Modern rubble, brick plus redeposited material including pottery, bone and burnt flint.
 - 27 Turf line.

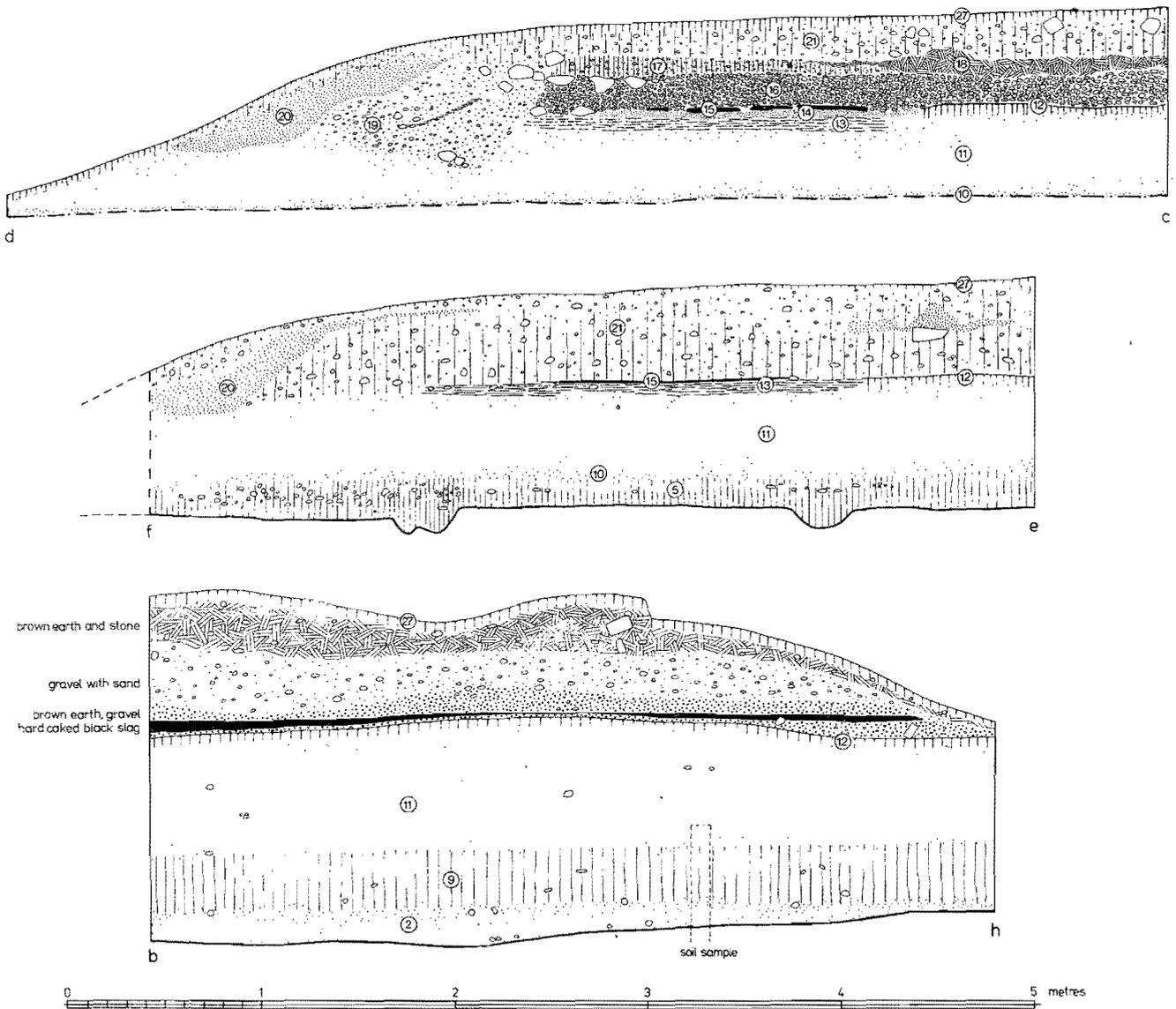


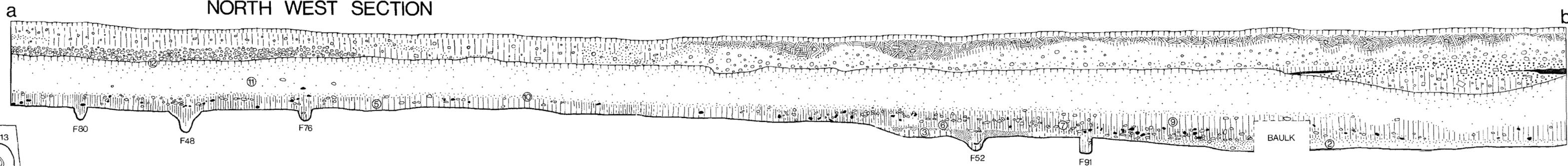
Fig 2 Sections. For location of sections see Fig 4

On the basis of these results it was thought appropriate to extend the area under excavation. The uncertain weather during the winter months entailed a postponement of heavy earthmoving on the motorway and afforded us this opportunity.

Area 2

Slightly over 100 square metres were stripped by machine (JCB digger-loader) to a depth of 1 m, that is, just above the archaeological horizon. The area opened was restricted by the

NORTH WEST SECTION



SITE PLAN: LOCATION OF FEATURES

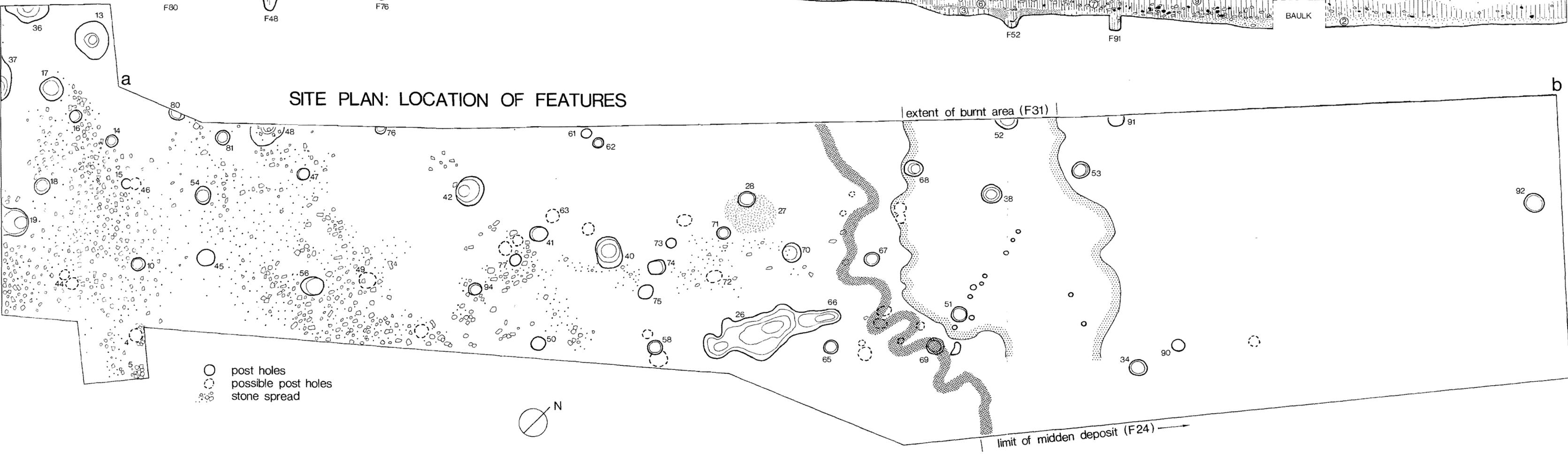


Fig 3 Site plan and section

limitations of time and the extent of modern disturbance (Pl V). After clearing the machined surface with flat spades the whole area was cleaned by trowel.

In the first instance and on the basis of the stratigraphy in Area 1, a method of excavation involving the removal of uniform (5 cm) spits was adopted. This was abandoned where features and distinct layers could be excavated stratigraphically, but retained over the majority of the south-western half of the site where no variation was apparent in the accumulation of occupation debris. The individual spits have been rationalised into stratigraphically related groups where possible on the basis of the sections and overlay plans and numbered accordingly in the text. These groups reflect, as far as the evidence allows, the events of the site.

It would seem that occupation was originally established over the entire area under excavation. This is suggested by the survival, though not to any great depth, of post hole 92 (Fig 4). Gradual encroachment by a water course, a channel of the river perhaps, appears to have eroded the evidence over the north-eastern half of the site and it may be that layer 2 represents erosion here initially. Occupation prior to encroachment need not have been prolonged. The postulated circular building (see F31) was abandoned accompanied by some burning after a single phase of occupation only and this event may have been occasioned by the increasing proximity of the water course, the collapsed structure suffering partial erosion on the north-western side. That occupation continued over the rest of the site is evidenced by the proliferation of post holes and the suggestion is that some rebuilding took place. A midden (layer 7) was formed over the debris of the 'circular' structure spilling into the river and possibly serving as something of a barrier against further inundation.

Apparently a problem from the outset, waterlogging of the entire site may eventually have caused its abandonment. A thin

grey layer (10) represents washing over the occupation and midden deposits alike, merging into a sterile brown deposit of alluvial material (11) which covers the site to a depth of 60 cm. This is the alluvial deposit recognised in Area 1 and capped by the 20th century turf line (12).

The sequence is as follows (Fig 3, section a-b):

- 1 Clean yellow sand, very sticky under (2) but dry and light under (3) and (5). Dirtied in places by small light brown root marks. Underlies whole site.
- 2 Dirty sand, green/brown staining on yellow/white sand. Some pottery sherds and a small amount of bone. Initial erosion deposit.
- 3 F31. Dirty sand/earth. Extensive (burnt?) orange patches and dark brown (organic?) streaks in upper levels. Pottery and burnt bone occurs, some fragments with earth cemented through firing. Fragments of timber appearing as charcoal bedded in layer.
- 5 Light brown sand/earth with flint cobbles, pottery and bone mixed. Main occupation deposit.
- 6 Dark layer overlying (3). Indistinguishable from midden deposit (7) on excavation but appears distinctly in section through the absence of stony debris. Probably represents remnants of structural material.
- 7 Dark sticky deposit, much domestic refuse and flint cobbles. Midden.
- 9 Dark grey/brown. Some pottery, bone and burnt flint. River silt with occupation material washed from midden (7) and possibly occupation deposit (5).
- 10 Thin grey/brown band. Wash over occupation and midden deposits merging into
- 11 Sterile, brown, alluvium.
- 12 Pre-embankment turf line.

For sequence above (12) see discussion of Area 1.

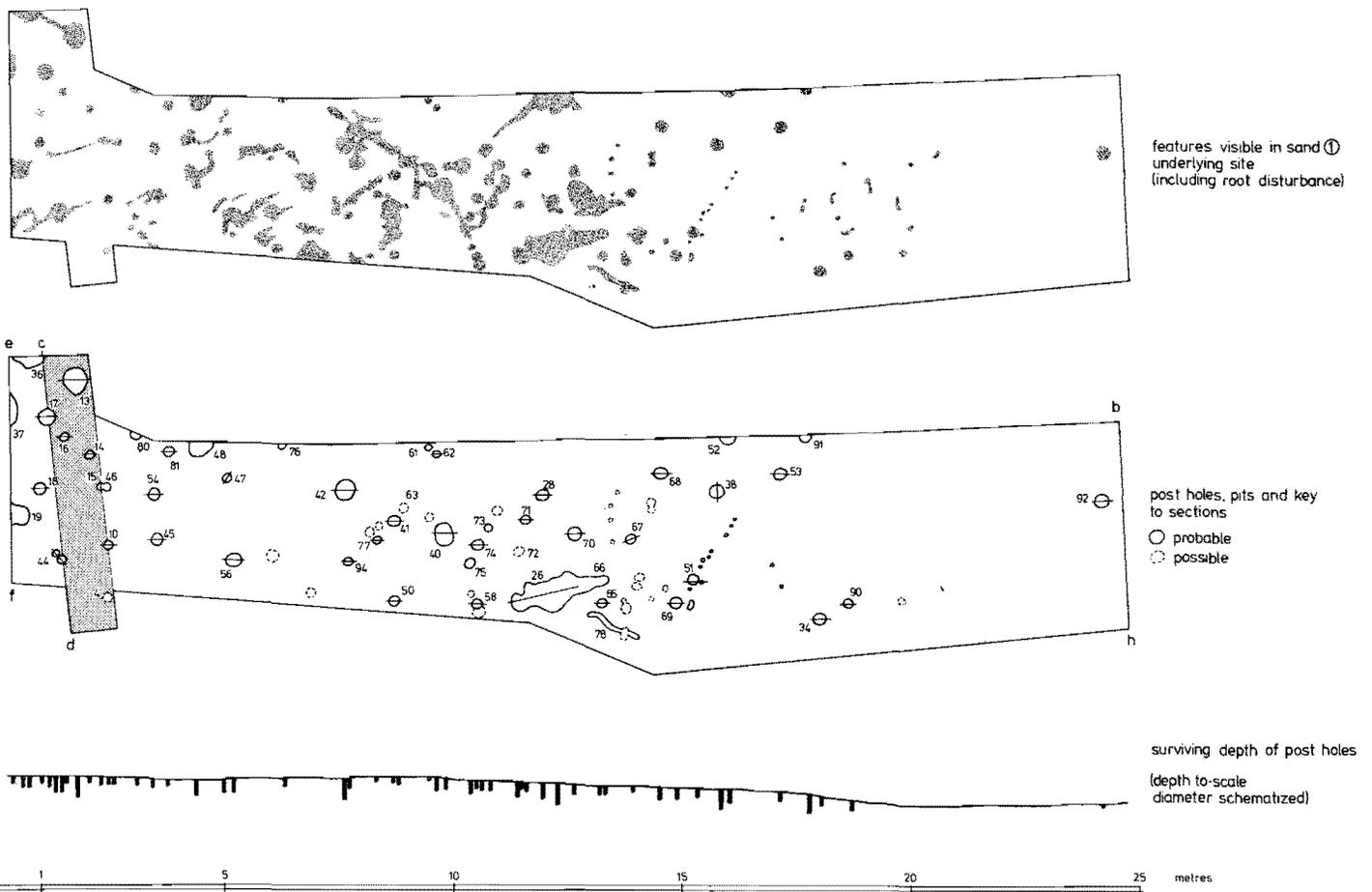


Fig 4 Features visible in sand underlying the site; post holes, pits, and key to sections; diagrammatic representation of surviving depth of post holes. The area shown hatched is Area 1. The whole of the rest of the excavated area is Area 2

TABLE 1 Summary of post-hole data

Key a depth at section
b projected depth
c mean diameter
d conjectural post pipe
* charcoal
— no data

All measurements are in centimetres

Feature (F)	Depth		Diameter		Fill	Finds
	a	b	c	d		
4	—	20	35	20	Dark earth adjacent burnt flints	
5	—	—	—	—	Stone cluster	Pottery
10	17	27	14	12	Dark humic soil and burnt flints at top; light grey sandy *	
13	45	48	15	12	Clogging black earth; some pebble packing *	
14	13	16	16	14	Firm dark; small burnt flint	Small fragments of bone and pottery
15	20	23	10	10	Dark earth *	
16	17	20	17	14	Dark grey earth; small burnt flints; small clay patch near bottom *	
17	23	26	27	20	Dark clogging earth	Bone fragments, burnt clay
18	14	16	22	19	Grey-brown earth *	
19	—	30	17	15	Black humic fill	Bone and pottery
26	Pit — see section (Fig 7)				Black deposit; yellow sand; pebbles; burnt flint	Bone (some burnt), pottery, large fragments of burnt clay
28	27	27	25	19	Dark earth; burnt flint *	
29	see Fig 6				Packed stone and pebble in brown clay/soil; burnt orange/red at edges; burnt flint *	Pottery, bone
34	26	36	28	21	Black earth; dirty sand; grey grit; burnt flint *	
36	27	27	32	25	Black clogging earth; some pebbles *	Bone and pottery
37	29	29	25	17	Dark earth	Bone and pottery
38	46	46	15	14	Sticky grey; burnt flints *	Burnt bone, pottery, daub fragment
40	20	22	30 *	20	Light grey-brown earth; burnt flint	Bone and pottery
41	16	18	25	20	Dark grey-brown earth; burnt flint *	Bone and pottery
42	41	43	14	10	Dark cloggy soil; lighter dirty sand; burnt flint *	Bone and pottery
44a	33	33	10	8	Dark humus	
44b	36	36	15	13	Dark humus	
45	(much root disturbance) shallow depression, possibly root action				Dark earth	Bone and pottery
46	20	20	15	—	Dark earth	
47	25	31	18	13	Dark earth	Bone, pottery, daub
48	41	41	15	11	Dark clogging earth	Bone and pottery
49	16	23	30	—	(shallow irregular depression, may be due to root action)	Bone and pottery
50	10	16	22	20	Black fill *	
51	16	16	24	21	Black clogging earth *	
52	30	30	22	15	Brown earth; some stones *	
53	20	26	16	14	Dark earth *	
54	20	26	24	18	Dark earth; dirty sand *	Bone
56	25	31	23	20	Dark humus; some stone	Bone and pottery
58	12	18	24	22	Dark earth; pebbles	Pottery, burnt clay
61	6	8	18	—	Grey-brown earth	
62	24	26	14	11	Grey-brown earth *	Bone
63	—	—	20	—	Brown earth	Bone, pottery, spindle whorl
65	17	20	24	22	Clogging black earth; dirty sand/earth	
66	rectangular depression or post hole; merges into F26; 17 cm deep					Bone, quernstone fragment
67	10	16	20	17	Dark clogging earth *	
68	24	28	20	11	Grey-brown earth; pebbles *	
69	20	24	18	13	Dark brown clogging earth on top; grey-brown fill	Pottery
70	17	22	20	15	Grey-brown earth	
71	14	14	18	16	Dark grey sandy soil; pebble *	
72	9	9	24	—	(roughly circular round-bottomed depression)	
73	20	—	20	—	Dark earth	Pottery
74	19	25	20	18	Brown earth	Bone and pottery
75	28	—	—	—	(much root disturbance)	Bone and pottery
76	14	20	15	13	Black earth *	Bone and pottery
77	10	13	11	9	Brown earth	Pottery
78	(meandering slot — root?)				Brown earth *	Bone and pottery
80	19	19	15	12	Grey-brown sandy earth *	Pottery
81	16	22	20	15	Grey-brown earth	Bone
90	36	36	15	15	Grey fill *	Bone and pottery
91	44	44	22	22	Dark grey/black earth; flint *	Pottery, burnt clay
92	9	—	30	—	Sticky grey-brown *	Bone and pottery
94	16	19	17	12	Dark earth/sand	

Structural Evidence

The evidence for upstanding structures is contained in the number of post holes recognised cutting into the sandy 'natural' underlying the site (Fig 3) and in the spread of daub plotted in Fig 8. Fig 4a plots all disturbance visible in the 'natural' sand, much of which may be attributable to root action, while Fig 4b isolates the postulated structural features and locates the post-hole sections drawn to uniform scale in Figs 5 and 7. Table 1 summarises the post-hole data and Fig 7 presents the dimensions graphically.

It was not always possible to recognise post holes until their darker fill could be seen contrasted against the lighter sandy material constituting the lower levels of the occupation deposit (5) and even at this lower level the post holes could become invisible during prolonged spells of dry weather, bleached against a background of buff sand. It is clear that in some cases the holes were cut in from a higher level and it has been possible, for the majority, to reconstruct the essentials from overlay plans.

Although some disturbance to the upper occupation levels (5) is possible, it is unlikely that flood action here has removed much, if any, of the post-hole evidence and in the case of F31 the post holes are sealed by debris from the structure and the midden which formed above it. Hence, any shortcomings in Figs 5 and 7 should be attributable to the conditions of excavation rather than erosion following abandonment, although the possibility of some compression of the occupation deposit should be borne in mind.

The hole dug to accommodate a post is necessarily larger than the diameter of the post itself. In some cases the 'post pipe' may be observable in section (eg 38, 52), in others it may be inferred. Table 1 presents the alternatives. It is also possible that occupation material might accumulate around the base of a post, effectively increasing the depth of the post hole. Occasionally, the extent to which this occurred was determined although for the majority this was not possible and depths are presented in Table 1 as (a) the depth at which the post hole was recognised and sectioned, (b) the projected depth of the post hole traceable through overlay plans, including, possibly, this additional build up. There is no immediately apparent standardisation. Depths range from 8 cm to 48 cm with the majority between 16 cm and 32 cm, while the posts themselves have diameters concentrating between 10 cm and 22 cm.

Unfortunately no house plans can be reconstructed with any degree of certainty. It is possible that the post holes surrounding F31 represent a circular structure however (see below) and it may be that some rebuilding over the rest of the site and the limited area available for excavation obscures the plan of any further structure. Nevertheless, the schematic plotting of daub scatter in Fig 8 points to the existence of a well-defined occupation surface approximately central to the accumulation of material in layer 5 and corresponding to the irregular scatter of 'cobbling' in Fig 3. This is seen more clearly both in the daub scatter and cobbling over the south-western end of the excavated area. This occupation surface is also reflected, to a lesser degree, in the distribution of small finds (Fig 10) and pottery (group 5b) through the layers. Presumably artefacts might be lost from the inception of occupation whereas daub might accumulate only after an occupation surface had been established and structures had begun to decay.

The 'Round House'

F31 first appeared, on excavation, as an irregular discoloration interpreted in Fig 6 as the result of heat action on the ground surface and the collapse of decayed organic material (including charcoal) and daub. Much of the excavated surface within the limits defined in Fig 5 appears as orange fired clay or sand. This has been omitted from Fig 6 for the sake of clarity, although indicated in the accompanying sections. Post holes were also

apparent at this level. It seemed that the feature (F31) might represent structural collapse and that, furthermore, the dark brown organic streaks might be the last vestiges of structural timbers. The deposit was excavated to a grid of 40 cm squares with a 10 cm baulk between each square (Pl VI). It was hoped that the pattern of collapse might be reconstructed in this manner from very tenuous evidence. The 'organic' streaks appear in section as flattened rectangular or sub-circular patches and can often be directly related to contiguous or enveloping patches of burnt clay (Fig 6). It would seem that these features do, in fact, represent decayed and partly burnt timbers and to some extent these can be traced from section to section. The evidence is, however, not sufficient for the drawing of any firm conclusions regarding the original construction and it is possible that reusable timber was dismantled before the burning of unwanted materials. The lens-like section of decayed and charcoal 'timbers' suggests that planking may have been used in the construction.

Some of the excavated deposit must represent accumulated material on the trodden-down floor surface of the structure and it would seem that only the upper layer, clearly visible in the sections, is representative of structural debris and firing of this floor surface. This interpretation is complicated, however, by the presence of charcoal 'timbers' well within the layer (section 5). The answer may lie with the suggested disturbance of this deposit by water action (see below).

Daub was found mixed with layer 3 (Fig 8), some of the bone appeared burnt, and both bone and pottery occurred with earth cemented to it by the action of heat. Above this a black layer 6 may further represent the debris of organic material associated with this building.

Erosion may account for the absence of post holes on the north-eastern side of this structure. The positioning of the extant post holes, however, suggests a 9-post round house with widely spaced (1.5 m) uprights, and as such compares well both in size and spacing of posts with, for example, house B5 from Crickley Hill (Dixon 1973, 14). Post holes 38, 53 and 51 may also reflect the internal arrangements of house B5 (and others) at Crickley, and broadly spaced internal settings have been discussed with regard to the structures at Rams Hill (Bradley and Ellison 1975, 164). The circle of 5 m diameter defined by the post ring is small and need not have been coterminous with the external wall. A number of possible stake holes survive in the immediate vicinity and while some may represent internal divisions within the structure, others might possibly be associated with a wall on the south-western side. The exact relationship of the stake holes with the postulated round house was, however, not determinable stratigraphically and must remain uncertain.

The lack of evidence for the renewal of posts in this area may suggest that occupation of this structure was not prolonged. Traces of burning may indicate accidental destruction of the building; alternatively this may represent the clearance of unwanted materials on the occasion of its deliberate demolition. Whether or not the building was abandoned because of encroaching water it would seem that some erosion had taken place in the vicinity and that the silt deposit (2) had accumulated before the establishment of the midden (7) on the ruins of the collapsed structure (6). A considerable quantity of daub may be associated with the building under discussion. Much of this consists of large fragments, some apparently bearing the impressions of wattling and some with flattened surfaces attesting the use of squared timbers, if not planking, in the construction. Fig 8 plots the occurrence of daub fragments and demonstrates that while some of this material occurs mixed with the destruction level of the hut itself a far greater amount occurs above the silt deposit (2) and in the lower levels of the 'midden' (7). Presumably the infringing water course is responsible for washing some structural debris down from the 'house' area at this stage and for some disturbance to the stratigraphy here as referred to above. In sequence this would place the abandonment and destruction of the hut after the beginning of riverine transgression but before the establishment of the midden over its ruins.

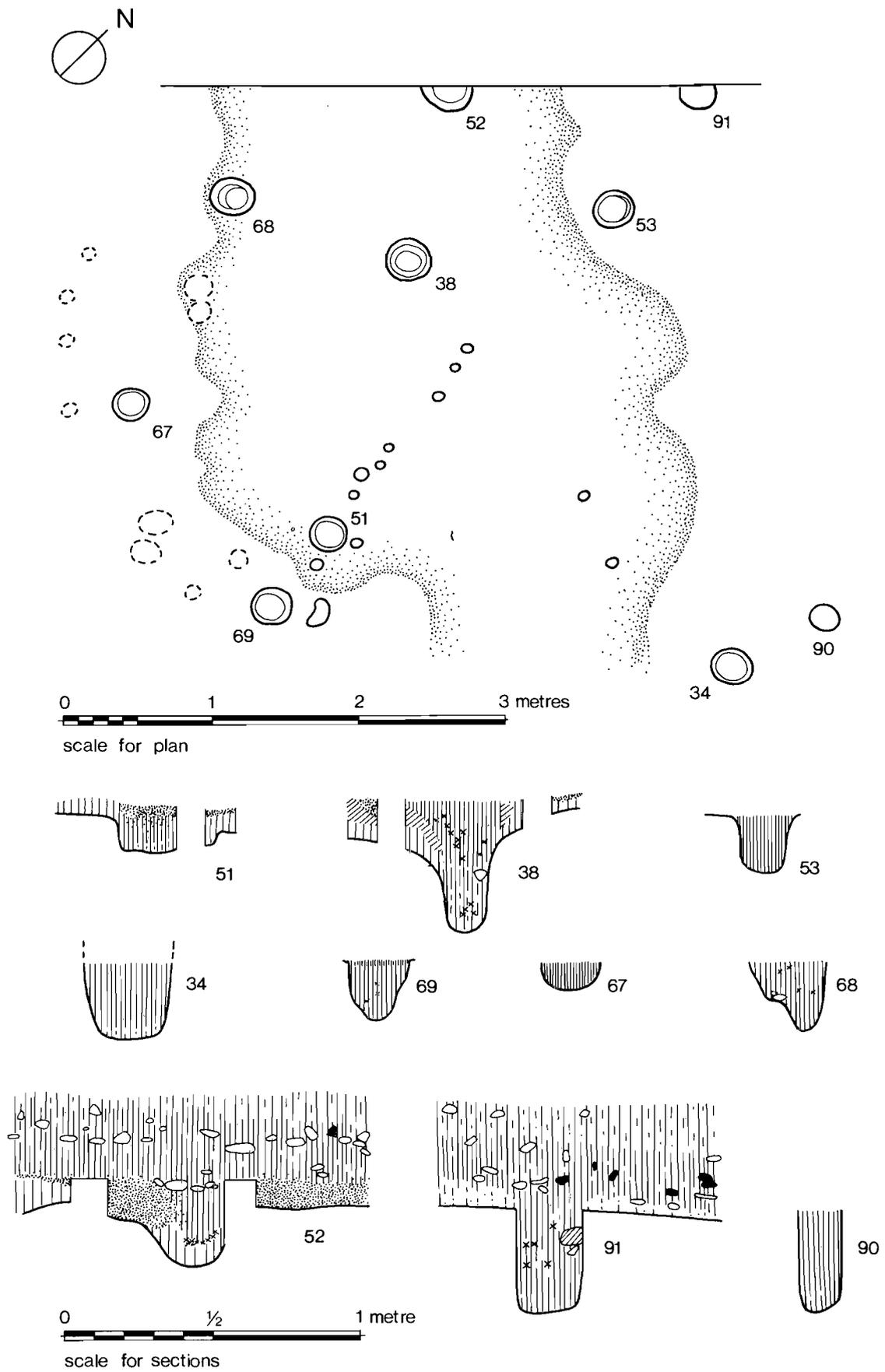


Fig 5 Feature 31: plan and post-hole sections

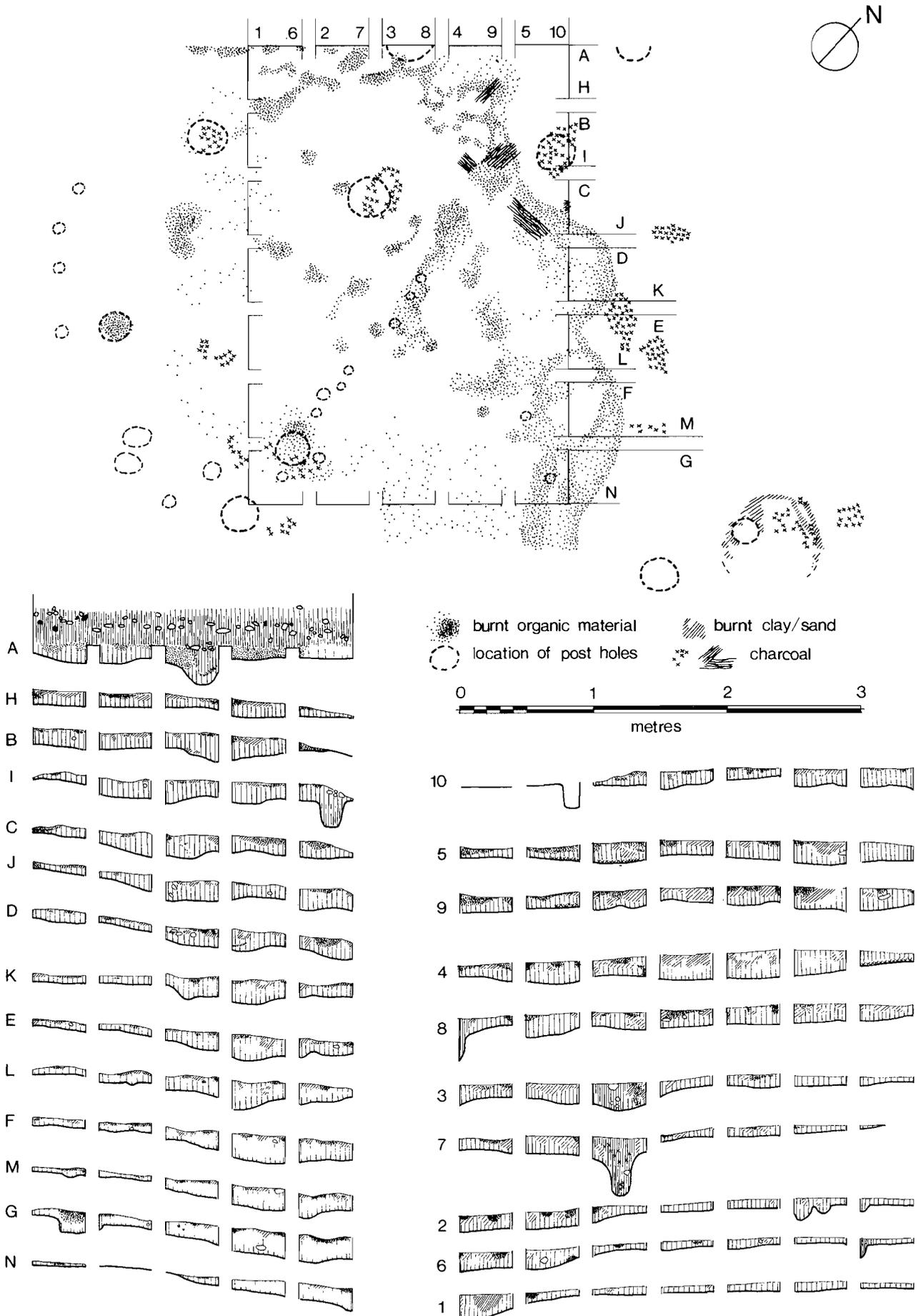


Fig 6 Feature 31: grid excavation and sections

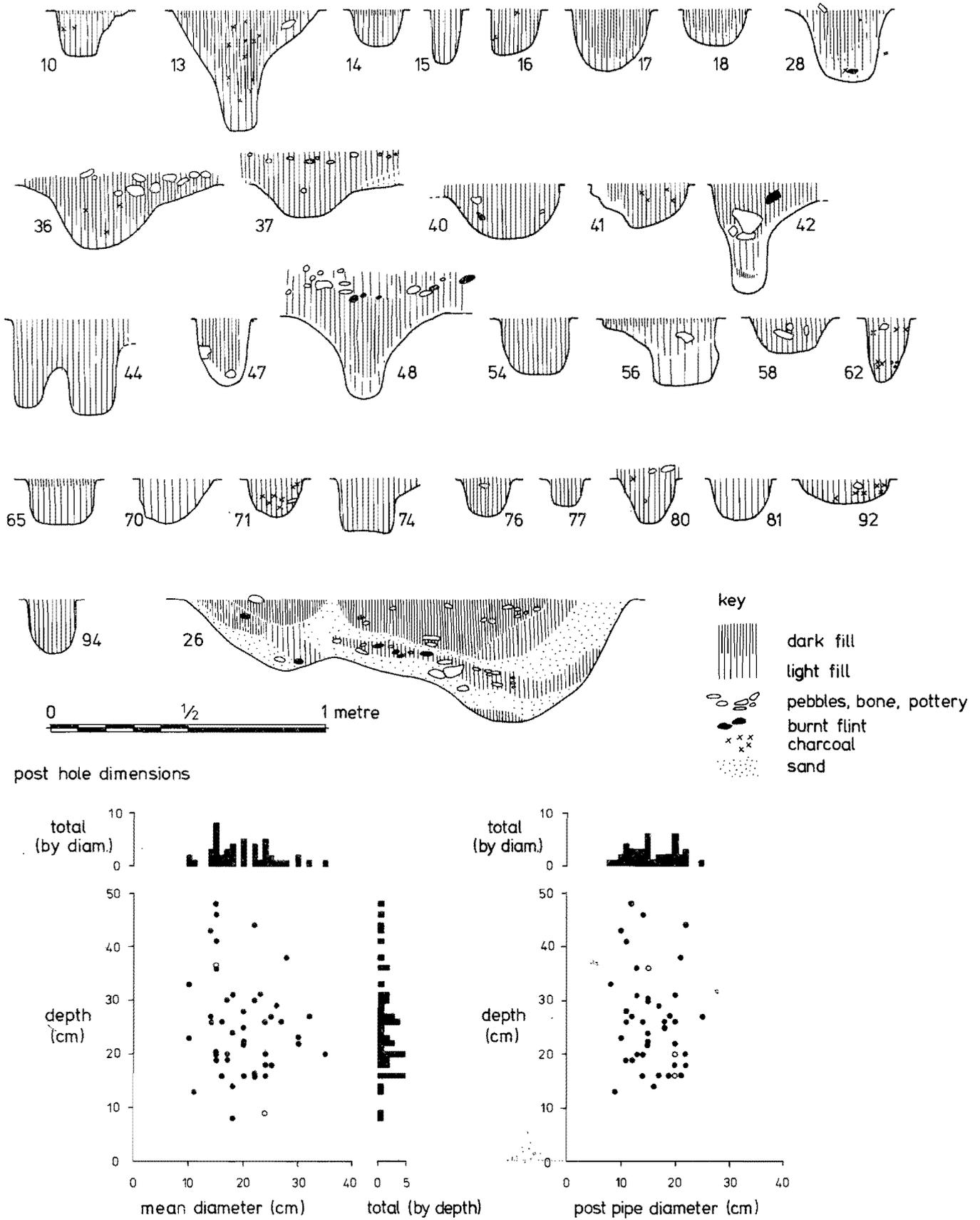


Fig 7 Post-hole/Pit sections; graph of post-hole dimensions

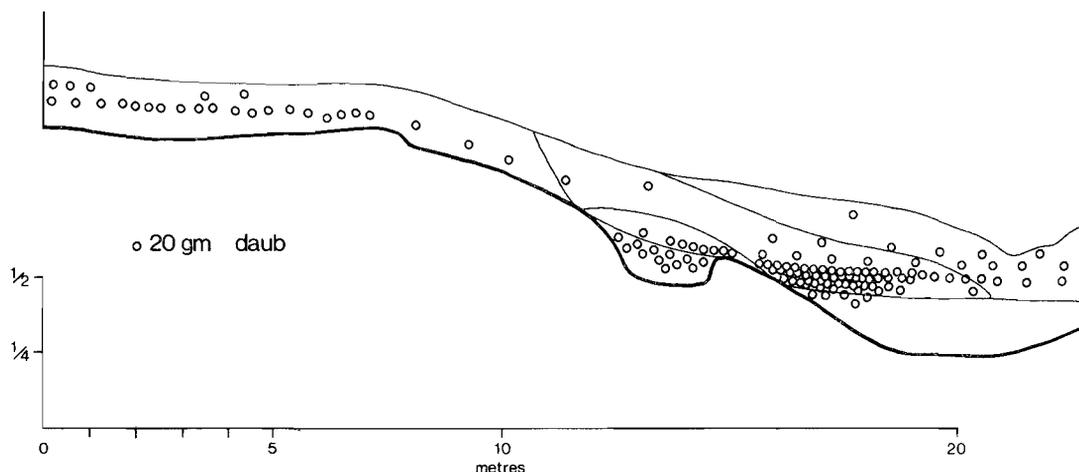


Fig 8 Scatter of daub through layers on schematic representation of section a-b in Fig 3

THE EXTENT AND DURATION OF THE SETTLEMENT

The 1976 excavation touched on what must represent a fraction of the total area under occupation. It is, perhaps, doubtful whether any further information could have been obtained from extended excavation in this area. The operations of bridge, road and motorway construction and their attendant floodway systems have taken their toll in recent years while fluvial erosion in the Late Bronze Age may have effectively removed the occupation deposits in the area between the excavation and the modern course of the river.

Pottery and burnt flint were first recognised in the M25 floodway during field investigation (see above, p 3). The walls of this floodway were cleaned down in an attempt to determine the extent of this spread of material. The floodway had clearly

been excavated to a depth below the archaeological level over much of its length. A thin (10 cm or so) band of material was visible in the walls and on the floor of the floodway over a restricted area and this information has been projected on to an arbitrary section (a-b in Fig 9). The deposit first appears (at the south end, towards b) as a very faint grey discoloration. Small pot fragments and charcoal occur midway along its length as the layer dips slowly towards the floor of the floodway at its northern visible limit. Here the deposit is black and contains charcoal and pottery fragments, and may well dip below the excavated level at this point. The western face of the floodway shows evidence of disturbance, here, associated initially with the original channel of the A30 floodway and subsequently with the blocking of this exit and realignment on to the M25 conduit.

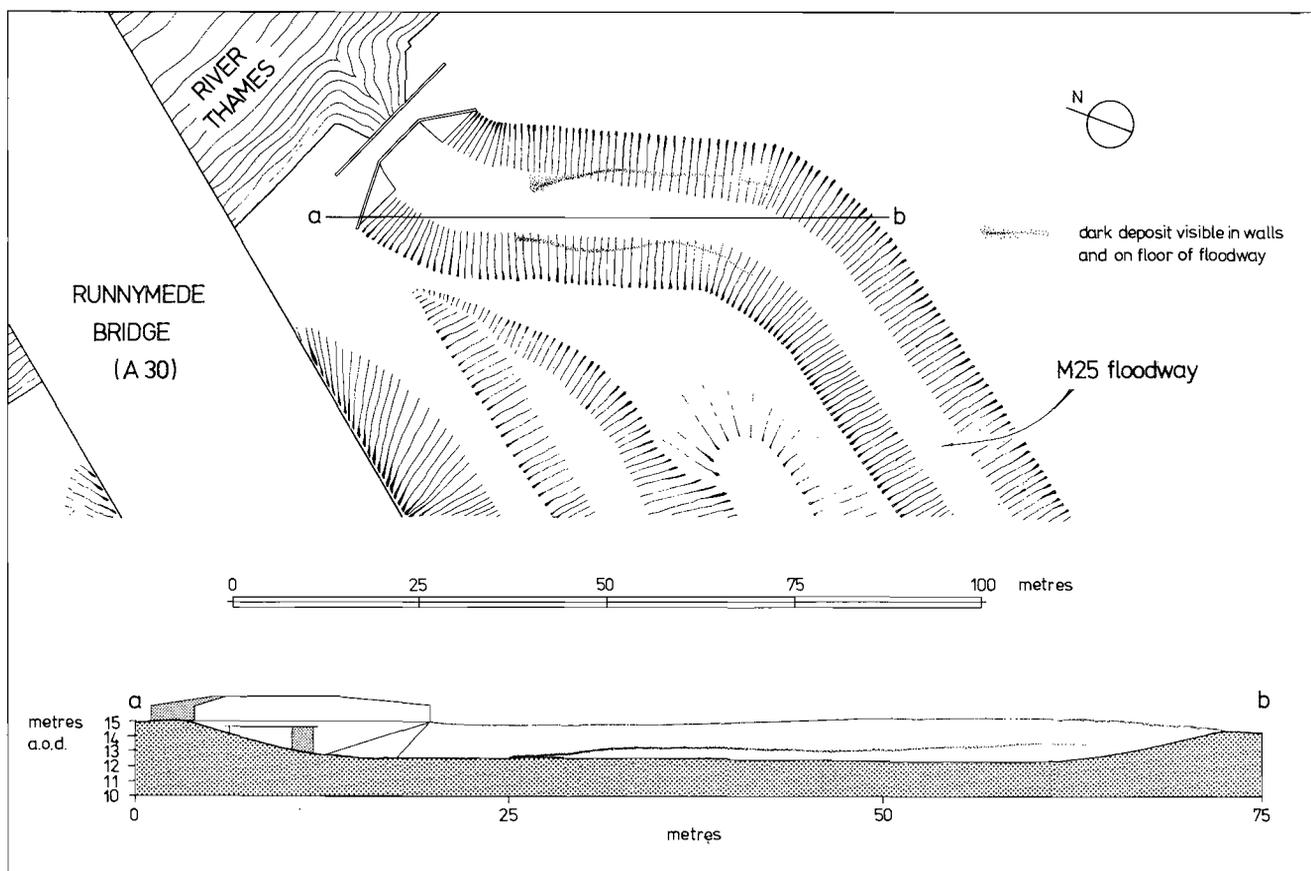


Fig 9 Spread of material located in M25 floodway; information projected on to arbitrary section a-b along length of floodway

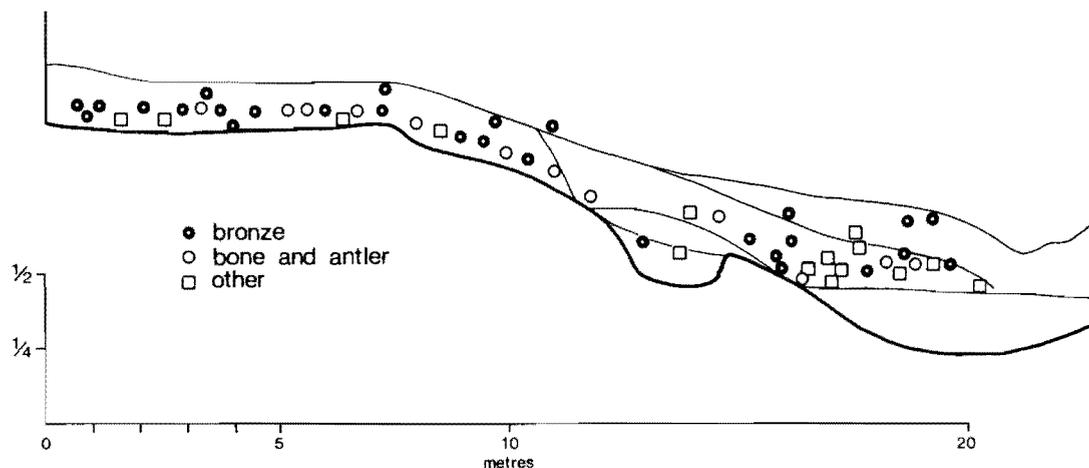


Fig 10 Distribution of small finds through layers on schematic representation of section a-b in Fig 3

The archaeological layer in the floodway section contains pottery of a similar character to that from the excavated settlement area. The material has a derived appearance, however, and it is here cautiously suggested that this deposit represents washed material, again possibly reflecting the activity of the river in this area. Its presence does not allow positive speculation concerning the extent of occupation east of the excavated area. The absence of archaeological material in the walls of the M25 floodway south of this point, however, may suggest that occupation terminated between the excavated area and the floodway.

The possibility remains that occupation originally extended westwards, now preserved under the present A30 embankment, and southwards 'inland' from the river. Indeed, the recently completed excavations at Petters Sports Field, Egham, demonstrate occupation at a slightly later date than at Runnymede within 500 metres of the site and may indicate a shift away from the river.

The problems of estimating the duration of occupation have been touched upon (p 5) and will be again (p 24). Insufficient time had elapsed to necessitate the refurbishing of the 'round house' although continued occupation is evidenced to the south-west. Perhaps up to two generations of structural life may be envisaged before inundation required abandonment of the site. The situation is further complicated, however, by the possibility of continuing evolution of the settlement away from the river bank.

Radiocarbon Measurements

Two samples of charcoal were submitted for radiocarbon analysis. Both samples are from a stratigraphically contemporary deposit and may be associated with the demolition of the 'round house'. The determinations are as follows, expressed in terms of the shorter (5568 years) half-life:

- (a) large fragment of timber including outer, curved face. Associated with floor surface (F31). HAR 1834 800 bc \pm 70;
- (b) many fragments of charcoal. Associated with floor surface (F31). HAR 1833 670 bc \pm 70.

Fig 47 presents the results in raw (uncalibrated) form for comparison with radiocarbon dates from other sites. The question of calibration to 'true' years must be borne in mind, although the small number of samples from Runnymede hardly permits any firm conclusions to be drawn from the radiocarbon evidence. Using the method outlined by Clark (1975) the dates have been calibrated at ± 2 sigma giving results of:

- (a) 600–1020 BC;
- (b) 820–1190 BC.

In other words there is a 95% probability that the 'true' (BC) date of each sample lies within the range cited.

THE 1978 EXCAVATIONS

Since the above was written, further developments in the Egham area have necessitated a re-interpretation of the floodway evidence. In the spring of 1978 motorway excavations were taking place below the water table to set the foundations for the new bridge on the south bank of the Thames. Occupation material including worked timber was observed in the contractors' trenches and, after lengthy 'salvage' recording, excavation was sanctioned under the direction of the present writer and Stuart Needham. The area involved represented a silted-up river channel and the adjacent bank which had been revetted by a double row of pile-driven timbers, traceable for a length of at least 50 metres. Behind this revetment (which may very probably have supported a superstructure) prehistoric occupation material was revealed on the old land surface. Rubbish material was recognised accumulating against the pile rows and washing out into the channel beyond. Salvage recording of motorway construction sections allows some correlation of the 1976 site with the 1978 material 80 metres distant. We may be dealing here with the wharfage arrangements for the Late Bronze Age site, a revelation which places into context the evidence for the exploitation of the communications potential of the river, manifested in the number of exotic items present. The 1978 results do not deny the evidence for erosion recognised in 1976 but do suggest that erosion may have been more localised prior to flooding than has been suggested above. The answer may be that we are dealing with occupation amongst a braided river system here at this period with the river splitting up into a number of channels, although this suggestion must await further study of the 1978 findings.

An interim account of the 1978 excavations has been published (Needham and Longley 1980).

THE FINDS

Stratigraphy

The method of excavation and the rationalisation of arbitrary 'spits' into stratigraphically related groups has been described above (p 5). The stratigraphy on this site cannot be described as complex and it has been suggested (p 1) that occupation was not prolonged, being curtailed by inundation. This very process, however, may have disturbed the stratigraphy and this fact has been noted (p 7). Furthermore, the possible introduction of extraneous material to the site by the agency of the river must be borne in mind. Nevertheless, the excavated material has a coherent unity confirming the stratigraphical

indications that this is a contemporary assemblage and this point is argued further below (p 24).

Layer 2 contains residual material from the primary occupation of the site. It is overlain partly by the midden deposit (7) and by structural debris from F31. Layer 3 contains material from the floor surface of the structure F31. Layer 5 represents the gradual accumulation of settlement material over a period of time, and while no stratigraphic variation was observed during excavation the material has been subdivided, for the discussion, into three groups, on the basis of the stratigraphy visible in the section and considered above (p 4). Group 5a designates material from the lowest levels of this occupation deposit and the disturbance of the original ground surface when the settlement was established. This material is presumably contemporary with groups 2 and 3 from layers 2 and 3. In section and from the plotting of daub, cobbling and finds scatter, a distinct floor surface is apparent approximately central to layer 5. The material from this level has been designated group 5b. Group 5c distinguishes the material from the upper levels of the occupation deposit where contamination through the action of flooding might be considered a possibility.

The midden (7) was established on the collapse of structure F31 and may be expected to contain material spanning the entire occupation. Erosion of the collapsed structure, by the river, has also resulted in some of the material from F31 being incorporated in the lowest levels of the incipient midden.

Material from layer 9 may be considered to be derived either from the midden (7) or the occupation deposit (5), and in either case to have been churned about by the action of the river.

The Bronzes — by Stuart Needham

CATALOGUE (Figs 11–13, Pls VIII, IX, X, XII, XIII, XVIII)

In this and the following three catalogues, entries have been laid out wherever possible in the following format:

Number; item; stratification.

Description; typology and surface.

Evidence for damage.

Identification (where necessary).

Major dimensions.

The following abbreviations have been used:

- M Maximum
- E Extant
- L Length
- W Width
- T Thickness
- D Depth
- d diameter

1 Spearhead fragment; layer 9

Round-sectioned midrib and near-flat blade wings retaining traces of original edge-bevel; dark green patina partly obscured by lumpy corrosion products; probable casting flaw in solid part of midrib at upper fracture.

Midrib dented and blade wings slightly bent towards lower fracture suggesting deliberate attempt to break for scrap.

Probably plain peg-hole spearhead; surviving outline suggests broadest part, indicating original length perhaps 15–20 cm.

EL 38 mm; W 38 mm; ED socket 20.5 mm.

2 Socketed tool fragment; layer 5b

Socket-mouth fragment with rounded corner of 90° angle; pronounced upper moulding with flattened top above lesser secondary moulding; dark green patina gives way to lumpy surface in parts.

One side of socket apparently twisted outwards tilting horizontal top of the mouth moulding.

Tool with near rectangular, or square, socket; double moulding typical of axes in south-east, but flat top suggestive of hammer.

EL (along socket) 16 mm; T upper moulding 7–7.5 mm; T body below moulding 2.9 mm.

3 Socket fragment; layer 7

Asymmetrically curved cross-section indicating elliptical socket if original; otherwise possibly distorted round socket; dark green patina interrupted by lumpy corrosion and some brighter green patches.

Three, possibly all four, broken edges.

Elliptical socket would suggest socketed knife family of implements.

EL 37.5 mm; T (narrow end) 3 mm; T (broad end) 1.8 mm.

4 Tanged bradawl/tracer; layer 7

Wedge-like tang of square cross-section, its angular corners faceted at junction with round-sectioned shaft; two bevelled surfaces converge abruptly to bring shaft to chisel-like edge, aligned diagonally to tang section; reed green patina intermittent with paler pockings and laminated corrosion structures. Flaky condition of metal at tang suggests loss of end, and notch not original feature.

Wide angle of edge, approaching 45°, unsuitable for cutting; probably for tracing, piercing, or boring.

EL 47.5 mm; EL tang 20 mm; W tang 3.8 mm; T tang 3.6 mm–2 mm; d shaft 4 mm; W working edge 3.9 mm.

5 Razor fragment; layer 5b

Single convex shaving edge terminating in acutely angled blade tip; blunt back of blade almost straight but interrupted by markedly concave notch; reed green patina flaked to pale green surface in small areas.

Exact line of edge lost due to minor fracturing; snapping of blade across notch explains adjacent abrupt bend.

Large diameter of notch favours single-edged notched-back form rather than single surviving blade-wing of perforated bifid.

EL 30.5 mm; MT 1.2 mm; T towards shaving edge 0.6 mm.

6 Razor, miscast and encased in clay mould; layer 5b

Thin bronze plate encased in crumbly buff clay fabric, with outer layer of blackened, slightly less-crumbly material, on one face at least; inner buff sheath vesicular with few inclusions; outer blackened sheath contains quantities of charred organic matter; both impregnated with small dispersed globules of bronze; whole unit found in several pieces, most now successfully reconstructed; poor laminated condition of bronze and corrosion impregnation of adjacent clay prevented removal of latter intact, although part left *in situ*.

Bronze: two blade-wings separated by axial double-rib on each face, leading from base of blade to circular perforation; latter terminates narrow 'V' shaped notch in blade top; much of blade outline convex but with straight base offset from stump of tang; better preserved blade-wing has attached casting flash of thinner metal with irregular edge.

Considerable buckling of blade probably deliberate damage after casting; porous nature of stump of tang suggests incomplete casting rather than breakage, explaining abandonment before removal from mould.

Features best paralleled on heel-shaped bifid razors.

EL 82 mm; MW 62 mm; T midrib 6.5 mm; T blade 4 mm thinning to 3 mm; T casting flash 2 mm.

7 Tweezers; unstratified

Bar of bronze thickest in the centre doubled over to form strongly sprung hinge; arms expand to widest and thinnest towards their ends, and swell outwards slightly above incurving pincer grips; dark reed green patina flaked to paler surface over large areas.

Complete implement; both arms bent at right angles halfway along preventing pincer edges from meeting, therefore not original feature.

L (straightened) 75 mm; W hinge 4 mm; T hinge 2.2 mm; MW arms 8 mm; T arm-ends 1.3 mm; W pincer edges 7 mm.

8 Tweezers, fragments; layer 5a

(i) hinge fragment; EL 22.5 mm; W hinge 4.5 mm; T hinge 1.2 mm.

(ii) arm fragment; slight bend not suggestive of intentional shaping; EL 19.2 mm; W 6 mm; T 1.5 mm.

(iii) two arm fragments (not illustrated) separated by narrow gap, set in a mixed matrix containing small wood fragments unlikely to represent a solid piece of wood, the piece in three joining parts; EL (reconstructed) 23.5 mm.

Dull green patina partly flaked and pocked.

Fragments found together thus presumably the incomplete remains of a single pair of tweezers similar to no 7.

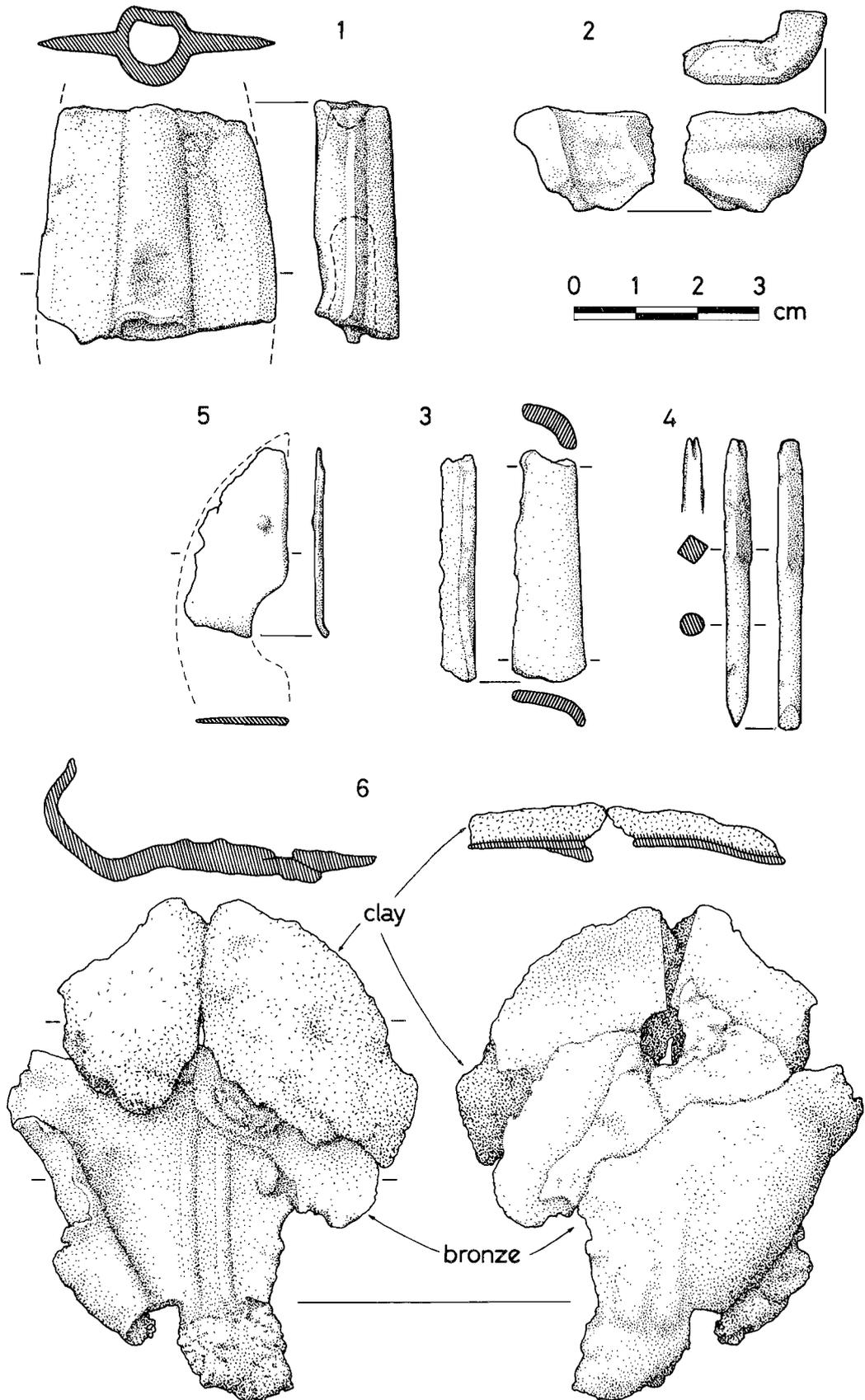


Fig 11 Bronze artefacts. Nos 1-6

- 9 Tweezers, fragment; unstratified
Large portion of one arm of a pair of tweezers terminating in original incurved pincer edge; poor dull green surface flaked to pale green in places.
Fragment bent double thus superficially resembling a hinge piece. Probably from pair of tweezers similar to no 7.
EL (extended) 52 mm approx; MW (base of arm) 9.1 mm; W broken end 5.8 mm; MT 1.7 mm.
- 10 Bracelet/Ring fragments; layer 5b
(i) Possible terminal fragment; appears to be flattened at one end. EL 24 mm; T 3.7 mm; T terminal-end 4 mm; internal d 40 mm approx.
(ii) Possible terminal fragment; appears to be flattened at one end. EL 21 mm; T 3.7 mm; T terminal-end 4 mm; internal d 45 mm approx.
(iii) Hoop fragment; EL 14 mm; T 4–4.6 mm.
(iv) Hoop fragment; EL 9.5 mm; T 3.9–4.4 mm.
(v) Hoop fragment; EL 5.5 mm; T 3.6 mm.
(vi) Hoop fragment; EL 5.2 mm; T 3.6 mm.
All fragments with circular cross-sections; lumpy corrosion products, some laminated, obscure much of a dark green patina. Found together, thus presumably remains of a single object; assumption supported by similarity in form, though no two pieces join demonstrably.
Two possible terminals favour tentative reconstruction as simple penannular bracelet; otherwise a continuous hoop; slight irregularities in curvature (cf fragments (i) and (ii)) suggest possibility of elliptical or irregular form, not unknown elsewhere.
- 11 Pin; layer 7
Round-sectioned shank gently swollen below a constriction immediately underneath a flat-topped 'panel-pin' head; upper quarter of shank decorated with series of incised horizontal encircling lines, some apparently bordering panels of short vertical strokes; shank slightly bent, possibly original feature; fine light reed green patina spoiled by few corrosion spots.
Extreme tip lacking.
L 61 mm; d head 3 mm; d shank below head 2 mm; Md shank 2.6 mm.
- 12 Pin, damaged; layer 7
Bulbous head retains stump of projection on upper surface; round-sectioned shank decorated on upper part with single spiralled groove whose coils are separated by narrow, rather variable gap; dark green patina interrupted by some areas badly eaten by corrosion.
Part of head and lower shank missing; angular bend in shank probably due to damage, the stress of which may explain excessive corrosion there.
Surviving portion of pin suggests vase-headed form, originally considerably longer to judge from small reduction in diameter of shank over extant length.
EL (straightened) 80.5 mm; d head 5.4–5.7 mm; d shank below head 3–3.2 mm; d shank (at break) 2.7–2.9 mm.
- 13 Pin fragment; layer 7
Portion of round-sectioned shank tapering to a point; reed green patina flaked to light green surface in parts.
Marked bend below break, and possibly gentler curve in perpendicular plane lower down, likely features of damage.
EL 42 mm; d shank (at break) 2.6–2.8 mm.
- 14 Pin fragment; layer 9
Shank piece with round section, tapering virtually to point; two curves described in perpendicular planes; mainly light green surface due to loss of green patina.
Extreme tip damaged through corrosion.
EL 33.5 mm; d shank (at break) 2.8 mm.
- 15 Shank fragment; layer 5b
Portion of gently tapering round-sectioned shank; a little curved towards thicker end; dull green slightly rough surface.
Broken at both ends.
Most probably part of a pin.
EL 44.5 mm; d shank (upper break) 3.2–3.4 mm; d shank (lower break) 2.9–3.0 mm.
- 16 Pin fragment; unstratified
Portion of round-sectioned shank tapering virtually to a point; gentle curve along much of length; some flaking of green patina.
Tip of point missing; angular bend below upper break suggestive of damage possibly causing fatigue and excessive corrosion.
Presumably lower part of a pin shank.
EL 43.5 mm; d shank (upper break) 2 mm; d shank (lower break) 1.5 mm.
- 17 Shank/Hoop fragment; layer 9
Short rod of elliptical section; uneven poorly-preserved surface with little surviving patina.
Probably broken at both ends; three transverse indentations probably due to damage.
Possibly part of a pin or simple bracelet.
EL 23 mm; d shank 4 x 3 mm.
- 18 Ring; layer 5c
Complete circular ring with rounded triangular cross-section whose apex projects inwards; patina has mainly given way to dull green, coarse-textured surface. Slight irregularities in width and thickness could be due to either poor condition or uneven wear.
External d 18–18.4 mm; internal d 12.3–12.7 mm; W hoop 2.9–3.5 mm; T hoop 3.7–4.2 mm.
- 19 Ring; layer 7
Complete circular ring with more or less round cross-section but traces of slightly angular junctions bordering inner face; reed green patina occasionally flaking to lighter green surfaces intermittent with lumpy corrosion.
Irregularities in thickness mainly due to uneven corrosion.
External d 13.9–14.4 mm; internal d 8.6–9.2 mm; W hoop 2.6 mm; T hoop 2.5–2.7 mm.
- 20 Stud; unstratified
Sub-conical head of roughly circular plan; slightly hollowed underside with central shank of elliptical cross-section; dull green surface with little surviving patina.
Stud survives complete although shank is broken across.
L 12 mm; L shank 8.5 mm; d head 8.9–9.4 mm; d top of shank 3.6 x 2.9 mm.
- 21 Stud; layer 5b
Head of elliptical plan with dome-like long profile and arched cross-section; underside substantially hollowed leaving thin surrounding rim; centrally placed shank with thin elliptical cross-section aligned along long axis of head; dull green rough surface.
Tip of shank probably missing, remaining stump bent over to one rim; other side of rim crushed inwards accentuating elliptical shape; row of bumps on less damaged side probably represent corrosion products.
Form particularly suited to use as a pommel piece capping butt of an organic handle of elliptical section, although other possibilities exist.
d head 35 x 13 mm; D head 9 mm; MD hollow 4.5 mm; EL shank 10 mm; W shank (base) 10 mm; W shank (broken end) 8 mm.
- 22 Button; layer 5c (see also Ancient Monuments Laboratory report, p 27)
Near circular disc with two concentric mouldings separated by marked furrows, encircling a central domed projection; outer moulding with near flat side and more or less flattened crests on face and reverse; interior of reverse depressed with approximately central rectangular bar projecting, bearing indications of indentation on one side which radiographs suggest may be a blocked perforation; hints of bumps at ends of bar; reed green patina partially flaked to pale bluey-green surface.
Complete and little damaged; found with both faces covered with organic material.
Reverse bar intended to have been perforated forming a staple and suggesting a button form; perforation presumably partially blocked by corrosion products.
d 16.2–16.8 mm; T outer moulding 3.2–3.5 mm; L staple 8.2 mm; W staple 3.3 mm; D central dome 2 mm.
- 23 Button; layer 7
Two concentric mouldings, separated by marked furrows, encircling a central rod-like projection; outer lip on reverse delineated internally by shallow annular furrow enclosing flat circular area; sub-rectangular, off-centrally placed staple stems at each end from the course of the furrow, thin ribs spreading from its feet; fine reed green patina with only occasional corrosion products.
Complete and apparently undamaged.
Staple for attachment suggests button-like function.
d 19.9–20.5 mm; T outer moulding 3.5–4.5 mm; L staple 15.4 mm; W staple 2.7–2.8 mm; D central projection 2 mm.
- 24 Button; layer 5b
Almost hemispherical plain dome cast with hollow reverse, traversed by a straight bar of round cross-section, which recedes gently inwards; fine rib running from rim down the inside possibly related to manufacture; dome with reed green patina, hollow paler coloured.
Complete and little damaged.
Bar for attachment suggests button-like function.
d 19.4–20 mm; D dome 7.6 mm; T rim 1.1–1.7 mm; D hollow 6.2 mm; T bar 2.5–3 mm.
- 25 Button; layer 5b
Almost sub-conical dome with hollow reverse traversed by straight bar of round cross-section; dark green patinated dome, more coarsely textured hollow.
Complete and little damaged.

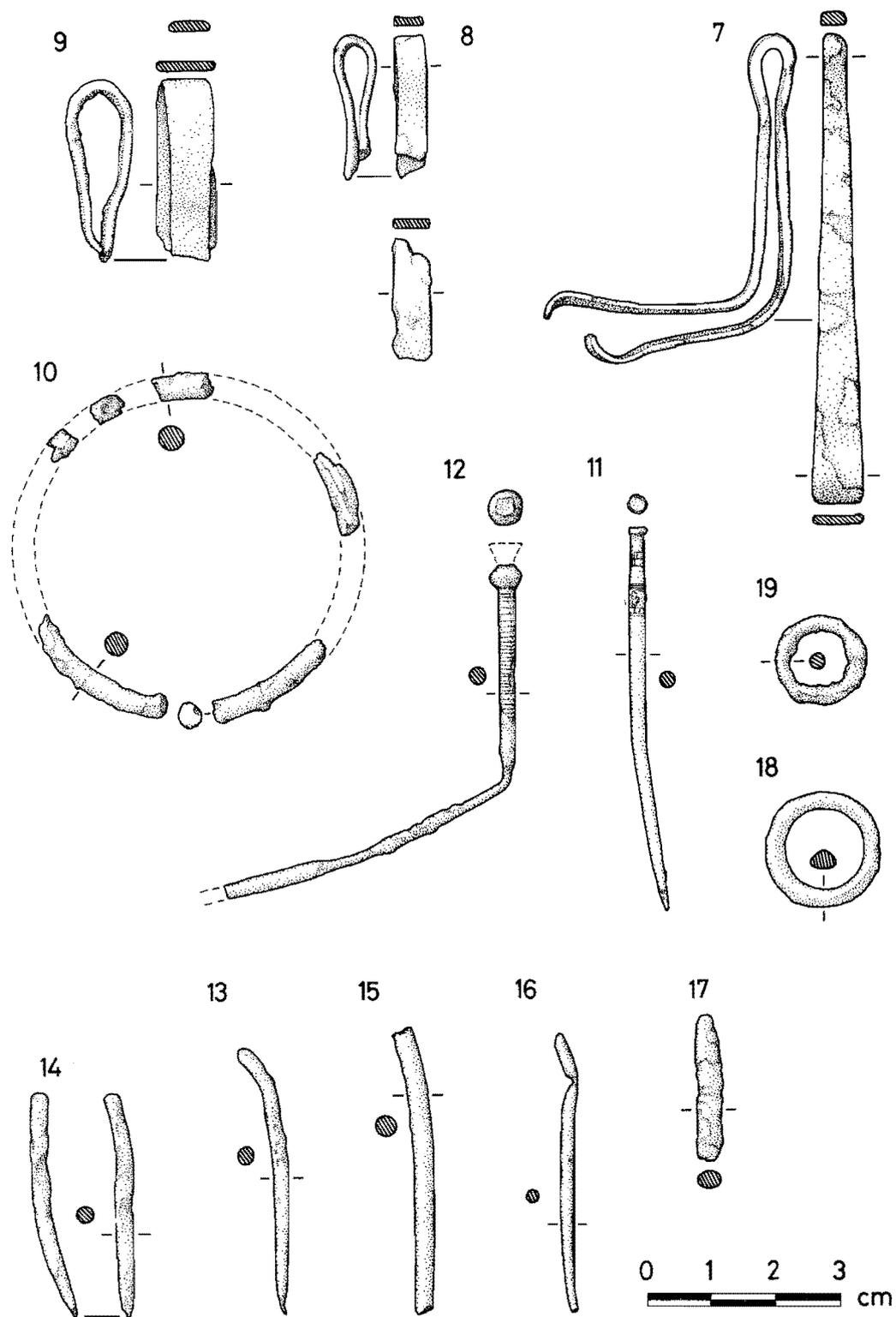


Fig 12 Bronze artefacts. Nos 7-19

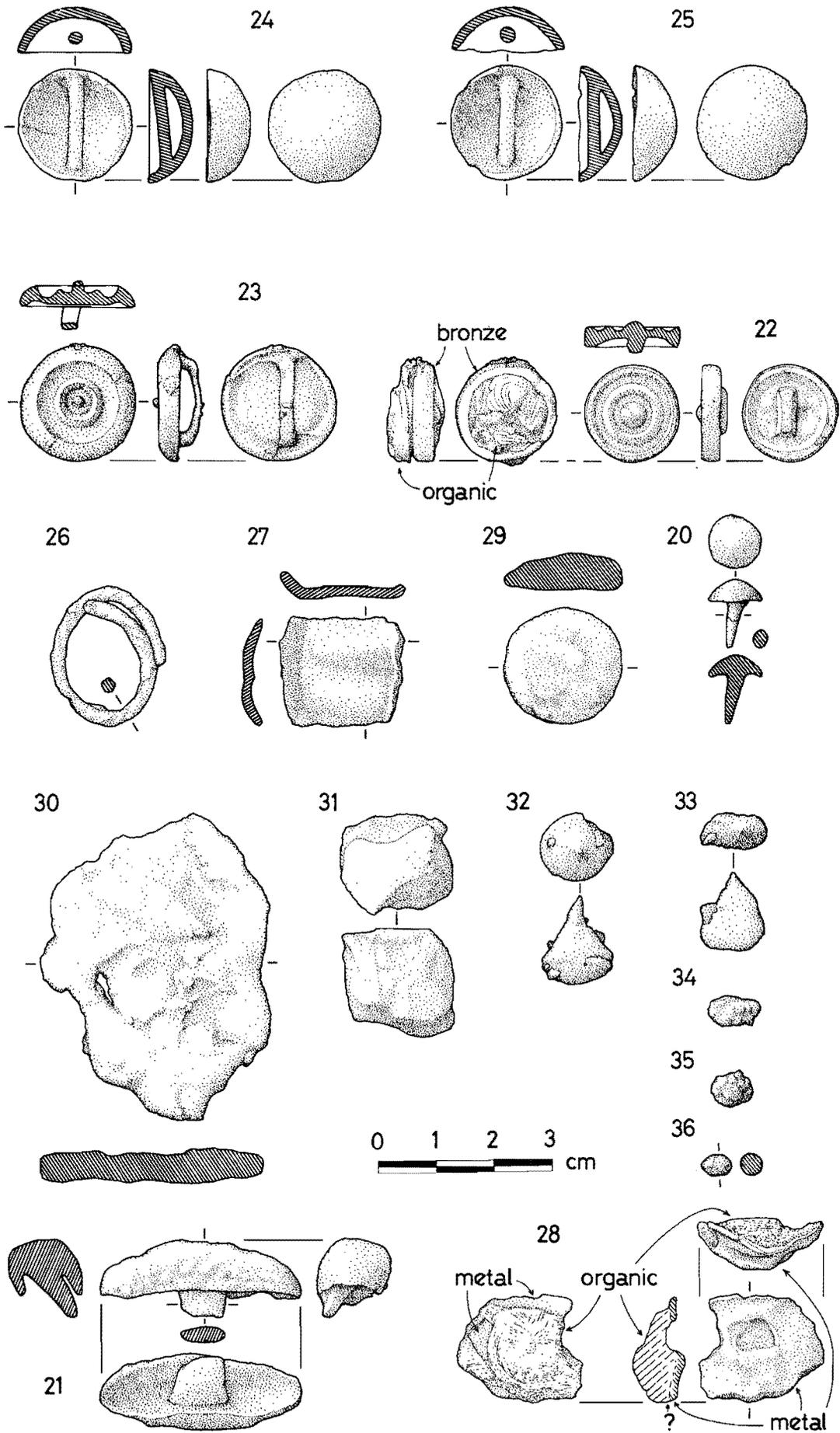


Fig 13 Bronze artefacts, Nos 20-36

- Bar for attachment suggests button-like function.
d 19.4–19.7 mm; D dome 7.6 mm; T rim 0.9–1.3 mm; D hollow 5.8 mm; T bar 2.7–3.2 mm.
- 26 Wire fragment; post hole 53
Loosely coiled stretch of wire containing traces of twisting; little dull green patina mainly replaced by coppery brown surface.
Possibly broken at both ends; variable thickness could be due to poor condition.
Features reminiscent of twisted-wire ornament, or otherwise produced in the manufacture of wire.
EL (extended) 76 mm; T terminals 2.6 and 3.1 mm; T 2.2–3.2 mm.
- 27 Plate; layer 5b
Body with two humps divided by a furrow perpendicular to an upturned flange bordering one edge; slight upturn along opposite edge suggests original matching flange; dark/bright mottled green patina.
Much of one flange apparently broken off, other largely intact; two remaining edges thinned but not obviously fractured; furrow possibly damage product.
Form not identified.
EL 22 mm; W (along flange) 19 mm; T flange 2 mm; MT body 2.3 mm.
- 28 Sheet-metal fragments; layer 5b (see also Ancient Monuments Laboratory report, p 27)
Fragment of sheet-metal with undulating form; edges of 'D' shaped perforation appear unbroken — probably original feature; possible indication of a second perforation preserved in left-hand edge (as illustrated); found with much of metal remnant concealed by corrosion-impregnated organic matter, that on reverse enclosing small tongue of sheet-metal seated in the left-hand side and probably a separate fragment; grey to green patina with little rough-textured surface.
Top edge (as illustrated) appears largely original (although not straight), remaining edges mainly broken; main fragment undoubtedly contorted but curved form in general may be original.
Evidently part of a sheet vessel or binding.
M dimension 22.8 mm; T metal 0.7–1.3 mm; M dimension of perforation 6.3 mm.
- 29 Disc; layer 5a
Small circular disc, roughly plano-convex in cross-section; reed green patina.
No obvious fractures; apparently complete.
Too regular for accidental spillage, but possibly residual blob from crucible bottom; alternatively, served more non-utilitarian function, eg gaming counter.
d 20.1–21 mm; MT 6.4 mm.
- 30 Slab; layer 5
Thick plate of irregular shape with a rather vesicular structure — possibly impure; pale green/brown surfaces, coarsely-textured.
No obvious fractures or damage.
Form suggestive of metal spilled or run off in process of metal-working.
M dimension 52.8 mm; MT 7 mm.
- 31 Lump; layer 5b
An angular cuboid piece, possibly of impure composition; pale green surfaces mainly uneven with crumbly texture.
Some faces might be lines of fractures.
Possibly part of larger block of metal, but not particularly reminiscent of plano-convex ingot form.
M dimension 25 mm.
- 32 Droplet; layer 3 (found with no 33)
Roughly globular body extending into sharp pinnacle along one axis; green slightly porous structure largely discoloured by yellow sandy matrix embedded into surface along with some small grits.
Apparently more or less intact.
May represent dropping of molten bronze blob on to gravelly patch.
L 15.3 mm; d 12–13 mm; grits up to 3.5 mm.
- 33 Droplet; layer 3 (found with no 32)
Flattened triangular body with one apex extended to a pinnacle; a large flint grit and sandy material embedded into porous green surface.
Probably intact.
May represent dropping of molten bronze blob on to gravelly patch.
L 13.8 mm; W 11.5 mm.
- 34 Globule; layer 5a (found with no 35)
Small lump of rather nodular form; dull green surface.
Not obviously damaged.
Likely blob of waste.
M dimension 9.5 mm.
- 35 Globule; layer 5a (found with no 34)
Small nodulated lump; dull green surface.
Not obviously damaged.
Likely blob of waste.
M dimension 8 mm.
- 36 Pellet; layer 5b
Small ovoid grain of metal; mostly rough pale green surface, small patch of reed green patina.
No obvious damage.
Likely drop of waste.
M dimension 5.8 mm.

DISCUSSION

The total of thirty-six bronze pieces from Runnymede Bridge represents a rich metal assemblage in terms of the comparatively small area available for excavation. The vast majority of the pieces are of a fragmentary nature as might be expected from their context amongst occupational and industrial debris. For discussion, the assemblage is conveniently split into four main groups — weapons; tools and implements; ornamental and attachment pieces; and metalworking debris — according to the functions or origins of the respective bronzes, very few of which remain unidentifiable.

WEAPONS

Spearhead

A single fragment (1) was the only metal item of weaponry brought to light during the excavations. Plain peg-hole spearheads, to which class this example probably belongs, occur in datable contexts in Britain as early as the Penard phase (MBA 3), but are much more commonly encountered throughout the Late Bronze Age, after 1000 BC (Coombs 1975, 60).

TOOLS AND IMPLEMENTS

Hammer

On the basis of its flat top, the mouth fragment of a socketed tool (2) has been regarded above as representing a hammer rather than an axe. Socketed hammers usually have flat-topped mouths which would presumably abut against a ledge encircling a wooden haft. While this tool-type makes its earliest appearance in MBA hoards, eg Burgesses' Meadow hoard, Oxon (*Inv Arch* GB 6.6) and Bishopsland hoard, Co. Kildare (Eogan 1964, 275 fig 5:3–5), examples with double mouth-mouldings seem only to occur in Late Bronze Age contexts. The hammers from the hoards of Thorndon, Suffolk (*Inv Arch* GB 11); Isle of Harty, Kent (*Inv Arch* GB 18); Minnis Bay, Kent (Worsfold 1943, pl XI:18); and Roseberry Topping, Yorks (Howarth 1899, 87–9, fig), all display rather pronounced upper mouldings surmounting lesser step-mouldings, broadly comparable to those on the Runnymede fragment. The Roseberry and Minnis Bay examples furthermore parallel the close setting of the latter's mouldings. The Isle of Harty hoard is datable to the LBA 1/2 transition (Coombs 1971, 39–45); the Thorndon, Minnis Bay and Roseberry hoards belong more generally to the Ewart Park phase (LBA 2–3), although Roseberry may be late within it containing a socketed axe with a heavy mouth-moulding comparable to those on 'massive' socketed axes of LBA 3. The Runnymede example is likely to be broadly contemporary with these finds, spanning late LBA 1–LBA 3. The regular use of closely-spaced double mouth-mouldings on the common local socketed axeheads of this period (south-eastern type) may support this argument on stylistic grounds; indeed it seems likely that this hammer was manufactured under the same industrial tradition as such axeheads.

Socketed knife

If the identification of the second socket fragment (3) as part of a socketed knife is correct, then it would probably belong to the

Thorndon class, examples of which commonly display elliptical socket-sections, as in the type-fossil (*Inv Arch* GB 11; Hodges 1956, 38). Thorndon socketed knives are frequent in hoards dated to LBA 2-3, which is thus the most likely date range for this tool fragment. The settlement context of this example is paralleled by the recent discovery of an almost complete Thorndon socketed knife during the excavations at The Breiddin, Powys (Coombs, forthcoming, no 145). Two complete knives from Weybridge and Seale and broken ones in the Egham hoard, all in west Surrey, demonstrate that the type was available locally (Phillips 1967, 24, fig 6:2, 28, 32; O'Connell and Needham 1977).

Bradawl/Tracer

The square-sectioned tang and circular shaft of this implement (4) are features most regularly associated with pointed working-ends on tools generally described as awls. In contrast, however, this specimen would appear to be unusual in maintaining a constant thickness down the length of its shaft, terminating instead in a steeply-bevelled chisel-like edge. This adaptation of the normal working end may be indicative of it serving more as a bradawl than a piercer, the square-sectioned tang preventing rotation within its wooden handle. Alternatively, such an implement could have been used as a tracer in the delicate working of sheet-metal (Maryon 1938, 243-6). In this circumstance the piece is too small to have been struck direct and would still have required a handle. A number of small implements with chisel-like edges are known from the lowest levels of Traprain Law, Midlothian (Curle and Cree 1920-1, 166, fig 10), some of which apparently have squared-off butt ends indicative of true tracers, and clearly not designed for hafting, instead being struck direct.

Typologically this piece has affinities with a wide family of tanged boring and piercing implements which most usually have pointed ends, but are also known with slender gouge-ends, as illustrated by examples from Carleton Rode (Evans, J. 1881, 173, fig 203), and Snettisham, Norfolk (Sandringham Museum). The lack of recognition of any number of examples of the 'chisel-ended' variant illustrated at Runnymede may be partially due to the assumption that poorly preserved tanged implements with missing working ends would invariably have tapered to a point. Nevertheless, the sparse evidence for other examples must be indicative of the rarity of this form.

Awls, exhibiting a variety of cross-sectional and other features, are not as yet closely datable, occurring in Early Bronze Age graves as well as in hoards of the Middle and Late Bronze Ages, and thus cannot be used to suggest the chronology of the Runnymede bradawl. Of three awls known from Surrey only that from Coombe Warren, Kingston Hill (Devenish 1964, 1-2) parallels the characteristic change in section between the tang and shaft of the latter implement. This is accomplished by means of small facets flattening each corner of the tang, thus emphasising the comparison. The Kingston awl probably belongs to a group of metalwork dating to the Ewart Park phase (LBA 2-3).

Razors

The only regular British razor type to which the fragmentary Runnymede example (5) could have belonged is that of the bifid class. As such, this piece would represent one of two blade-wings separated by a narrow channel terminating in a broad circular perforation. While the notches of a few British bifids (including the second Runnymede Bridge razor, no 6) do, indeed, terminate in circular perforations, these are generally considerably smaller than could be reconstructed for this Runnymede specimen. Perforations of a more closely comparable size occur on some continental bifid razors (Jockenhövel 1971, pl 25, nos 308, 310, 318, 370). However, the problem of making this identification lies in the blade-tips, that on the surviving Runnymede fragment subtending an acute angle of 60° or less, contrasting with the 90° angle normally described on the relevant continental bifids with circular central perforations. The blades of the latter also

maintain a constant radial width around this central hollow, a condition which is similarly not fulfilled by the present example.

A much more satisfactory identification can be made amongst the single-edged razors of central and northern Europe, within which class a significant group with notched backs occurs (Jockenhövel 1971, 218-33). Jockenhövel has divided the central European *notched razors* into three types on the basis of the form of the handle, or its absence. In view of the loss of the butt-end of the Runnymede razor it is impossible to assign it to one of these groups with any certainty but the close similarity of its extant features to many notched razors leaves little doubt that it belongs somewhere in the series. Reconstructed, this razor seems likely to have had a near-straight back interrupted by a semicircular notch accompanying a slender blade, rather than the deep angle-backed blade present on many of the continental parallels. Such slender blades are generally associated with handled razors, and examples from Nidau, Allendorf, and Mörigen (Jockenhövel 1971, nos 430, 454, 481) may be cited as more specific parallels for the Runnymede piece.

The distribution of this razor class is dominated by a high concentration of finds amongst the Swiss lakes, from which region a regular, though sparse, scatter of finds extends northwards as far as the north German coastal strip (Jockenhövel 1971, pls 49B-51B). That the phenomenon responsible for this spread northwards also affected Britain had already been surmised from a notched razor find dredged from the river Thames at Old England, Brentford (Wheeler 1929, pl I, fig 2:7). In view of the absence of any other known examples of the type from Britain, the strong continental affinities of the Brentford and Runnymede razors should be indicative of their importation from Europe. It is noteworthy that two known British examples come from sites in close proximity on the river Thames, which in conjunction with the river Rhine could have provided a convenient means of transportation between their find-spots and the Swiss concentration of the type. However, the latter relatively dense distribution is not necessarily indicative of it being the sole area of manufacture, and the possibility thus exists that the Runnymede razor may be of more northerly origin in Europe. This point is further examined below (p 26). Jockenhövel dates the notched single-edged razors of central Europe to the end of the Younger Urnfield period (Hallstatt B3) which is broadly equivalent to the Ewart Park phase in British chronology (in particular LBA 2), and it was probably during this time that the two Thames Valley examples were brought here (Jockenhövel 1971, pl 82; Burgess 1976a, fig 4:9).

The second razor from Runnymede represents an unfinished *bifid razor*, whose features are well paralleled amongst examples of Piggott's class II (1946, 138-40). Its blade-form seems to belong to a heel-shaped sub-series, whose curved outlines are invariably interrupted by a notch at the top, while their straight bases may be either perpendicular to the tang, or slightly drooping. These blades are often accompanied by a small circular perforation inset a little from the notch, or in some cases, as at Runnymede, actually contiguous with the notch. Only a few heel-shaped bifid razors are comparable in this respect, including examples from St. Andrews, Orkney (Piggott 1946, no 88); Llangwyllog, Anglesey (Lynch 1970, 207, fig 68); Feltwell Fen, Norfolk (*Inv Arch* GB 35); Ugley, Essex (Piggott 1946, nos 44 and 45); Ivinghoe, Bucks (Britton 1968, 205, fig 10:1); and Chilmark, Wilts (Moore and Rowlands 1972, no 86), while a similar blade from the river Thames at Old England, Brentford, London (Piggott 1946, no 47/90) differs in possessing an open-work handle characteristic of certain continental razors (Jockenhövel 1971, pls 12-27), a 'hybrid' type which is also known in northern France, eg in the St. Grégoire hoard, Ile-et-Vilaine (Briard, Onnée, and Veillard 1977, 54, pl XIV:102-4), and at Court-St.-Etienne, Belgium (Mariën 1958).

Many heel-shaped bifids have centrally thickened blades, some of which more specifically parallel the reeded ribbing of the Runnymede Bridge example. In addition to the razors from Llangwyllog, Feltwell and Chilmark, already noted for their

comparable notch/perforation arrangements, are examples from Adabrock, Lewis (Coles 1959–60, pl V); Snettisham, Norfolk (Sandringham Museum); Wallingford, Berks (Evans, J. 1881, 218, fig 269); and a second find from the river Thames at Brentford, London (Piggott 1946, no 46). Of the three razors similar to the Runnymede Bridge example in having both reeded midribs and contiguous notch/perforations, that from Llangwyllog must be isolated as the best parallel on account of the more closely comparable size of its perforation.

Heel-shaped bifid razors have a fairly widespread distribution in the British Isles, finds being most densely concentrated in the south-east but with a sparser scatter as far as the northern and westernmost islands. However, the type does not appear to have become established in Ireland, being replaced there by relatively narrower bifid razor forms with squashed 'double-axe' blades, as illustrated by examples in the Dowris, Co. Offaly, hoard (Herity and Eogan 1977, 203, fig 82:9) and others (Piggott 1946, nos 58, 61, 63, 64, 73, 75, 76, 77). Razors displaying one or other of the specialised features extant on the Runnymede specimen occur throughout the British distribution, but the Runnymede variant itself, combining both features, is known only from the southern half of the country. The latter finds do not, however, lie in particularly close geographical proximity, the Runnymede Bridge example being alone in the Thames Valley.

Several heel-shaped bifid razors, including those from Llangwyllog and Feltwell with particularly close affinities to the Runnymede example, come from hoards which are consistent in dating to the Ewart Park phase (LBA 2–3). However, the unribbed razors from Ugley were apparently associated with a broken sword of Burgess' Group IV (1968b, 13, 16, fig 10) which may thus indicate an origin for the heel-shaped razor within the Wilburton phase (LBA 1), unless the sword represents scrap survival. Other razors of the type occur in cave deposits at Merlin's Cave, Gwent (Piggott 1946, no 57), and Heathery Burn, Co. Durham (*Inv Arch* GB 55.91), and elsewhere in settlement contexts at All Cannings Cross, Wilts (Cunnington 1923, pls 18:3 and 19:2); Angle Ditch, Dorset (Pitt Rivers 1898, 107, pl 263, fig 2); and Ivinghoe Beacon, Bucks (Britton 1968, 205, fig 10:1). The latter bronze assemblage has been dated to the Ewart Park phase, while the association of a Breton socketed axe blade fragment at All Cannings strengthens the possibility of an early phase of occupation there within the Late Bronze Age.

Late Bronze Age heel-shaped bifid razors should be distinguished from other varieties which have short offset blade-bases and sometimes end-notches, but which retain a leaf-shaped blade more closely analogous to those on typologically earlier Class I razors (Piggott 1946, 121). Typical examples of this intermediate form come from the hoards of Glentrool, Dumfries and Galloway (Coles 1963–4, 121, fig 16), and Rosnoën, Brittany (Burgess 1968b, 7, fig 4:7), both dating to the Penard/Rosnoën phase (British MBA 3), while two examples from the ditch silts of South Lodge Camp, Dorset (Pitt Rivers 1898, 23–5, pl 238, figs 3 and 4) probably both belong to the Middle Bronze Age on the evidence of other metalwork stratified in the sequence. The typological distinctions drawn between this form and heel-shaped razors thus appear to have chronological validity.

In addition to the Runnymede evidence, the miscasting of razors is also attested in the Ugley hoard where one razor at least (British Museum: 1937. 1–7.1) has unworked edges and the remains of casting flashes. The absence of a tang and the uncharacteristic rounded shape of the blade-base on this example may be the result of insufficient metal being poured to fill its mould. The Ugley razor may be likened further to the Runnymede Bridge example on account of its relatively thick blade for this type of implement, and it is possible that the two valves of their respective moulds had unintentionally been located too far apart, thus explaining the apparent miscalculation of the amount of metal required to fill their matrices.

Tweezers

Three pairs of tweezers are represented at Runnymede Bridge, two by fragments only (8, 9), while the complete pair (7) has not escaped damage, both arms being bent midway along their length. The two examples with surviving arm-ends (7, 9) display incurved 'pincer grips' apparently typical of other British tweezer finds (Coombs, forthcoming). Coombs has drawn attention to the difficulties in dating tweezers on typological grounds, especially as generically similar implements occur in Iron Age and later, as well as Bronze Age, contexts. While this remains a valid point it is worth reflecting upon the increasing number of finds appearing on British sites occupied during the Late Bronze Age (in addition to those listed by Coombs (forthcoming): Ivinghoe Beacon, Bucks (Britton 1968, 208, fig 11:16 and 19); and possibly those in the Bledlow deposit, Bucks (Head 1938, 341, pl 13:9 and 11)) which may be indicative of a sudden increase in the popularity of, or necessity for, this implement type. Indeed, amongst Irish/British bronze tweezers of the general form illustrated at Runnymede, only the Bishopsland hoard fragment, Co. Kildare (Eogan 1964, 275, fig 5:17), appears to occur in a pre-LBA 2 context, dating from MBA 2. The width of the Bishopsland tweezers at the hinge is twice that of the Runnymede specimens, whose narrower dimensions are well paralleled by LBA examples, and they should thus probably be dated to LBA 2 at the earliest.

The presence of organic material adhering to one of the tweezer fragments (8:iii) should perhaps be compared with the record of fibrous traces observed on the corroded surfaces of the fragmentary pair from Ivinghoe, Bucks (Britton 1968, 209, no 19). Whether these traces bear any significance regarding the functions of the implements remains to be seen from more informative finds.

ORNAMENTS AND PIECES FOR ATTACHMENT

Pins

A total of five fragments and one complete pin make this the best represented bronze type from the site. While some of the fragments could, on the basis of common dimensions, have belonged to the same pin, no two pieces can actually be demonstrated to fit together. Four of the fragments (13–16), representing shank or point portions, do not display any particularly distinctive features, although the gently curved profiles of some could possibly have been intentional features of the original objects, being matched on some complete, apparently undamaged, examples — Runnymede Bridge no 11; The Breiddin, Powys, pin no 151 (Coombs, forthcoming); Bledlow, Bucks (Head 1938, 341, pl 13:5). The complete Runnymede pin (11) belongs to the *nail-headed* class which includes examples with a wide range of head sizes (discussed by Coombs, forthcoming). The size of head of this specimen falls within the smallest range and makes it most comparable in this respect to pins from Traprain Law, Midlothian (Curle and Cree 1921–2, 211, fig 12:1); Heathery Burn, Co. Durham (*Inv Arch* GB 55.107); Scarborough, Yorks (Wheeler 1931, 23, fig 16:10 and 11); The Breiddin, Powys (Coombs, forthcoming, nos 150–1); and Bledlow, Bucks (Head 1938, 341, pl 13:5). One of the Scarborough pins also compares in bearing decoration around its upper shank, while one from Bledlow matches the gently swollen shank of the Runnymede example. However, the precise typological form of these pins varies, and they should not necessarily be regarded as a homogeneous group.

A group of similar small-nail-headed pins has been identified in northern Europe (Baudou 1960, 86, 282–3, pl XVIII, form XXVG2), and the type example illustrated exhibits a gently curved and swollen shank strongly reminiscent of the Runnymede one. Some Danish examples apparently bear cross-ornamented heads although there is no mention of decorated shanks. The distribution of these pins in the north is restricted to northern Jutland, being absent from southern Denmark and northernmost Germany. Nine of the Danish

examples are dated by their grave contexts to Montelius IV, which should equate with later MBA 3 and LBA 1 in Britain (Burgess 1976a, 74, fig 4:9). This date is somewhat earlier than might be suggested by the contexts of the Scarborough and Heathery Burn pins, which seem to belong mainly to LBA 2-3, and thus poses a problem, regarding the affinities and chronology of the Runnymede and other British pins, which could not be resolved without a systematic study of the European nail-headed class.

The remaining pin from Runnymede Bridge (12) can fairly confidently be reconstructed as a *vase-headed pin*, despite the loss of part of its head. Pins of this general type are common in parts of central and northern Europe. Müller-Karpe regards bronze examples of the type as characteristic of the Hallstatt B2-3 period in southern Germany, in which context occur pins closely comparable to the Runnymede one (Müller-Karpe 1959, 162, fig 19; 215, fig 52; 224, fig 61; 225, fig 62). Wider chronological ranges are, however, proposed for the whole vase-headed pin series of central Europe, incorporating diverse types (Alexander 1964, 167). The central European concentration of vase-headed pin finds extends as far west as the lakes region of south-east France whence a large number are recorded (Audouze and Courtois 1970, 40-54). The distribution northwards includes a concentration of finds in northern Germany and Denmark where examples in datable contexts belong to Montelius IV and V, equivalent to Hallstatt B2-3 further south (Thrane 1975, 160, fig 100:258; Tackenburg 1971, maps 38-9; Laux 1976, pl 52A). Throughout this area of distribution vase-headed pins with decorated upper shanks are frequent and the ornament encircling the Runnymede Bridge example could be paralleled equally in central and northern Europe (eg Audouze and Courtois 1970, nos 338, 369; Laux 1976, no 584; Thrane 1975, 160, fig 100e). Consequently it would be difficult on present evidence to identify any particular region as a source for the Runnymede pin; the missing cap of its head may prove a further hindrance to this end.

A vase-headed pin associated with occupational debris at Totternhoe, Beds, probably resembled the incomplete Runnymede example in both form and dimensions (Hawkes, C. F. C. 1940, 491, fig 5). One of two bronze pins from the Fenny Bentley hoard, Derbyshire, has also been described as of vase-headed type but is differentiated from the Runnymede form by the wider spacing of its broad disc head and bulbous shank swelling; it is associated with a Wilburton hollow-bladed spearhead characteristic of LBA 1 (Burgess 1976b, 91, no 33; *Proc Soc Antiq Lond* 1895-7). Iron vase-headed pins from the All Cannings Cross and Fifield Bavant settlement sites, Wilts (Cunnington 1923, pl 21.5; Clay 1922-4, 483, pl XI, fig 8) demonstrate that the general type may recur in Britain presumably as late as Hallstatt C or D. The apparent rarity of this general pin-type in Britain does little to encourage the view that any were indigenously produced, although the comparatively small number of excavated LBA settlement sites may partially be responsible for this poor representation. However, on present evidence, the known examples may best be regarded as imports from various stages of the continental vase-headed pin sequence; certainly the close comparison of the Runnymede specimen to continental bronze pins of the Hallstatt B2-3/Montelius IV-V phase suggests that it was probably imported to Britain within LBA 2.

Bracelets

No pieces from Runnymede Bridge can be identified with certainty as belonging to bracelets, but three possible examples are represented. One set of fragments (10) has been reconstructed as a penannular bracelet of more or less even thickness throughout its circuit, with plain terminals. Similarly indistinctive ornaments occur at the Late Bronze Age settlements of Ivinghoe Beacon, Bucks (Britton 1968, 208, fig 11:17); Scarborough, Yorks (Wheeler 1931, 23, fig 16:9); and Grafton, Yorks (Waterman et al 1952-5, 392, fig 6:6); from within the Chalbury hillfort, Dorset (Whitley 1943, 119, fig 8:55); and from Late Bronze Age deposits at Bledlow, Bucks

(Head 1938, 341, pl 13:3). All of these examples have slender hoops, though those from Ivinghoe and Chalbury have elliptical rather than round sections. Grafton and Chalbury have, like Runnymede, yielded only fragments which may equally have belonged to continuous rings. Rings of such slender proportions relative to their diameter are unusual in Britain, but one in the Heathery Burn deposit, Co. Durham, may be cited as a good parallel (*Inv Arch GB* 55.29). Most of these sites can be seen either to belong to, or to have origins within, LBA 2-3. However, the simple form of these bracelets does not justify dating the Runnymede fragment on typological grounds alone.

The small fragment of bronze (17) with an elliptical section may be part of a *hoop* of a ring or bracelet. In the latter instance it would match a variety of bracelet forms with similar section, including the Ivinghoe example mentioned above.

The final piece which may represent a bracelet takes the form of a length of *twisted wire* (26). Twisted wire ornaments are a well-established component of the Ornament Horizon complex of MBA 2 date (Smith 1959, 147, fig 2:2; 152, fig 3:6 and 8). However, a twisted wire bracelet is also known from the Lulworth hoard, Dorset (Drew 1935), dating to LBA 2-3, an example which need not necessarily be regarded as scrap survival from the Middle Bronze Age in view of the occurrence of twisted wire fragments elsewhere, for example in the lowest levels at Traprain Law, Midlothian (Curle and Cree 1919-20, 66, fig 7:15), which may be of Late Bronze Age date as are many of the bronzes at this level. Plain wire, sometimes made into ornaments, is undoubtedly more frequently encountered in British Late Bronze Age contexts, eg Nottingham Hill hoard, Glos (Hall and Gingell 1974), but the simple idea of twisting wire for its decorative effect could easily have been a recurrent theme through the Bronze Age. If the Runnymede fragment does belong to a twisted wire bracelet or other ornament form, there would be no difficulty in accepting a Late Bronze Age date for it, though the possibility of its earlier origin remains, preventing any close dating independent of its context.

Rings

Two rings occurring in the Runnymede Bridge assemblage (18, 19) are of different sizes and cross-section. Rings exhibiting a wide range of diameters and thicknesses are known from several settlement contexts datable to the Late Bronze Age and later: Traprain Law, Midlothian (Curle and Cree 1919-20, 66, fig 7:12-14 — 2 bronze/1 silver); Scarborough, Yorks (Wheeler 1931, fig 16:6-8); Staple Howe, Yorks (Brewster 1963, figs 63:12 and 65:2 — 1 bronze/1 iron); The Breiddin, Powys (Coombs, forthcoming, no 160); Ivinghoe Beacon, Bucks (Britton 1968, 205, fig 10:5); Weston Wood, Surrey (Harding, J. 1965); Eldon's Seat, Dorset (Cunliffe and Phillipson 1968, 224, fig 20:1 — silver); Chalbury, Dorset (Whitley 1943, 119, fig 8:56), to supplement those associated in some contemporary (Late Bronze Age) hoards — in addition to those listed by Britton (1968, 206): the Llangwyllog hoard, Anglesey (Lynch 1970, 207, fig 68); Heathery Burn cave deposit, Co. Durham (*Inv Arch GB* 55.29-40); Nottingham Hill hoard, Glos (Hall and Gingell 1974). While small continuous rings are by definition a simple metal form, their absence from any datable context in Britain prior to the Late Bronze Age is strongly suggestive of their initial production here during that period. It is likely that the wide variety of ring forms and sizes known represents a similarly diverse range of functions, perhaps including shaft bindings, sword belt attachments, or horse harness strap fittings.

Stud

The smaller of the two studs from the site (20) is matched by examples closely analogous in size and form from two other settlement sites, Ivinghoe Beacon, Bucks (Britton 1968, 205, fig 10:2 and 4) and The Breiddin, Powys (Coombs, forthcoming, no 161). At both sites the studs come from assemblages that have been dated largely to the Ewart Park

phase (LBA 2–3), while other comparable examples occur at Isleham, Cambs (Britton 1960) and Guilsfield, Powys (Savory 1965, fig 7:7; Davies 1967) in hoards of the Wilburton tradition dated late within LBA 1. Although, in reviewing the continental evidence, Coombs (forthcoming) has pointed out that the general type has a long lifetime, the present British evidence favours a most likely date during the Late Bronze Age for the Runnymede stud.

Locally, in Surrey, a stud associated in the LBA 2–3 Carp's Tongue hoard of Addington Park, Croydon (*Inv Arch GB 54.17*) is only generically related to the Runnymede specimen in view of its much larger and shallower-domed head, although some of the parallel series of French Carp's Tongue hoards contain studs of smaller, more comparable, size, eg Azay-le-Rideau, Indre-et-Loire (Cordier et al 1959, 65, pl 6:94).

Pommel

The second stud-like ornament (21) has been regarded above as a pommel piece, a type which does not commonly survive on British weapons or implements after the close of the Early Bronze Age (Hardaker 1974), and it is difficult to match the Runnymede specimen closely. The metal pommels associated with Ewart Park swords at Tarves, Aberdeenshire, and Grosvenor Crescent, Edinburgh, are not shanked pieces; instead, each has an opening to enclose and bind the butt end of the composite hilt (Coles 1959–60, 53, fig 6). A more closely related, shanked, pommel with an elliptical dome-shaped cap comes from the Blackrock hoard, Sussex, where it constitutes part of a hollow-cast metal hilt grip of Nordic type which would be dated to Montelius II–III in northern Europe (*Inv Arch GB 47.2*). The two pommels are not, however, sufficiently close in typological form, especially in the length and cross-section of their respective shanks, to be able to regard the Runnymede one as of Nordic origin, although the possibility of a late Middle Bronze Age date based on the Blackrock hoard should be borne in mind in the absence of other analogous finds.

The arrangement of the Blackrock pommel piece and hilt grip gives some insight into the way in which the Runnymede example could have been mounted, though perhaps in a wooden hilt, and the overall visual appearance may have been quite similar. If this pommel piece was being used in the Late Bronze Age, as would seem likely on account of its stratification with other Late Bronze Age material at Runnymede Bridge, then it may have served as a pommel for a wooden-handled implement rather than for a sword. Its dimensions would permit it to be used for either of these two alternatives, but in the latter case an organic hilt piece would have to project beyond the butt of the metal sword-hilt in order to provide material into which the pommel's shank might be sunk. The elliptical plan of the pommel would match up with the handle of a socketed knife, to judge from the comparable shape of their sockets. Alternatively, the handle of a bradawl-like implement such as no 4, elliptical in section to provide better purchase for a rotational action, might profitably employ a domed metal butt-end to sit comfortably in the palm of the hand, as well as for aesthetic reasons.

Buttons

Two totally different forms of button survive in the assemblage. The plainer type is represented by two examples of almost identical form and size (24, 25) and is characterised by a *hemispherical*, or slightly conical, dome whose hollow reverse is traversed by a straight bar for attachment. Buttons of this fairly simple design occur on the continent as well as elsewhere in Britain, but they should be distinguished from other dome-shaped button types with different attachment arrangements such as a small loop sitting in the bottom of the hollowed reverse, or loops projecting beyond, or from, the rim of the dome, eg in the Isleham hoard, Cambs (Coombs 1975, 65, fig 10:28–30); Brebach hoard 2, Saarbrücken (Kolling 1968, pl 41); Morimoine, Haut-Dyle (Mariën 1958, fig 40).

Buttons of the Runnymede type, with a straight bar, occur in widely scattered parts of north-west Europe, though their bars

may have round or rectangular cross-sections and there is some considerable variation in size, diameters ranging between five and fifty millimetres. Twenty-nine known Danish examples have small diameters towards the lower end of the range (10–15 mm) and are thus smaller than the Runnymede pair. Five examples there occur in graves dated to Montelius IV, while one other is dated to Montelius V (Baudou 1960, 90–1, 298, pl XVIII).

A number of Belgian examples have come from the Court-St.-Etienne and other nearby cemeteries (Mariën 1958, 39, no 117b; 40, nos 119b and 120; 63, no 126; 65, no 128b; 78, no 147; 219; 229–30). Many of these cannot now be definitely attributed to specific graves due to the lack of sufficient records but one was associated in the Tombelle de Morimoine with an iron Hallstatt C sword and other miniature examples adhere (through the action of fire) to various unprovenanced attachment pieces typical of the equestrian equipment in the local Hallstatt C graves, and seem to suggest that the whole group may belong to that phase. Associated in the Morimoine grave were also four hemispherical buttons with small-loop attachments, a type common in central Europe where the straight-barred form is apparently rare.

In northern France this button type occurs in hoards typical of the Carp's Tongue complex, such as Choussy, Loire-et-Cher (Thrane 1975, 29, fig 8f); Ile Nihen, Morbihan (Briard 1961, 58); Azay-le-Rideau, Indre-et-Loire (Cordier et al 1959, 63, 64, pl 5:74 and 89); and Prairie de Mauves à Nantes, Loire Atlantique (Briard 1965, 226, fig 83), which are datable to Briard's *Bronze Final III*, or its equivalent.

Turning to the British evidence, a single hemispherical button was found in the Broadness hoard, Kent, which in dating to the Ewart Park phase should be contemporary with the French hoards containing the type (Burgess et al 1972, 235, 257, fig 14:47). A further single example was excavated from the second levels at Traprain Law, Midlothian, and may be scrap survival deriving from the lowest levels, from which the Late Bronze Age finds almost invariably come (Curle and Cree 1922–3, 210, fig 20:5; Burley 1955–6, 124–8). Alternatively its stratification may indicate its later usage during the Iron Age. Finally, attention should be drawn to the not insignificant discovery of 120 such buttons on another hilltop settlement site, that of Staple Howe, Yorks (Brewster 1963, 114, fig 63:2). The occupation was considered by the excavator to begin at Staple Howe during the Hallstatt C phase (LBA 3). A Hallstatt C razor and 'massive' moulded socketed axe fragment confirm activity during this phase, while a fragment of a plate of cup-shaped mouldings has parallels amongst the Court-St.-Etienne (Belgium) Hallstatt material. The miniature size of the Staple Howe buttons draws close analogy with many of the Court-St.-Etienne examples, thus favouring LBA 3 rather than earlier dating for these also. A second razor from the site seems to be related to the north European series *Rasiermesser mit Schleifengriff* which are dated to an earlier horizon (Jockenhövel 1971, pl 82; Baudou 1960, 32). However, damage and wear appear to have shortened the ribbed back and modified the shape of the blade suggesting that it may have been in use for some considerable length of time.

To summarise the chronological evidence, it would appear that hemispherical buttons similar to the Runnymede examples were in use in different parts of Europe over a fairly lengthy period of time, perhaps 1000–600 BC. Earliest are the Danish examples whose date in the main is equivalent to British LBA 1. At the other end of the scale lie the Belgian finds whose late date, equivalent to LBA 3, could also apply to the Staple Howe cache and the Traprain Law specimen in Britain. Finally, examples in some French hoards and in the Broadness hoard, Kent, are associated with types whose main currency during LBA 2 may also have extended into LBA 3. Regarding the Runnymede Bridge buttons, the proximity of the Broadness find might justify some preference for an LBA 2–3, rather than an earlier, date.

The association of hemispherical straight-barred buttons with equestrian equipment at Court-St.-Etienne, Belgium, and now also in the disturbed *burial a* at Saulces-Champenoises,

Ardennes, France (Flouest and Stead 1979, 11–14, nos 10–12, fig 5), suggests that others of this type may also have embellished horse harness gear, which may be significant in the light of the occurrence of cheek pieces at Runnymede Bridge. The stratification of the two hemispherical buttons from this site to the same layer (layer 5) allows the possibility that they belonged to the same set of equipment, whatever its function.

Two more decorative *ridged buttons* from Runnymede Bridge (22, 23) differ from the hemispherical pair in their provision for attachment, having a staple-like bar projecting from an almost flat-backed disc. The two are not, however, of identical style, bearing marked divergences in the spacing and cross-sectional form of concentric mouldings and central feature as well as in staple shape. The larger example (23) can be closely matched against a pair of buttons in the Reach Fen hoard, Cambs (*Inv Arch GB 17.26–7*), one from Casterley Camp, Wilts (Cunnington and Cunnington 1914, 96, pl I:5, 98), and five examples from the Llangwyllog hoard, Gwynedd (Lynch 1970, 207, fig 68:8–12). These nine buttons seem to form a homogeneous class. A single larger button in the Kensington hoard, London (*Inv Arch GB 52.8*), has a bulbous central boss in place of a rod and a curved rather than rectangular staple, but it retains a similar style. Its central boss resembles that on the second Runnymede ridged button (22), but otherwise there is little similarity. Good parallels for the latter example are not forthcoming and it can only be placed in the general family of concentrically ridged and stapled buttons. In ornamental style it is perhaps closest to the decorative disc-terminals on the Llyn Fawr, Glamorgan, cheek piece and attachment plate, which are also of very similar size (Savory 1976, 81, fig 11:13 and 14).

The Casterley Camp button came from the fill of Ditch 1, which formed an inner rectilinear enclosure constructed in the later Iron Age, and was in a stratigraphical position which the excavators considered could date to as late as the Roman period. The Cunningtons, however, did recognise the strong typological affinities of the Casterley button to Late Bronze Age examples, and its stratigraphical context is best explained in terms of rubbish survival (Cunnington and Cunnington 1914, 81–3, 96, 98, pl I:5). The other earthworks on the site were dated to the same period, but earlier activity was attested by Early Iron Age material from three pits and there must remain the possibility that this extended back into the Late Bronze Age despite the recognition of no other specifically Bronze Age artefacts from these rather limited excavations.

The three hoards containing ridged buttons are consistent in dating to the Ewart Park phase, LBA 2–3, while the Kensington hoard may date more specifically to the earlier part (LBA 2) on account of an associated north European socketed axe with *Lappenmuster* decoration, a type belonging mainly to Montelius V. However, there is an apparently unpublished example of a Reach Fen-like button from Tremsbüttel, North Germany, in a context dated to Montelius VI (*Inv Arch GB 17*, discussion) which, if truly comparable, would raise the possibility of reciprocal links across the North Sea as well as of the later continuation of the type. This dating may possibly be supported by the presence of a massive-moulded socketed axe in the Reach Fen hoard itself (Burgess 1968a, 269), although the form represented there is a regular inclusion in East Anglian Ewart Park phase hoards and may be an earlier development than the Sompting type, proper to the Hallstatt C phase.

Finally, it is worth noting the similarity between the visual effect of these buttons and of the ornamented disc-terminals of the bronze cheek piece in the Llyn Fawr hoard, Glamorgan (Britnell 1976, 29, fig 3b), dated to LBA 3. The presence of this motif at Llyn Fawr, and of less-similar concentric moulded decorations on other pieces of horse harness equipment from such contexts as Heathery Burn, Co. Durham (*Inv Arch GB 55*), and Parc-y-Meirch, Clwyd (Sheppard 1941, pl V), gives some support to the notion that Reach Fen-type buttons may also have been employed as harness trappings.

MISCELLANEOUS

Wire

If the piece of wire (26) from Runnymede does not constitute part of an ornament, then the twists along its length were presumably formed in the process of 'drawing' the wire through a plate. Whatever the origin of these twists, however, the possibility exists that wire production was amongst the metalworking activities that were carried out at the site.

Plate

No parallels have been located for the damaged flanged plate (27), and as it displays no apparent provision for attachment it would be hazardous to postulate any function, or date, for it. The piece does, however, appear to be an intentionally shaped object rather than a by-product of metalworking.

Sheet

The rather thinner piece (28) can be regarded as sheet-metal and is more certainly a fragment of a larger object. The perforation might have been for ornamental effect, or have accommodated a rivet at the edge of a plate used in the construction of a sheet vessel, or some form of binding.

Disc

Nothing useful can be added regarding the origin of the disc (29).

Metalworking pieces

Most of the pieces of metalworking debris from the site are best regarded as of accidental origin rather than as the regular by-products of casting and other activities. The slab (30) most obviously has the appearance of metal spilled or run off during metalworking, on account of its irregular but complete form and porous structure. In contrast, the more angular lump (31) is more likely to be a fragment of a larger cake-like form. Examples of raw metal which are more readily identifiable as fragments of distinctive plano-convex ingots than this Runnymede piece occur commonly in hoards in Surrey and elsewhere in the south-east, datable to the Ewart Park phase (LBA 2–3). These ingot fragments are further represented locally at the contemporary settlement site of Weston Wood, Albury (Harding, J. 1964, 15), and at Carshalton from within the hillfort (Lowther 1944–5, 67). Four fragments of similar origin were found amongst the Ivinghoe Beacon, Bucks, occupation material, again associated with a defended hilltop (Britton 1968, 207, 205, fig 10:12).

Two droplets (32, 33) were presumably dropped through air to account for their 'flight tails', remaining molten at least until impact with the ground where small grits became embedded in their structure. Little further can be added about the process by which this occurred. The small nodular lumps (34, 35) are more reminiscent of two equally small fragments from The Breiddin, Powys (Coombs, forthcoming, nos 174–5), which are interpreted as dross.

The apparently miscast bifid razor (6) with its untrimmed edges, found as it was embedded in two clayey layers of differing composition (probably the remains of a clay mould), provides the most direct evidence for metalworking at Runnymede Bridge, actually attesting the casting of bronze, and indeed its miscasting, a presumably rarer occurrence. Clay moulds are known from a number of sites in Britain and Ireland (Tylecote 1962, 119, table 46), but had not until recently been recognised from southern Britain (eg Dainton, Devon, Needham 1980). The occurrence of clay moulds in occupational contexts is a recurring feature directly attesting metalworking on several settlement sites during the Late Bronze Age, most notably at Jarlshof, Shetland; Traprain Law, Midlothian; Lough Gur, Co. Limerick; Lough Eskragh, Co. Tyrone; Rathgall, Co. Wicklow; and possibly also Fimber, Yorks. The great majority of examples appear to have belonged to two-piece moulds, a form which the Runnymede

mould must also have taken, as evidenced by the casting flash surviving around parts of the enclosed bronze implement. The double layering of clay moulds seems to have been a standard practice of Late Bronze Age smiths, and Hodges has demonstrated by analysis that the inner 'sheath' of the Eskragh, Co. Tyrone, moulds was of finer clay than the enveloping material, a distinction that on the basis of visual inspection also applies to the Runnymede mould, while the presence of organic matter in its coarser outer layer has also been noted in other cases (Hodges 1954, 63; Tylecote 1962, 118).

This clay mould would appear to be the first example recognised for the production of razors, although a stone mould from Ballymena, Co. Antrim, has matrices for casting such implements (Piggott 1946, pl VIII, fig 10). The Runnymede mould is also the first recorded example from Britain actually retaining a bronze casting, in this respect paralleling some bronze moulds which, interestingly, contain the remains of lead castings (Tylecote 1962, 127, table 49). That the object was discarded after its unsuccessful casting rather suggests that the bronzesmith did not consider such a small amount of metal worth retrieving for recycling.

CONCLUSIONS

CHRONOLOGY

The comparative rarity in Britain of well-stratified occupation sequences containing bronze finds, and indeed the similar rarity of grave deposits during the Middle and Late Bronze Ages, means that the relative dating of Bronze Age metal forms must rely to a very large extent on the better-documented hoard record. The material in hoards can normally be considered to comprise types current at the time of deposition, these thus ideally representing a fairly restricted chronological horizon. In contrast, the assemblages from settlement sites might span any length of time, thus increasing the possibility of a mixture of material from different phases, and in cases where vertical stratigraphy is negligible, as on many British sites, the resulting conflated debris may prove difficult to sort chronologically. This problem in settlement-bronze studies is further accentuated by the common occurrence of small fragments which often cannot be related to specific typological forms, thus further hindering assessment of their chronological and industrial significance.

Most of the pieces in the Runnymede Bridge bronze assemblage for which there is reasonable dating evidence are consistent in representing types whose main currency in Britain occurred during the Ewart Park phase (LBA 2-3) — the double-moulded socketed hammer, socketed knife, heel-shaped bifid razor, tweezers, nail-headed pin, rings, hemispherical and ridged buttons. Other fragments which are less closely datable — spearhead, twisted wire, bradawl, stud — can be paralleled in earlier contexts, but would nevertheless not be out of place in an LBA 2-3 context, while only the pommel piece could conceivably be better dated to an earlier horizon. The dating of continental vase-headed pins most closely comparable to the Runnymede example is suggestive of its importation to Britain during the Ewart Park phase, LBA 2, and it would thus appear to be contemporary with the indigenous types. The final and most closely dated piece is the imported notched razor, a type assigned to a restricted phase within the Late Urnfield period of central Europe, Hallstatt B3, which should likewise fall well within British LBA 2. The larger part, and possibly the whole, of the assemblage may thus be seen to date to the Ewart Park phase of the ninth and eighth centuries BC, with little positive evidence for an earlier origin or later continuation. The latter conclusion can quite confidently be drawn from the absence on the site of any metalwork types specifically characteristic of the Hallstatt C phase, LBA 3, in this Thames Valley region which was clearly receptive to the influences of that culture (Burgess 1974, 212, fig 36).

On stratigraphical grounds, the broad contemporaneity

indicated by independent dating is supported by the occurrence of the majority of the bronzes, including those most closely dated, in the main occupation levels (layer 5) and the contemporary adjacent midden deposit (layer 7), the build-up of which was probably not of particularly long duration to judge by the comparative homogeneity of the other occupational debris.

A few pieces of bronze were stratified low in the main occupation and midden levels; most of them (32-35, possibly 29) represent the debris of metalworking and suggest that this activity was practised from the earliest phase of occupation in the immediate vicinity. Two of these pieces came from layer 3, representing activity around structure F31 prior to its destruction by fire. A single implement from the lowest occupation levels was a pair of tweezers (8) which might conceivably indicate that occupation was established not earlier than LBA 2 in view of the rarity of this type in earlier dated contexts.

A variety of tool and ornament pieces were thrown away or lost during the build-up of the main occupation levels and associated midden (layers 5 and 7), but it may be significant that while the occupation area continues to attest metalworking activities, the midden is barren of such debris.

The uppermost occupation levels (layer 5c), representing the cessation of activities on this part of the site, contained a bronze ring. As this piece is not closely datable, a type possibly continuing in use into the Iron Age, it cannot be used to estimate the duration of occupation, or date of abandonment, of the site. However, the consistent use of bronze for weapons, tools and implements in addition to ornaments, throughout the assemblage, and the absence of any stratified ironwork, strongly suggests termination of settlement within the full Bronze Age. The bronze spearhead fragment (1) from layer 9 may have been washed out of the midden deposit or the upper occupation layer and seems to emphasise this conclusion, although the slight possibility remains that it may derive from an earlier deposit further upstream.

THE PRODUCTION, USE, AND DEPOSITION OF BRONZE ON SETTLEMENT SITES

The assemblage of bronzes at Runnymede is in many ways typical of metalwork coming from Late Bronze Age settlement sites, including in particular many small fragments and a high percentage of ornamental and attachment pieces, and lacking, as a rule, any large component of tools or weapons, which are found in proliferation in the contemporary hoards. Many of these hoards in the south-east of England are characterised by large amounts of scrap and raw metal, with the less frequent occurrence of moulds, casting jets, and other more distinctive trappings of the bronzesmith. On this evidence such hoards are generally interpreted as the properties of bronze metalworkers who were prepared to receive worn-out implements for re-smelting, presumably in part-exchange for newly-cast goods. In this way bronze pieces of any appreciable metal content, such as the majority of weapons and tools, are likely to have been returned to the bronzesmith when rendered useless, thus explaining their general absence from amongst occupational debris. In contrast, smaller pieces, especially those of an ornamental nature, would not have been of sufficient value to interest the smith in part-exchange, and it is probably for this reason that comparatively few founder's hoards in southern Britain contain scrapped ornaments and pieces for attachment — examples of such hoards with ornaments are Minnis Bay, Kent (Worsfold 1943, pls XI-XII) and Lulworth, Dorset (Drew 1935) — these pieces finding their way instead into domestic refuse as exemplified at Runnymede Bridge. Another contributory factor must have been their generally small size, making them particularly susceptible to accidental loss around areas of habitation, and this might explain the occurrence of the complete pin (11) and three buttons (23-25) at Runnymede which could hardly be regarded as spent, although changes in fashion could also have caused their rejection.

In general, therefore, this model allows a fuller understanding of the relationship between the metal components of hoards and occupational assemblages, which appear to be largely exclusive of each other, representing as they do different facets of the utilisation-cycle of the material. Fortunately there are usually sufficient links between the two context-types to indicate their relative chronologies; some personal hoards, rich in ornaments and other trappings, such as Llangwyllog, Anglesey (Lynch 1970, 207, fig 68) also perform a useful intermediary role in this correlation. However, the scarcity of some ornamental types within the better documented and dated hoard sequences makes it difficult to assess their particular periods of currency.

Where metalworking took place amidst occupation, directly attested at sites with clay moulds (mentioned above, p 23), indirectly at others with ingot- or waste-metal, eg Ivinghoe Beacon, Bucks (Britton 1968, 207, 205, fig 10:12), and by the occurrence of casting by-products such as the casting jet at Scarborough, Yorks (Wheeler 1931, 23, fig 16:5), the distinction between the components of founder's hoards and settlement assemblages may be thought likely to break down to some extent. However, in such circumstances it would have been all the more important for the smith to maintain the bulk of his valuable stock-in-trade in a cache, or caches, if he was to keep it secure and readily retrievable, and thus any sizeable metal pieces are likely still to be absent from the occupational debris. Caches when buried would presumably take the form of a hoard, and in the event of their discovery on a settlement site would therefore be easily recognised and distinguished from general occupational and industrial debris, as was the case at Nottingham Hill, Glos (Hall and Gingell 1974), and Petters Sports Field, Egham, Surrey (O'Connell and Needham 1977), unless they happened to be scattered by later activity. Indeed, at Runnymede, the small pieces of industrial waste that do occur are best explained as scrap abandoned as of negligible worth or accidentally dropped on to the ground and subsequently overlooked.

On the evidence quoted above, concerning the character of the metalwork from the midden deposit, it seems likely that, at Runnymede Bridge at least, while it was usual to dispose of domestic refuse from habitation plots on to a specially formed dump, this practice was not followed for the industrial waste of metalworking, even though this activity was carried out in close proximity. This feature presumably reflects a different attitude towards the rubbish created in that activity.

The value of comparison between bronze assemblages from different settlement sites is limited to some extent by certain unknown factors governing their composition. It has already been implied that the small bronze pieces typical of settlement deposits are unlikely to be fully representative of the complete set of bronze equipment in use during occupation. A further problem is the variable degree of recovery of the artefacts deposited due to the partial excavation of sites. The fact that known Late Bronze Age settlement sites do tend to yield material of similar general nature seems to suggest that the processes controlling deposition were fairly uniform. Any observed differences between specific types represented on respective sites may therefore in some instances genuinely reflect regional, industrial, or chronological distinctions.

In general, the assemblage at Runnymede Bridge, with its pin and bracelet fragments, buttons, studs, toiletry implements, tool and weapon fragments, and metalworking debris, is most closely paralleled at Ivinghoe Beacon, Bucks (Britton 1968) where only the buttons are absent and different tool and weapon types are represented. In particular the studs, rings, bracelet hoops, tweezers and bifid razors are of similar forms on the two sites, while the pin forms seem to indicate different stylistic preferences which, if it is a real distinction, is better explained in cultural rather than chronological terms, for the Ivinghoe material should be broadly contemporary with that from Runnymede Bridge, belonging to the Ewart Park phase (Britton 1968, 210-1). However, the occurrence of nail-headed pins at Bledlow, Bucks (Head 1938, 341, pl 13), and a vase-headed pin at Totternhoe, Beds (Hawkes, C. F. C. 1940,

491, fig 5), types present at Runnymede, in Chiltern situations close to Ivinghoe argues against this being a straightforward regional distinction.

Another similar range of fragments from Staple Howe, Yorks (Brewster 1963, 111-18), however, includes only a pair of tweezers and a large number of hemispherical buttons that can be specifically related to Runnymede Bridge types. Differences between the two may partially be explained by the main occupation on the Yorkshire site occurring during the Hallstatt C phase (LBA 3).

Other significant bronze assemblages from occupational contexts come from Scarborough, Yorks (Wheeler 1931, 22-3), and The Breiddin, Powys (Coombs, forthcoming), and contain the usual preponderance of fragments and ornamental pieces, but include in addition two or three tools of larger character which might be expected to have been lost or deposited occasionally. The datable Scarborough bronzes seem to belong to the Ewart Park phase, and amongst them a plain penannular bracelet, small-nail-headed pins, and bronze rings parallel items from Runnymede Bridge, while a casting jet seems likewise to attest metalworking at that site. The awl and slender socketed gouge possibly join the Runnymede bradawl in representing the tools of various domestic, or settlement-based, crafts.

Amongst the comparatively large number of bronze pieces from The Breiddin, in addition to certain basic types in common such as the studs, plain rings, tweezers, and possibly socketed knives, one or two of the pins have small nail-heads approaching the proportions of the Runnymede example. The material from The Breiddin, however, illustrates the major problems encountered in assessing the chronology of the metalwork coming from sites where some considerable duration of occupation has taken place, extending in this case into the Iron Age. Apart from the continuing use of bronze for ornaments, harness trappings, etc, into a fully iron-based economy, making pin and other fragments notoriously difficult to date independently, certain pieces of established Bronze Age date (sword and spearhead fragments) had apparently found their way at The Breiddin into later (Iron Age) contexts, thus rendering suspect even the stratigraphy for dating less typologically distinct forms. The likelihood of accidental disturbance of Bronze Age deposits, and of the re-use of Late Bronze Age metal scrap for Iron Age 'small-bronze' production, must be high on a site with intense activity represented over a long period, and further accentuates this problem. The Breiddin Late Bronze Age bronzes cannot, therefore, be necessarily regarded as belonging to one tradition, although Coombs felt that most could be assigned to the Ewart Park phase, suggesting at least some contemporaneity with the Runnymede Bridge assemblage, a conclusion which would tally with the existence of a few types common to both sites.

A fair proportion of the bronze types from Runnymede Bridge — rings, tweezers, hemispherical buttons, spearhead, twisted wire and nail-headed pins — are known from Traprain Law, Midlothian, amongst a group of Late Bronze Age metalwork datable mainly to the Ewart Park phase and predominantly coming from the lowest levels there (Burley 1955-6, 124-8, 145-54). The number of such parallels, however, assumes less significance when account is taken of the large quantity of bronzes recovered during the Traprain excavations.

Some further sites, from each of which only a few pieces of metal have been recovered, have nevertheless produced varying combinations of pieces typical of the larger, better-dated, assemblages, including rings, pins, bracelets, awls, tweezers, and tanged chisels. This partial repetition of the general pattern emerging for Late Bronze Age settlement bronzes occurs at such sites as Eldon's Seat, Dorset (Cunliffe and Phillipson 1968, 223-4); Chalbury, Dorset (Whitley 1943, 119); Weston Wood, Surrey (Harding, J. 1964, 15-16; 1965); Deal, Kent (British Museum: 1939.10-3.1-5; Champion 1980, 235-7, fig 5:1-3); and Grafton, Yorks (Waterman et al 1952-5, 392), suggesting the contemporaneity of at least parts of their respective occupations. The tanged and collared chisel from

Eldon's Seat is paralleled at both Staple Howe (Brewster 1963, fig 61:5) and Scarborough, Yorks (Wheeler 1931, 23, fig 16:3), at Cullykhan, Grampian (Greig 1972, 231, fig), and also from an occupation layer associated with other bronzes at Wallingford, Berks (Collins, A. E. P. 1948-9, 65-6), and the type provides an important link between these sites and the hoard series of which it is a frequent component in the Ewart Park phase (Burgess et al 1972, 217).

The composition of the Llangwyllog hoard, Anglesey (Lynch 1970, 207, fig 68), which contains tweezers, a ribbed bifid razor, rings, and ridged buttons, is further likened to the Runnymede Bridge assemblage by the association of wire, in the form of an ornament, and of amber beads. The Llangwyllog hoard may perhaps be seen as the 'deliberate deposition' counterpart of the settlement assemblages, reflecting, in a different context, a similar range of personal equipment in common use during the Ewart Park phase.

Another rather unusual group deposit which includes a number of 'small bronzes' is that from the Heathery Burn cave, County Durham (*Inv Arch* GB 55). The occurrence here of rings, pins, buttons, bracelets, razor, awl, etc, material highly reminiscent of the Runnymede type settlement assemblages, marks an important divergence from LBA hoard compositions and should be significant for the interpretation of the deposit. The specific styles represented within this component of the deposit are not closely matched at Runnymede Bridge; nevertheless the general likeness of the two assemblages is further emphasised by common non-metal types—antler cheek piece, amber, worked shale/jet. The complementary component of weapons and tools at Heathery Burn effectively serves to bridge the gap between the metal assemblages of settlements and hoards.

Amongst a number of small bronzes from the Cop barrow, Bledlow, Bucks (Head 1938, 341, pl 13), a bronze ring or bracelet hoop came from a pit considered to belong to the Late Bronze Age (pit no 12), while two pairs of tweezers and two small-nail-headed pins from disturbed soil around this feature may have been deposited at the same time. This group of small bronzes would not be out of place in a Late Bronze Age context, the types being well paralleled in the settlement assemblages of that period, as exemplified at Runnymede Bridge which has yielded all of them. Two other objects, a tanged bronze knife and an antler cheek piece, could further attest activity during the Late Bronze Age at the Bledlow site. A ring and another pair of tweezers are recorded from the south-west quadrant which contained only 'rough-picked' sub-surface features apparently characteristic of Late Bronze Age rather than Saxon interference with the barrow, and may therefore have been the remnants of a similar deposit to that around pit no 12. However, the presence of a small bronze in a Saxon secondary grave in the mound (Head 1938, 341, pl 13:12) allows no certainty in the attribution of the unaccompanied pieces to particular phases.

EUROPEAN AFFINITIES

Continental links are most strongly attested at Runnymede Bridge by the notched razor and vase-headed pin, types which have some considerable overlap in their respective distributions and chronologies, factors illustrated by their association together in the Brebach 2 hoard, Saarbrücken (Kolling 1968, pl 41). While this association is not from the dense concentration of notched razor finds of central Europe, its position *en route* towards Britain is all the more interesting on account of the occurrence of both types at the Runnymede Bridge site. In addition, both metal groups have associated hemispherical buttons, though the Brebach example differs in its small-loop attachment and central pimple. Other important hoards containing notched razors, those of Allendorf, Marburg (Jockenhövel 1971, pls 79B and 80), and Hanau, Hessen (Müller-Karpe 1948, 78, pls 36 and 37), come, like Brebach, from the lands flanking the middle reaches of the Rhine. All three hoards contain, besides their ornamental and

personal equipment, a small number of tools and weapons. One of the tool types present is the end-winged axe, generally adopted in Britain near to the beginning of the Ewart Park phase and during which it occurs frequently in hoards in the extreme south-east of the country. The British form, however, is generally distinct from the Rhineland *Urnfield* type which is represented by only a few examples in Britain, such as that in the Minnis Bay hoard, Kent (Worsfold 1943, pl XI:15). These latter finds presumably evidence the initial introduction of the end-winged axe-form into the country, and in view of the continental associations, common influences may have been responsible for the importation of the Runnymede and Brentford notched razors to the Thames Valley. A closer typological relationship has long been recognised between the British end-looped axes and examples from north-west France, a relationship strengthened by their association in both zones with hoards of the Carp's Tongue complex. In this light the occurrence of hemispherical buttons in some of the French Carp's Tongue hoards (cited above, p 22) provides an indirect link between the Runnymede Bridge assemblage, with its hemispherical buttons, and contemporary Thames Valley hoards with Carp's Tongue components, as exemplified by the Addington Park hoard in north-east Surrey (*Inv Arch* GB 54). That local bronzesmiths in the Runnymede area were handling Carp's Tongue, as well as indigenous, metalwork types during LBA 2-3 is now confirmed by the recent discovery of a hoard nearby at Petters Sports Field which contains swords and other occasional types characteristic of the complex (O'Connell and Needham 1977).

A large hoard from Vénat, Charente, France (*Inv Arch* F 6), perhaps, however, provides the most remarkable parallel in a hoard context for the Runnymede Bridge bronze assemblage, containing as it does a number of closely analogous types— notched razors, heel-shaped bifids, vase-headed pins, pairs of tweezers, twisted wire ornaments, hemispherical buttons, studs, and rings. This component of the Vénat hoard serves to illustrate the contrast apparent between the French Carp's Tongue hoards, commonly incorporating quantities of ornaments and *bric-a-brac*, and their British counterparts, largely devoid of such material (Burgess 1968b, 17). The occurrence here of similar elements in only a few founder's hoards, eg Minnis Bay, Kent (Worsfold 1943, pl XII), supplemented by occasional personal hoards, eg Llangwyllog, Anglesey, has already been considered in assessing the relationship between settlement assemblages and hoards, and the contrasting composition prevailing in French hoards may be indicative of a different economic system operative there. The tool and weapon content in the Vénat hoard finds a much better parallel amongst the Carp's Tongue hoard complex of south-east Britain, and a further important link is represented by two lozenge-shaped cap-ends (*Inv Arch* F 6.23) which are almost identical to a piece in the Reach Fen hoard, Cambs, associated with ridged buttons (*Inv Arch* GB 17.30).

INDUSTRIAL BACKGROUND

Although all of the dating evidence for the Runnymede Bridge bronze assemblage points to its chronological parity with the hoards of the Ewart Park phase, the more specific industrial background of the pieces present is rather more difficult to ascertain, this being due partly to the rarity of some types in hoards and partly to the lack of distinctive features on some fragmentary pieces. Plain leaf-shaped spearheads are a frequent component of hoards and are common to Late Bronze Age industries throughout Britain. Stylistically the socketed hammer seems to relate to industries centred on south-east Britain producing double mouth-moulded socketed axes, although one parallel comes from Yorkshire, at Roseberry Topping (Howarth 1899, 87-9), another region where double-moulded socketed axes are typical in the local Heathery Burn tradition (Burgess 1968b, 39-40). Thorndon socketed knives are most densely concentrated in the south-east of Britain but are by no means exclusive to this area, as demonstrated for

instance by The Breiddin settlement example (Coombs, forthcoming, no 145). Their predominance in the south-east may simply be a function of the larger number of LBA 2-3 hoards from this region. Finds of tweezers, rings, hemispherical buttons, and bifid razors are scattered over a wide geographical area and are thus unlikely to be the products of particular regional industries. When these types do appear in hoards the latter prove to be of diverse regional forms. One hemispherical button in a British context occurs in a hoard of the Broadward tradition, Broadness, Kent (Burgess et al 1972, 257, fig 14:47), but the type also occurs in a wide variety of contexts across northern Europe, including hoards of the Carp's Tongue complex in France. The hoards of Reach Fen, Cambs (*Inv Arch GB 17*), and Feltwell Fen, Norfolk (*Inv Arch GB 35*), contain some material diagnostic of the latter complex associated with ridged buttons and rings, and tweezers and a bifid razor, respectively. Four of the five known find-spots for ridged buttons lie in the south-east, but the Kensington, London, example (*Inv Arch GB 52.8*) is in a hoard with a socketed axe of north European type and contains none of the French affiliated Carp's Tongue material, while the outlying Llangwyllog hoard, Anglesey (Lynch 1970, 207, fig 68), does not include any material that can be attributed to a regional industry. The evidence in fact suggests that during the Ewart Park phase many of the ornamental and attachment types found on settlement sites may, like the Ewart Park sword itself, transcend the regional boundaries established for some other bronze types, notably socketed axes.

In conclusion, the bronzes from Runnymede Bridge form one of the best-documented assemblages yet known from a Bronze Age settlement site, being unequivocally associated with other stratified occupational debris and the remains of structures. The assemblage firmly establishes that occupation took place under a full bronze-using economy, and is further strongly suggestive of this dating to the early Ewart Park phase (LBA 2). This evidence from Runnymede Bridge makes way for a reassessment of other sites in Britain where bronze metalwork finds are of less diagnostic forms or are less demonstrably associated with structures and ceramics. The Runnymede site amply illustrates the differences that might be expected between the metalwork found amongst occupational debris and that in hoards. In common with many hoards, however, the assemblage provides direct evidence for the actual working of metal and this is presumed to have occurred in the immediate vicinity of the site.

ANCIENT MONUMENTS LABORATORY REPORT

The scientific examination of two objects at the Ancient Monuments Laboratory is possibly of wider significance and thus reported below. Glynis Edwards, Justine Bayley and Jacqui Watson carried out X-radiography and mechanical cleaning to reveal the nature of the objects, Leo Biek co-ordinated the work and helped with interpretation and useful discussion.

a Botanical material—bronze button (22) by C. A. Keepax

The object is surrounded by, and encloses, replaced and partially preserved organic material. The remains on the outside are masked by a consolidant and are therefore difficult to identify. The resin has not penetrated completely into the middle of the mass and a few areas show recognisable cellular structures. In most cases this does not resemble wood, but is more like grass or straw (*Gramineae epidermis*). The remains are generally a few millimetres wide and are overlapping in many different directions. They are now detached from the button.

b Metallographic examination—sheet-metal (28) by R. F. Tylecote

A tiny piece from one corner of the object was mounted on its edge and polished. No metal appeared to be present but there

was a strong suggestion of a dark oxidised dendritic structure with a lighter 'thread' weaving its way between the dendrites. This could have been an oxidised copper-base solid solution with inter-granular tin-rich delta phase and therefore originally a cast tin bronze.

ACKNOWLEDGEMENTS

My especial thanks are due to Ian Kinnes for reading and commenting on the draft manuscript. In addition David Watkinson, Department of Conservation, University College, Cardiff, kindly helped with some particular problems at short notice, and Margaret Ehrenberg supplied some further details concerning material from Wallingford. David Coombs, Department of Archaeology, University of Manchester, kindly let me read his report on the bronze metalwork from The Breiddin hillfort in advance of publication. Finally, I should like to acknowledge the many useful discussions with David Longley, whose keen interest in the metalwork made my task an enjoyable one.

Antler and Bone Artefacts

CATALOGUE (Fig 14, Pls XI, XII, XV-XVIII)

- 37 Cheek piece; layer 5b
Hollowed red deer antler; complete except for evidence of severe wear on upper right corner of central socket (one face only) and slight indentation on circumference of lower extremity below strap socket (see illustration); no evidence of surface treatment other than some smoothing on upper portion of shaft as represented in central and right-hand illustrations.
Cheek piece from horse bridle set.
L 143 mm; central perforation 27 mm x 12 mm on better preserved side, enlarged—possibly through wear—on illustrated side; strap sockets: upper 14 mm x 9 mm, lower 14 mm x 10 mm.
- 38 Cheek piece fragment; layer 5b
Red deer antler; partially hollowed, tip solid and intact; fractured across central perforation; smooth surface may be a natural feature.
Cheek piece with multiple peg hole strap socket from horse bridle set.
EL 80 mm; central perforation W about 6 mm, L uncertain; upper strap socket 19 mm x 5 mm; peg holes d 4 mm.
- 39 Slotted antler fragment; layer 7
Hollowed deer antler; lower extremity original, upper extremity the result of fracturing; highly polished surface, appears to have been burnt.
Similar objects are commonly referred to as 'toggles' although their precise function is unknown. This piece is unlikely to have originally been the base of a third cheek piece.
EL 53 mm; slot 7.5 mm x 25 mm.
- 40 Partially worked antler fragment; layer 7
Red deer antler tine; series of slanting cut marks adjacent to fracture; solid, and no other evidence of working; surface smoothing may be a natural feature. The surviving length of the piece and the size and position of the 'notch' would not be inconsistent with those of a projected third cheek piece before its fracture in the manufacturing process.
EL 130 mm.
- 41 Antler fragment; layer 5b
Red deer antler tine; slanting cut marks around circumference at point of break; shallow linear incision at cut end.
Large enough to be an unfinished or unused handle for a tanged metal tool but perhaps more probably 'cut off' waste material.
EL 76 mm.
- 42 Antler fragment; layer 7
'Polished' red deer antler tine; cut marks around circumference at point of break. Possibly 'cut off' waste material.
EL 45 mm.
- 43 Bone pin; unstratified
Finely worked indeterminate bone; pointed at one end, spatulate at other end; almost square cross-section.
EL 74 mm.
- 44 Boar's tusk fragment; layer 2
Boar's tusk with lightly incised transverse lines in the enamel; exposed to heat but the grooves do not appear to be the result of fracturing on this account; natural curvature.
Possible component of decorative bangle?

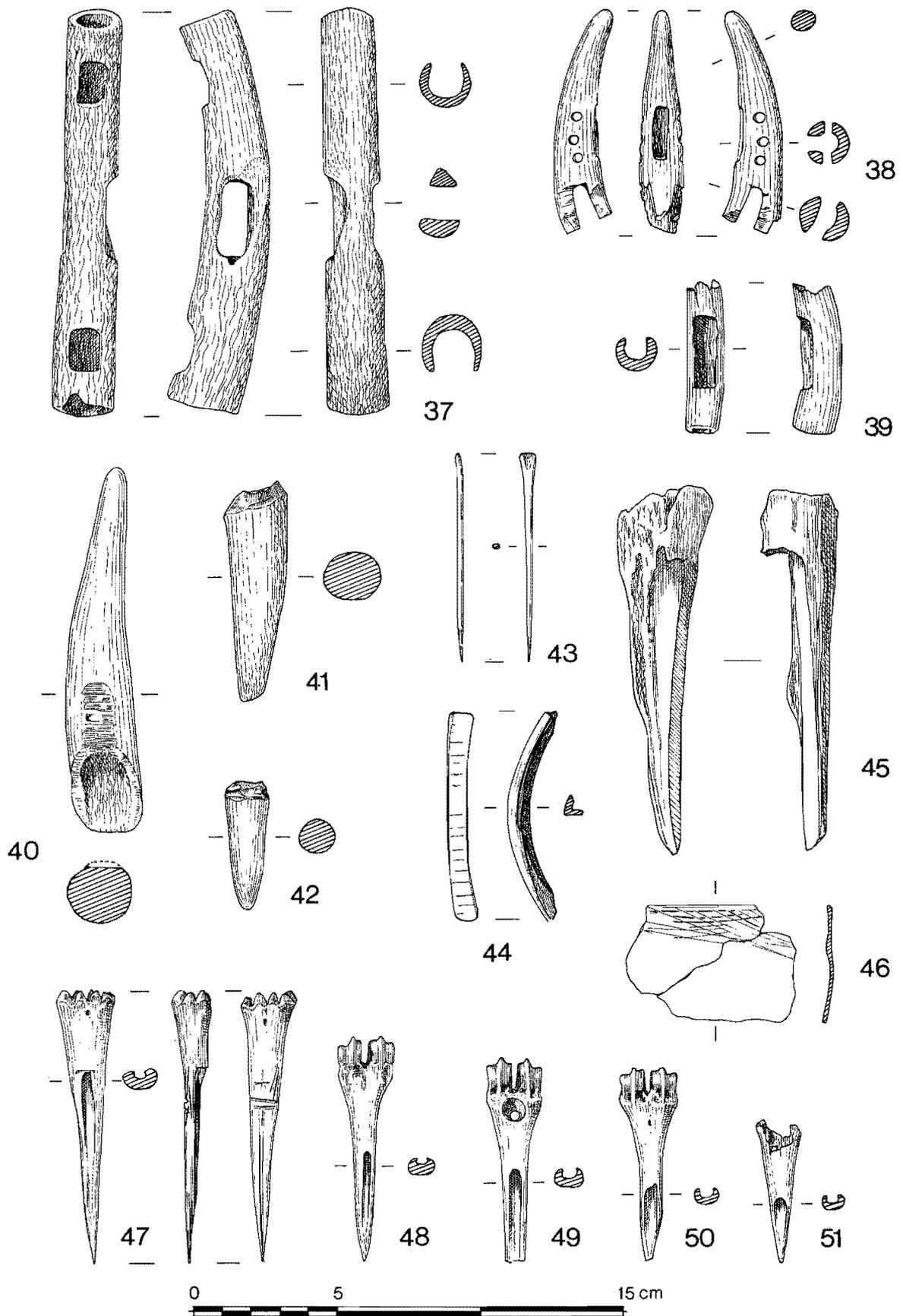


Fig 14 Antler and bone artefacts

- 45 Bone fragment; layer 5b
Ox metatarsal; unnatural lateral fracturing leaving hooked end.
Possibly an unfinished implement or rough peg.
- 46 Bone fragment; layer 7
Numerous incised lines and faint scratch marks on one face (illustrated); the beginnings of five lines parallel with the upper edge on the reverse.
- 47 Bone point; layer 5b
Sheep/goat metacarpal; finely worked and sharp point; narrow vertical groove extending to the tip, surmounted by two horizontal grooves, has been incised on the reverse; further incisions and scratch marks visible on reverse and side.
L 96 mm.
- 48 Bone point; layer 7
Sheep/goat metacarpal; complete.
L 80 mm.
- 49 Bone point; layer 5b
Sheep/goat metacarpal; broken at point; circular perforation exploits blood vessel foramen at wider end.
- 50 Bone point; layer 5b
Sheep/goat metacarpal; almost complete, tip broken.
EL 68 mm.
- 51 Bone point; layer 5b
Sheep/goat metacarpal; broken at wider end.

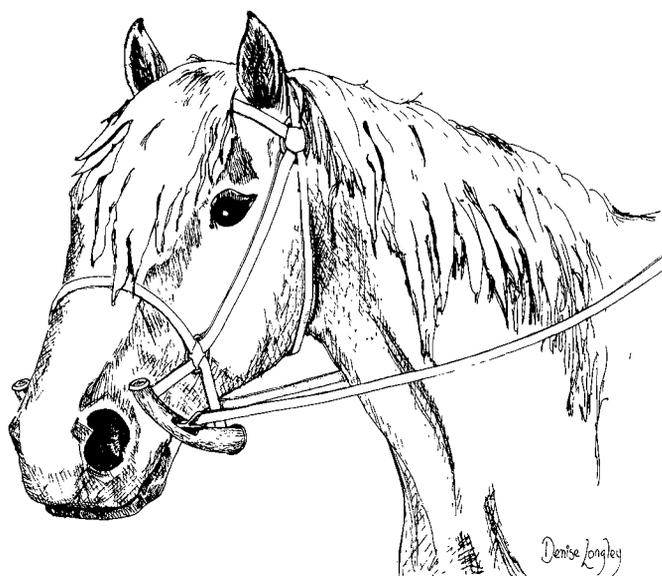


Fig 15 Reconstruction of horse gear

DISCUSSION

The two antler cheek pieces (37, 38) would originally have formed components of two distinct sets of horse bridles, each set comprising two matching cheek pieces. The fractured tine (40) may be an unfinished third piece. Some uncertainty surrounds their method of employment, and the biting arrangement suggested by Bokonyi (1953, fig 4) and followed by Britnell (1976, fig 3A) raises the practical issue of the ability of the antler component to withstand the traction operating directly on the weakest part of the cheek piece. The arrangement preferred for the Runnymede examples (Fig 15) favours a solid bit moving freely within the central perforation (cf. Britnell 1976, fig 3A). Whatever the precise relationship might have been, it is clear that the function of the central perforation was to locate the bit securely in the mouth of the horse while the upper and lower sockets accommodated straps which themselves secured the cheek pieces to the rest of the bridle.

The antler cheek pieces from British contexts have recently been discussed and illustrated by Britnell (1976). The two examples from Runnymede Bridge bring the total now known to nine. Previously, only the Heathery Burn pieces had remotely secure associations and Britnell's detailed consideration of the material reflects this uncertainty concerning our earliest horse gear.

The use of antler components in bridling horses has a long currency on the continent and a development which is insufficiently understood but which may be summarised as follows. Circular and rectangular strengthening plates appear as elements of combined low noseband and mouthpiece control bridles in metal and bone in the Middle East and on the

Eurasian steppes respectively from the middle of the second millennium onwards (Littauer 1969; Potratz 1966; Foltiny 1967). With increasing emphasis on mouthpiece control the noseband is divorced from the bit but the strengthening plates remain to locate and retain the bit in the horse's mouth. As free-standing pieces there is now no necessity for a retention of the original flat surface, and antler tines of complete cross-section are utilised as cheek bars in the Carpathian Basin during the second half of the second millennium BC (Mozsolics 1953). The curved form and tubular cross-section of the antler prototypes are reproduced in bronze in western Europe during BzD/HaA1 (Thrane 1963). Developments of the type in both bronze and antler from this date on would seem to be reciprocal with metal pieces displaying more variation in realisation of the potential of the raw material.

Two types of cheek piece are represented at Runnymede and it is suggested here that this distinction may be extended, provisionally, to the British series as a whole, on the basis of a technical difference in the method of their construction and employment. While both classes share the same basic features of a central perforation for the bit and a rectangular (or in the case of one of the Heathery Burn examples, circular) slot at either end for the cheek straps, the two classes may be differentiated by the way in which the cheek strap is secured in the socket. Cheek-strap sockets of the first class, represented by Runnymede Bridge 38, are provided with multiple peg holes (two or three) for attachment at right angles to the socket, and all retain the tip of the antler tine intact. The small number comprising this class have an apparent southerly distribution (Fig 16). Cheek pieces of the second class, represented by Runnymede Bridge 37, are varied in character and may not

comprise a coherent group at all. When more information is available a clearer picture may emerge. Cheek-strap sockets of this second class may be provided with a single peg hole (as at Bledlow, Bucks); a socket which penetrates the entire thickness of the cheek piece (as at Heathery Burn, Co. Durham); may make use of the deliberately hollowed ends of the cheek piece, perhaps in conjunction with a terminal fastener (as at Runnymede Bridge); or may employ a combination of these features (as at Washingborough, Lincs). In addition all examples have the rounded tip of the antler tine removed.

Class II pieces occur widely and are reproduced in bronze as early as HaB2 on the continent, eg at Corcelettes (Balkwill 1973, cat 25), and at a similar date in Britain at Isleham in LBA 1 (Coombs 1975, fig 10). Class I, on the other hand, appears to be a specifically British development and it is not until multiple rivet-hole cheek pieces appear at Llyn Fawr, Glamorgan (Savory 1976), and at Court-St.-Etienne, Belgium (Mariën 1958, fig 3) that this class finds a metal parallel. In this

connection it is worth mentioning the concentrically ribbed bronze button from Runnymede (23) which, it is argued, is also a British type. It is interesting to find, at Llyn Fawr, both these elements on the same cheek piece and to speculate whether the Llyn Fawr set might not be an indigenous product rather than a continental HaC import. The implications of such a conclusion for the Court-St.-Etienne piece (Mariën 1958, fig 3:12) cannot be explored further here.

The 'pegs' (41, 42) may be waste products from the antler industry. The on-site manufacture of antler implements is already attested by the presence of the discarded piece (40). 41 is large enough to have served as a knife handle (cf West Harling, Clark and Fell 1953, pl VI) but lacks a socket. The bone 'peg' (45) is so basic as to defy analysis, although compare the bone peg from Ivinghoe Beacon (Cotton and Frere 1968, fig 15:10).

The pin (43), the points (47-51) and the antler 'toggle' (39) are more distinctive and are characteristic of the range of bone implements available to later prehistoric communities.

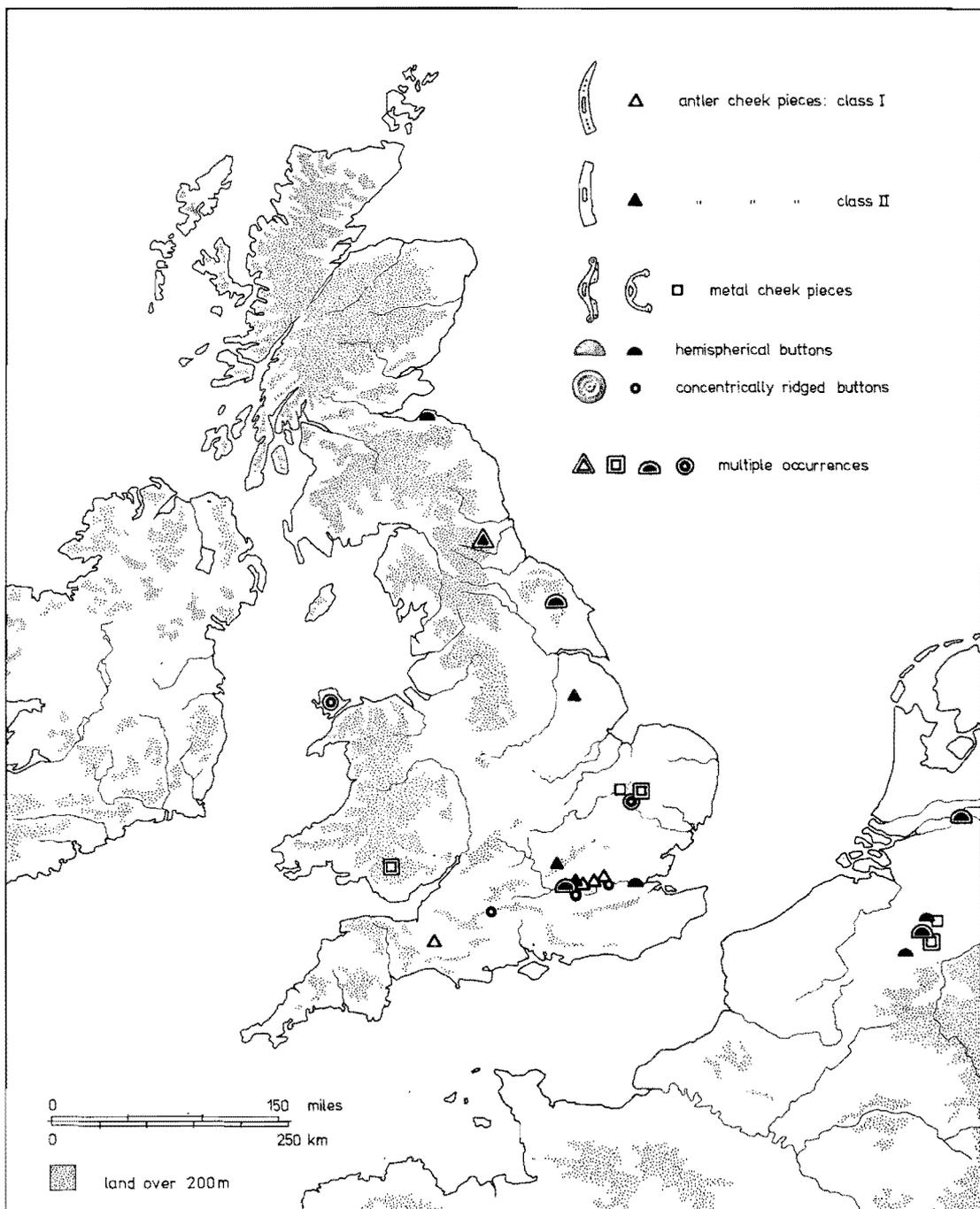


Fig 16 Distribution of selected items of horse gear: HaB-C, LBA 1-3

Evidence from Late Bronze Age settlement contexts is scarce but the assemblages from Eldon's Seat, Dorset (Cunliffe and Phillipson 1968, pl Vb), and Staple Howe (Brewster 1963, 122-7) well illustrate this range. While metapodial points are ubiquitous, antler toggles are less common. Good parallels occur at Ivinghoe (Cotton and Frere 1968, fig 15:14) and Heathery Burn (*Inv Arch GB* 55.169), however, while a number of other toggles of a slightly different character occur again at Heathery Burn and Staple Howe (Brewster 1963, fig 69:5).

Pottery and Baked Clay Artefacts (excluding Pottery Vessels)

CATALOGUE (Fig 17)

- 52 Spindle whorl; layer 7
Pottery; dark brown fabric with flint grits; slight indentation around perforation on upper and lower faces; complete.
Biconical spindle whorl.
d 44 mm; central perforation 6 mm.
- 53 Spindle whorl fragment; layer 5b
Pottery; brown/black fabric with medium flint grits; marked indentation around central perforation on one face; incomplete.
Biconical spindle whorl.
- 54 Spindle whorl fragment (not illustrated); layer 5a
Pottery; dark brown fabric with medium flint grits; incomplete.
Possibly from biconical spindle whorl.
- 55 Clay sphere; F63
Very poorly baked clay; orange brown; perforated with indentation around one end of perforation; complete.
Possible spindle whorl or bead.
d 27 mm; central perforation 4 mm.
- 56 Potsherd with drill marks; layer 7
Potsherd with beginnings of a drill hole on either face; outer face fairly smooth, buff; inner face fairly smooth, black; section dark brown; small-medium flint grits. The drill holes are not in exactly corresponding positions on either side and neither penetrates the full thickness of the sherd. Possibly intended for use as a spindle whorl and the project abandoned when it was realised that the two holes would not meet.
- 57 Perforated pottery slab; layer 5a
Pottery; orange brown fabric with medium-large flint grits; slight ridge round perforation; incomplete, with sub-rectangular side (left-hand side in illustration) and part of the circumference of the perforation intact.
T 23 mm.
- 58 Perforated pottery slab; unstratified
Pottery; orange pink fabric with flint grits; slight ridge round perforation on both faces; incomplete, with one straight side and part of the circumference of the perforation intact (sectioned).
T 22 mm.
- 59 Folded clay strip; unstratified
Thin strip of orange clay folded a number of times; baked; complete. Not a mould.
- 60 Loom weight fragment; layer 7
Baked clay; cream pink fabric with some small-large flint grits; outer face fairly smooth. Perforated; rounded section above perforation, square section with rounded corners below perforation.
Reconstructed as cylindrical pyramidal type loom weight with single perforation transverse to long axis.
- 61 Loom weight fragment; layer 7
Baked clay; buff fabric with brown grog inclusions; perforated; flattened section, possibly more rounded above perforation.
Reconstructed as loom weight of same type as 60.
- 62, 63, 64 Three fragments of baked clay (not illustrated)
Probably from three separate loom weights. 62, layer 7; 63, layer 9; 64, layer 7.

DISCUSSION

Three of the spindle whorls are biconical in form. While biconical spindle whorls do occur in late Iron Age contexts, eg at Tollard Royal (Wainwright 1968, 137-8) and Maiden Castle (Wheeler 1943, fig 99:14), Cotton and Frere (1968, 216) have drawn attention to their preponderance on early sites. Further-

more, at Tollard Royal the biconical example was unique among a number of the more usual flat spindle whorls. The spherical object (55) may be a bead rather than a whorl — cf Bledlow (Head 1938, pl 13), where a similar bead is contrasted with a larger, biconical, spindle whorl. The potsherd with the drill marks was probably in the process of being converted into a spindle whorl when it was realised that the two holes would not converge and the project was abandoned. This is not an uncommon technique and is represented by the potsherd spindle whorl with hour-glass perforation from Staple Howe (Brewster 1963, fig 74:8).

Despite a degree of uncertainty, it is felt that the reconstructions suggested in Fig 17 for the loom weights are the most appropriate. These invite comparison with the cylindrical or 'pyramidal' type with single horizontal perforation at the narrow end, in contrast to the conventionally Iron Age triple-perforated triangular type. The Runnymede Bridge loom weights seem to have had flattened sides (ie, square sectioned with rounded corners) along the body of the weight, becoming more rounded above the perforation. Similar loom weights occur at Ivinghoe (Cotton and Frere 1968, fig 14), Staple Howe (Brewster 1963, fig 73), and Eldon's Seat Period II (Cunliffe and Phillipson 1968, fig 20:6).

Perforated slabs, represented by two examples at Runnymede (57, 58) are being increasingly recognised in settlement contexts in the lower Thames Valley. Their precise function is unknown although some relationship to a cooking process seems likely (cf Bocquet 1976, fig 6:1).

The baked clay piece (59) seems originally to have been a strip which was subsequently folded and pressed against the flat surface of a thin object, possibly accidentally, before being baked.

Shale, Flint, and Amber Artefacts

CATALOGUE (Fig 18, PL XIV)

- 65 Shale ring fragment; layer 7
Dark brown shale; triangular section; incomplete.
Possibly an armlet.
T 10 mm; internal d reconstructed as 82 mm.
- 66 Shale ring fragment; layer 7
Dark brown shale; D section; incomplete.
Possibly an armlet.
T 7 mm; internal d reconstructed as 76 mm.
- 67 Flint flake; layer 5a
Some secondary working.
L 109 mm.
- 68 Flint (not illustrated); layer 7
Fractured, some evidence of wear and polishing.
- 69 Amber bead; layer 5b
Thick encrustation of dull red-brown corrosion product; slight damage on one side; perforated.
Wedge section; circular amber bead.
d 15 mm; central perforation d 2 mm.
- 70 Amber bead; layer 9
Thin skin of yellow-brown corrosion product; perforated.
Wedge section; circular amber bead.
d 19 mm; central perforation d 3 mm.
- 71 Amber bead fragments (not illustrated); layer 3

DISCUSSION

Shale was used in the manufacture of decorative artefacts over a long period of time. A bracelet was found locally in a Middle Bronze Age context in 1972 at Petters Sports Field, Egham (Johnson 1975, 12). The two fragmentary rings from Runnymede Bridge are of a very basic form. They are, however, consistent with the range of armlets produced at, for example, Eldon's Seat (Cunliffe and Phillipson 1968, 226). Amber, again, was used over a considerable period and the beads (69, 70) are not in themselves distinctive. Amber is much more common in the Bronze Age than in the succeeding Iron Age,

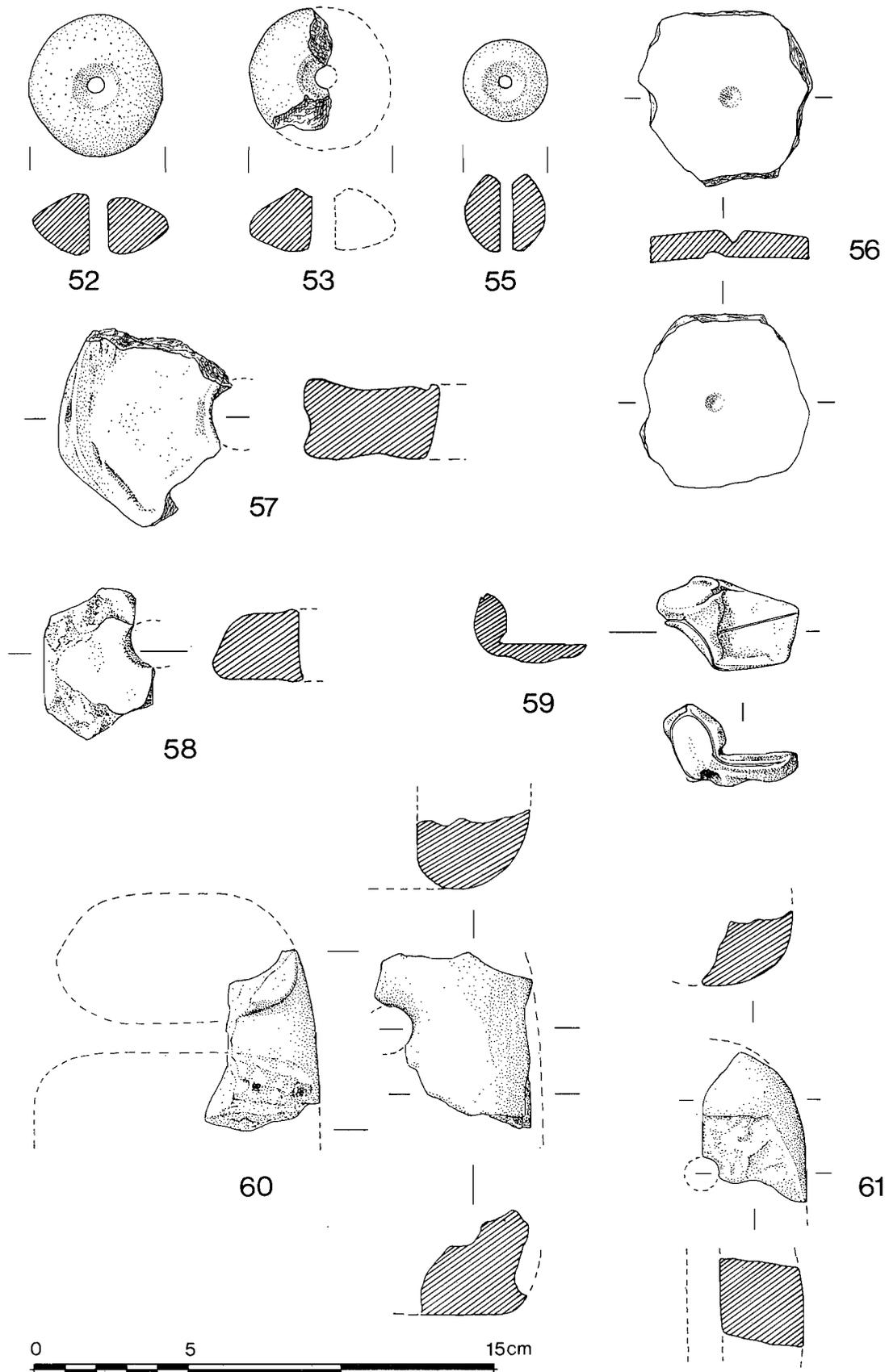


Fig 17 Pottery and baked clay artefacts

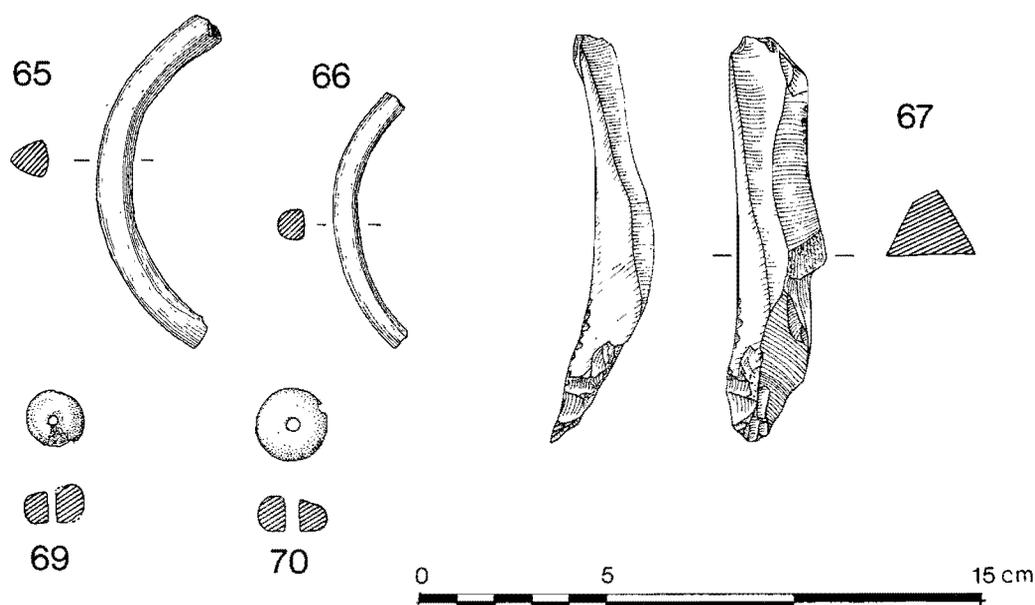


Fig 18 Shale, flint, and amber artefacts

however, and similar beads to those from Runnymede Bridge occur in Late Bronze Age contexts at Heathery Burn, and in the Llangwyllog hoard (*Inv Arch GB 55*; Lynch 1970, fig 68). The flint flake (67) appears to have been deliberately struck and is of a better quality than the naturally occurring flint pebbles on the site.

The Pottery

CATALOGUE (Figs 19–42)

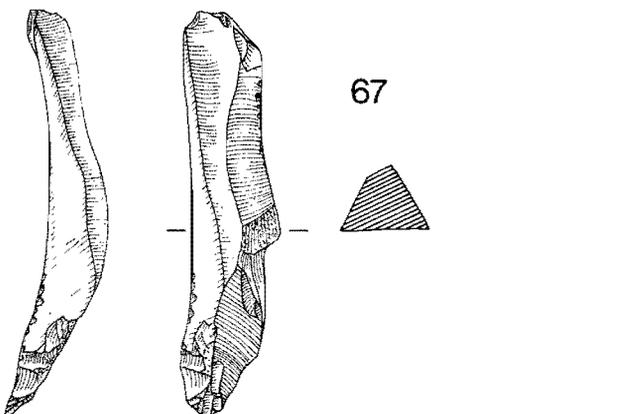
For the grouping of the material, see discussion of stratigraphy (p 12).

GROUP 2 (Fig 19)

- 1 Slightly rough, brown fabric; large grits.
- 2 Flattened rim in rough, dark brown fabric with medium flint grits.
- 3 Slightly squared rim in sandy fabric with sparse, small flint grits; outer face dark brown; inner face light brown; section grey.
- 4 Squared rim with slight groove in uniformly dark brown, sandy fabric with sparse, small flint grits.
- 5 Rim with internal fold-over; abraded, sandy grey fabric; virtually no grits.
- 6 Slightly squared rim in fairly rough, dark brown fabric with medium flint grits; some smoothing and indenting on neck; outer face dark brown; inner face brown; section black.
- 7 Slightly squared rim in rough fabric; medium flint grits; outer face red/brown; inner face red; section grey.
- 8 Rim; small flint grits; outer face fairly rough, dark brown; inner face rough, brown; section grey brown.
- 9 Medium flint grits; heavily gritted on underside with some finger-pressing on exterior wall towards base; rough fabric; outer face uneven, brown/buff; inner face pink/buff/grey; section buff.
- 10 Body sherd; smooth, brown fabric with small flint grits.
- 11 Rough fabric; medium flint grits with heavy gritting on underside; outer face grey/buff; inner face grey; section grey.
- 12 Rough fabric; small flint grits with heavy gritting on underside; outer face brown buff; inner face black; section brown-black.

GROUP 3 (Fig 19)

- 13 Rough, brown fabric.
- 14 Smooth, brown fabric with small flint grits.
- 15 Rough, light brown fabric with medium flint grits.



- 16 Rim slightly flattened by indentation; small/medium flint grits; outer face rough, grey/brown; inner face rough, black; section black.
- 17 Thinned and rounded outcurving rim in smooth fabric with small flint grits; outer and inner faces orange brown; section dark brown.
- 18 Fairly smooth, black/brown fabric with small flint grits.
- 19 Small flint grits; outer face smoothed but uneven, dark brown; inner face rough, orange/brown; section dark brown.
- 20 Outward-curving rim with slight bead; small flint grits; smooth, brown/black fabric.
- 21 Very small sparse flint grits; occasional large grit; smooth, orange/buff fabric.

GROUP 5a (Fig 20)

- 22 (Number not used)
- 23 Internal bevel on rim; sparse flint grits; outer and inner faces smooth, black; section dark brown.
- 24 Medium/large flint grits; rough, black fabric.
- 25 Rough fabric with small flint grits; outer face grey brown; inner face lumpy, grey/buff; section black.
- 26 Rim thickened by slight fold-over; small-large flint grits; outer and inner faces rough, light orange/brown; section brown.
- 27 Small/medium flint grits; rough, black/brown fabric.
- 28 Body sherd; small flint grits; outer face smooth, black; inner face rougher, black; section black-brown.
- 29 Rim flattened on top; medium flint grits; dark grey, slightly bumpy fabric.
- 30 Small flint grits; outer and inner faces smooth, brown; section grey.
- 31 Outward-curving squared rim; internal bevel; medium flint grits; outer and inner faces slightly smooth, black; section dark brown.
- 32 Medium/large flint grits; outer face rough, orange; inner face rough, orange/grey; section grey.
- 33 Medium flint grits; outer face burnished, black/brown; inner face smooth, buff; section dark grey.
- 34 Soft fabric with sparse small flint grits; outer face grey/black, uneven; inner face grey/black, slightly rough; section dark grey.
- 35 Splayed base; small-large flint grits; outer face rough, grey; inner face rough, black; section black/brown.
- 36 Squared rim; medium flint grits; outer face smooth, black/brown; inner face rough, black; section black.

GROUP 5b (Figs 21–27)

- 37 Very slight bead on out-turned rim; small/medium flint grits; outer face smooth, black/buff; inner face rougher, brown/black; section brown/black.
- 38 Fine/small flint grits; outer face smooth, dark brown; inner face smooth, red brown; section black.

- 39 Medium flint grits; outer face black; inner face slightly smooth, brown; section grey/brown.
- 40 Sparse small grits; outer face smooth, black; inner face smooth, black/brown; section dark brown.
- 41 Sparse fine flint grits; outer and inner faces smooth, black; section dark brown.
- 42 Sparse small flint grits; outer and inner faces abraded, light grey; section light grey.
- 43 Fine/small flint grits; outer face smooth, black; inner face rougher, black; section dark brown.
- 44 Sparse fine flint grits; outer and inner faces smooth, black; section dark brown.
- 45 Fine flint grits; outer face smooth, dark brown; inner face smooth, black; section black-brown.
- 46 Small flint grits; outer face smooth, orange/brown; inner face fairly smooth, black/buff; section dark grey.
- 47 Fine/small flint grits; outer face smooth, brown/black; inner face fairly smooth, orange/black; section grey brown.
- 48 Body sherd; small flint grits; outer face smooth, black/brown; inner face smooth, dark grey; section dark grey. Sharp definition of carination on inside face marking join of slabs in build up of pot.
- 49 Body sherd; small flint grits; outer face smooth, black/brown; inner face fairly smooth, dark brown; section brown/black.
- 50 Body sherd; small/medium flint grits; outer and inner faces smooth, black; section dark brown.
- 51 Jar with high, pronounced shoulder and everted rim; finger tip and nail impressions on inside of rim; medium/large flint grits; outer face brown/black; inner face black; section dark grey.
- 52 Small flint grits; outer face rough, black/brown; inner face rough, black; section dark brown.
- 53 Sparse small flint grits; outer face smooth, orange/buff; inner face smooth, grey; section dark brown.
- 54 Finger tip and nail decoration on a slightly out-turned rim; small flint grits; outer face rough, black; inner face rough, brown; section brown.
- 55 Tooled rim; small/medium flint grits; outer face rough, brown/orange; inner face rough, brown; section black.
- 56 Very short out-turned, squared rim; slightly smooth, black fabric with small flint grits.
- 57 In-turned neck of shouldered vessel with small rim beaded externally and bevelled internally; medium flint grits; rough, orange/grey/brown fabric.
- 58 Beaded rim in medium flint-gritted fabric; slight bevel on inside of lip; outer face smooth, brown/black; inner face rough, brown/buff; section brown.
- 59 Medium flint grits; outer face rough, black; inner face rough, brown; section brown/black.
- 60 Medium flint grits; outer and inner faces rough, orange/grey; section grey.
- 61 Small flint grits; outer face rough, red-brown; inner face rough, light brown; section black.
- 62 Small flint grits; outer face buff; inner face orange buff; section grey.
- 63 Linear cross-hatched decoration on neck incised before firing; small-large flint grits; outer face smoothed, buff; inner face rough, buff/black; section buff/black.
- 64 Medium flint grits; outer face rough, black/brown; inner face rough, orange/brown; section brown/black.
- 65 Rim thickened by folding over; small-medium flint grits; outer and inner faces rough, dark brown; section dark brown.
- 66 Small-medium flint grits; outer and inner faces rough, black/brown; section black.
- 67 Small-medium flint grits; outer and inner faces rough, brown/dark brown; section dark brown.
- 68 Small-medium flint grits; outer face rough, grey/orange/brown; inner face rough, grey/brown; section dark grey/buff.
- 69 Medium flint grits; outer face lumpy, brown/black; inner face rough, brown; section dark grey.
- 70 Medium/large flint grits; rough, black fabric.
- 71 Slightly flattened rim; medium flint grits; irregular finger-nail impressions on shoulder, neck and rim; outer face rough (some smoothing on neck), brown/buff; inner face rough, black/brown; section orange/brown.
- 72 Slight finger-pressing on inner face; small/medium flint grits; outer face lumpy, black; inner face slightly rough, brown; section black/brown.
- 73 Finger-tipped rim; small/medium flint grits; outer face almost smooth, black/brown; inner face rough, brown; section dark grey.
- 74 Black fabric; medium flint grits.
- 75 Upright rim with slight bead; medium flint grits; outer face rough, brown; inner face rough, orange/brown; section dark grey.
- 76 Flattened rim; small/medium flint grits; outer face rough, black; inner face rough, dark brown; section black.
- 77 Thinned and squared-off rim; small flint grits; outer face fairly smooth, black; inner face rougher, buff/brown; section dark brown.
- 78 Cable-effect decoration; slightly sandy; sparse small flint grits; outer and inner faces fairly smooth, brown; section dark brown.
- 79 Sparse fine flint grits; outer and inner faces smooth though uneven; dark brown/buff fabric.
- 80 Small/medium flint grits; outer face rough, orange/brown; inner face rough, brown; section grey/brown.
- 81 Flattened rim; medium/large flint grits; outer and inner faces rough, black; section black/brown.
- 82 Small/medium flint grits; outer and inner faces rough, black; section black.
- 83 Rim thickened slightly by folding over; small flint grits; outer face sandy texture, orange; inner face rough, orange/grey; section grey.
- 84 Small/medium flint grits; outer and inner faces rough, brown; section grey/brown.
- 85 Finger-tipped rim in rough, brown fabric with medium flint grits.
- 86 Slight bead on rim; medium flint grits; outer face lumpy, black; inner face rough, black/brown; section dark grey.
- 87 Faint shoulder; upright neck and finger-tip decoration on rim; medium flint grits; outer and inner faces rough, black; section black.
- 88 Finger-pressed decoration on rim; medium flint grits; outer face rough, dark brown; inner face rough, brown; section black.
- 89 Finger-tip decoration on rim; small/medium flint grits; outer face rough, dark brown; inner face rough, black; section dark brown.
- 90 Finger-tipping on rim; medium flint grits; outer face rough, black; inner face rough, brown/black; section dark grey/brown.
- 91 Slightly flattened rim above faint shoulder; medium flint grits; outer and inner faces rough, orange/buff; section grey.
- 92 Small/medium flint grits; outer and inner faces rough, brown; section brown.
- 93 Medium flint grits; outer face rough, buff/black; inner face rough, buff/brown; section black.
- 94 Slightly flattened rim; small-medium flint grits; outer face rough, brown/black; inner face rough, grey; section black.
- 95 Squared rim; medium flint grits; outer face rough, black/brown; inner face rough, black; section black.
- 96 Rough, orange, flint-gritted fabric.
- 97 Thinned rim; fine flint grits; outer and inner faces smooth, buff; section black.
- 98 Abraded, light grey fabric; small-medium grits.
- 99 Flattened rim; black, fairly smooth fabric.
- 100 Squared rim; fairly smooth, black/brown fabric with medium flint grits.
- 101 Flattened rim; medium flint grits; outer face slightly smooth, black; inner face rough, orange; section black.
- 102 Moulding on outer face; small-medium flint grits; outer face rough, brown; inner face rough, black.
- 103 Fine flint grits; hard fabric; outer face slightly rough, orange brown; inner face smoother, black.
- 104 Small flint grits; outer and inner faces almost smooth, orange buff; section grey.
- 105 Finger-tipped cabling; medium flint grits; outer face rough, brown; inner face rough, black; section grey.
- 106 Rough cable-effect decoration; small-medium flint grits; outer face rough, dark brown; inner face rough, brown; section grey.
- 107 Expanded and slightly flattened rim; small-medium flint grits; outer face smooth, orange/black; inner face rougher, black; section dark brown.
- 108 Rim with groove below lip on outer face; no grits; outer and inner faces smooth, grey; section dark brown.
- 109 Expanded and flattened rim; fine-small flint grits; outer face smooth, dark brown; inner face and top smooth, black; section grey-brown.
- 110 Rounded rim; small flint grits; outer and inner faces slightly rough, buff; section dark brown.
- 111 Fairly smooth fabric with sparse small grits; outer face black; inner face brown; section grey.
- 112 Bevelled rim; small flint grits; outer face rough, black; inner face rough, dark brown; section grey.
- 113 Irregular (finger-tipped?) rim; medium flint grits; outer face rough, brown; inner face rough, orange/brown; section dark brown.

- 114 Slightly squared rim; small-medium flint grits; outer face rough, grey; inner face rough, orange/brown; section grey.
- 115 Small-medium flint grits; rough, black fabric.
- 116 Black fabric with medium flint grits.
- 117 Beaded rim; fairly rough, black fabric with small flint grits.
- 118 Small-medium flint grits; outer and inner faces slightly rough, brown/black; section dark brown.
- 119 Finger-tip decoration; small-medium flint grits; outer and inner faces rough, brown; section dark brown.
- 120 Finger-tipped rim in rough, brown fabric with medium flint grits.
- 121 Finger-pressed rim in rough, dark grey fabric with medium flint grits.
- 122 Thickened and squared rim; medium-large flint grits; rough, flaking brown/black fabric.
- 123 Squared rim; mostly small flint grits; outer and inner faces rough, brown/black; section black.
- 124 Squared rim; fine-small flint grits; outer and inner faces smooth, black; section black.
- 125 Small flint grits; outer face rough, black/brown; inner face rough, orange/brown; section dark brown.
- 126 Small-medium flint grits; outer face rough, brown/dark brown; inner face rough, grey/buff; section grey/brown.
- 127 Flattened rim in medium flint-gritted fabric; outer face smooth, orange/brown/black; inner face smooth, black; section dark brown.
- 128 Small flint grits; outer face rough, buff/brown; inner face rough, brown; section dark brown.
- 129 Slightly squared rim; small-medium flint grits; outer face rough, grey; inner face rough, orange/brown; section grey.
- 130 Squared rim; small flint grits; outer and inner faces smooth, black; section black.
- 131 Smooth, black fabric with sparse fine flint grits.
- 132 Medium flint grits; outer face smooth, brown/buff; inner face rough, dark brown; section dark brown.
- 133 Medium flint grits; outer and inner faces rough, dark brown; section dark brown.
- 134 Squared rim; small flint grits; outer face smooth, brown/black; inner face smooth, black; section black.
- 135 Grittless, slightly soft, black/brown fabric; outer and inner faces smooth, slightly uneven.
- 136 Medium flint grits; outer face abraded, rough, light grey; inner face abraded, rough, light grey/brown; section light grey/brown.
- 137 Medium flint grits; outer face rough, black/brown; inner face rough, black/buff; section grey/buff.
- 138 Slightly flattened rim; small flint grits; outer face smoothed, dark brown; inner face rougher, black; section dark brown.
- 139 (Number not used)
- 140 Small/medium flint grits; outer face rough, black/brown; inner face rough, black; section black.
- 141 Slightly flattened rim; small/medium flint grits; outer and inner faces rough, black; section dark brown.
- 142 Flattened rim; medium flint grits; outer face slightly smooth, black; inner face rough, orange; section black.
- 143 Fairly rough, black/brown fabric with medium flint grits.
- 144 Orange/grey, sandy fabric with medium flint grits.
- 145 Small/medium flint grits; outer face smooth, black; inner face rough, black; section grey/brown.
- 146 Small/medium flint grits; outer face smooth, brown; inner face smooth, dark brown; section dark brown.
- 147 Sherd from neck of fine ware vessel similar to 149; three incised diagonal lines on inner face of neck; smooth, fine, black/brown fabric.
- 148 Groove below rim on inner face; no grits; outer face smooth, black/buff; inner face mostly black; section dark brown.
- 149 Body sherd with incised linear decoration; sparse fine flint grits; outer and inner faces smooth, black/brown; section grey/brown.
- 150 Lid (?); small/large flint grits; rough, black/brown fabric.
- 151 Mostly fine grits; red/brown, fairly smooth fabric.
- 152 Body sherd in grey/brown sandy, large flint-gritted fabric; outer face smooth with two incised lines, the longer with possible traces of white inlay; inner face rough.
- 153 Body sherd with finger-tip decoration; medium flint grits; outer face rough, black/buff; inner face rough, black; section dark brown.
- 154 Body sherd in brown/buff, sandy fabric with small/medium flint grits; the cordon is formed from the body of the sherd, rather than applied.
- 155 Finger-pressing on outer face of rim; soft, orange/brown fabric; no grits.
- 156 Handle; sandy fabric with medium flint grits; outer face rough, orange/red; inner face grey/brown.
- 157 Squared rim; small flint grits; outer face smooth, black/brown; inner face smooth, black; section black.
- 158 Small/medium flint grits; outer and inner faces slightly rough, dark brown; section dark brown.
- 159 Black, medium flint grits; outer face fairly smooth; inner face rough.
- 160 Rim with external bevel (?); smooth, dark fabric; sparse fine flint grits.
- 161 Mostly small grits; outer and inner faces rough, black; section dark brown.
- 162 Squared-off rim; sandy fabric, sparse small flint grits; outer face smooth, black/buff; inner face smooth, grey/buff; section grey/buff/brown.
- 163 Smooth, buff fabric; sparse small flint grits.
- 164 Medium flint grits; slight bevel on inside lip; outer face smooth, brown/black; inner face rough, brown/buff; section brown.
- 165 (Number not used)
- 166 Small flint grits; dark grey/brown fabric; outer face smooth; inner face slightly rough.
- 167 Profile uncertain; possibly large bowl with out-turned lip; medium (some large) flint grits; outer face very abraded, grey; inner face rough, grey/brown; section grey.
- 168 Omphalos base; mostly small flint grits; outer face fairly smooth and even, orange/black; inner face rougher, buff/black; section brown/black.
- 169 Fine-small flint grits; outer and inner faces fairly smooth, black; section dark brown.
- 170 Medium flints, dark grey/buff fabric; outer and inner faces almost smooth.
- 171 Small/medium flint grits; outer and inner faces slightly smooth, dark brown; section dark brown.
- 172 Small/fairly small flint grits; outer and inner faces fairly smooth, brown; section brown.
- 173 Small/medium flint grits; outer face smooth but uneven, black; inner face rough, black/brown; section black/brown.
- 174 Rough, black fabric with small/medium flint grits; underside slightly more heavily gritted.
- 175 Rough, orange, flint-gritted fabric.
- 176 Slightly splayed base; small/medium flint grits; outer face rough, dark brown; inner face rough, black; section dark brown; underside abraded.
- 177 Medium flint grits; outer face rough, brown/black; inner face rough, black; section black. Base formed by attaching bowl to circular plate and then working down from the sides.
- 178 Small/medium flint grits; outer face rough, dark brown; inner face smoother, black; section black.
- 179 Base of small vessel in rough, orange/brown, flint-gritted fabric.
- 180 Medium flint grits; outer face and base grey/brown; base heavily gritted with flints; inner face rough, grey; section grey.
- 181 Large flint grits; outer face very rough and bumpy, orange/brown; inner face rough, brown; section grey/buff.
- 182 Splayed base; fine/medium flint grits; outer and inner faces rough, black/brown; section dark brown.

GROUP 5c (Figs 27, 28)

- 183 Small/medium grits; outer and inner faces smooth, dark brown; section grey brown.
- 184 Small flint grits; outer face smooth but slightly uneven, black/buff; inner face uneven, black; section black.
- 185 Sparse small/medium flint grits; outer face smooth, black; inner face smooth, black/brown; section grey/brown (some copper-coloured discoloration).
- 186 Rim slightly thickened by folding over; medium flint grits; outer face rough, black/brown; inner face rough, black/brown/buff; section grey.
- 187 Small flint grits; outer and inner faces fairly smooth, dark brown; section grey.
- 188 Small/medium flint grits; outer face slightly rough, black/brown; inner face rough, black; section black.
- 189 Small flint grits; outer and inner faces rough, brown; section brown/black.
- 190 Medium/large flint grits; outer face rough, black; inner face rough, brown; section grey/brown.
- 191 Finger-tipping on rim; medium flint grits; outer face rough, black/brown; inner face rough, orange/brown; section grey.
- 192 Rim with slight bead; slightly rough, light grey/brown; small flint grits.
- 193 Beaded rim; small/medium flint grits; outer face rough, dark brown; inner face rough, buff; section dark grey.
- 194 Squared rim; small flint grits; outer face fairly smooth, brown; inner face fairly smooth, black; section black.
- 195 Rim with slight overhang and tooling just below rim on outer face; smooth, orange, sandy fabric.

- 196 Body sherd with decoration of incised lines; hard, sandy fabric; outer face smooth, buff/grey; inner face slightly more rough, buff; section black/buff.
- 197 Body sherd with decoration of incised lines and impression of overlapping concentric circles; smooth, gritless, dark grey fabric.
- 198 Finger impression on body sherd; medium flint grits; outer face rough, brown; inner face rough, grey; section grey.
- 199 Finger-tipped rim; small/medium flint grits; outer and inner faces brown/black, slightly rough; section black.
- 200 Splayed base; medium flint grits; outer face rough, black; inner face rough, black/brown; section grey.
- 201 Medium flint grits; outer face smooth, buff; inner face fairly rough, grey/brown; section grey.
- 202 Medium/large flint grits; outer face fairly rough, buff; inner face rough, brown; section grey/brown.
- GROUP 7 (Figs 28–39)**
- 203 Small flint grits; outer face slightly burnished, black; inner face smooth, black; section grey.
- 204 Fine flint grits; outer face smooth, black, lightly burnished; inner face smooth, grey brown; section dark grey.
- 205 Small flint grits; outer and inner faces brown/black, slightly burnished; section brown.
- 206 Fine/medium flint grits; outer face smooth, black/brown; inner face smooth, black; section grey/brown.
- 207 Expanded and flattened rim; small flint grits; smooth, black fabric.
- 208 Gritless; outer and inner faces smooth, grey/brown; section grey.
- 209 Very sparse fine flint grits; outer and inner faces smooth, orange; section brown.
- 210 Sparse fine flint grits; outer face smooth, buff/grey; inner face smooth, buff; section buff.
- 211 Fine/small flint grits; outer and inner faces buff/black, slightly burnished; section dark grey.
- 212 Slight girth groove on inside of neck; fine flint grits; outer face slightly burnished, buff; inner face smooth, buff; section buff.
- 213 Body sherd; fine/small flint grits; outer face smooth, grey/buff; inner face smooth, buff; section grey/buff.
- 214 Small flint grits; rough, black/brown fabric.
- 215 Body sherd of carinated vessel; small/medium flint grits; outer face smooth, black/buff; inner face rougher, black; section grey/brown.
- 216 Finger-nail impressions on rim; small/medium flint grits; outer and inner faces rough, black; section brown.
- 217 Small/medium flint grits; outer face slightly rough, buff/black; inner face rough, black; section black.
- 218 Sharply out-turned rim, flattened on inner face; small/medium flint grits; outer face slightly rough, brown; inner face slightly smooth, black; section grey/brown.
- 219 Fairly smooth, grey fabric with sparse medium flint grits.
- 219b Small/medium flint grits; outer and inner faces fairly smooth, brown; section red/brown.
- 220 Sandy fabric; fine flint grits; outer and inner faces smooth, sandy, orange/buff; section black.
- 221 Finger-nail or tooled incisions on neck; large flint grits; outer face rough, brown; inner face rough, brown/black; section grey/brown.
- 222 Small flint grits; outer face slightly burnished, black; inner face smooth, black/brown; section grey.
- 223 Sparse fine flint grits; outer and inner faces smooth, black; section dark brown.
- 224 Small flint grits; outer face smooth, grey/buff; inner face slightly rough, brown; section brown.
- 225 Rough, black fabric; medium flint grits.
- 226 Small flint grits; outer face smooth, brown; inner face smooth, black/brown; section dark brown.
- 227 Small/medium flint grits; outer face burnished, brown/black; inner face slightly rough, brown/black; section grey.
- 228 Finger-tipped rim; medium flint grits; outer face rough, grey; inner face rough, dark grey; section grey.
- 229 Jar with slight shoulder; finger-nail impressions below rim; medium/large flint grits; outer and inner faces rough, brown; section brown.
- 230 Slightly rough, black fabric; small flint grits.
- 231 Small flint grits; outer face smooth, buff; inner face smooth, grey/buff; section grey.
- 232 Medium flint grits; outer face rough, brown/black; inner face rough, grey/buff; section grey.
- 233 Fine/small flint grits; outer and inner faces smooth, black/brown; section brown.
- 234 Small/medium flint grits; outer and inner faces rough, brown; section grey.
- 235 Slightly flattened rim (by finger-pressing?); medium flint grits; rough, black fabric.
- 236 Rim, slightly thickened; small/medium flint grits; outer face rough, orange; inner face rough, dark grey; section dark grey.
- 237 Rim, thickened by folding over; grey/brown, fairly smooth fabric; small flint grits.
- 238 Squared rim of bipartite vessel; smooth, dark grey/brown; sparse small flint grits.
- 239 Small sparse flint grits; outer and inner faces smooth, black/brown; section brown.
- 240 Outer and inner faces lightly burnished, buff; section buff.
- 241 Fine flint grits; outer face burnished, black; inner face smooth, black/brown; section brown.
- 242 Fairly smooth, grey, flint-gritted fabric.
- 243 Smooth, brown fabric with fine/small flint grits.
- 244 Sparse fine flint grits; outer face smooth, black/brown; inner face smooth, brown; section dark brown.
- 245 Medium flint grits; outer and inner faces almost smooth, brown; section grey.
- 246 Rough, black fabric with medium flint grits.
- 247 Thinned rim; small flint grits; slightly rough, black fabric.
- 248 (Number not used)
- 249 Thinned rim; smooth, grey fabric; small flint grits.
- 250 Irregular thickened rim; medium flint grits; outer face rough, orange/grey/buff; inner face rough, grey/buff; section grey/buff.
- 251 Slightly squared rim; sparse medium grits; fairly smooth, dark brown fabric.
- 252 Medium flint grits; lightly burnished, black fabric.
- 253 Slightly thinned rim in fairly smooth, brown/black fabric with small flint grits.
- 254 Rough, black/brown fabric with medium flint grits.
- 255 Slight overhang on rim; small flint grits; outer and inner faces smooth, black/brown; section dark brown.
- 256 Small flint grits; outer and inner faces smooth, grey/black; section grey.
- 257 Rough, uneven, black fabric with medium flint grits.
- 258 Finger-tip decoration on rim; medium flint grits; outer and inner faces rough, brown; section brown.
- 259 Finger-nail impressions on rim; medium flint grits; outer and inner faces rough, black/buff; section black.
- 260 Small flint grits; outer and inner faces rough, grey/brown; section dark brown.
- 261 Squared rim; medium flint grits; outer face smoothed but uneven, black/brown; inner face uneven, black; section black.
- 262 Slightly flattened rim; sparse fine/small flint grits; outer face lightly burnished, brown; inner face smooth, buff; section brown.
- 263 Small/medium flint grits; outer face slightly rough, brown/black; inner face rough, brown/black.
- 264 Light brown, smooth, gritless fabric.
- 265 Medium flint grits; outer and inner faces rough, black/brown; section grey.
- 266 Medium flint grits; outer face uneven, brown/black; inner face slightly rough, black; section black.
- 267 Nail incisions on rim; small flint grits; outer face rough, buff; inner face rough, grey/buff; section grey.
- 268 Medium flint grits; outer face uneven, rough, black/brown; inner face rough, black; section black.
- 269 Medium and large flint grits; outer face rough, black/buff; inner face rough, brown/buff; section black.
- 270 Small flint grits; outer face slightly rough, black/brown; inner face rough, black/buff; section dark brown.
- 271 Slightly soft, smooth, black/brown fabric; gritless.
- 272 Small flint grits; outer face fairly smooth, orange/buff fabric; inner face slightly rough, orange/grey; section black.
- 273 Shouldered vessel, not certainly the rim; sharply defined ridge on inferior angle demonstrates construction technique of separate slab for neck of vessel; small/medium flint grits (some brown grog inclusions); outer face rough, buff/grey; inner face rough, buff; section buff.
- 274 Medium flint grits; outer face slightly rough, black/brown/buff; inner face rough, black/brown; section dark brown.
- 275 Small/medium flint grits; outer face slightly smooth, buff/brown/black; inner face smoothed, brown/black; section black.
- 276 Finger-tipped rim; small flint grits; rough, grey fabric.
- 277 Rim with finger tip and nail impressions; medium flint grits; outer face rough, orange/brown; inner face rough, grey/brown; section grey.

- 278 Body sherd with finger-tipping on the shoulder; sparse small flint grits; fairly smooth, brown/black sandy fabric.
- 279 Body sherd with finger-tipped decoration below shoulder; sandy fabric with sparse fine flint; black quartz and possible brown grog inclusions; outer face fairly rough, brown; inner face rough, grey/brown; section dark grey.
- 280 Finger tip impressions; small and large flint grits; outer face rough, brown; inner face rough, black; section dark grey.
- 281 Small flint grits; outer and inner faces smooth, black/brown; section brown.
- 282 Medium flint grits; outer face smooth, grey/buff; inner face smooth, black; section grey.
- 283 Sparse flint grits; outer face slightly rough, brown; inner face slightly rough, grey; section grey.
- 284 Squared rim; fine flint grits; outer face smooth, grey/buff; inner face smooth, dark grey; section brown.
- 285 Small flint grits; outer face smooth, orange; inner face smooth, buff; section grey.
- 286 Expanded, flattened rim; small flint grits; outer and inner faces rough, orange/brown; section grey.
- 287 Small flint grits; outer and inner faces rough, black/grey/brown; section brown.
- 288 Small flint grits; outer and inner faces buff/black, lightly burnished; section grey.
- 289 Rim with cable-effect moulding; rough, black fabric with small flint grits.
- 290 Medium flint grits; outer face rough, grey/brown; inner face rough, buff; section brown.
- 291 Very sparse fine flint grits; outer face smooth, buff; inner face smooth, grey/buff; section grey/brown.
- 292 Rough, dark grey fabric; flint grits.
- 293 Slightly thickened and squared everted rim; medium flint grits; outer face rough, grey/orange; inner face rough, black/brown; section brown.
- 294 Medium flint grits; outer face uneven but lightly burnished; inner face smooth; section grey.
- 295 Expanded, flattened rim; fairly smooth, grey/brown fabric with small flint grits.
- 296 Small/medium flint grits; outer face abraded, buff; inner face uneven, slightly smooth, grey; section grey.
- 512 Slightly beaded rim; small flint grits; outer and inner faces rough, brown; section grey.
- 513 Small flint grits; outer face slightly burnished, black; inner face smooth, dark brown.
- 514 Small/medium flint grits; outer face rough, orange; inner face rough, grey/orange; section grey.
- 515 Fairly smooth, black/brown fabric; small flint grits.
- 516 Expanded rim with bevel on inside of lip; fine flint grits; outer face smooth, grey/buff; inner face smooth, dark grey; section grey/brown.
- 517 Rough, black fabric; medium flint grits.
- 518 (Number not used)
- 519 Medium flint grits; outer face slightly rough, dark brown; inner face rough, orange; section dark brown.
- 297 Body sherd of carinated jar; small/large flint grits; outer face smoothed but slightly uneven; inner face rough, black; section dark grey.
- 298 Gritless fabric; outer face smooth, dark brown; inner face fairly smooth, dark grey; section dark brown.
- 299 Fine/small flint grits; outer face lightly burnished, black/brown; inner face fairly smooth, dark grey; section grey.
- 300 Rim slightly thickened by folding over on outer and inner faces; small-medium flint grits; outer face rough, orange/dark brown; inner face rough, dark grey; section dark grey.
- 301 Rim with slight overhang on outer face; small/medium flint grits; outer face uneven, rough, grey; inner face slightly rough, dark grey; section grey.
- 302 Squared rim; fine flint grits; outer face smooth, buff/grey; inner face smooth, black; section grey/brown.
- 303 Rough, dark grey fabric; small/medium flint grits.
- 304 Squared rim; small flint grits; outer face smooth, black/brown with white encrustation; inner face smooth, brown/black; section brown/black.
- 305 Squared rim; small/medium flint grits; outer and inner faces slightly rough, buff; section buff.
- 306 Expanded and flattened rim; medium flint grits; outer face rough, orange/brown; inner face rough, orange/buff; section grey.
- 307 Medium flint grits and occasional red/grey inclusion; outer and inner faces fairly smooth, orange/brown; section dark brown.
- 308 Medium flint grits; outer face rough, black/buff; inner face buff; section grey.
- 309 Medium flint grits; outer face rough, black; inner face rough, buff; section black/brown.
- 310 Squared rim; medium flint grits; outer and inner faces rough, brown; section brown.
- 311 Rim, angle uncertain; small flint grits; outer and inner faces fairly smooth, grey/buff; section dark brown.
- 312 Medium flint grits; outer face rough, grey/buff; inner face rough, black; section grey/brown.
- 313 Faint finger-nail impression below neck; small/medium flint grits; outer and inner faces fairly smooth, orange; section grey.
- 314 Small/large flint grits; outer face rough, black; inner face rough, buff/grey; section grey.
- 315 Creamy, slightly rough fabric; occasional small flint grits.
- 316 Horizontal groove on inner face below rim; medium flint grits; rough, black fabric.
- 317 Uneven but fairly smooth, black fabric; fine/medium flint grits.
- 318 Small flint grits; rough, buff fabric.
- 319 Fine, small flint grits; outer and inner faces smooth, buff/brown; section grey.
- 320 Fine flint grits; slightly sandy, fabric; outer face smooth, orange/dark grey; inner face smooth, dark grey; section grey.
- 321 Virtually gritless; slightly soft fabric; outer and inner faces smooth, buff; section grey.
- 322 Finger-tipping; medium flint grits; outer and inner faces fairly rough, grey/buff; section black.
- 323 Medium flint grits; outer face rough, buff; inner face smooth, lightly burnished; section grey.
- 324 Squared rim, angle uncertain; small/medium/large flint grits; outer face slightly rough, buff; inner face rough, buff; section grey.
- 325 Squared rim, slight fold-over on outer face; medium flint grits; outer face rough, black; inner face rough, black/brown; section black.
- 326 Finger-tipped impressions; small flint grits; outer face rough, buff; inner face rough, black; section grey.
- 327 Expanded rim; sparse medium flint grits; outer and inner faces slightly rough, grey/buff; section grey/buff.
- 328 Rim, thickened and turned over inside; small/medium flint grits; outer and inner faces rough, dark grey/brown; section grey/brown.
- 329 Sparse small flint grits; outer face smooth, black/buff; inner face slightly smooth, black; section black.
- 330 Angle uncertain; smooth, dark grey fabric; fine flint grits.
- 331 Flattened rim; slightly rough, grey/black fabric; small/medium flint grits.
- 332 Rim with finger-tipping (angle uncertain); small/medium flint grits; outer face rough, orange; inner face slightly rough, orange/grey; section grey/brown.
- 333 Angle uncertain; small/medium flint grits; outer and inner faces rough, buff; section buff.
- 334 Squared rim; slightly smooth, black; sparse fine flint grits.
- 335 (Number not used)
- 336 Small/medium flint grits; outer face rough, brown; inner face rough, dark brown; section brown.
- 337 Squared rim; fine/small flint grits; outer and inner faces smooth, dark grey; section grey/buff.
- 338 Flattened rim; slightly softer fabric; very occasional small flint grit and red grog inclusions; outer face smoothed, brown; inner face slightly rougher, buff/orange.
- 339 Rim with slight bead on outer face and bevel inside lip; medium flint grits; outer face rough, buff/grey; inner face rough, orange; section grey.
- 340 Medium flint grits; outer face rough, brown; inner face rough, black; section black.
- 341 Slightly thickened by folding over and finger tipping and nail impressions; small/medium flint grits; rough, black fabric.
- 342 (Number not used)
- 343 Angle uncertain; rough, black fabric; medium flint grits.
- 344 Expanded rim; small/medium flint grits; outer face rough, red/black; inner face rough, dark grey; section black.
- 345 Medium flint grits; outer face rough, dark brown; inner face rough, black; section dark grey.
- 346 Small flint grits; outer face fairly smooth, orange/buff fabric; inner face slightly rough, orange/grey; section black.
- 347 Small/medium flint grits; outer face rough, orange/grey; inner face rough, orange/brown; section grey.
- 348 Flattened rim; rough, grey/brown fabric; small/medium flint grits.
- 349 Finger-tipping on rim; outer face rough, dark brown/orange; inner face rough, buff/orange; section grey.
- 350 Medium flint grits; outer and inner faces rough, black; section black.

- 351 Slightly folded over; small flint grits; outer and inner faces black; section black.
- 352 Squared rim; dark grey, flint-gritted fabric.
- 353 Angle uncertain; medium flint grits; outer face rough, buff/grey; inner face grey/brown; section grey/brown.
- 354 Small/medium flint grits; outer face rough, dark brown; inner face rough, orange/brown; section grey.
- 355 Beaded rim; medium flint grits; outer face rough, buff; inner face rough, grey/buff; section grey/buff.
- 356 Rim, thickened by folding over; medium flint grits; outer and inner faces rough, orange; section grey.
- 357 Expanded and flattened rim; mostly small flint grits; outer face slightly rough, brown; inner face rough, orange; section brown.
- 358 Finger-tipped rim of vessel; medium flint grits; outer face rough, black; inner face rough, black/brown; section dark grey/brown.
- 359 Rim with finger-tipping on inner face; small/medium flint grits; outer and inner faces rough, brown; section black.
- 360 Rim sherd with finger impressions on inside of lip; small flint grits; outer and inner faces rough, brown/buff; section grey.
- 361 Medium flint grits; outer face rough, buff; inner face rough, brown; section grey.
- 362 Small flint grits; rough, black/brown fabric.
- 363 Small/medium flint grits; outer face slightly rough, black/brown; inner face rough, brown; section brown.
- 364 Rim, slightly flattened; small/medium flint grits; outer face rough, grey/buff; inner face rough, dark grey; section brown.
- 365 Small flint grits; outer face smooth, grey/black; inner face rougher, grey; section grey.
- 366 Angle uncertain; small/medium flint grits; outer face smooth, dark brown/orange; inner face rougher, black/brown; section grey/brown.
- 367 Sparse fine/small flint grits; outer and inner faces smooth, black; section dark grey.
- 368 Body sherd; rough, black/brown fabric with medium flint grits.
- 369 Rim of jar with groove just below rim on inner face and incised decoration of hatched triangle; smooth, gritless, black/brown fabric.
- 370 Slightly thinned rim; small flint grits; outer and inner faces fairly smooth, orange/buff; section orange/buff.
- 371 Everted rim with horizontal groove under inside of lip and combed decoration, inlay barely discernible; smooth, black/buff, gritless fabric.
- 372 Jar with everted rim and decoration of incised hatched triangles, traces of white inlay in incisions; virtually gritless, smooth, rather soft fabric, grey/black.
- 373 Slightly beaded rim with incised decoration; gritless, smooth, buff/brown fabric; outer face slightly burnished, possible traces of inlay in incisions.
- 374 Body sherd with incised hatched triangle decoration, possible traces of white inlay; smooth, gritless, black fabric.
- 375 Body sherd with incised decoration, probably a hatched pendant triangle from a similar, though not identical, vessel to 372; smooth, gritless, black fabric.
- 376 Body sherd with combed decoration; no grits; outer and inner faces smooth, rather soft, buff/grey; section buff/grey.
- 377 Body sherds with combed decoration; fine flint grits; outer face smooth, burnished, black/brown; inner face smooth, red/brown; section brown.
- 378 Body sherd with combed decoration; very sparse fine flint grits; outer face burnished, buff/grey; inner face smooth, black; section grey.
- 379 (Number not used)
- 380 Body sherd with combed decoration; no grits; outer face smooth, buff; inner face smooth, grey/buff; section buff.
- 381 Body sherd with combed decoration; smooth, black, slightly soft, gritless fabric.
- 382 Body sherd with combed decoration; gritless; outer and inner faces smooth, buff/grey; section buff/grey.
- 383 Body sherds with combed decoration; smooth, black fabric; occasional fine flint grit.
- 384 Body sherd with combed decoration; very sparse fine flint grits; outer face smooth, buff/brown; inner face smooth, black; section grey.
- 385 Body sherd with incised lines; small/medium flint grits; outer face rough, buff; inner face rough, black; section grey.
- 386 Body sherd with incised lines; small/medium flint grits; outer and inner faces rough, brown; section grey.
- 387 Body sherd with incised decoration; small/medium flint grits; outer and inner faces smooth, buff/grey; section grey.
- 388 Body sherd with incised geometric decoration; small flint grits; outer face smooth, orange; inner face slightly rough, black; section black.
- 389 Body sherd with 'rusticated' decoration, possibly effected by pushing up the clay with the back of the finger nail; small flint grits; rough, slightly sandy, brown fabric.
- 390 Body sherd with stamped dot ornament; smooth, slightly soft, gritless, buff fabric; outer face abraded.
- 391 Body sherd with finger-nail impression on shoulder; medium flint grits; outer face rough, grey/buff; inner face rough, brown; section grey.
- 392 Body sherd with marked finger tip and nail impressions; almost gritless, smooth, black fabric.
- 393 Body sherd with finger impressions; medium flint grits; outer face rough, dark grey; inner face rough, black/brown; section grey.
- 394 Body sherd with finger-tip impressions; small flint grits; outer and inner faces slightly rough, black/brown; section dark grey.
- 395 Body sherd with finger-nail impression on shoulder; small/medium flint grits; outer face rough, buff/orange; inner face slightly rough, buff; section buff.
- 396 Body sherd with finger-nail impression on shoulder; small flint grits; outer face rough, red/brown; inner face rough, grey/brown; section red/brown.
- 397 Body sherds with finger-nail or tooled incisions on shoulder; virtually gritless, soapy; outer face uneven, brown; inner face smooth, brown/black; section brown/black.
- 398 Flake from body sherd with finger-tip decoration; section not known; rough, black fabric with small flint grits.
- 399 Body sherd with finger-tipping on shoulder; small/medium flint grits; outer face rough, black; inner face rough, black/brown; section dark brown.
- 400 Body sherd with finger tip and nail decoration on shoulder; medium flint grits; outer face rough, black/brown; inner face rough, black; section grey.
- 401 Body sherd with finger-tipping on shoulder; gritless fabric; outer and inner faces fairly even, orange/brown; section brown.
- 402 Body sherd with applied finger-pressed band; medium flint grits; outer face slightly rough, buff; inner face rough, buff; section grey/brown.
- 403 Body sherd with punched(?) impressions on shoulder; sparse fine flints; uneven, slightly sandy, grey/brown fabric.
- 404 Body sherd with finger-tip decoration; virtually gritless; grey/brown, uneven, sandy fabric.
- 405 Body sherd with applied handle; black, flint-gritted fabric; outer face fairly smooth but uneven.
- 406 Fairly smooth, grey fabric with small flint grits.
- 407 Small/medium flint grits; outer face rough, brown; inner face rough, dark brown; section grey.
- 408 Neck of vessel with drilled(?) hole; medium flint grits; outer face smooth, black, slightly burnished; inner face rougher, black; section black.
- 409 Medium flint grits; outer and inner faces rough, black; section black.
- 410 Thinned rim, angle uncertain; small flint grits; outer face rough, brown; inner face rough, buff; section grey/brown.
- 411 Small/medium flint grits; outer face lightly burnished, black; inner face rough, black; section dark brown.
- 412 Medium flint grits; outer face rough, black/brown; inner face rough, buff; section grey.
- 413 Smooth black fabric with small/medium grits.
- 414 Squared rim; fairly smooth, orange/brown fabric.
- 415 Thinned rim in smooth, buff/grey fabric with sparse fine flint grits.
- 416 Rim thickened by folding over; small/medium flint grits; outer face rough, black/brown; inner face rough, brown; section grey.
- 417 In-turned squared rim in smooth, orange/buff fabric; very sparse small flint grits.
- 418 Squared rim; small flint grits; outer and inner faces smooth, black; section grey.
- 419 Squared rim; gritless; outer and inner faces smooth, brown; section dark brown.
- 420 Small/medium flint grits; outer and inner faces smooth, black; section black.
- 421 Horizontal groove below slightly squared rim; sparse fine flint grits; smooth grey/brown fabric.
- 422 Beaded rim; small/medium flint grits; outer face fairly smooth, grey/brown; inner face rougher, grey/brown; section dark grey.
- 423 Gritless fabric (similar fabric to 425, 529 and 534, slightly sandy); outer face smooth, orange/grey, slightly abraded; inner face grey; section grey/brown.
- 424 Small flint grits; outer and inner faces smooth, brown/buff; section brown/buff.
- 425 Gritless orange fabric (similar fabric to 423, 529 and 534); outer and inner faces smooth; faint incisions on interior.

- 426 Gritless fabric; barely visible incised decoration on interior; outer face burnished, smooth, black; inner face smooth, grey; section grey.
- 427 Beaded rim; small/medium flint grits; outer face rough, black/buff; inner face rough, black/brown; section brown.
- 428 Body sherd probably from bowl similar to 423, 425 and 426; incised but heavily worn furrowing on incised face; gritless fabric, similar to 423, 425 and 426; outer face smooth, black; inner face grey/brown; section grey/brown.
- 429 Small, very thin-walled bowl; gritless fabric; outer face smooth, grey/brown; inner face smooth, black; section black/brown.
- 430 Fine flint grit; outer and inner faces smooth, dark grey; section grey with reddish tinge.
- 431 Shallow cup with horned protrusion or handle expanding from thinned rim; small/medium flint grits; outer face smooth, black/pink/buff; inner face smooth, black/buff; section grey.
- 432 Omphalos base; small flint grits; outer face smooth, dark grey; inner face fairly smooth, dark grey; section brown.
- 433 Omphalos(?) base, small/medium flint grits; outer face slightly rough, black; inner face rough, black; section brown.
- 434 Base with slight kick; small flint grits; outer face fairly smooth, red-brown; inner face rough, orange; section grey.
- 435 Base with slight kick; small flint grits; outer face fairly smooth, black/buff; inner face rougher, black; section black.
- 436 Small flint grits; outer face smooth, black/brown; inner face slightly rough, dark grey; section grey/brown.
- 437 Base(?), small flint grits; outer face smooth, black; inner face slightly rough, black; section brown.
- 438 Medium flint grits; outer face rough, grey/brown; inner face uneven, grey/brown; section grey/brown.
- 439 Medium flint grits; outer face smooth, buff; inner face fairly rough, black; section dark brown.
- 440 Base with slight kick; sparse small flint grits; outer face smooth, black/buff; inner face slightly rough, buff; section buff/grey.
- 441 Occasional fine flint grit; outer and inner faces fairly smooth, buff; section grey.
- 442 Occasional fine flint grit; outer and inner faces fairly smooth, buff; section grey.
- 443 Small flint grits; rough, buff fabric.
- 444 Medium flint grits; outer and inner faces rough, black/brown; section dark brown.
- 445 Small/medium flint grits; outer face slightly smoothed but uneven, rough, grey/black; inner face rough, dark grey/brown; section dark grey.
- 446 Medium flint grits; outer face rough, buff; underside heavily pitted through grits mostly lost; inner face rough, buff/grey; section buff.
- 447 Medium/large flint grits; outer face rough, buff; inner face rough, grey/brown; section buff.
- 448 Fine/small flint grits; outer face smooth, grey; small grits on underside; inner face slightly rough, orange/buff; section buff.
- 449 Medium flint grits; outer face slightly smooth, grey/brown; inner face smooth, black with cream accretion; section grey.
- 450 Lower part of shouldered jar with finger-tipping on shoulder; small/medium flint grits; outer and inner faces rough, black; section black.
- 451 Fairly smooth, grey/buff fabric with fine/small flint grits.
- 452 Medium flint grits; outer face rough, orange; underside heavily gritted; inner face rough, grey.
- 453 Medium/large flint grits; outer and inner faces almost smooth, grey; section grey.
- 454 Medium flint grits; outer face rough, buff/grey; inner face rough, black; section black.
- 455 Medium flint grits; outer face rough, buff; inner face rough, black; section grey; some grits on underside.
- 456 Medium flint grits; outer face grey/buff; inner face orange; section dark grey.
- 457 Small/medium flint grits; outer face rough, brown; inner face rough, black; section black.
- 458 Rough, grey, flint-gritted fabric.
- 459 Slightly smooth, grey/brown fabric with medium flint grits.
- 460 Medium flint grits; some pitting; outer face rough, buff; inner face rough, brown; section dark grey.
- 461 Fairly smooth, grey/black fabric with small flint grits; many small grits on underside of base.
- 462 Small flint grits; outer face rough, buff/brown; inner face rough, black; section black.
- 463 Medium flint grits; uneven, rough, buff fabric.
- 464 Medium flint grits; outer face rough, orange; underside heavily gritted; inner face rough, grey.
- 465 Small/medium flint grits; outer face rough, grey/buff; inner face rough, black/brown; section black.
- 466 Medium flint grits; outer face rough, brown; inner face rough, black/brown; section black/brown.
- 467 Splayed base; medium flint grits; base heavily pitted; outer face rough, buff; inner face rough, black/buff; section grey.
- 468 Splayed base; small/medium flint grits; outer face rough, orange; underside heavily gritted; inner face rough, orange/brown; section brown.
- 469 Small/medium flint grits; outer face rough, grey; inner face rough, black; section black.
- 470 Medium flint grits; outer face rough, brown; inner face rough, orange; section dark grey.
- 471 Slightly splayed base; medium flint grits; outer face rough, buff/grey; inner face rough, grey/brown; section grey.
- 472 Splayed base; small/medium flint grits; outer face rough, grey/black; heavily gritted on underside; inner face rough, brown; section brown.
- 473 Slightly splayed base; rough, buff/grey fabric with fine/small flint grits.
- 474 Splayed base; medium/large flint grits; outer face rough, brown, finger smearing; underside of base heavily gritted with small/medium flint grits; inner face rough, black; section black.
- 475 Small/medium flint grits; outer face rough, buff; underside of base heavily gritted with small/medium grits; inner face rough, black; section black.
- 476 Splayed base; medium flint grits; base pitted; outer and inner faces rough, grey/brown; section grey.
- 477 Medium flint grit; outer and inner faces rough, buff; underside very heavily gritted with small/medium grits.
- 478 Medium flint grits; outer and inner faces rough, black/brown; section grey.

GROUP 9 (Figs 39–41)

- 479 Small/medium flint grits; outer and inner faces smooth, black; section black.
- 480 Smooth, black fabric with sparse fine flint grits.
- 481 Hard, gritless fabric; outer and inner faces smooth, grey/brown; section black.
- 482 Finger-tipped decoration; rough, black fabric with medium flint grits.
- 483 Smooth, grey/buff, gritless fabric.
- 484 Sparse fine flint grits; outer and inner faces smooth, black.
- 485 Slight fold-over; fairly smooth, black fabric; small flint grits.
- 486 Small flint grits; outer and inner faces smooth, brown/black; section brown/black.
- 487 Small flint grits; outer face rough, grey/black; inner face rough, black; section grey/black.
- 488 Rim with slight bead; fairly rough, black fabric with small flint grits.
- 489 Small flint grits; outer face smooth, grey/buff; inner face slightly rough, black; section black.
- 490 Thickened rim; small/medium flint grits; outer and inner faces rough, black/brown; section grey.
- 491 Fine flint grits; outer and inner faces fairly smooth, black; section dark brown.
- 492 Squared rim; smooth, gritless, grey/buff fabric.
- 493 Body sherd from shouldered bowl; smoothed, though uneven, black fabric; small flint grits.
- 494 Body sherd from carinated vessel; small flint grits; outer face slightly rough, black; inner face rough, black/brown; section black/brown.
- 495 Rough, sandy, buff fabric; small/medium flint grits.
- 496 Finger-pressed rim; small/medium flint grits; outer face fairly rough, black; inner face rough, orange/brown; section brown.
- 497 Rim (angle unknown) with irregular fold-over on outer face; medium flint grits; outer face rough, grey/buff; inner face rough, brown/black; section dark grey/brown.
- 498 Finger-tipped rim; small flint grits; outer and inner faces rough, black/brown; section dark brown.
- 499 Rim with finger-tip decoration; small flint grits; outer face rough, grey; inner face rough, orange; section grey/brown.
- 500 Rim with slight bead; small flint grits; fairly rough, black/buff fabric.
- 501 Small/medium flint grits; outer face rough, black/buff; inner face rough, black; section black.
- 502 Smooth, brown fabric; fine flint grits.
- 503 Small/medium flint grits; outer face rough, black; inner face rough, brown/pink; section dark brown.
- 504 Rim, flattened and turned over; slightly sandy fabric with medium flint grits; outer and inner faces rough, orange/buff; section orange/buff.

- 505 Rough, orange/brown; small flint grits.
 506 Fine/medium flint grits; outer face fairly smooth, orange/brown; inner face fairly smooth, brown; section black/brown.
 507 Small/large flint grits; outer and inner faces rough, black/brown; section black/brown.
 508 Finger-tipped decoration; small/medium flint grits; outer and inner faces rough.
 509 Small/medium flint grits; outer and inner faces rough, dark grey/brown; section brown.
 510 Small/medium flint grits; outer face of rim rough, buff; inner face of rim smooth, buff; section buff.
 511 Thinned rim; medium flint grits; outer and inner faces rough, orange/brown/black; section black.

For numbers 512–519, see p 37.

- 520 Body sherd with combed line decoration; hard, black, gritless fabric; outer face smooth, lightly burnished; inner face smooth.
 521 Body sherd with cordon and incised decoration; gritless, slightly soft, smooth, black/brown fabric; (plus a similar sherd, not illustrated, without decoration).
 522 Body sherd with incised decoration on outer face; virtually gritless, slightly soft, smooth, black/brown fabric.
 523 Body sherd with finger-nail decoration; soft, gritless fabric; outer and inner faces fairly smooth, orange/brown; section black.
 524 Body sherd with cordon; gritless, slightly soft, smooth, black/brown fabric.
 525 Body sherd with finger-nail impressions on shoulder; small flint grits; outer face slightly rough, orange; inner face slightly rough, light brown; section light brown.
 526 Fine flint grits; smooth, black fabric.
 527 Thinned rim; small flint grits; outer face smooth, brown; inner face rougher, brown; section grey.
 528 Small/medium flint grits; outer face rough, black/brown; inner face rough, dark brown; section black/brown.
 529 Squared rim (angle uncertain); gritless, sandy fabric (similar fabric to 423, 425 and 534); outer and inner faces smooth, light grey, abraded; section orange/brown.
 530 Rim(?); soft, gritless orange/pink fabric.
 531 Upright rim (angle uncertain); fine flint grits; outer and inner faces fairly smooth, black; section dark brown.
 532 Small-large flint grits; outer face rough, grey/brown/buff; inner face rough, grey/brown; section grey/brown.
 533 Hard fabric, fine/small flint and black quartz grits; outer face smooth, dark grey; inner face rough but regular, grey; section grey.
 534 Omphalos base with decoration of incised lines on inner face (possibly from a shallow bowl of Type 8); gritless, orange/brown/buff, sandy fabric (similar fabric to 423, 425 and 529); outer face even, though slightly abraded; small perforation in wall of vessel.
 535 Small flint grits; outer face fairly smooth, buff/dark grey; inner face smooth, dark grey; section dark grey.
 536 Small/medium flint grits; outer face fairly smooth, buff/black; inner face rough, brown; section brown.
 537 Medium flint grits; outer face fairly smooth, black; inner face fairly rough, black; section black.
 538 Medium flint grits; outer face smoothed, black; inner face rough, brown; section dark brown.
 539 Small/medium flint grits; outer face smoothed, brown; inner face rough, brown; section dark brown.
 540 Small flint grits; outer face smooth, dark grey/brown; inner face smooth, black, with even cream accretion or slip; section dark grey/brown.
 541 Medium flint grits; outer and inner faces rough, brown/black; section brown/black.
 542 Small/large flint grits; outer face rough, grey/brown; inner face rough, orange/grey; section grey/brown.
 543 Slightly splayed base; medium flint grits; outer face rough, buff/grey; underside slightly pitted; inner face rough, black; section black.
 544 Small/medium flint and black quartz(?) grits; hard fabric; outer face uneven, brown; inner face fairly rough, black; section black.
 545 Splayed base; medium/large flint grits; outer face fairly rough, brown; underside heavily gritted with fine/small flints, brown; inner face rough, brown; section dark brown.

Feature 29

- 547 Rough, grey/brown, flint-gritted fabric.
 548 Hard, grey fabric.

Feature 26

- 549 Finger-tipping on inner face of rim; soft, orange, flint-gritted fabric.
 550 Small flint grits; outer and inner faces rough, buff/brown; section brown.
 551 Small/medium flint grits; outer and inner faces rough, black; section dark brown.
 552 Thinned rim; hard, grey/brown fabric.
 553 Medium/large flint grits; outer face rough, black/brown; inner face rough, orange/brown; section brown.
 554 Body sherd of shouldered vessel; small/medium flint grits; outer face rough, grey/brown; inner face rough, black/brown; section dark brown.
 555 Bowl (or lid?) with distinct shoulder and 'pie crust' decoration (not finger-tipped); small/medium flint grits; outer face rough, black/buff; inner face rough, brown; section dark grey.
 556 Small flint grits; outer and inner faces rough, brown; section black.
 557 Finger-tipping on rim; small/medium flint grits; outer face rough, dark brown; inner face rough, black; section dark brown.

Feature 69

- 558 Smooth, black; fine flint grits.

Feature 36

- 559 Rough, black, flint-gritted fabric.

Feature 91

- 560 Flint grits; outer face rough, dark grey; inner face rough, brown.

Feature 48

- 561 Fine flint grits; black fabric, burnished on outer face.

Feature 38

- 562 Flint grits; rough, brown/black fabric.

Feature 92

- 563 Rough, dark grey, flint-gritted fabric.

DISCUSSION

FABRIC AND MANUFACTURING TECHNIQUES

The great majority of sherds are gritted with crushed flint, ranging in grade from the very coarse (7 mm) grits of some large jars to the fine grits of some bowl forms. Grog inclusions are very occasionally present. An entirely gritless, smooth, fabric occurs exclusively in Type 18 jars and body sherds with related incised decoration.

Buff/red/brown-dark brown wares predominate over black wares, although grey wares can also occur. Often, irregular firing conditions have resulted in colour variations over different areas of the same pot. It would seem that the finer smoothed vessels are more uniformly dark brown-black although this is by no means a rule. The pottery is generally very hard although the smooth, gritless fabric does have a tendency towards softness in some examples. The large body sherd (378) in this fabric is, nevertheless, extremely hard and well finished, and highlights, on the one hand, the apparent fluctuations in firing conditions and, on the other hand, the results that could be achieved under the right conditions.

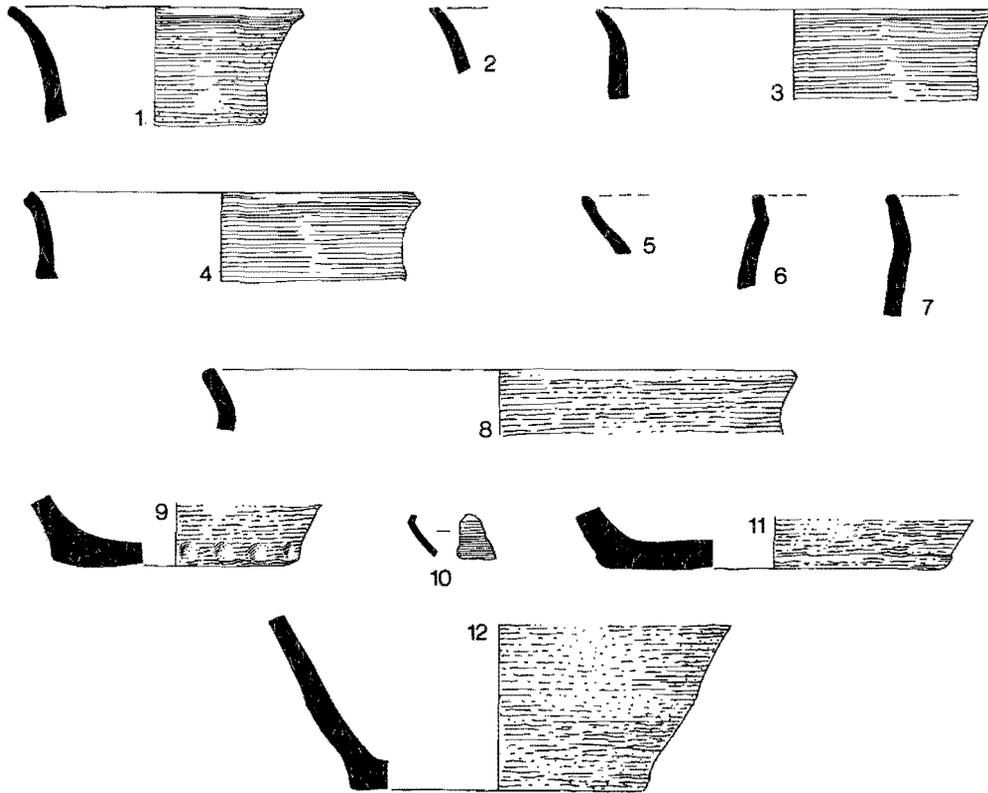
The flint-gritted fabric is consistent with apparently earlier material from this part of the Thames Basin (unpublished pottery from Knight's Farm, Berks, information courtesy of Julian Richards) and with some pottery from Petters Sports Field, Egham, Surrey (information courtesy of Martin O'Connell, report forthcoming). The bulk of the pottery from Petters, however, is smoother with a slightly sandy feel and lacks the quantity of large grits present at Runnymede Bridge.

POTTERY FROM FEATURES (Fig 42)

Feature 19

- 546 Flattened rim; hard, brown fabric; flint grits.

GROUP 2



GROUP 3

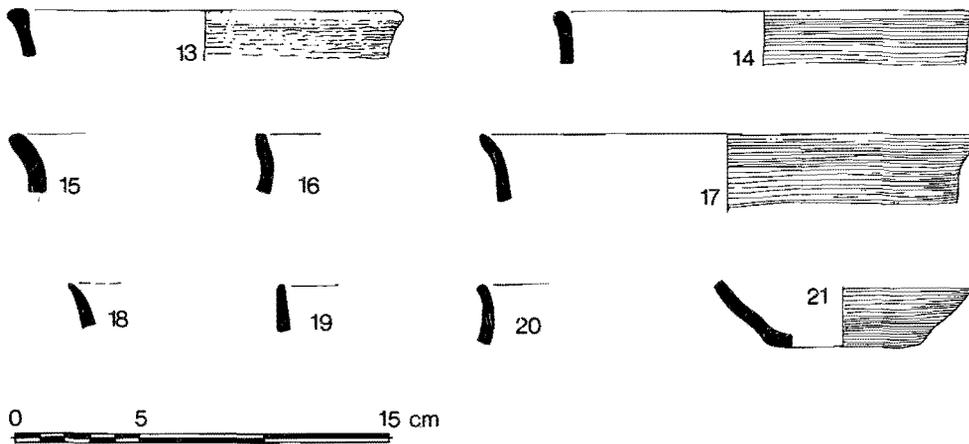


Fig 19 Pottery. Group 2, nos 1-12; Group 3, nos 13-21

GROUP 5a

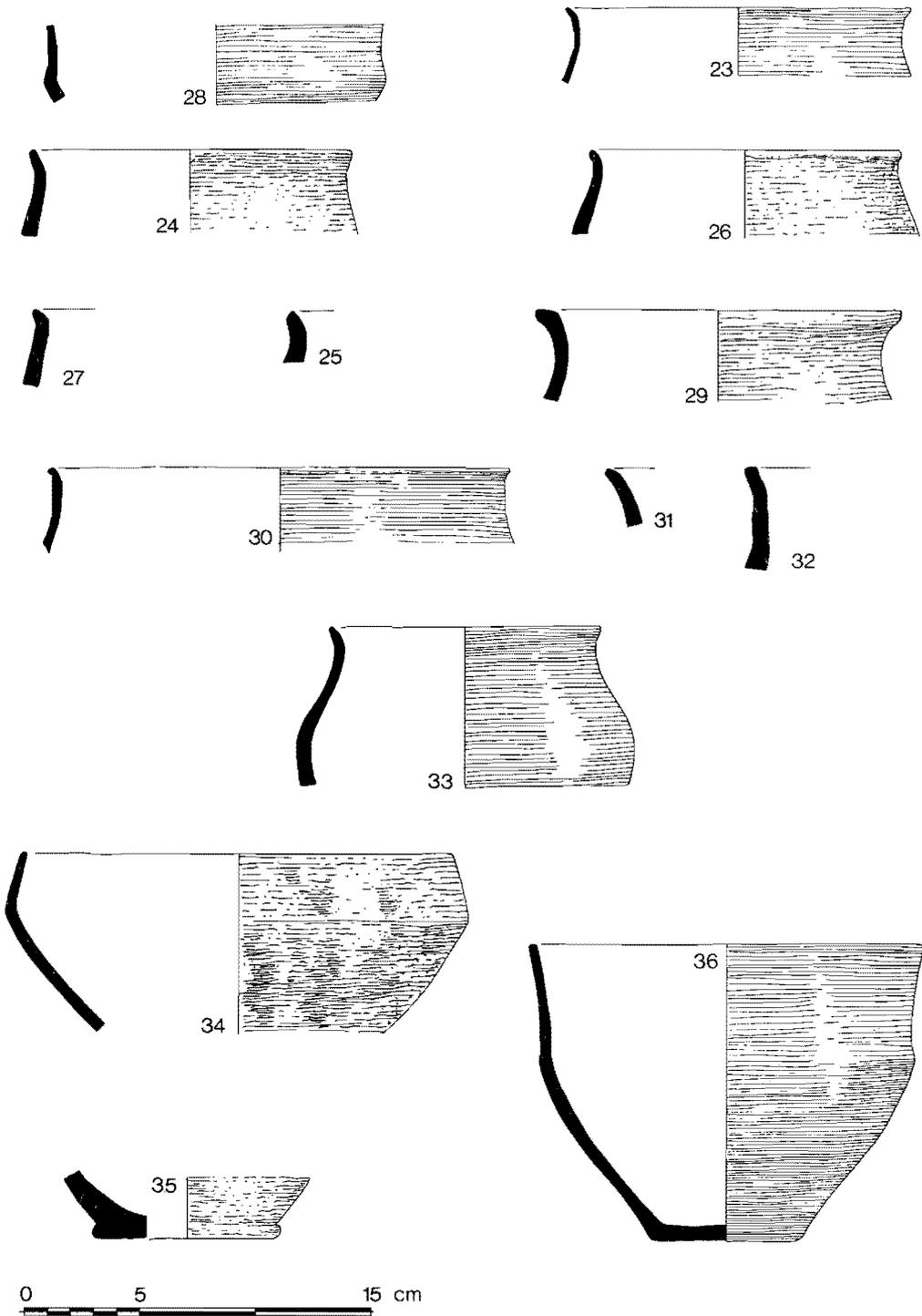


Fig 20 Pottery. Group 5a, nos 23-36

GROUP 5b

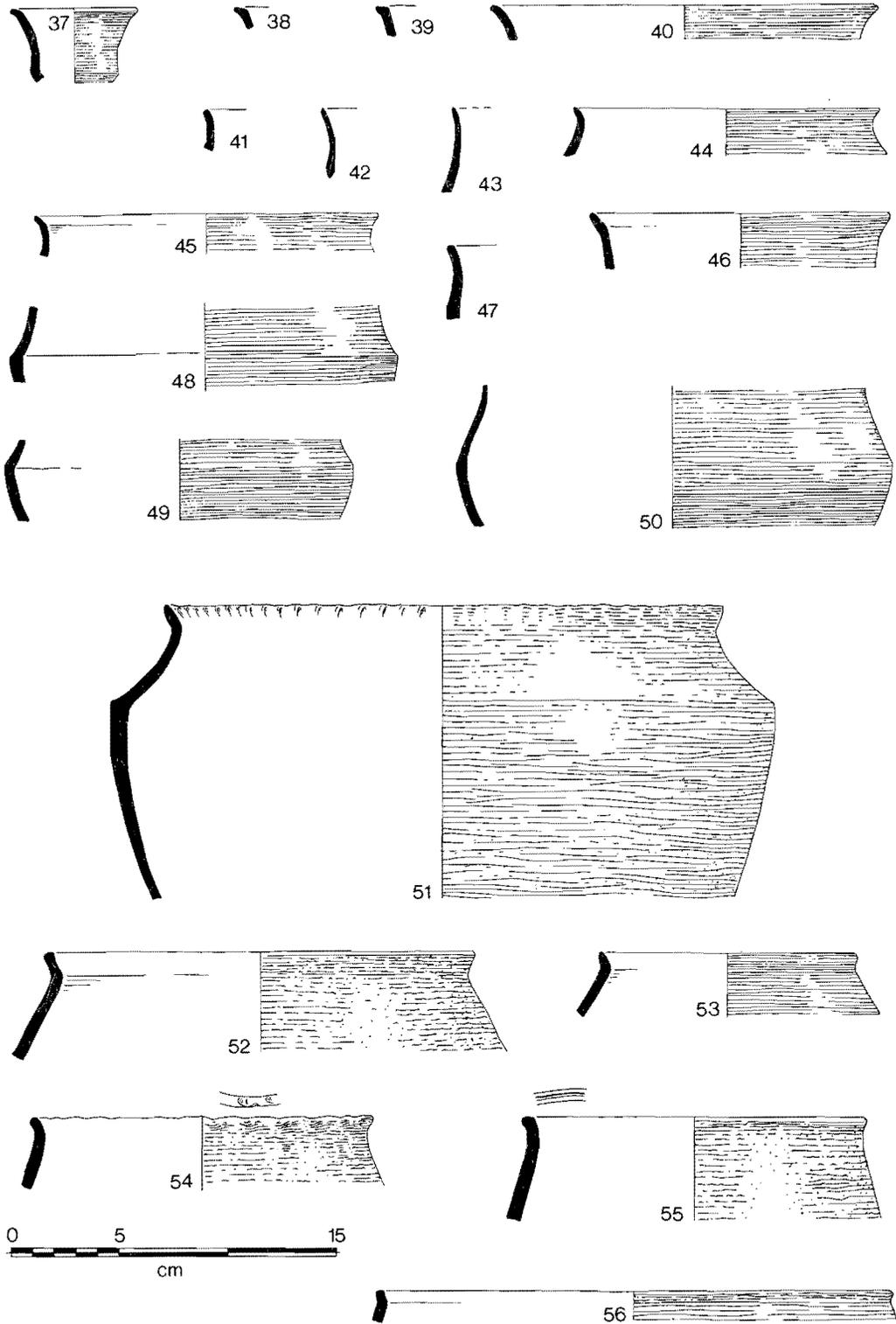


Fig 21 Pottery. Group 5b, nos 37-56

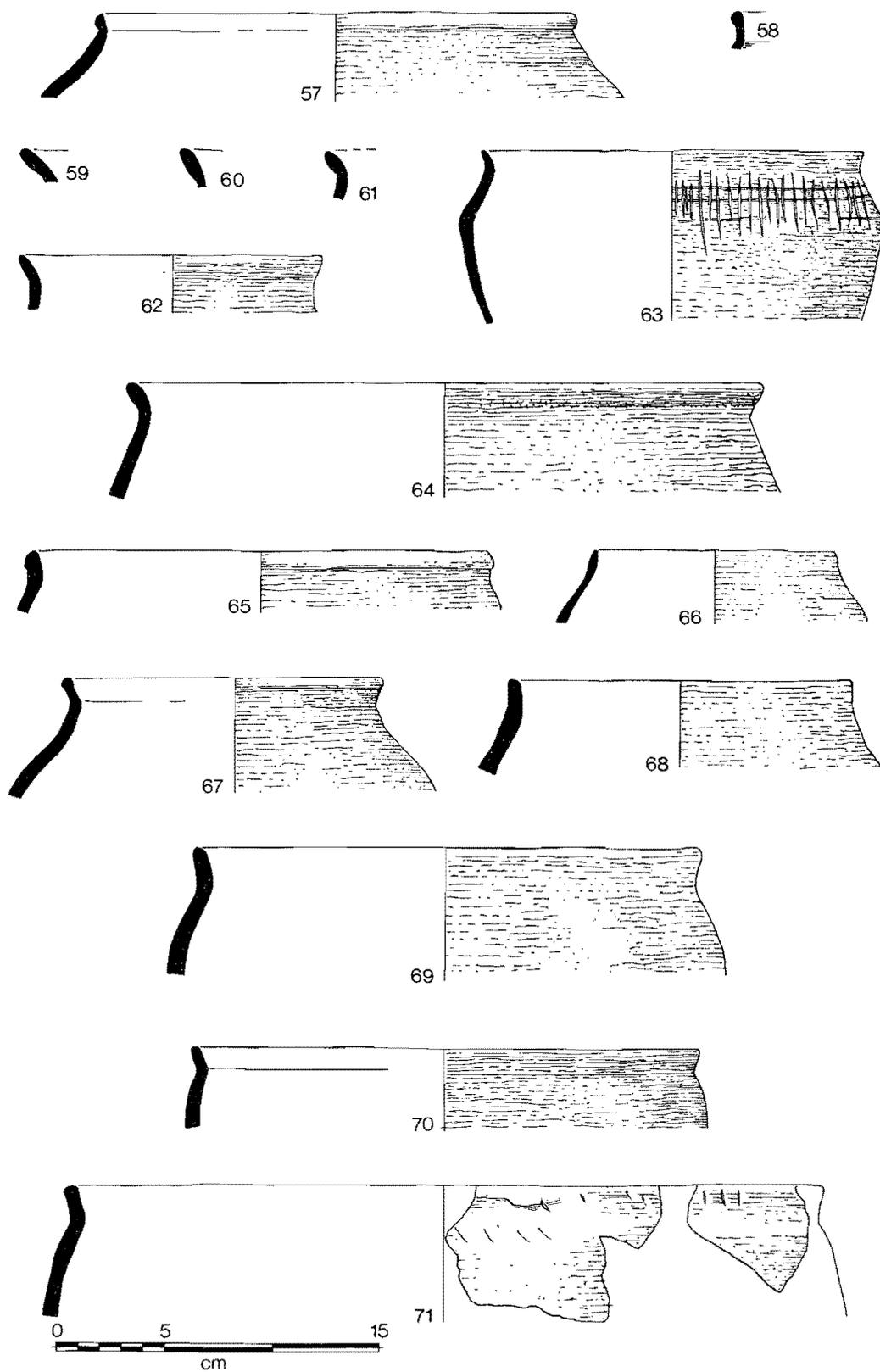


Fig 22 Pottery. Group 5b, nos 57-71

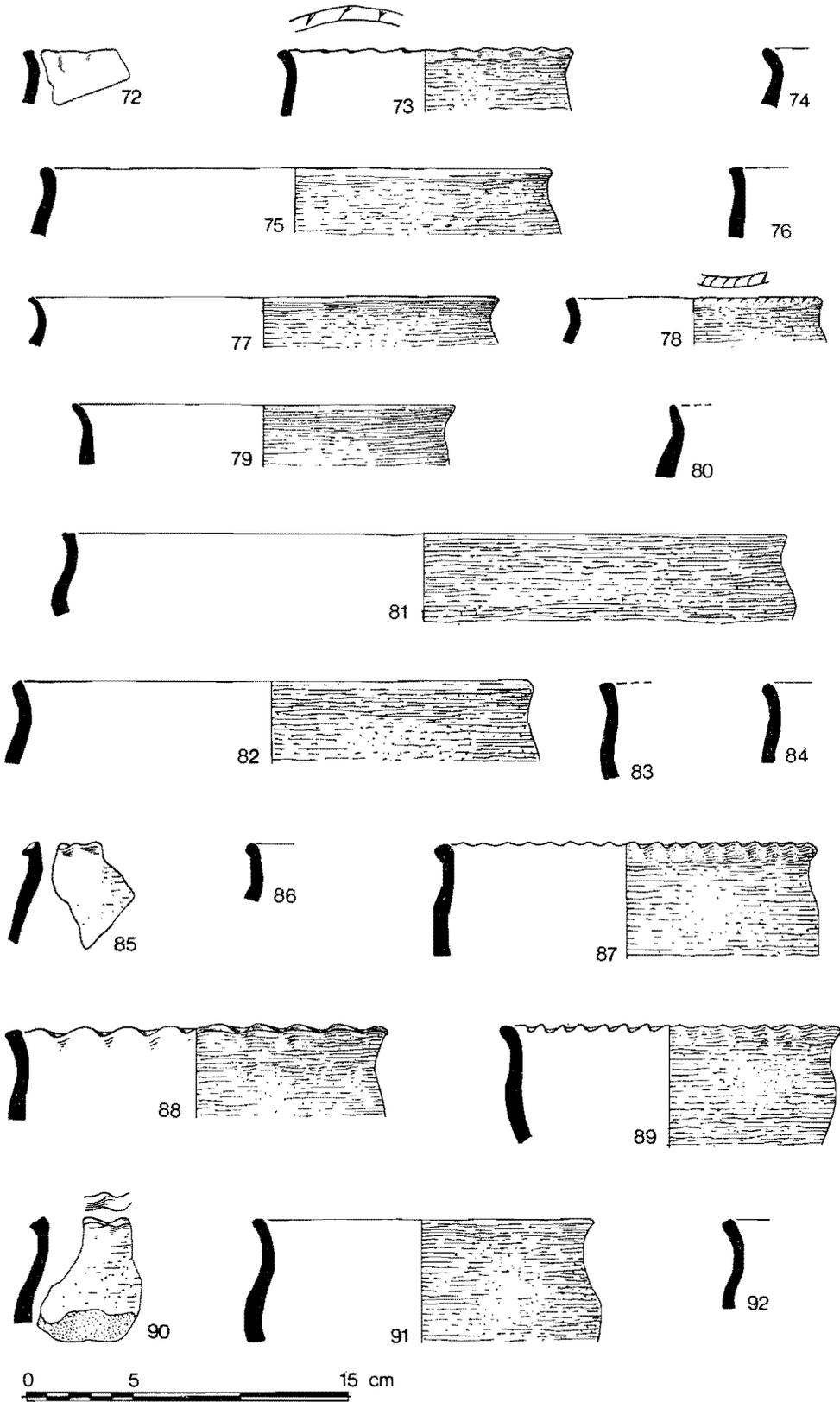


Fig 23 Pottery. Group 5b, nos 72-92

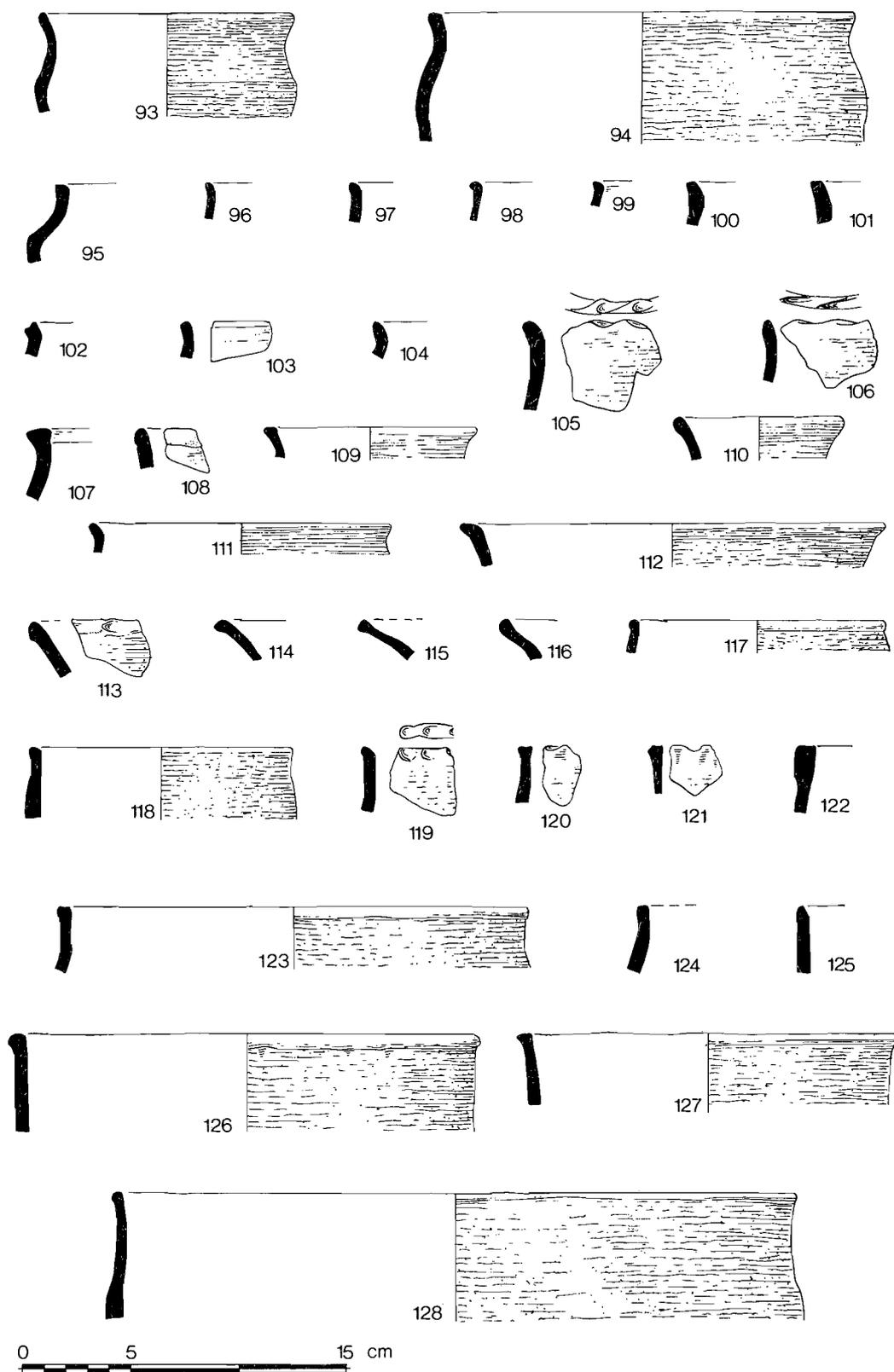


Fig 24 Pottery. Group 5b, nos 93-128

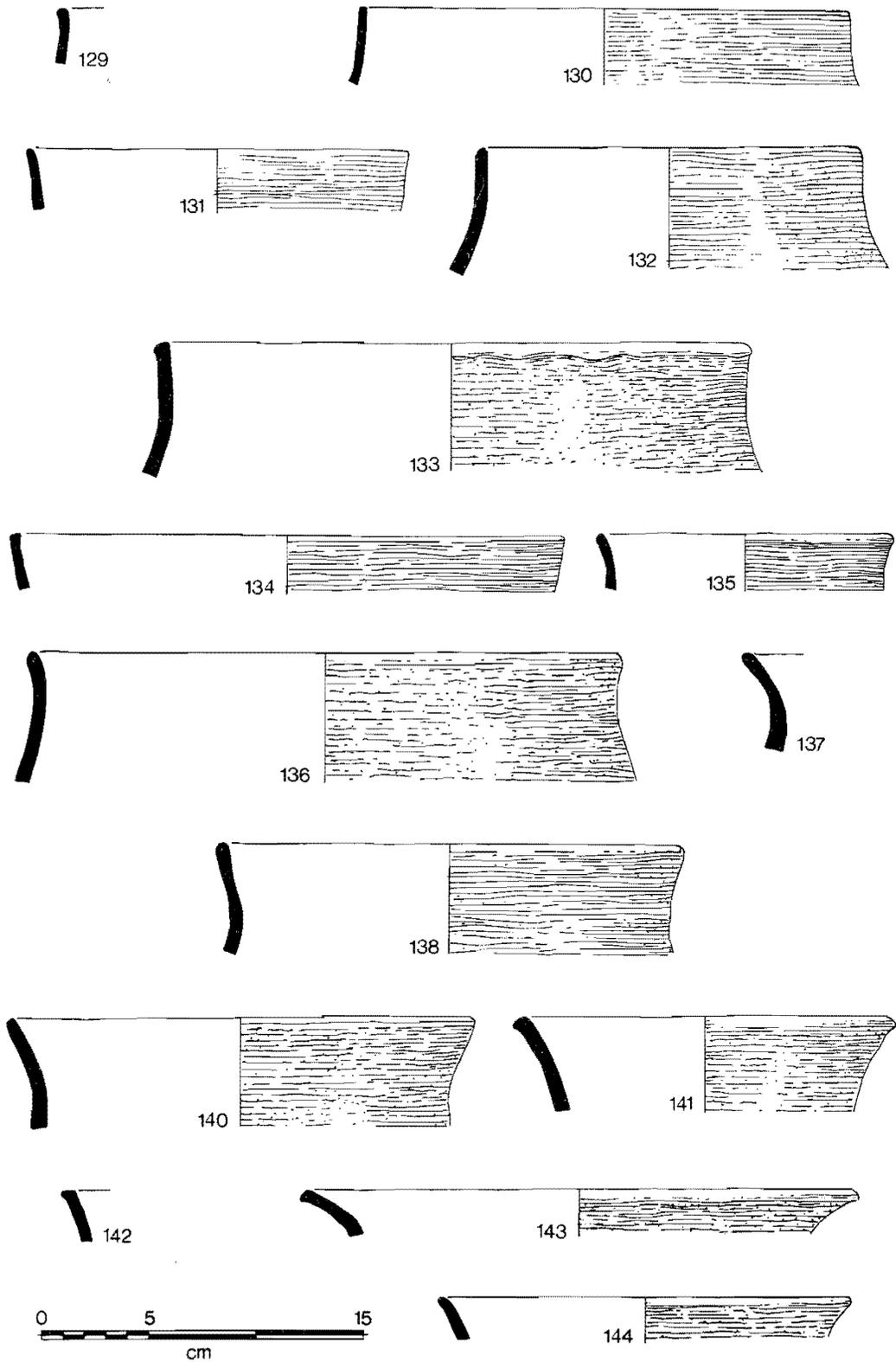


Fig 25 Pottery. Group 5b, nos 129-138, 140-144

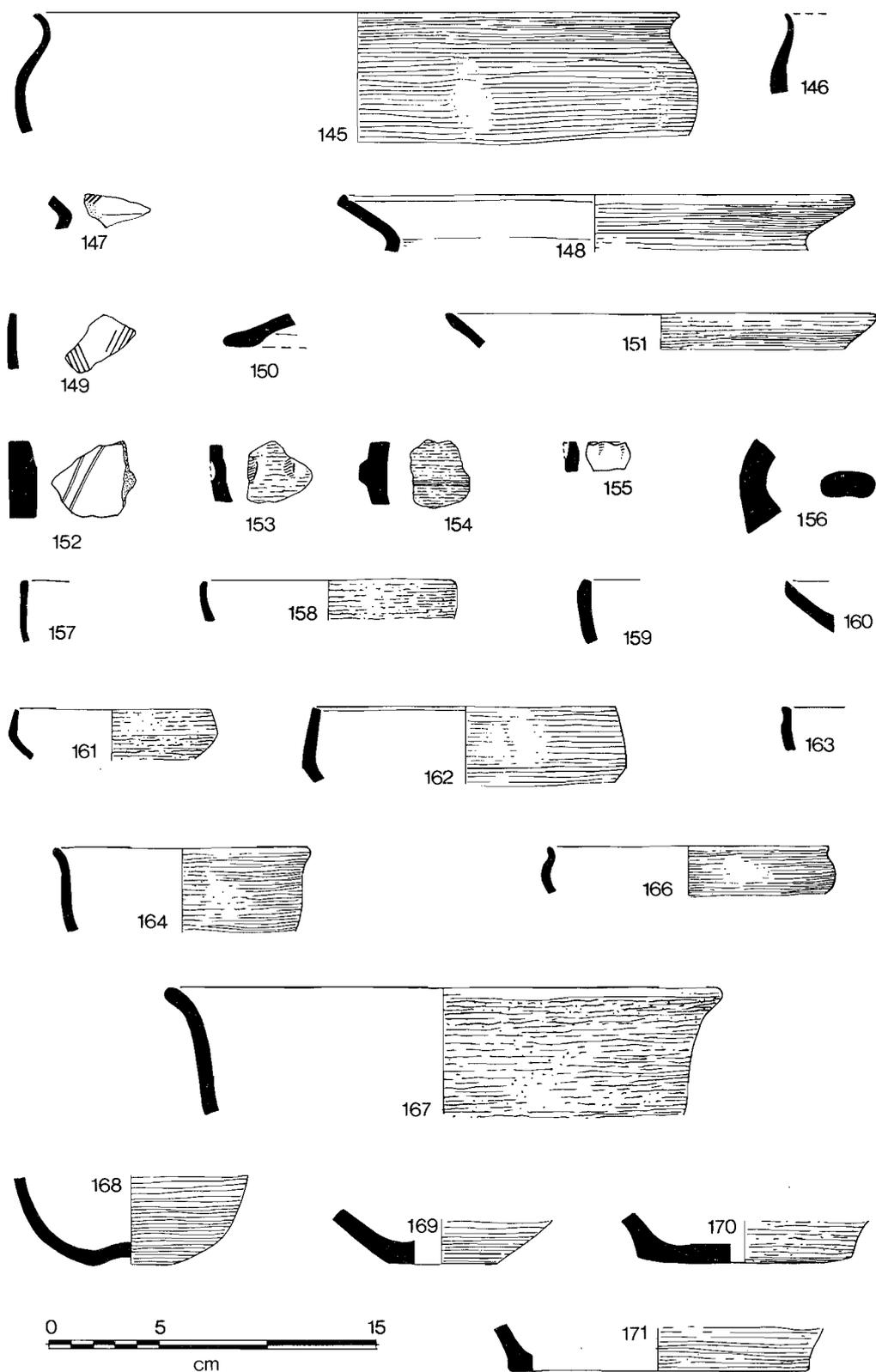
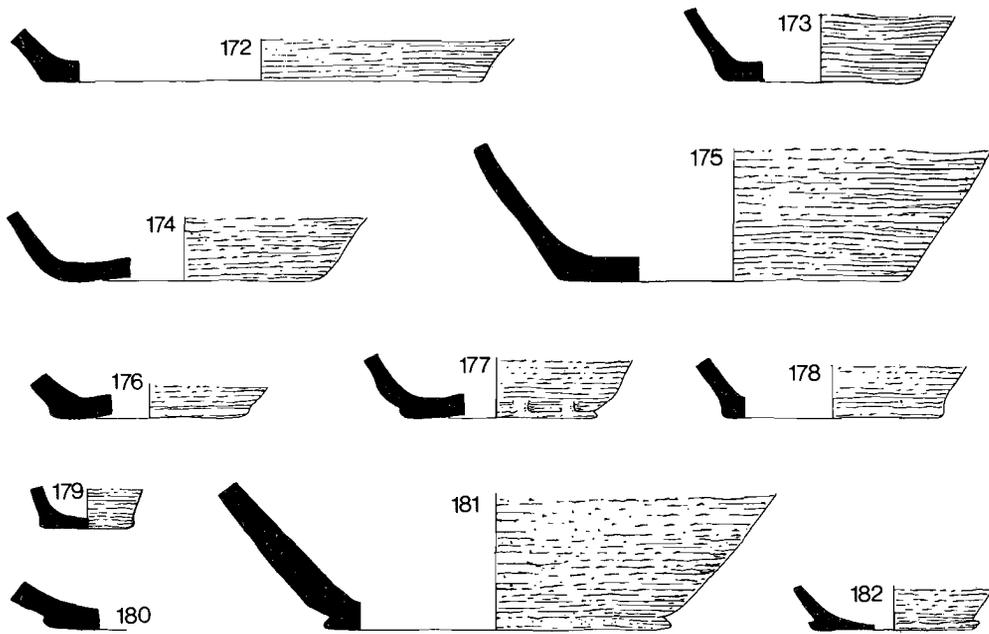


Fig 26 Pottery. Group 5b, nos 145-164, 166-171



GROUP 5c

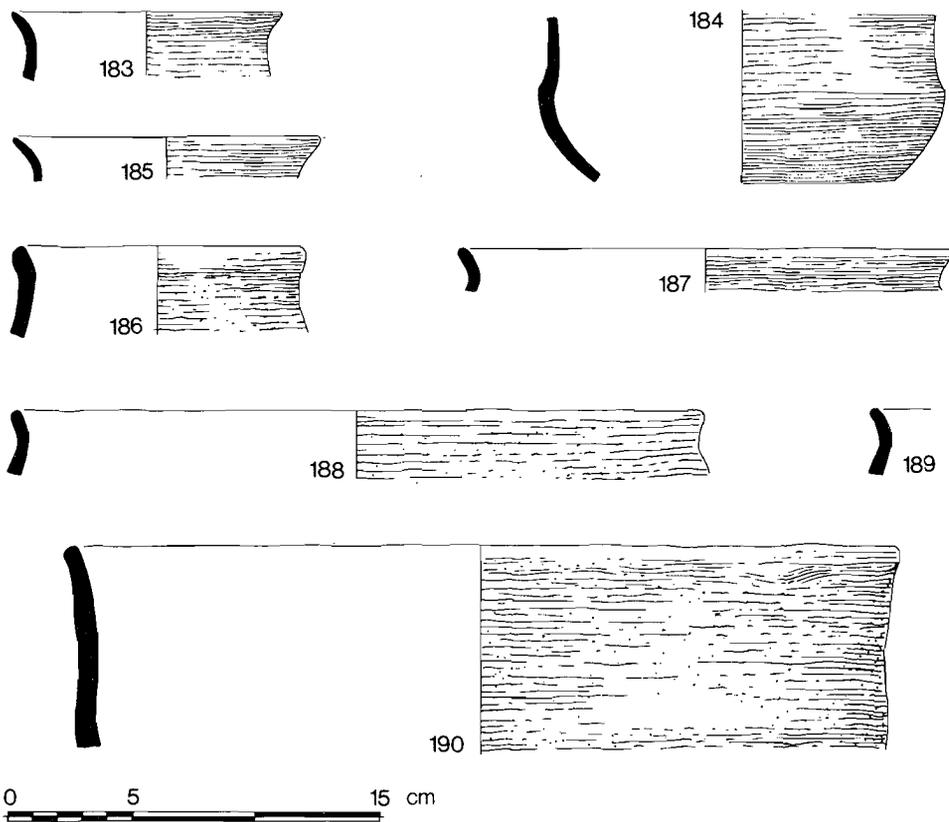
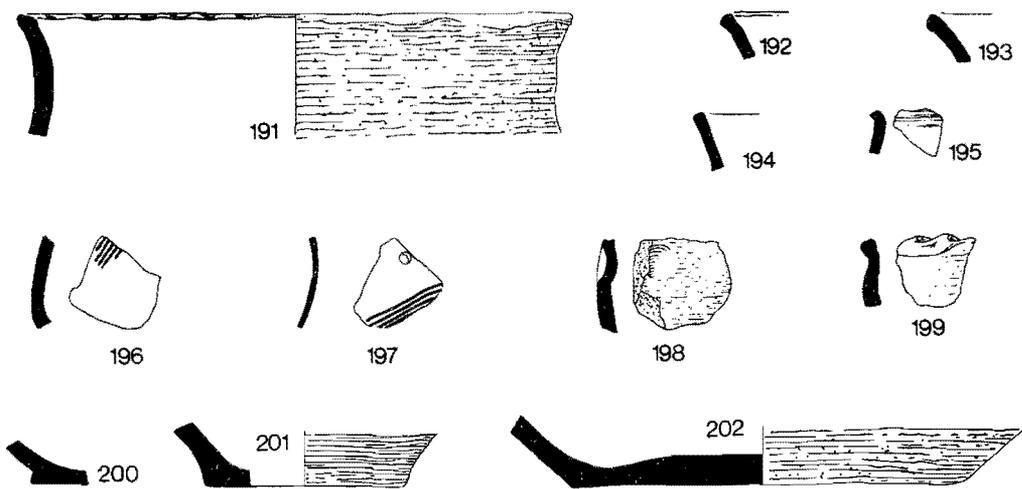


Fig 27 Pottery: Group 5b, nos 172-182; Group 5c, nos 183-190



GROUP 7

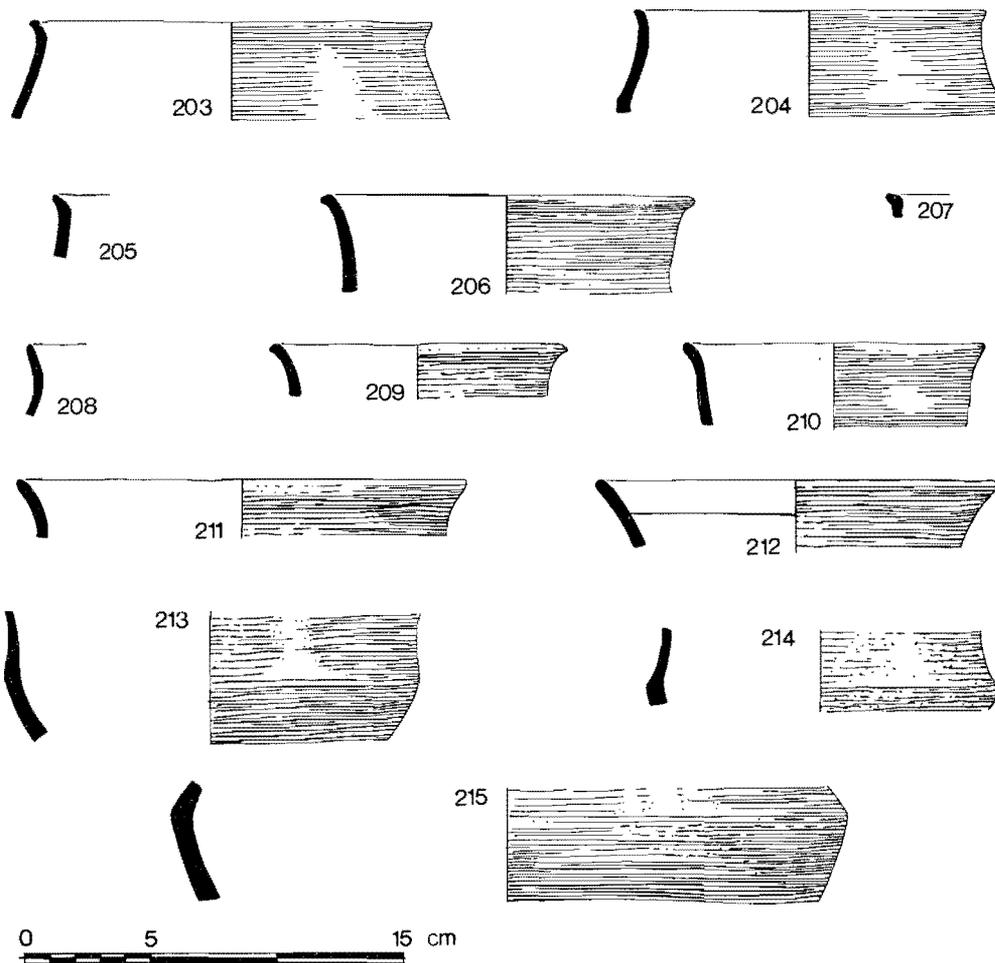


Fig 28 Pottery. Group 5c, nos 191-202; Group 7, nos 203-215

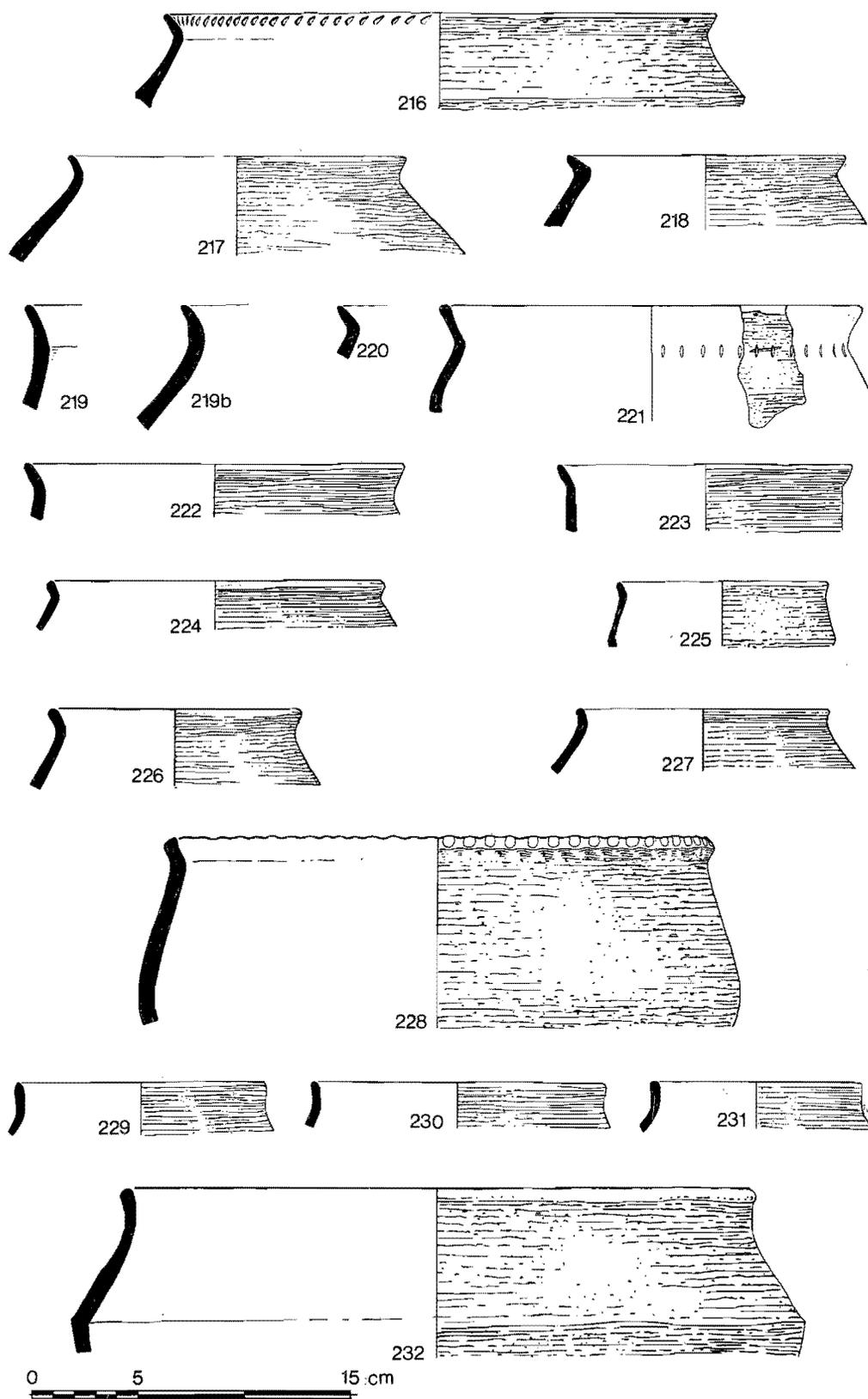


Fig 29 Pottery. Group 7, nos 216-232

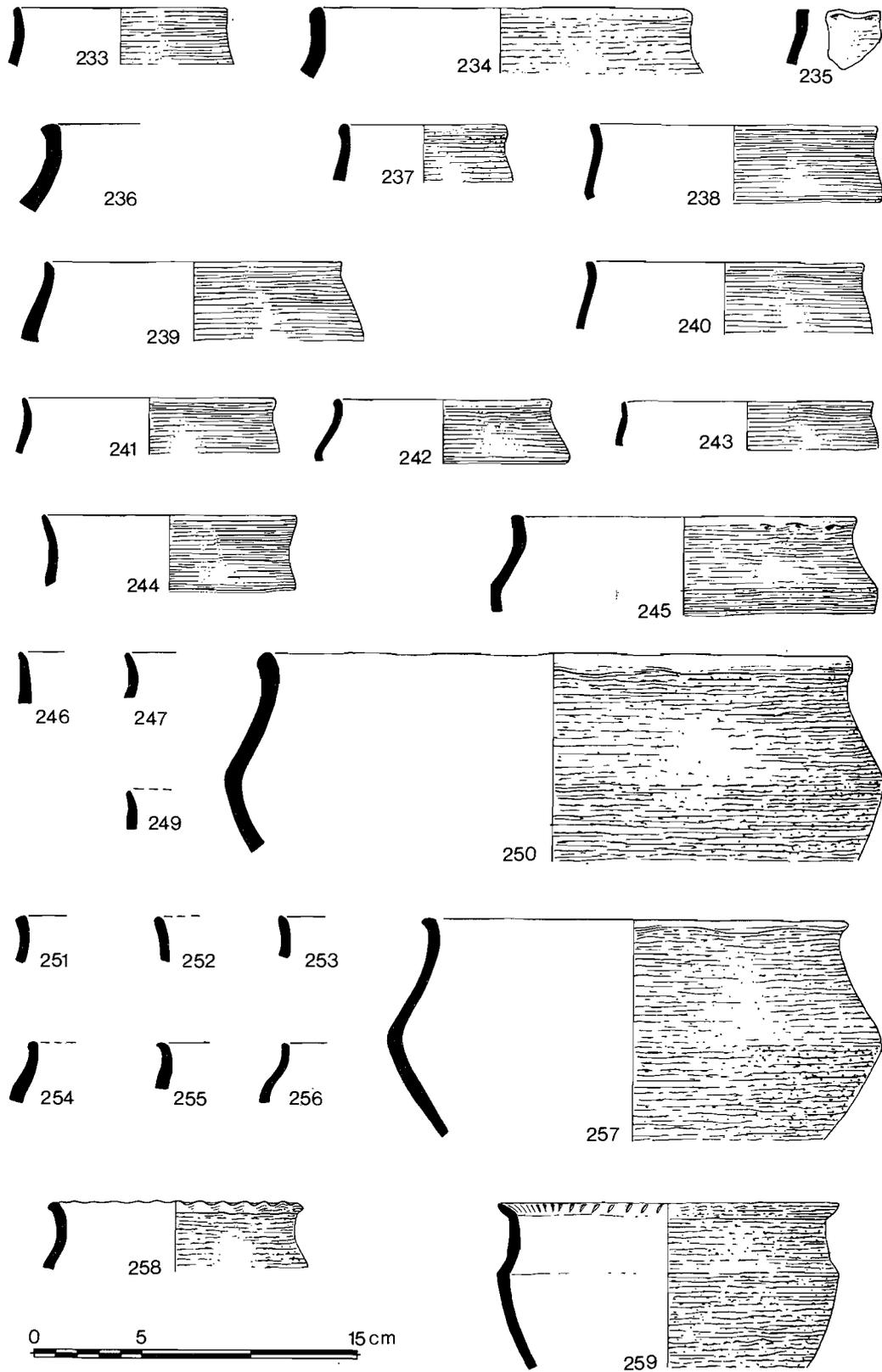


Fig 30 Pottery. Group 7, nos 233-247, 249-259

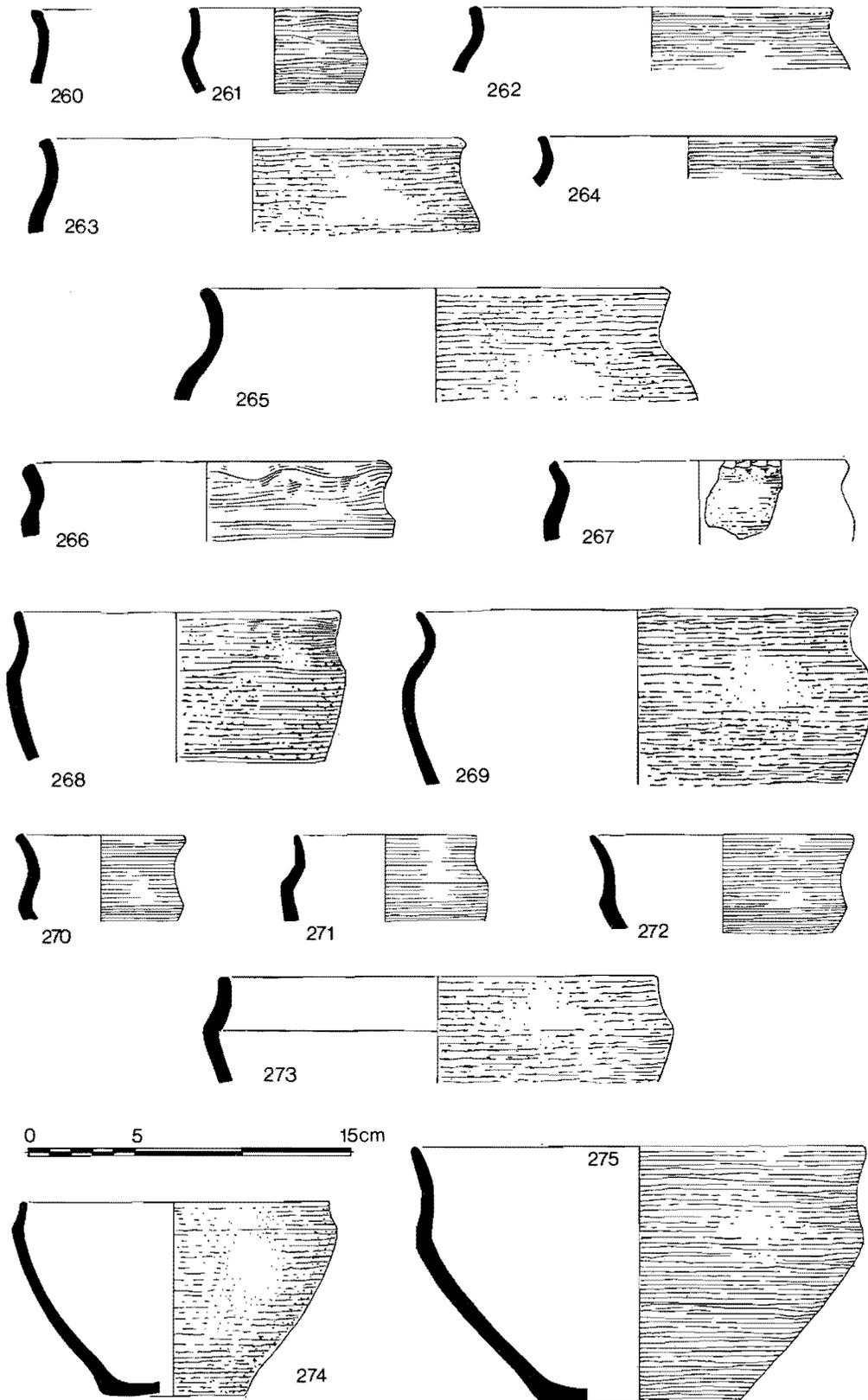


Fig 31 Pottery. Group 7, nos 260-275

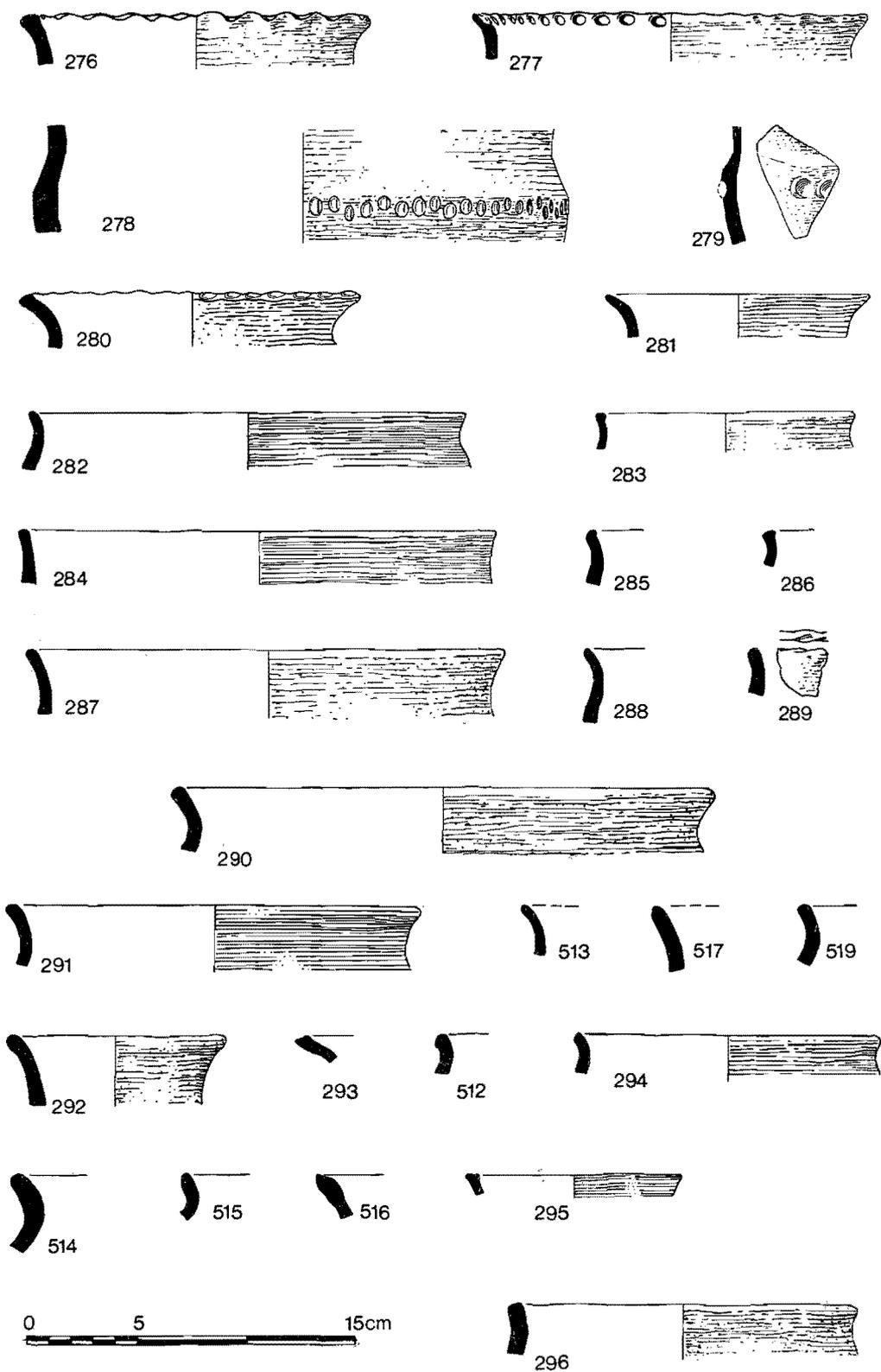


Fig 32 Pottery. Group 7, nos 276-296, 512-517, 519.

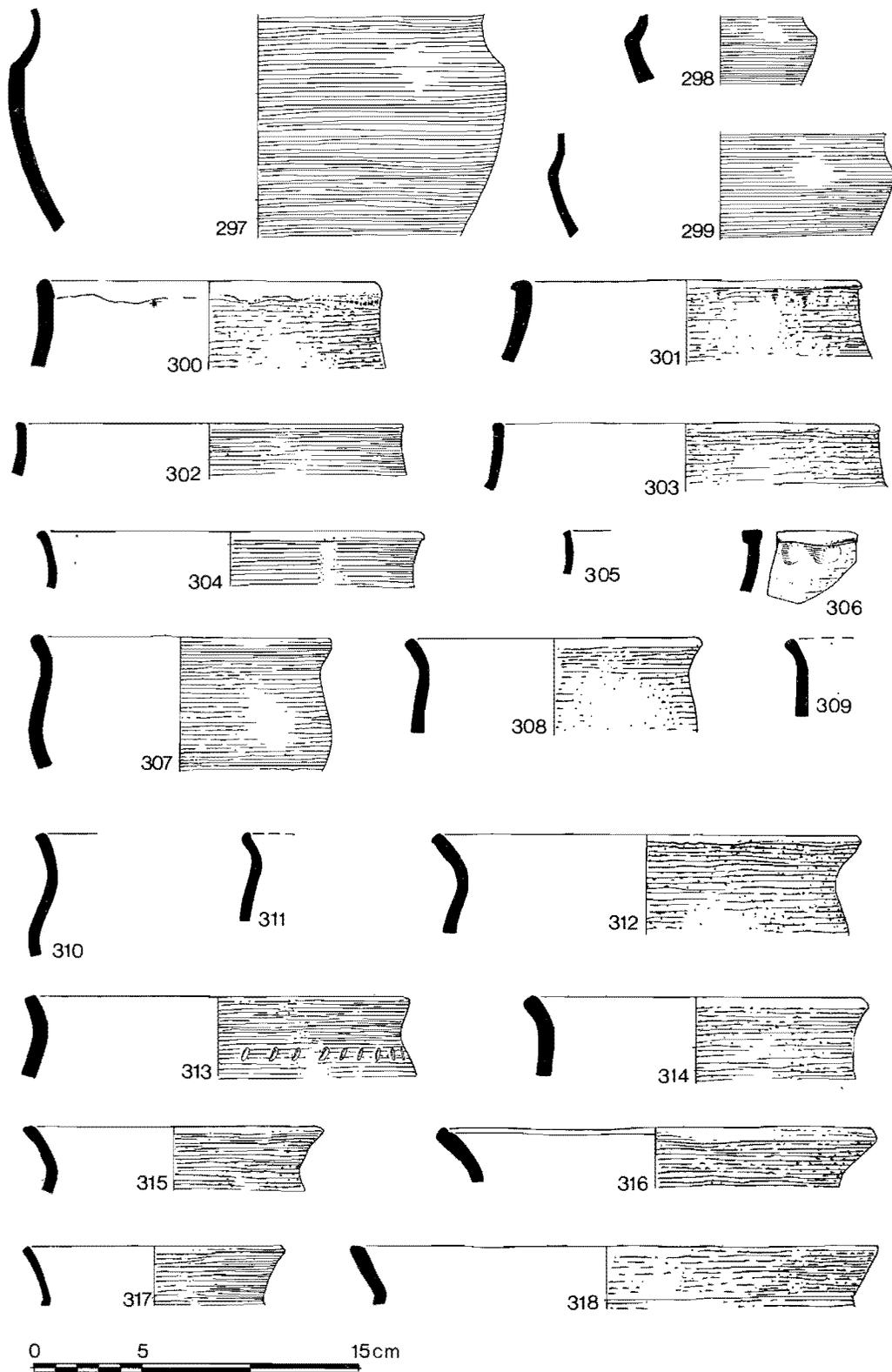


Fig 33 Pottery. Group 7, nos 297-318

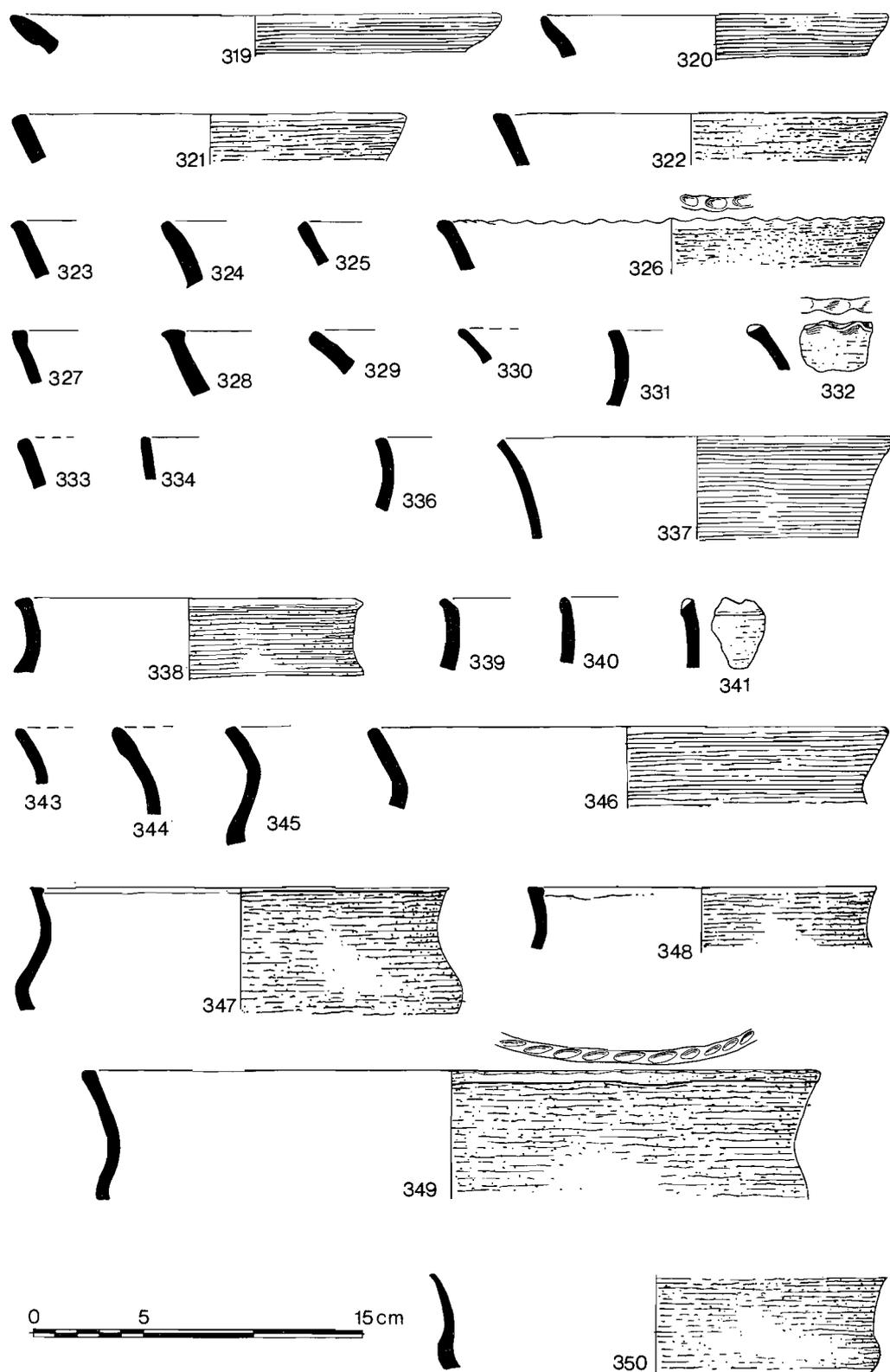


Fig 34 Pottery. Group 7, nos 319-334, 336-341, 343-350

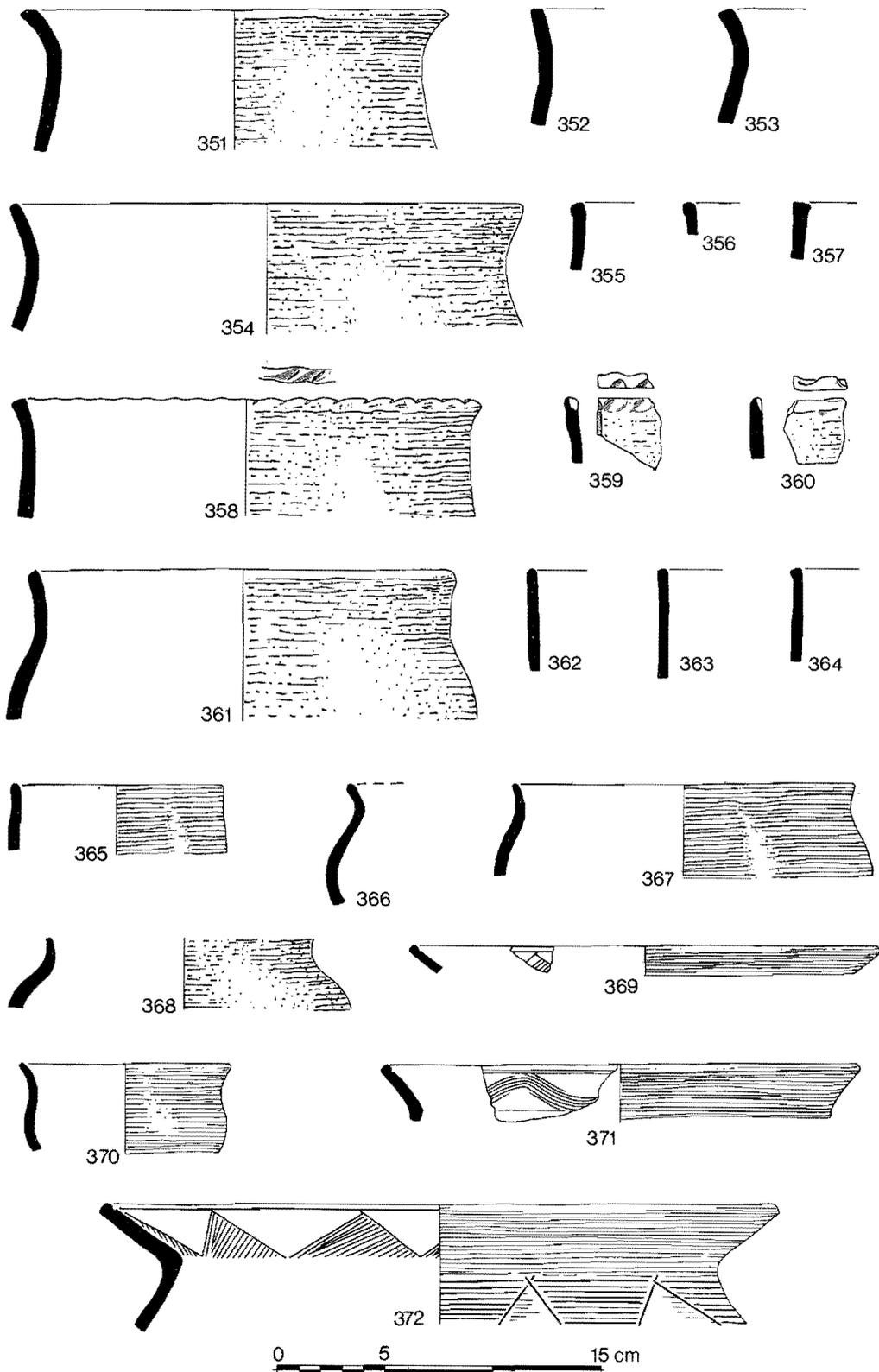


Fig 35 Pottery. Group 7, nos 351-372

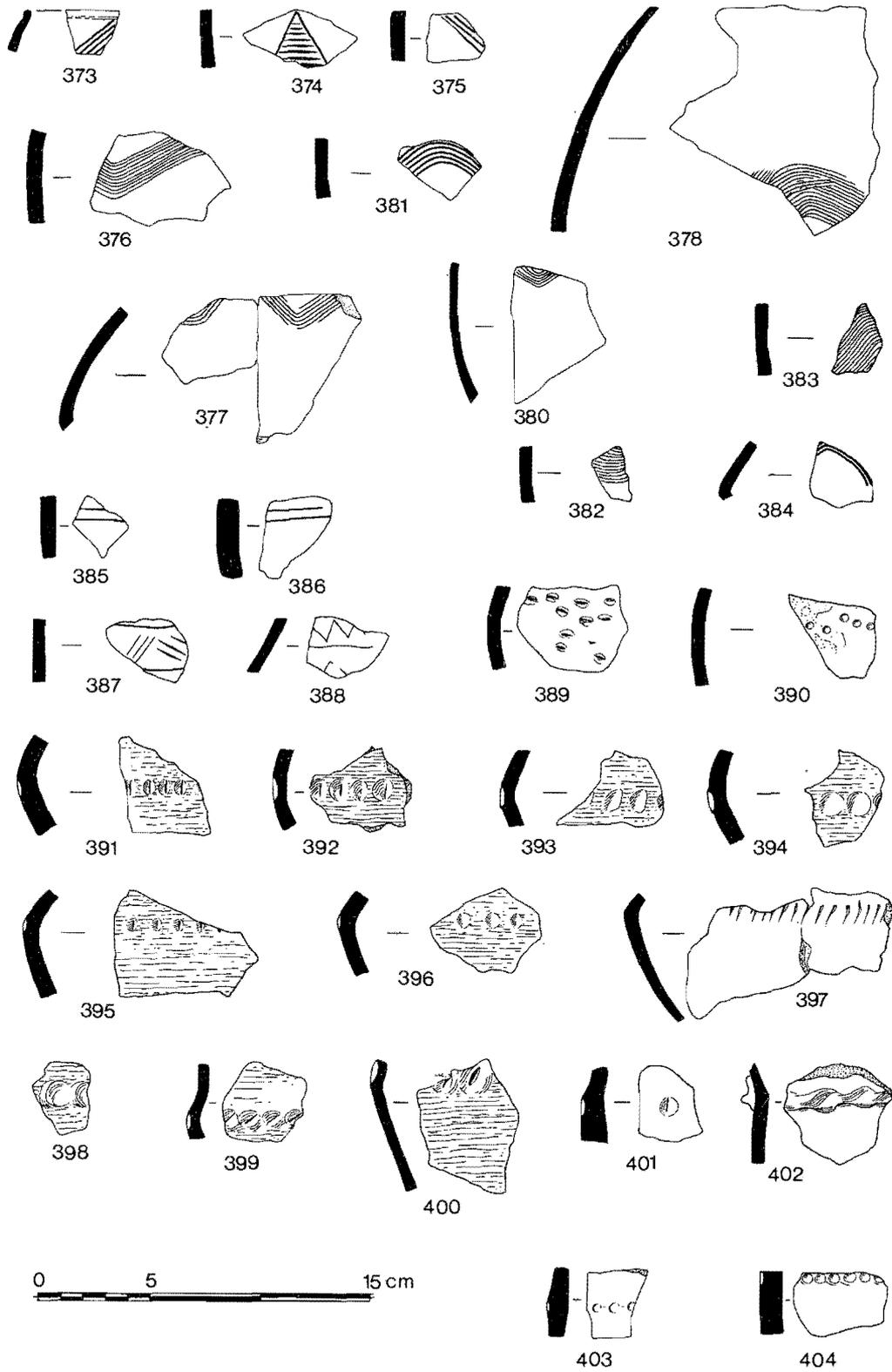


Fig 36 Pottery. Group 7, nos 373-378, 380-404

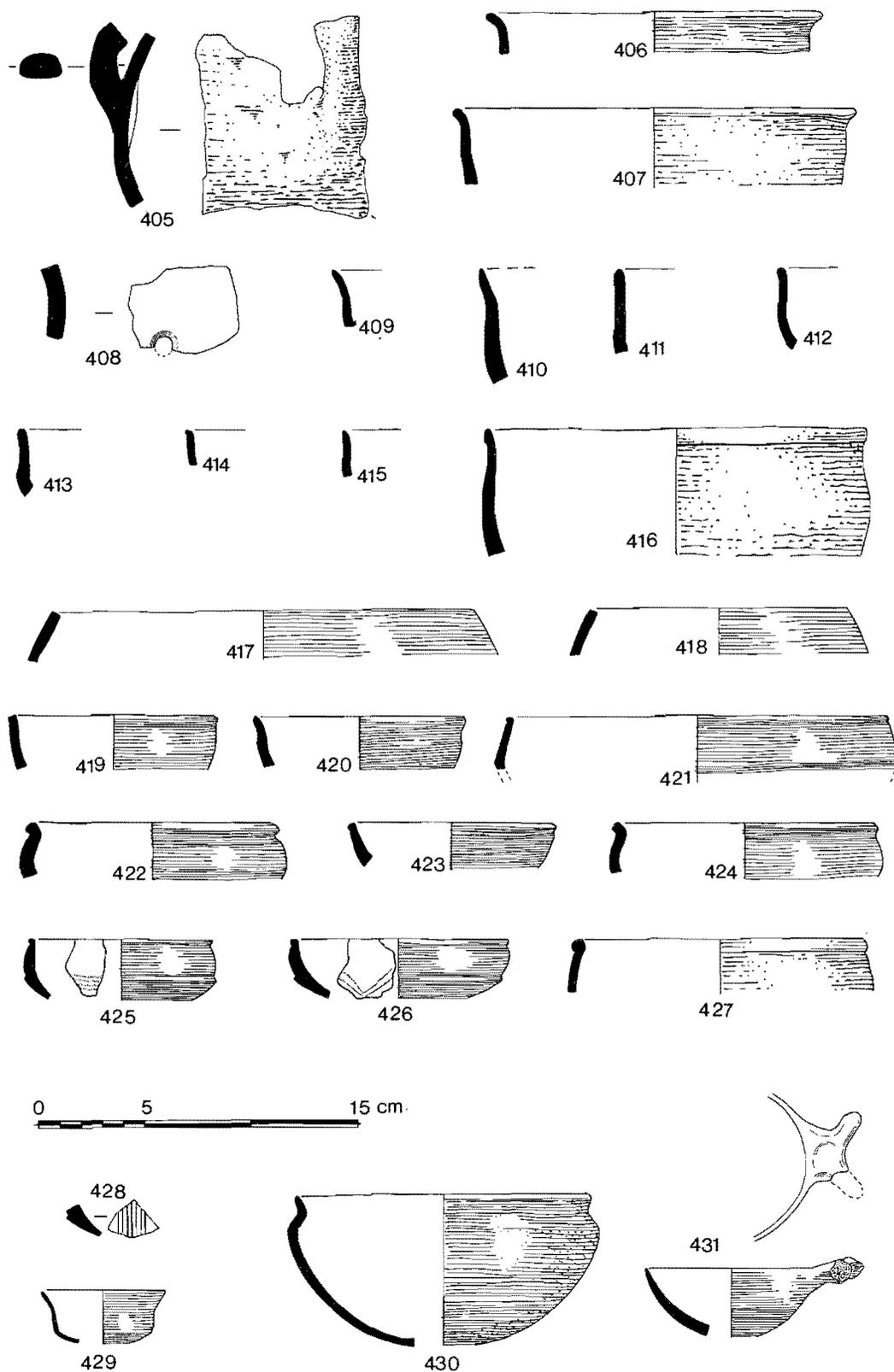


Fig 37 Pottery. Group 7, nos 405-431

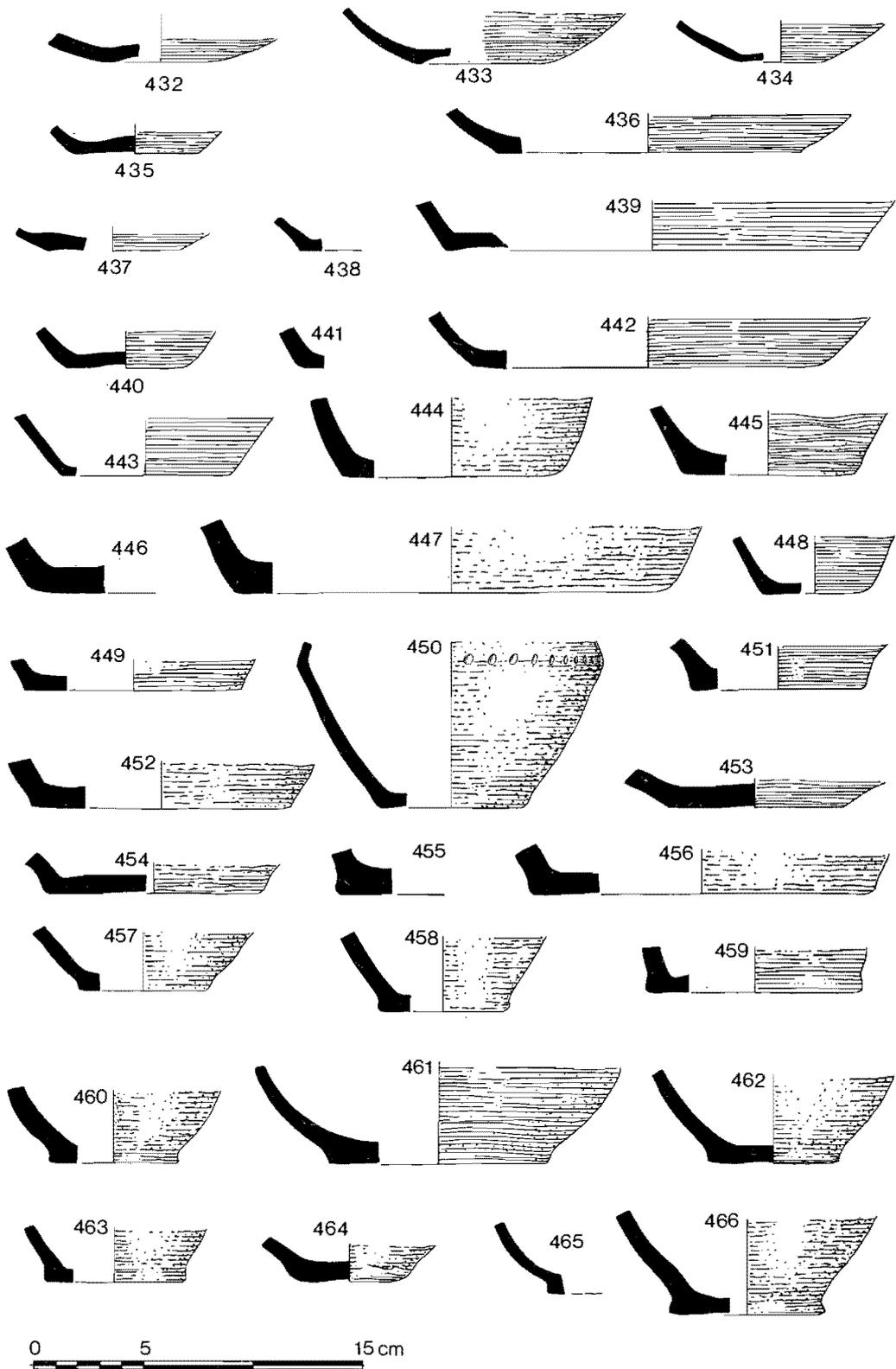
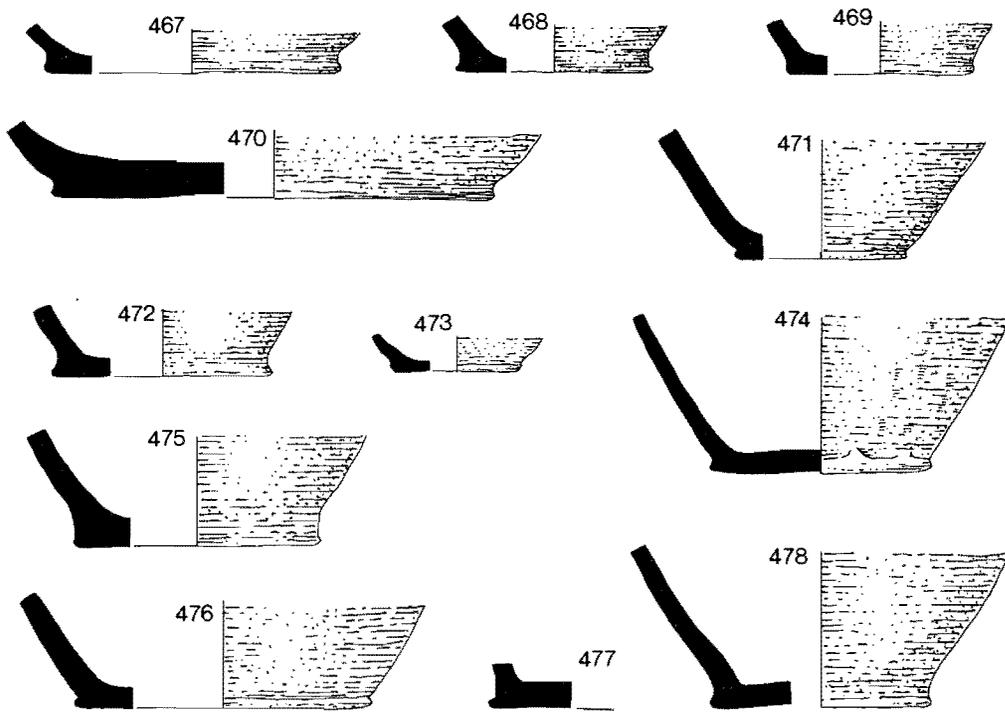


Fig 38 Pottery. Group 7, nos 432-466



GROUP 9

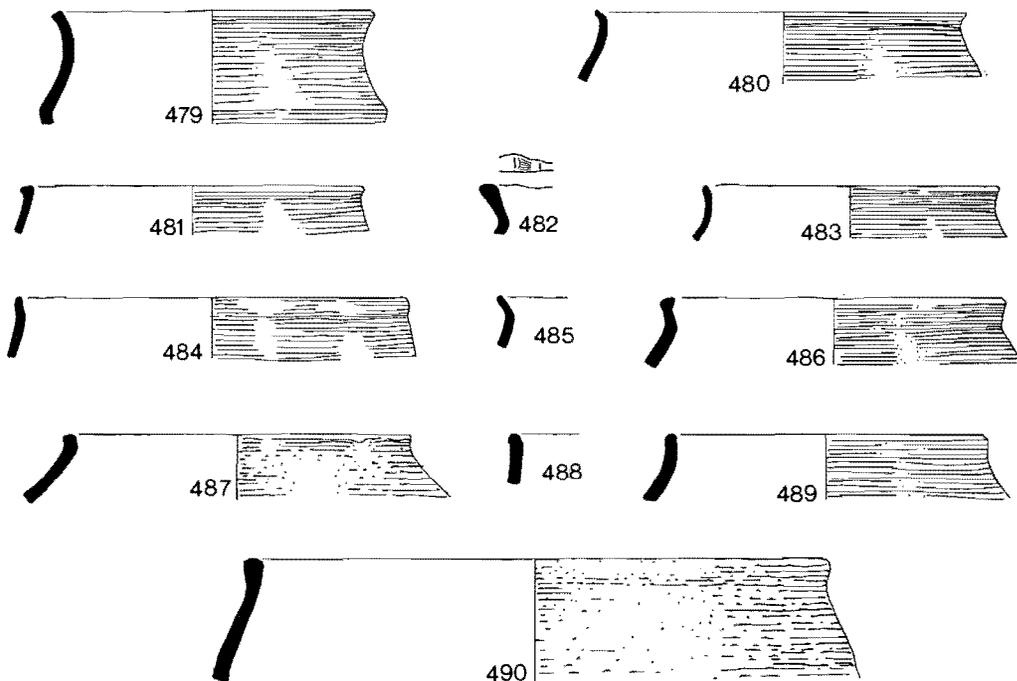


Fig 39 Pottery. Group 7, nos 467-478; Group 9, nos 479-490

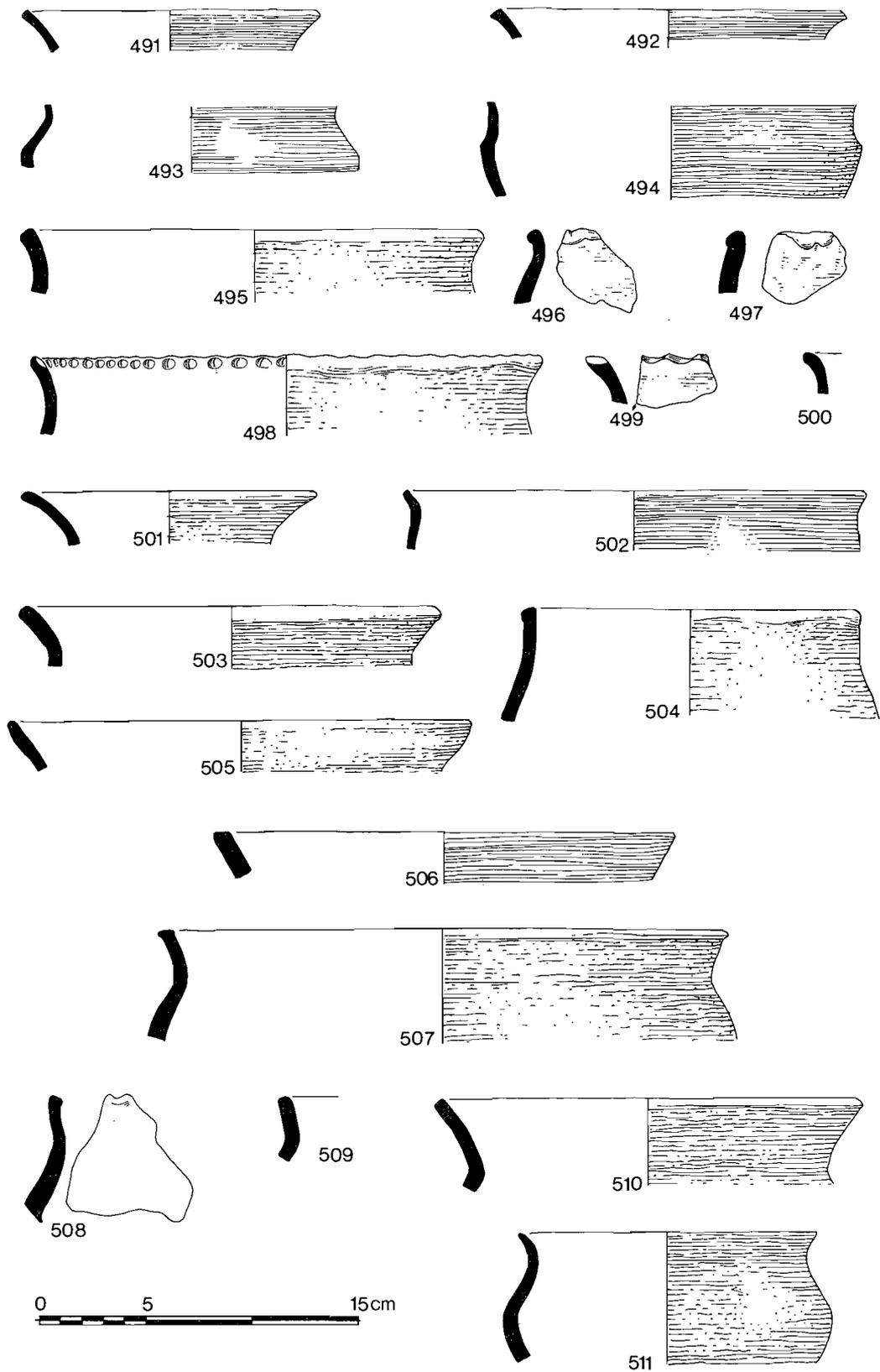


Fig 40 Pottery. Group 9, nos 491-511

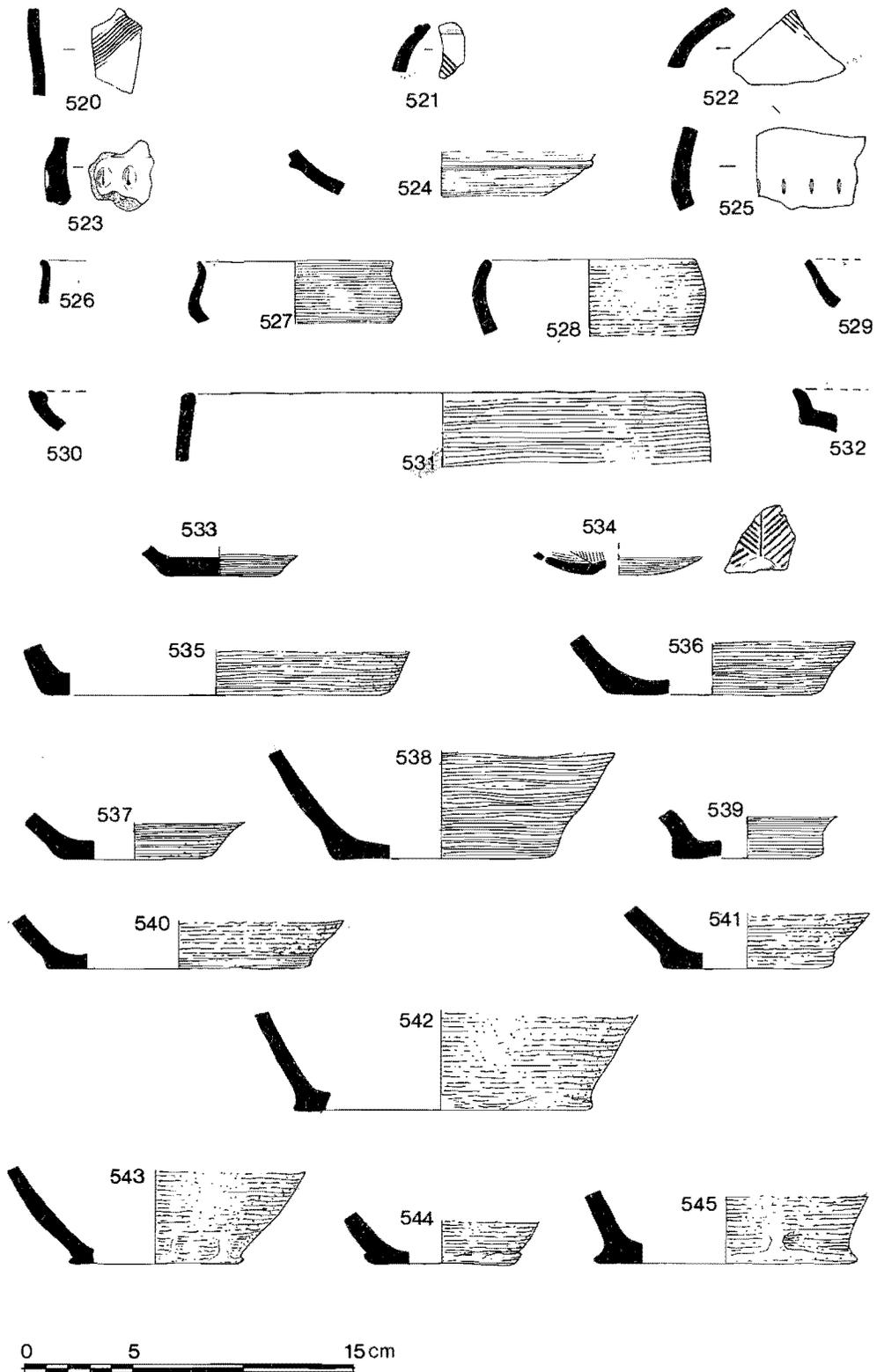


Fig 41 Pottery. Group 9, nos 520-545

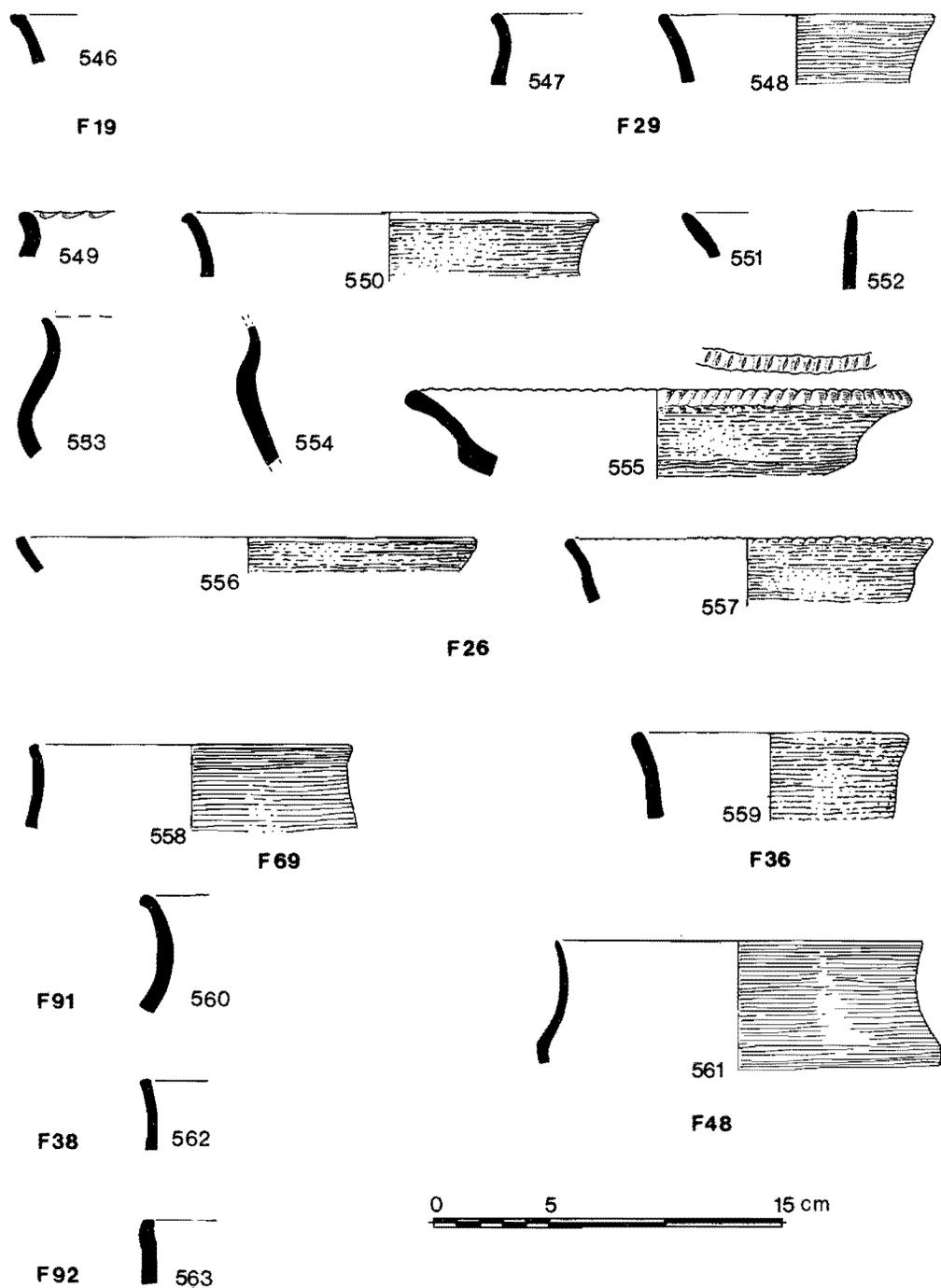


Fig 42 Pottery from features. Nos 546-563

There are other grounds for thinking that the Runnymede assemblage might be slightly earlier than that at Petters, and these are considered below (p 73).

A single sherd in a hard sandy fabric (279) is reminiscent of the fabric from the 'early land surface' at Brooklands, Weybridge (Hanworth and Tomalin 1977). All the sherds are hand raised; thin walls are common and join grooves are occasionally present. Sherd 48 well illustrates the way in which the upper portion of the vessel might be abutted to the body below the shoulder.

In applying the walls of vessels, particularly large coarse jars, to round slab bases the outer face of the vessel might be smeared down on to the circumference of the base giving a splayed effect. It appears, from the heavy flint gritting on some bases, that pots were stood to dry on areas of crushed flint, possibly to prevent them sticking to the ground surface. Attention has recently been drawn to the occurrence of this characteristic at Ivinghoe Beacon, Bucks; Mucking, Essex; Weston Wood, Surrey, and Weybridge, Surrey (Hanworth and Tomalin 1977, 24). Omphalos bases are also present but rare, and occur only in finer fabrics.

Vegetable and finger smearing is visible on a number of sherds as is the apparent use of certain, unidentifiable tools. Outer surfaces may be smoothed and occasionally burnished.

Handles were evidently affixed to the bodies of certain vessels (405) although there is insufficient evidence to reconstruct the exact arrangement. The handles presumably formed simple loops of oval or thick strap section. The large hole in the neck of 408 may have been for suspension, whereas the small perforation in 534 may conceivably be interpreted as a rivet hole for mending a broken fine-ware vessel.

FORMS AND TYPE SERIES

A wide range of forms is represented and a type series has been constructed to facilitate its discussion (Figs 43–45). The series is not comprehensive in that there is certainly more variation present than the numbered types suggest. The small size of many sherds, however, makes reconstruction difficult in several cases. On the other hand, it is equally probable that certain forms, distinguished in the series as separate types, may represent nothing more than permutations of the same basic form, a likelihood confirmed by the range of intermediate variations. The series discussed below, therefore, should not be seen as a rigid ordering of the pottery assemblage but rather as an aid to the discussion of certain significant combinations of typological features.

Fig 46 shows the occurrence of the types, and demonstrates the association and frequency of certain decorative elements. The percentages are approximate and relate to the total assemblage. The qualifications of the preceding paragraph apply and a number of sherds (55%) cannot be assigned with any certainty to a particular group. Nevertheless, certain types are more easily distinguished than others and it is felt that for the bowl series (Types 1–10) in particular, the cited frequency is an accurate reflection of the true situation. The figures for the larger jars (Types 13–15) and the concave-necked jars (Type 17), and to a lesser extent the biconical bucket jars (Type 12), are almost certainly underestimated and it is with these groups that the unclassified vessels belong.

Type 1 — Shouldered beakers with flaring rim

These 'beakers' are distinguished as such by their small size and are represented here by two examples only (1, 37). The type is not a common one but may be found in the small flared-rim vessels from Staple Howe, Yorks (Brewster 1963, fig 37:3), possibly Court-St.-Etienne, Belgium (Mariën 1958, fig 15:12), and Long Wittenham, Berks (Harding, D. W. 1972, pl 50E:86f). Staple Howe and *tombelle* I at Ferme Rouge, Court-St.-Etienne, have HaC associations, while Long Wittenham may provide a somewhat later context (see below, p 73).

Type 2 — Extremely thin-walled carinated bowl with flaring rim

Extremely thin carinated bowls with flaring rims are also present at Long Wittenham and while none is as small as 429, some of the profiles are nevertheless reminiscent of this unusual example from Runnymede Bridge.

Type 3 — Handled hemispherical cup

Small hemispherical cups are not in themselves unusual and occur sporadically on the continent in HaB/HaC contexts. The treatment of the handle on 431, however, makes this example unique. The horns are at first glance reminiscent of north Italian Bronze Age ceramics but the inclination of the handle (only slightly above the horizontal) makes this derivation unlikely (L. Barfield, D. Ridgway, pers comm). The profile of the cup itself, but with a ring handle, is closely paralleled in the Netherlands at Massemen (grave 5) in a HaB context (Desittere 1968, fig 86:6), and at St. Vincent, Belgium, in a context assigned by the excavator to the earliest HaC phase (*tombelle* 18, Mariën 1964, 39ff). Interestingly, a number of larger vessels from the St. Vincent cemetery have bosses, some of which show a tendency towards a horn-like treatment. This is true of the jar from *tombelle* 45, associated with another ring-handled cup (Mariën 1964, fig 54) and, in particular, of *tombelle* 24 (Mariën 1964, fig 29). Hemispherical cups were sometimes produced in bronze. A bronze example of a capacity comparable to that from Runnymede occurs in the HaC, Steinkirchen, south Germany, cremation grave (Balkwill 1973, 448) which also contains a horned bronze attachment, whilst two bronze biconical cups with horned handles occur in association with LBA 2 metalwork at Glentanar (Pearce 1970–1).

Type 4 — Biconical bowls: (a) plain rim (b) beaded or developed rim

The biconical bowl with a relatively short neck and plain or squared rim is represented by five possible examples at Runnymede. Elsewhere the form is not common although represented by one possible example at Eldon's Seat, Dorset (Cunliffe and Phillipson 1968, fig 19:197), at Minnis Bay, Kent (Worsfold 1943) and at Petters Sports Field, Egham, Surrey, by a small number of vessels (O'Connell, forthcoming). A variation on this form, the biconical bowl with beaded or short everted rim (Type 4b) occurs only once, or possibly twice, at Runnymede Bridge (421, 373) whereas, significantly, the form is amongst the most numerous of all types at Petters. The form is also well represented at Minnis Bay, and occurs at Staple Howe, Yorks (Brewster 1963, fig 35:4), and West Harling, Norfolk (Clark and Fell 1953, fig 16:97). Sherd 373 may be a decorated variant of this form and as such can be paralleled at Kimmeridge, Dorset (Cunliffe and Phillipson 1968, fig 23:12, 27). The decorated series has recently been discussed by Barrett (1975b, 108, 110). Minnis Bay and Petters Sports Field are both loosely associated with Carp's Tongue material and the relationship of these sites, and of Eldon's Seat and Kimmeridge, to Runnymede Bridge is discussed below (p 74).

Type 5 — Open-mouthed bowls with straight sides: (a) plain rim (b) beaded rim

Type 6 — Open bowls with outward-curving rims

Bowl forms 5 and 6 are relatively indistinctive, simple vessels and occur quite widely at, for example, Ivinghoe Beacon, Bucks (Cotton and Frere 1968), a site with Ewart Park metal associations.

Type 7 — Round-bodied bowls: (a) plain rim (b) beaded or developed rim

7a is again a very basic form, while in 7b the globular body is elaborated with a slightly out-turned or beaded rim and is usually found in a finer fabric. This latter treatment of the rim is very difficult to parallel at the early date which the majority of the material would seem to demand.

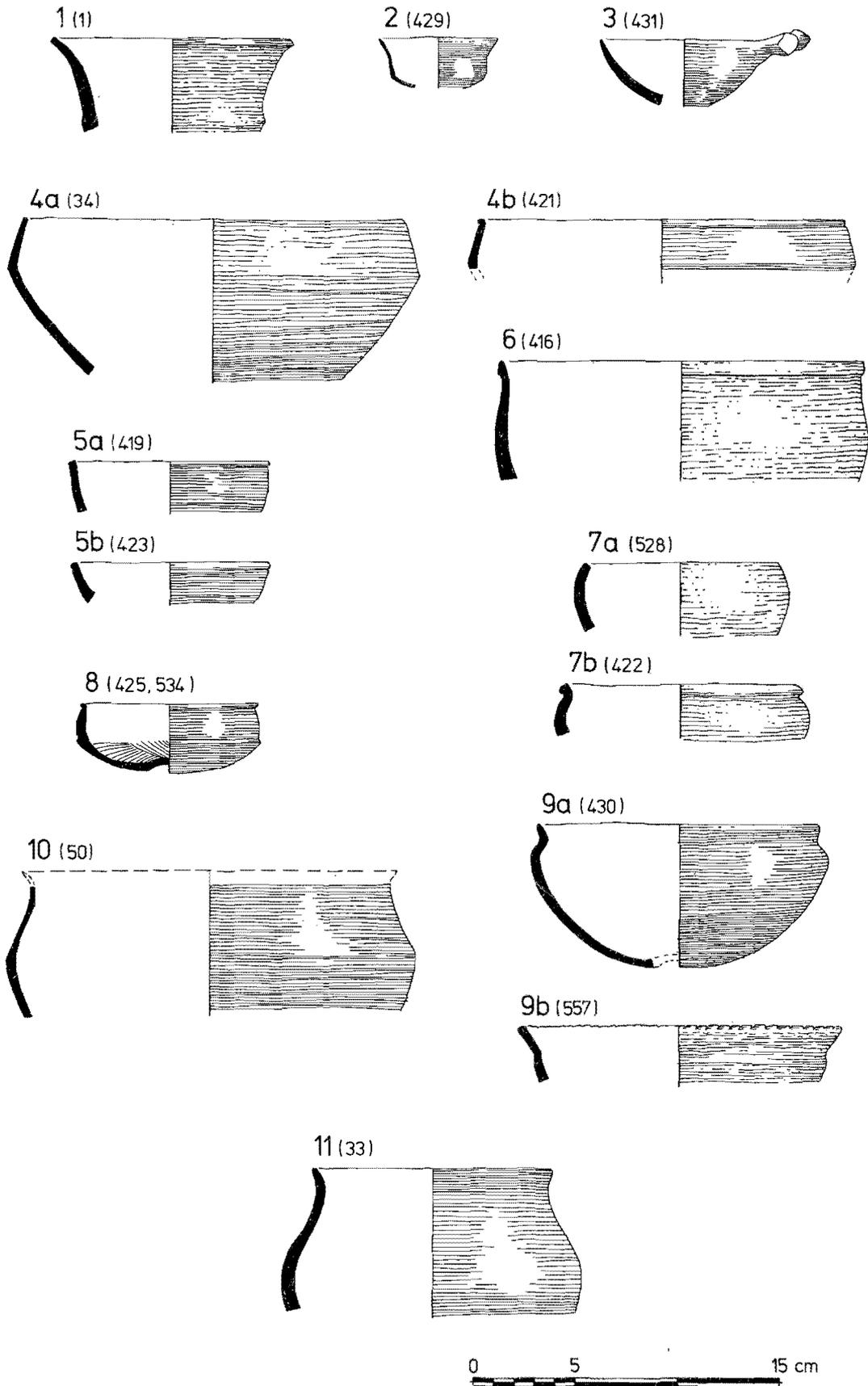


Fig 43 Pottery. Types 1-11

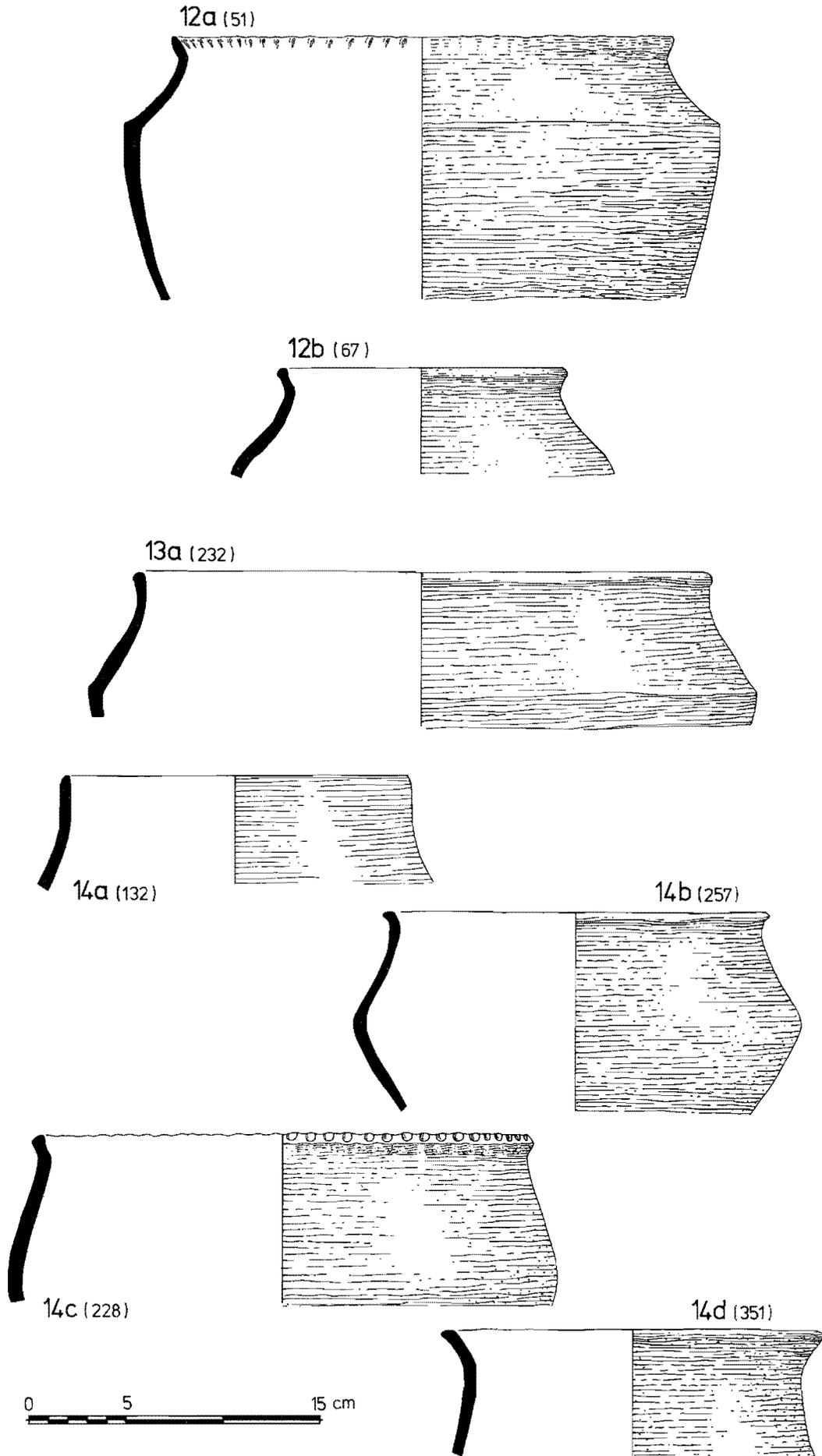


Fig 44 Pottery. Types 12-14

Type 8 — Beaded rim bowls with bowed sides and flanged carination

The characteristics are a beaded rim, globular body above a distinct 'flange' rather than carination, and lightly grooved decoration on the lower part of the interior (425, 426 and 428). The base fragment 534 may belong to this series in which case an omphalos base may also be characteristic of the type. Similar ideas may likewise have found expression as variations on the biconical series at Kimmeridge (Cunliffe and Phillipson 1968, fig 23:16, 22) in a less well defined form and in a context considered by Cunliffe to pre-date his Eldon's Seat II assemblage. The closest parallel, however, would seem to be a single sherd from Weybridge, Surrey (Hanworth and Tomalin 1977, fig 19:146).

Type 9 — Shouldered bowls: (a) short neck (b) flaring neck

Shouldered bowls of Types 9a and 9b seem to have enjoyed a long currency. They are present at Ivinghoe during the Ewart Park phase and at Staple Howe in HaC, and the flaring rim variant bowl continues into the Iron Age developing a pedestal base in its later stages.

Type 10 — Fine ware bipartite bowls with tall necks above distinct carinations, the rim variously treated

Type 10 defines a distinctive class of bipartite bowl, well illustrated in the Eldon's Seat II assemblage (Cunliffe and Phillipson 1968, fig 16:110, 130). While frequently burnished or smoothed at Runnymede Bridge they lack the haematite coating so prevalent at Eldon's Seat. Interestingly, an uncoated bowl of this type occurs in a period I context at the same site and does suggest an earlier origin for this series (Cunliffe and Phillipson 1968, fig 13:75).

The profile of these bowls owes something to the more strictly biconical form with everted rim and in this respect it is interesting to find both these forms elaborated with horizontal furrowing in the Wessex–Upper Thames region (Harding, D. W. 1974, fig 43). Examples of these, often haematite coated, vessels do in fact occur alongside the bipartite bowls at Eldon's Seat (Cunliffe and Phillipson 1968, fig 17:140–143). D. W. Harding has hinted (1974, 149–153) that a chronological development may be taking place from the furrowed bowls with in-turned neck and short, sharply-everted rim (the biconical form reproduced in bronze at Welby, Leics), through furrowed bowls with tall concave necks and simple rims, until finally the furrowing (which by this stage had deteriorated into simpler linear incisions) disappears altogether. It is this final stage which is represented at Eldon's Seat and perhaps, by analogy, at Runnymede Bridge. We have seen, however, that antecedents of this series may be present in a much earlier context (Cunliffe and Phillipson 1968, fig 13:75). Furthermore, at Runnymede Bridge, bipartite bowls with in-turned necks and short everted rims (53, 203), which seem to have more in common with the Welby type, occur alongside those with tall concave necks. Variation in the treatment of the rim and the curvature of the neck produces intermediate vessels that are likely on this site to be contemporary with the two extremes. The variations in form, therefore, need not indicate a chronological development, and continental assemblages seem to bear this out; see, for example, the range of forms decorated with furrowing at Courchapon (Sandars 1957, fig 53:9–11). The Welby bowl is in bronze, furrowed, and occurs in a hoard containing LBA 2 metalwork (Powell 1948).

Type 11 — Jars with smoothly curving profiles

Type 11 is characterised by a small number of jars with smoothly curving or 'S' shaped profiles. They appear on the continent in the late Urnfield period and also occur in HaC contexts.

*Type 12 — Biconical bucket jars and related smaller jars with short everted rims: (a) angled shoulders (b) rounded shoulders**Type 13 — Biconical bucket jars and related smaller jars with upright rims: (a) angled shoulders (b) rounded shoulders
Necks may be either short or tall*

The jars of Types 12 and 13 are variations on the same basic form. These high-shouldered, bucket-shaped vessels can be argued to have affinities with metalworking traditions. Bronze buckets (eg Heathery Burn, Co. Durham, *Inv Arch* GB 55, 1968) may have exerted an influence on specific features of the pottery vessels although the general development can be argued to be reciprocal. Certainly the origins of this type appear in very early contexts (Mam Tor, Derbys, Coombs 1976; Eldon's Seat I, Cunliffe and Phillipson 1968, fig 10:2, 6), and continue to be produced through the Late Bronze Age (Grimthorpe, Yorks, Stead 1968, fig 7:16; Ivinghoe, Cotton and Frere 1968, fig 16:1, 11, 12) and into the Early Iron Age (St. Vincent, Mariën 1964 — *tombelle* 45 associated with a handled cup, *tombelle* 67 associated with an iron razor; Staple Howe, Brewster 1963, fig 33:2; Scarborough, Yorks, Challis and Harding 1975, fig 42:11). These high-shouldered forms, in fact, occur in a range of sizes down to quite small jars and deep bowls which nevertheless preserve the essential elements of the larger vessels, a feature discernible at other sites of the period. Type 12 with its sharply everted rim is not so readily paralleled as Type 13. The Massemen cemetery (HaB–D) produced, however, a very similar jar to Runnymede Bridge 67 (Desittere 1968, fig 87:2). The tall-necked vessels with finger tip and nail decoration from the upper Thames Valley illustrated by D. W. Harding (1972, pls 52, 53) as 'native' variations on angular 'Marnian' jars may be seen, rather, as a development of this bucket-jar tradition and so be included in the series.

Type 14 — Biconical/round-bodied jars: (a) cylinder neck (b) short neck, beaded rim (c) short everted rim (d) flaring rim

A number of the Runnymede Bridge biconical jars have tall cylindrical or slightly flaring necks. The fragmentary nature of many of these vessels makes reconstruction difficult. Some examples may not belong to the bucket series at all and it should be noted that biconical jars with tall cylindrical necks occur in HaB/C contexts in the Low Countries (Desittere 1968, figs 87:4, 85:1, 4; Mariën 1958, fig 28, *tombe plat* IV) although, again, the form has a long continental ancestry. Runnymede Bridge 257 is a variation on this form (Type 14b) with short neck and slightly beaded rim, and parallels are to be looked for, again, in the urnfields of the Low Countries.

Sub-types c and d of this biconical form are distinguished by short everted rims and flaring rims respectively. In Germany and the Low Countries, Type 14c almost invariably has finger tip or nail decoration on the rim, associated at Mainz-Kostheim, for example, with a roll-head pin (Herrman 1966, Taf 95c). In Britain, 14d is represented at Scarborough in an LBA 2/3 context (Wheeler 1931, fig 21:25).

Type 15 — Slack or hump-shouldered jars with upright or slightly everted rims, and necks of varying length: (a) short (b) long

Jars or bowls with necks of varying length rising from slack or humped shoulders are here categorised as Type 15. In some cases the neck may be extremely short and slightly everted (70, 71). This form occurs at Ivinghoe (Cotton and Frere 1968, fig 17:14, 16), Scarborough (Challis and Harding 1975, fig 43:13), Staple Howe (Brewster 1963, fig 35:6), and possibly at West Harling (Clark and Fell 1953, fig 12:18). The bowl or jar form with tall or medium neck flaring directly from a rounded shoulder (eg 128, 361, 263) is also represented at Ivinghoe (Cotton and Frere 1968, figs 17:19, 18:71, 19:85, 20:119), Staple Howe (Brewster 1963, fig 48:4), Eldon's Seat II (Cunliffe and Phillipson 1968, fig 18:179), and on the continent at St. Vincent (Mariën 1964, *tombelles* 42, 57 and 60) and Court-St.-Etienne, Belgium (Mariën 1958, fig 13:4). Also included in this type might be those vessels with a somewhat more clearly defined shoulder (347, 349, 350) with parallels at West Harling (Clark and Fell 1953, fig 14:54, 56) and again at St. Vincent (Mariën 1964, *tombelles* 7 and 21). The material

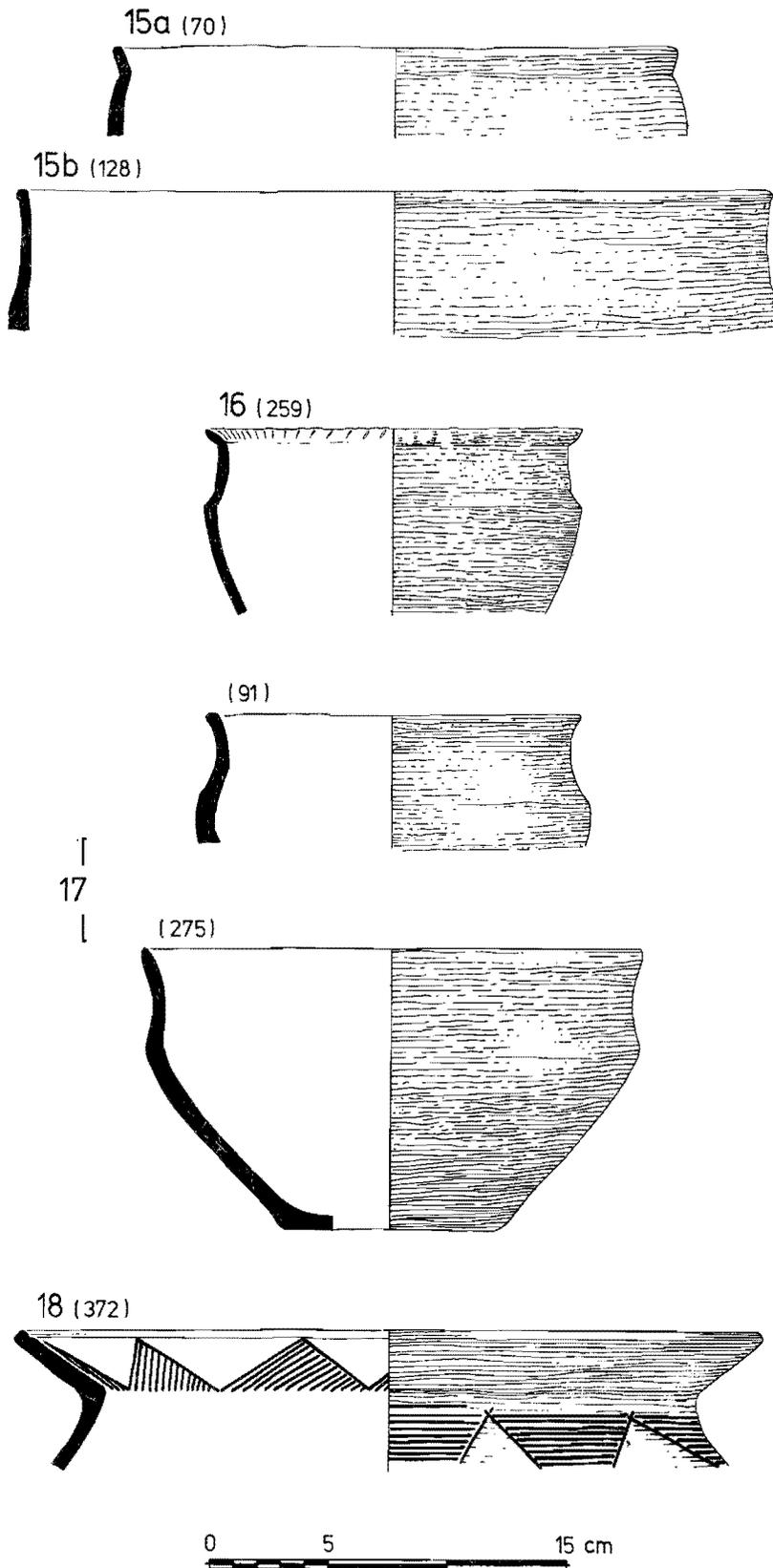


Fig 45 Pottery. Types 15-18

from St. Vincent and Court-St.-Etienne was considered by Mariën to fall within HaC (St. Vincent, *tombelles* 7, 42, 57 and 60) and HaD (St. Vincent 21 and the Court-St.-Etienne example).

Type 16 — Jars/bowls with distinctly angled shoulders and upright necks

These vessels are characterised by an upright neck above an angled shoulder, and a slightly out-turned rim with, at Runnymede, finger tip or nail decoration (eg 87, 89, 259). The type is not very well represented elsewhere but may occur at Staple Howe (Brewster 1963, figs 36:7, 58:1), Scarborough (Challis and Harding 1975, fig 43:3), Weybridge (Hanworth and Tomalin 1977, fig 17:85), and in an apparently later context at Darmsden (Cunliffe 1974, fig A11:9).

Type 17 — Jars/bowls with distinct shoulders and concave necks

These bowls with concave necks above the carination are related to Type 16 and occur widely. They are found at Grimthorpe (Stead 1968, fig 7:11), at Ivinghoe in a Ewart Park context (Cotton and Frere 1968, fig 20:110) and at Staple Howe in a HaC context (Brewster 1963, fig 37:2). Bishop (1971, 16) has argued for a HaD/La Tène I currency for these bowls in Surrey. It would seem, however, that the form first appears against a late Urnfield background on the continent and that the later types can be distinguished from those in earlier contexts by a shallower profile and a wide mouth. A further stage in this development is the adoption of the pedestal foot, in common with later examples of Type 9. It might be worth reconsidering some of the Surrey carinated bowls with this in mind, particularly those from sites with demonstrably early associations (eg Coombe Warren, Surrey, Bishop 1971, fig 5:38). The majority of Type 17 bowls from Runnymede are of the taller profile and are best paralleled at Staple Howe (Brewster 1963, fig 37:2), and at Court-St.-Etienne associated with a HaC razor (Mariën 1958, fig 24). Sherd 275, however, might be seen to have more in common with the later development and a similar, though slightly shallower, bowl from St. Vincent was considered by the excavator to be of HaD date (Mariën 1964, *tombelle* 41).

Type 18 — Fine ware vessels with markedly everted rim

Type 18 characterises a series of jars in a distinctive, extremely fine, gritless fabric. Four rim sherds survive (148, 369, 371, 372), all of which are markedly everted, and a groove on the inner face of the lip defines a slight bead. A fifth rim (373) in this fabric may be from a biconical bowl of Type 4b. 369 and 372 are decorated inside the rim with a pattern of incised hatched triangles while 371 carries a decoration of combed wavy lines in a similar position. Most may originally have been inlaid with the white paste which survives, for example on 372. 148 may have been plain. 372 carries hatched triangles on the outer body below the neck and although insufficient survives to be sure of this, it is probable that the other jars were decorated externally. Although the decorative technique is paralleled in a number of Late Bronze Age/Early Iron Age contexts and on a variety of vessels, the form suggested by the Runnymede rim sherds is unusual. While internal decoration may occur on shallow dishes and external decoration on jars, the combination of both these features on one vessel is unparalleled. Reconstruction of a complete profile is not, therefore, feasible. Unfortunately no basal sherds were recognised. Fragments from two vessels have quite distinct carinations (377, 384). These, however, while exhibiting identical decoration to the remaining sherds are in a fabric gritted with very fine, sparse, flints and might be said to stand apart from the main series. The decoration of 372 is arranged on the inside of the rim and externally below the neck. The same arrangement might have existed on, for example, 371. A reconstruction of 371 based on the very large sherd 378 might, therefore, give an ovoid or somewhat biconical profile. Compare, also, 384 with the biconical jar from Destelbergen, Belgium (Desittere 1968, fig 85:2), on which the chevrons are ranged just above the

carination. Alternatively, two sherds in this fabric (521, 524) are cordoned. The former has incised decoration ranged beneath a cordon and possibly foreshadows the decorative elements present on the later series of cordoned haematite bowls (Harding, D. W. 1974, 164–7).

DECORATION

A variety of decorative treatments are employed on the Runnymede pottery, ranging in subtlety from simple finger-pressed rims to neatly executed incised decoration inlaid with white paste. At most, something like 22% of the vessels were decorated in one way or another. This represents a maximum figure, however, as there is a possibility that some of the decorated body sherds belong to jars with decorated rims. The true frequency of decoration should lie between 16% and 22%. Decoration is confined to certain types of vessel (Fig 46) and, furthermore, specific treatments are even more restricted.

Finger-tip and finger-nail impressions are the most common form of decoration, occurring on between 9% and 13% of the total number of vessels and occurring most frequently on Type 15 jars. Most commonly the rim is treated in this way, and the method varies from a neat row of nail marks inside the rim (51), to deeper finger indentations (89) sometimes achieving a cable effect. Finger-tipping also occurs on, or just below, the shoulder or carination of some vessels (278, 399) and to a lesser degree on other parts of the body (221). On no occasion can finger-tipping be shown to be present on both the rim and the shoulder of the same jar although this possibility should not be excluded and does occur at, for example, Ivinghoe. Only one example of an applied cordon with finger-tip impressions is present (402) although a plain cordon occurs on 154 and on the fine-ware sherds 524 and 521. Some doubt has been attached to the continuity of finger-tipping as a form of decoration from its Middle Bronze Age associations and in some areas there seems to be a hiatus before the reappearance of this treatment on new jar forms in a Late Bronze Age context (Barrett 1975b, 107; Alcock 1973, 119–120). This form of decoration continues into the Iron Age but for how long is, at the moment, uncertain. In one instance a jar with finger-pressed rim from Weybridge was thought by the excavators to represent a survival of this technique into the earliest Iron B phase at the site (Hanworth and Tomalin 1977, 40). The percentage of finger-tipped pottery from Runnymede is a moderate one and this treatment is apparently less prolific than in the HaC assemblage from Staple Howe (Brewster 1963) or the Early Iron Age pottery from All Cannings Cross, Wilts (Cunnington 1923, 33). The frequency of finger-tipping may, however, compare with the material from Ivinghoe Beacon (Cotton and Frere 1968) although in each case (with the exception of All Cannings Cross where the frequency is tabulated) a true assessment is complicated by selective publication of decorated sherds.

After finger-tipping, the decorative technique most commonly employed was that of incised designs, either hatched triangles or combed wavy lines. It may be inferred from the small number of sherds where this survives that white inlay was used to define the pattern. This form of decoration at Runnymede Bridge is almost invariably found on very fine, virtually gritless fabric, its colour and hardness varying with firing conditions from black to buff and from slightly soft to very hard with a high burnish. Incised decoration of a different character is found on the body sherds 387 and 388, and cross-hatching occurs on the biconical jar 63.

Incised hatched triangles as a decorative motif can be traced on pottery at varying points during the 2nd millennium. In a form relevant to the present discussion they make their appearance in the Urnfield cultures of the Rhineland in HaA. By HaB and continuing into HaC meandering combed lines and swags occur beneath horizontal combing or furrowing on the shoulders of biconical and smoothly curving vessels, eg at Birgelen (Desittere 1968, fig 28:5), and Ferme Rouge, Belgium (Mariën 1958, fig 17:15). From British contexts similar decoration is known from Kimmeridge, though in greater variety (Cunliffe and Phillipson 1968, fig 23), from Rams Hill, Berks

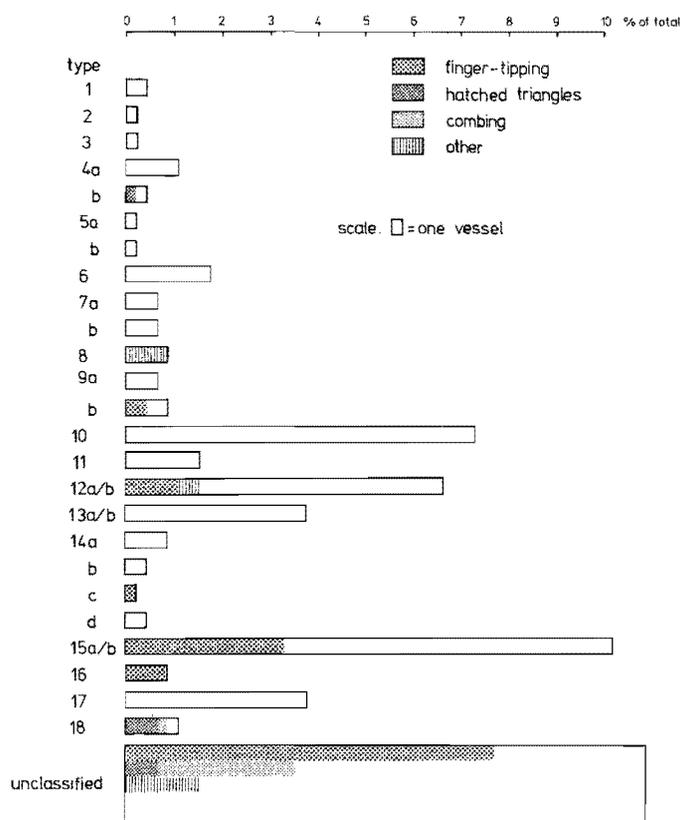


Fig 46 Relative frequencies of pottery types

(Barrett 1975b, fig 3:6) and possibly from Ivinghoe (Cotton and Frere 1968, figs 16:8, 18:55, 56). Similar ideas are also apparent in a stratified context at Crickley Hill, Glos (Dixon 1971, fig 8:6, 8–13), and unstratified from a number of Thames Valley sites, in particular Standlake, Bampton and Chinnor (Harding, D. W. 1972, pl 46:47, 56), and, spectacularly, from All Cannings Cross (Cunnington 1923). In general terms the restrained decoration of the earlier period may be seen to give way to flamboyance during HaC and later. Unfortunately, insufficient survives of the Runnymede pottery on which this decoration occurs to reconstruct adequate profiles of the vessels and it is this very combination of decoration and form that is necessary to place such material in its chronological sequence.

DATING

The preceding discussion has considered certain specific elements of the Runnymede Bridge assemblage. To place the site in a chronological perspective it is necessary to consider the pottery as a whole rather than concentrate on isolated elements within the group. The stratigraphy of the site suggests that this is a largely contemporaneous assemblage and that extremely fine vessels are found in association with very coarse jars. Hence the distinction must be functional and economic rather than simply chronological.

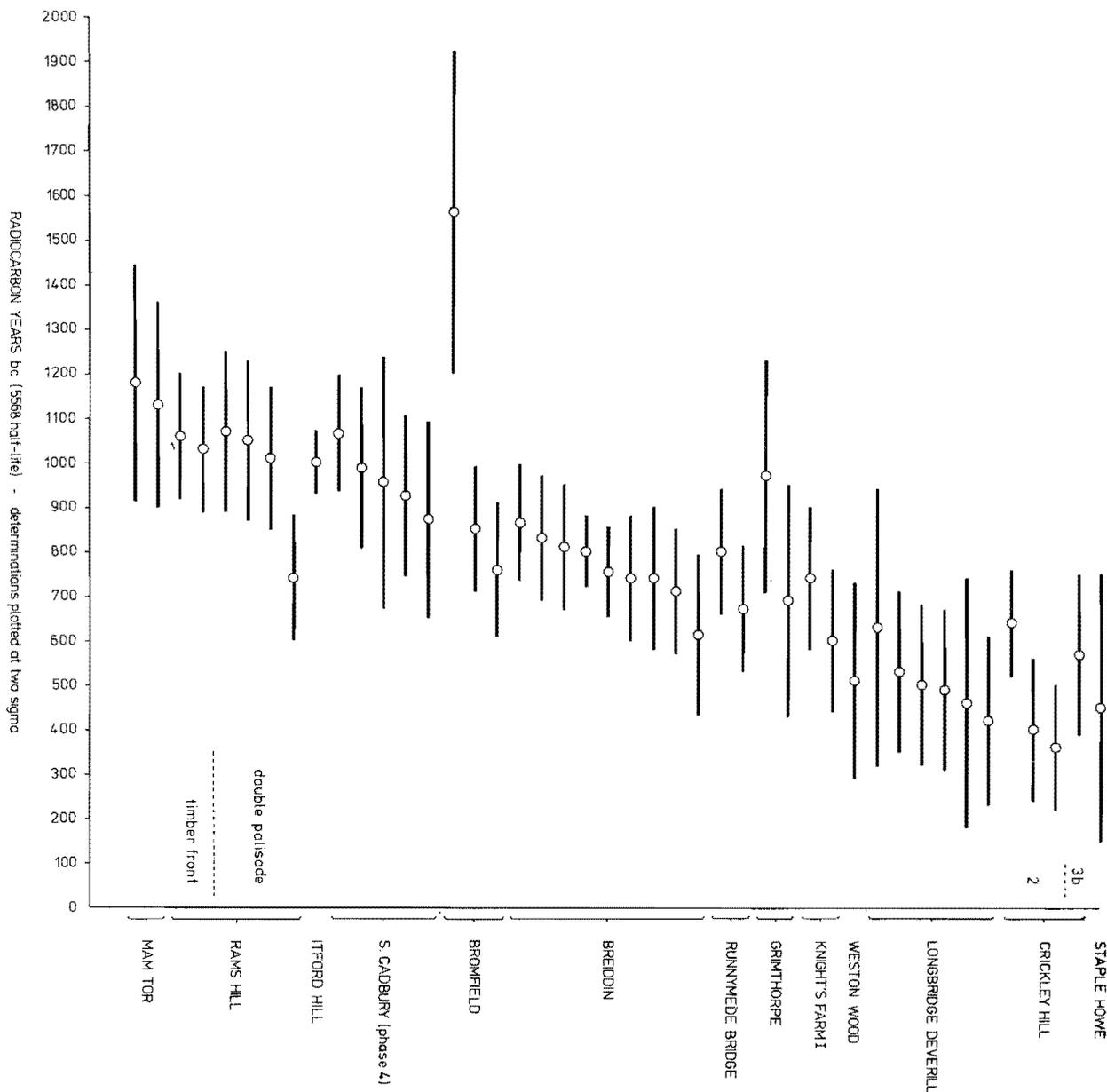
Unfortunately, very little comparable material is known from excavated contexts in Britain and still less with any datable associations. On the continent a great deal of material exists but again dating has often relied on typological considerations. In a series of recent papers (1975b, 1976a, and forthcoming), Barrett has drawn attention to the evidence for indigenous pottery manufacture during the first quarter of the 1st millennium bc developing out of 2nd millennium Deverel-Rimbury traditions and giving rise, in the 8th century or so, to a range of pottery forms hitherto characterised as 'exclusively Iron Age'. This essentially typological assessment of the material finds some support in a small series of radiocarbon dates (Fig 47).

At Mam Tor, Derbys (Coombs 1976), biconical tubs, high-shouldered bucket jars, and plain jars with hooked-over rim occur on a site producing radiocarbon determinations of 1130 bc and 1180 bc. At Rams Hill (Bradley and Ellison 1975), similar forms may be related to a series of dates in the 11th century bc and are superseded by finger-tipped coarse ware and finer decorated bowl forms, some with white inlay. Biconical tubs and plain hooked rim jars from South Cadbury, Somerset, occur in association with a series of dates centring on the 10th century bc (Alcock 1973, fig 16). These forms are succeeded by finger-tipped and shouldered jars, high-shouldered, biconical, bucket jars, and fine bowl forms. The relationship of metalwork and pottery at Cadbury is not secure (Alcock 1973, 114, 120); a gold 'Covesea' bracelet, however, and Ewart Park bronzes may pre-date two HaC razors from the site.

The pottery from Itford Hill, Sussex (Burstow and Holleyman 1957) with a radiocarbon determination of 1000 bc \pm 35 has affinities with Deverel-Rimbury material but includes variations which Barrett (1976a, 294) has suggested stand transitionally between the Deverel-Rimbury series and the later plain jars. The Bromfield, Salop, cemetery poses its own problems, not least on account of the divergence in the radiocarbon evidence from the site. An urn associated with a determination of 762 bc \pm 75 (Stanford 1972, fig 13) can be paralleled, without the decoration, at The Breiddin, Powys, where much of the pottery finds similarity in the urn tradition while nevertheless introducing some innovatory forms. A series of radiocarbon dates from this phase at The Breiddin concentrate in the 9th and 8th centuries bc in association with a number of Ewart Park bronzes (Musson, forthcoming).

Two dates from Grimthorpe (Stead 1968) reflect, as Bradley and Ellison note (1975, 167), the observed ditch stratigraphy and the later of the two was associated with pottery forms, many of which can be paralleled at Runnymede. In particular the 'situlas' and biconical jars should be noted, although decoration other than sparse use of finger-tipping is absent from Grimthorpe. The earliest pottery from Longbridge Deverill, Wilts, included large shouldered jars with incised and inlaid geometric decoration (Hawkes, S. C. 1961). Furrowed, haematite coated, bowls occurred in the same context from which a radiocarbon result of 630 \pm 155 bc was obtained. Further dates relate to stratigraphically later material from the same site (Fig 47). Incised and inlaid decoration occurs at Runnymede on fine jars although the absence of haematite may suggest an earlier date. A similar decorative treatment occurs at Crickley in association with plain and finger-tipped forms. Some uncertainty surrounds the interpretation of radiocarbon evidence from this site, however (Dixon 1973, 11).

At Staple Howe, a wide range of pottery forms included high-shouldered bucket jars and a variety of bowl forms. Decoration consisted principally of finger-tipping on rim and shoulder, and occasionally on applied cordons. A HaC razor from an early phase along with a second Hallstatt razor and a massive moulded socketed axe date the site and represent new influences, as do certain ceramic elements (eg Brewster 1963, fig 35:4). Much of the pottery, however, perpetuates earlier features and the remaining metalwork could be equally at home in a Late Bronze Age context. Indeed, the third razor from the site (Brewster 1963, fig 61:2) is a reworked Danish/north-west German type (*Rasiermesser mit Schleifengriff*) of Montelius IV/V (Baudou 1960, 32), and emphasises the hazards of defining horizons where continuity and innovation exist side by side. The radiocarbon determination of 450 bc \pm 150 from charred grain seems low under the circumstances. Grain also provided the material for the date of 510 bc \pm 110 from Weston Wood, Surrey, where coarse jars occur alongside finer wares, and forms include carinated bowls and shouldered jars with finger-tipped decoration (Harding, J. 1964). This pottery occurred in association with domestic and industrial material characteristic of the Late Bronze Age, including cylindrical loom weights, copper ingots, and a bronze awl. It is reasonably clear, therefore, that a variety of domestic pottery was in use by the



Mam Tor	1180 ± 132	Birm 202	Breiddin	868 ± 64	BM 880	Longbridge Deverill	630 ± 155	NPL 105
	1130 ± 115	Birm 192		828 ± 71	BM 879		530 ± 90	NPL 104
Rams Hill	1060 ± 70	HAR 197		810 ± 70	HAR 1616		500 ± 90	NPL 106
	1030 ± 70	HAR 461		800 ± 41	BM 878		490 ± 90	NPL 109
	1070 ± 90	HAR 228		754 ± 50	BM 798		460 ± 140	NPL 108
	1050 ± 90	HAR 231		740 ± 70	HAR 1615		420 ± 95	NPL 107
	1010 ± 80	HAR 229		740 ± 80	HAR 1761			
	740 ± 70	HAR 230		710 ± 80	HAR 1223	Crickley Hill 2	640 ± 60	HAR 392
				610 ± 90	HAR 1224		400 ± 80	HAR 394
Itford Hill	1000 ± 35	GrN 6167	Runnymede Bridge	800 ± 70	HAR 1834		360 ± 70	HAR 393
				670 ± 70	HAR 1833	Crickley Hill 3b	570 ± 90	HAR 391
South Cadbury (phase 4)	1064 ± 75	SRR 442	Grimthorpe	970 ± 130	NPL 137			
	985 ± 90	I 5973		690 ± 130	NPL 136	Staple Howe	450 ± 150	BM 63
	955 ± 140	SRR 451						
	925 ± 90	I 5971						
	870 ± 110	SRR 443						
Bromfield	1560 ± 180	Birm 64						
	850 ± 71	Birm 63	Weston Wood	510 ± 110	Q 760			
	762 ± 75	Birm 62						

Fig 47 Chart of radiocarbon determinations with pottery/metalwork associations, for comparison with those from Runnymede Bridge. The list gives the results at one standard deviation; the chart plots the results at two standard deviations. All results are expressed in years bc (5568 half-life)

end of the 2nd millennium bc and that new forms were appearing in certain areas well within the Late Bronze Age.

It is at this stage that the Runnymede Bridge material makes its appearance and the radiocarbon dates for the site are entirely consistent with the developments sketched above, as they are with the evidence of the pottery and bronzes. When considered in isolation, and when less data were available, some of the radiocarbon determinations seemed anomalous. This was the case at Grimthorpe where pottery and radiocarbon results appeared to contradict each other. The same difficulties were met when metalwork and pottery seemed inconsistent at Ivinghoe (Cotton and Frere 1968), and Minnis Bay (Worsfold 1943). The problems of accepting such evidence at its face value disappear, however, when the sequence is considered as a whole and, while it would be hazardous to suggest that innovation occurred simultaneously across the board, the trend retains validity.

Shouldered jars make up a high proportion of the Runnymede Bridge assemblage and at Ivinghoe Beacon (Cotton and Frere 1968) most of this range is represented, including high-shouldered bucket types, biconical forms with short everted rims, and tall cylindrical or flaring rims. Many of the small open-mouthed bowl types can also be paralleled at Ivinghoe as can many elements of decoration including finger-tipping and incised hatching. The Ivinghoe pottery was associated with a group of Ewart Park phase bronzes (Britton 1968). Nearby, shouldered bucket jars with finger-tip decoration occur associated with a vase-headed pin at Totternhoe (Hawkes, C. F. C. 1940).

Barrett has recently suggested that the new series of jar forms with high rounded shoulders were developed by late Wilburton communities in south and east Britain (Barrett 1975b, 113). High-shouldered bucket jars with tall upright or slightly flaring rims and finger-tip decoration are also present at Long Wittenham, Berks. This same site produced a group of fine ware tripartite jars which D. W. Harding considered to be of Marnian (early La Tène) inspiration and to have influenced the coarse ware forms. While bucket jars and carinated bowls are a feature of the Runnymede assemblage, the Long Wittenham jars exhibit a degree of angularity absent from Runnymede Bridge. The bowls at Long Wittenham are generally squatter and their mouths more open, although there are parallels, eg the bipartite bowl (Harding, D. W. 1972, pl 50:J). If it is accepted that the Long Wittenham jars are in the bucket jar tradition and that their antecedents are to be looked for in the Low Countries in HaB/C (eg Desittere 1968, fig 87:4; Mariën 1964, fig 54:81), and in Britain at West Harling, Norfolk (Clark and Fell 1953, figs 13:37, 14:53), rather than on the Marne in La Tène I, then the Long Wittenham material could be contemporary with the later phases of the Hallstatt culture. Harding (1972, 89) was prepared to accept that close parallels for the bowl series were to be found in the late Hallstatt phase at Les Jogasses. This is of interest in that we may have at Long Wittenham a group of pottery embodying, in a developed state, elements first discernible at Runnymede Bridge.

Barrett (1975b, 115) has drawn attention to one of the more important developments of the Late Bronze Age, the production of pottery bowls, and has linked this, with certain jar forms, to the rise of a particular social activity, namely, feasting and drinking. Certainly there is an increase in the number and variety of bowls during this period and often the bowls can be seen to mirror on a smaller scale the forms of associated jars, as, for example, at Minnis Bay and Runnymede Bridge.

In a British context the Ivinghoe bowls have already been noted. At Grimthorpe, biconical bowls or small squat jars of Runnymede Bridge Type 12 are associated with taller bucket jars of Types 12 and 13 (Stead 1968). At Grimthorpe, furthermore, while finger-tipped decoration was present, this occurred on less than 20% of the sample. At Runnymede Bridge the figure is at most 13% and at Ivinghoe a comparable proportion of vessels carried finger-tip decoration. If, as has been suggested (Barrett 1975b, 107; Alcock 1973, 120), its occurrence was no more than infrequent during the early

centuries of the 1st millennium, the low frequency of finger-tipping at Ivinghoe, Runnymede and Grimthorpe contrasts significantly with the widespread use of this form of decoration at sites with demonstrably later (LBA onwards) associations, for example Staple Howe and All Cannings Cross.

At Eldon's Seat, biconical bowls occur in period I layers (Cunliffe and Phillipson 1968, fig 11:24, 13, 75) but do so sporadically, and much of period I material retains an affinity with the preceding urn tradition. High-shouldered burnished jars, however, represent a new departure although in a much less developed form than at the neighbouring Dorset site of Kimmeridge. Here, high-shouldered jars occur although the material is dominated by the range of decorated biconical bowls. The decoration consists of incised designs, furrowing, stamped circles and dots, finger-nail impressions and cordons, and in some cases this is further enhanced by haematite coating. The majority of bowls are comparable to the Runnymede Bridge Type 4b, although some have affinities with the Type 12 tradition and a hint of the beaded rim and flanged carination of Type 8 is apparent in Kimmeridge 16 and 23. Cunliffe considered that Kimmeridge was occupied during the hiatus between the first and second phases at Eldon's Seat (Cunliffe and Phillipson 1968, 234-7). The carinated bowls with tall concave necks in Eldon's Seat, period II, represent a development from the Kimmeridge biconical forms and may be paralleled (without haematite) in the Type 10 bowls at Runnymede Bridge. Furrowed haematite bowls and incised and stamped decoration are also present in Eldon's Seat, period II (Cunliffe and Phillipson 1968, fig 16:17). Neither furrowing nor the haematite is present at Runnymede Bridge. Furrowing and occasional haematite coating may be applied to a variety of HaB/C bowl and jar forms on the continent (Sandars 1957, 207, 217, 223; Desittere 1968, vol 2). In Britain, however, the furrowing is restricted to biconical bowls with short everted rims and carinated bowls with tall concave necks, and their intermediate variations, while haematite occurs on a variety of vessel forms including the furrowed series. In fact, furrowing and haematite coating are elaborations of pre-existing bowl forms and, furthermore, of forms apparent at Runnymede Bridge. The absence of furrowing at Runnymede may not be chronologically significant as in Britain this technique is restricted, regionally, to Wessex and the Upper Thames, with occasional outliers. The absence of haematite, however, suggests that the Runnymede Bridge pottery may pre-date both Kimmeridge and Eldon's Seat I, while having affinities with both.

At All Cannings Cross a large quantity of material was recovered in unassociated contexts. This assemblage included a number of haematite furrowed bowls, bucket jars with finger-tip decoration and vessels bearing a variety of more elaborate decorative techniques some of which are paralleled at Kimmeridge (Cunnington 1923, pl 44:1; Cunliffe and Phillipson 1968, fig 23:26). All Cannings Cross also produced incised and inlaid decoration but in a much grosser technique than that found at Runnymede. The small finds, which include a bronze bifid razor and a variety of early iron pins, suggest that while occupation at All Cannings may have begun in LBA 2 its main currency was in LBA 3/Iron Age. The presence of a bronze tanged chisel at Eldon's Seat II, and in addition a fragment of iron, may, in view of pottery similarities, suggest a broadly contemporary date for this site. Type 4a, the biconical bowl form with plain rim, is not represented at Kimmeridge, although the variant 4b is, and the incised decoration on 373 can also be matched (Cunliffe and Phillipson 1968, fig 23:27). This variant with a slightly developed rim is found at Minnis Bay, where plain Type 4a also occurs (Worsfold 1943), and at Staple Howe (Brewster 1963, fig 35:4). At Petters Sports Field, Egham, Type 4b constitutes a significant proportion of the total number of vessels. Confirmation must await the forthcoming publication of the Petters material but there is reason for supposing that in the Egham area the elaboration of the rim on Type 4 bowls represents a chronological development. At Petters the material in question was stratified above a Carp's Tongue hoard (O'Connell and Needham 1977). At Minnis Bay

the pottery occurred in unknown association with a Carp's Tongue hoard.

Some 20 km east of Runnymede there are again indications of Late Bronze Age metalworking associated with settlement material at Coombe Warren. Shouldered jars with tall upright necks occur alongside those with a somewhat concave profile above the shoulder (Bishop 1971, figs 1:2, 3; 5:38, 40); compare in particular Runnymede Bridge 275 with Bishop's fig 5:38. This pottery is loosely associated with carbonised grain, cylindrical loom weights (Bishop 1971, 23) and bronze material, including possibly a founder's hoard of the Ewart Park phase (Devenish 1964, 1-2 and pl 1; see above, p 19).

At Brentford, Middlesex, a short distance further down the river, pottery and bronze implements have been recovered from the Thames over a number of years. While the true situation is obscured by the lack of secure associations, much of the metalwork can be assigned to the Ewart Park and preceding metalwork phases. Occupation here, producing high-shouldered biconical jars with upright necks and finger-tipped and combed line decorated pottery (Wheeler 1929, fig 4) may be contemporary with Runnymede. Antler cheek pieces, socketed knives, tweezers, and notched razors are common to both sites and while occupation at Brentford is likely to have continued into HaC, riverine transgression may have become a problem here too.

In conclusion, it would appear that while some pottery forms, notably the high-shouldered bucket jars, may have been popular over a long period of time, the Runnymede assemblage finds its closest parallels in LBA 2-3 and HaB-C groups in Britain and on the continent respectively. Further, it has been suggested that on the basis of certain bowl forms the Runnymede material foreshadows developments apparent at Petters Sports Field and Minnis Bay, sites which themselves have LBA 2 associations. The affinities of the Runnymede Bridge pottery with Eldon's Seat II, Kimmeridge, and All Cannings Cross, and the arguments for considering that it pre-dates the material from those sites, have been set out above. All Cannings Cross has LBA 3 associations and, although the evidence is tenuous indeed, a similar currency may be suggested for Eldon's Seat II. Kimmeridge in turn was thought to pre-date Eldon's Seat II.

HaC material was recovered from the earliest structural phase at Staple Howe and again the arguments for considering that Runnymede Bridge represents an earlier phase in the development of certain traits there present have been discussed. The closest comparisons for the Runnymede pottery may be found at Ivinghoe Beacon, where many of the elements of the bronze assemblage are paralleled (see above, p 25). Here again an LBA 2 dating has been suggested (Britton 1968).

It is unwise to draw conclusions from negative evidence while the nature of Hallstatt connections are imperfectly understood and it may be of no significance that there is no HaC material from Ivinghoe. On the other hand, it is possibly highly significant that there is no metalwork of a specifically HaC character from Runnymede Bridge in an area that was receiving Hallstatt influence on a large scale from around 700 BC onwards (Burgess 1974, fig 36). This is highlighted by the HaC metalwork from Old England, Brentford, in what could well have been a similar settlement context. The point was long ago made by Sandars (1957, 244) that the difference between a HaB and HaC pottery assemblage might be imperceptible in the absence of distinctive metal types. The preceding argument has attempted to demonstrate that although the Runnymede pottery can generally be accommodated in the LBA 2-3 phases with some confidence, there are, nevertheless, already indications that it pre-dates certain other pottery groups assigned to these phases. The pottery from Runnymede Bridge might well have been current in the period prior to the appearance of the earliest HaC influences in the Thames basin and would therefore date to the Ewart Park phase (LBA 2) of the 9th-8th centuries BC on the most recent assessment.

The Animal Bone — by Geraldine Done

The animal bone consists of some 4,000 fragments. The preservation is generally good and 65% of pieces were usefully identifiable. The following species were identified: horse, ox, sheep, goat, pig, red deer, dog, and a possible hare (one tibial shaft fragment). A single immature femur, probably of water vole, was found but in view of the location of the site this was considered likely to be intrusive. Also found were a small number of bird bones from goose, buzzard, and crow or rook, a single fish bone identified as right dentary bone of pike, and three small fragments of oyster shell.

Table 2 shows the amount of bone per species and gives the total number of fragments, with the minimum number of animals for the four species constituting the bulk of the material. Except for part of a maxilla, deer appears only as antler; the dog bones are four skull and two mandible fragments and nine ribs, possibly dog.

Cattle

The minimum number of sixteen beasts includes two new-born calves and two in their first year. Fifteen mandibles provided evidence of age, as follows:

c 2 years	5 mandibles
c 2½ years	2 mandibles
c 3 years	3 mandibles
3 years +	5 mandibles

Bone maturity was compatible with the pattern of dental age, and there are occasional traces of very old animals, for example an incisor worn down to the root and two heavily worn molars at Grant's stages L/M (Grant 1975).

Cattle bone measurements are given in Table 3. Estimation of withers heights from five metacarpals and four metatarsals indicates sizes from 95 to 106 cm, c 9 hands 2 to 10 hands 2, ie the small Celtic shorthorn. Two horn cores complete enough to assess are of shorthorn type, being short and directed outwards, then curving forwards and possibly, in the living animal standing normally, slightly downwards.

The bones in general tend to be small and slender. However, there are signs that along with the small stock there existed a larger type, as two metatarsals indicate withers heights of 120 and 125 cm. These would be roughly comparable in height with a modern Guernsey. There is clearly considerable variation in size, as has been recorded elsewhere (Jackson 1943).

Sheep/Goats

Both sheep and goat are present. Three goat horn cores were found and morphological differences were visible among the metapodials, some of which appeared very slender of shaft due to the presence of a well-marked 'shoulder' at the junction of shaft and distal extremity. In terms of actual measurements there is little to choose between these and the more gently contoured metapodials but to the eye the existence of two types is immediately apparent. All animals were small and lightly boned. Measurements are summarised in Table 4.

Mandibles were assessed using Payne's method (1973) and showed a wide scatter of ages:

0-2 months	2
c 6 months	7
c 12 months	2
1-2 years	1
less than 2 years	3
2-3 years	2
3-4 years	1
4-6 years	4
6-8 years	1

The numbers are too small to allow postulation of killing patterns. A peak at six months as indicated above seems unlikely and the preponderance of lambs may be fortuitous.

TABLE 2 Amount of animal bone per species

	Total fragments identified	%	Minimum number of animals	%
Horse	54	1.9	3	5
Ox	1584	57.0	16	27.1
Sheep/goat	752	27.0	22	37.3
Pig	388	14.0	18	30.5

Pigs

Both wild and domestic pig are present. Two canine teeth with wild characteristics were found, one of which was incomplete at a length of 15 cm. Bone measurements are summarised in Table 5. Some of the larger bones may be of wild type though no complete bones are available to add confirmation on morphological grounds. The ulnae shown in Plate XIX illustrate the range of size; they are accompanied for comparison by a modern bone from a pig of c 100 kg live weight. There is evidence for pigs of all ages so that, while some of the larger bones could be ascribed to wild pig, it is quite possible they represent fully grown, older domestic or wild/domestic cross-breeds.

The age distribution, based on dental evidence, shows four older jaws, all of which are of domestic character:

Pig mandibles at c 5 months	2
c 6 months	4
c 12 months	3
c 15 months	7
less than 18 months	3
c 18 months	5
more than 18 months	2
more than 2 years	4

There is also at least one new-born piglet. One of the four older jaws is heavily worn, but plainly most pigs were killed young.

Horses

It is unfortunate that, other than first phalanx, no complete horse bone was found; the best estimate of size was made from a damaged tibia. At c 137 cm, this agrees closely with a withers height of 138 cm (13 hands 3) calculated from a complete metatarsal reported from Minnis Bay (Jackson 1943). At least three horses can be accounted for. One of the first phalanges has an incompletely fused proximal epiphysis, ie a young animal of about 2 years. There is also an incisor of about 15 years and three others much worn, from one or possibly two horses of 20 years or more. Five loose molars with varying amounts of crown confirm at least three horses.

Dogs

The dog narrowly escapes being a notable absentee, being represented only by two mandibles, a few skull fragments and possibly some ribs. One mandible is small, cheek tooth row 50 mm, M₃ is absent, perhaps not yet erupted, though in that case wear on the other teeth seems excessive. The second mandible, a toothless fragment only, is a larger and heavier bone in which there is no socket for the third premolar. The tooth may have been lost some time before death.

Deer

In addition to antler fragments, part of a maxilla was attributed to red deer. No long bones could positively be identified though there may be deer among the smaller bone ends classified as ox (see Table 3).

BUTCHERING

It is always difficult to assess with any certainty what constitutes a butchering interference with bone and what is an accidental

damage, and when, as with the present material, preservation is good, it is possible that some of the 'accidental' breaks are in fact the result of butchering. The general impression conveyed by the Runnymede bones is that carcasses were subjected to minimal processing. The pieces of bone are in general large, split rather than chopped, with cut marks almost non-existent. Possible saw marks were noted on a bovine femoral shaft.

The sheep bones bore few signs of butchering: cuts about an acetabulum, a chopped distal femur and a split radial shaft. Two goat horn cores had been cut off at the base. As the sheep were small there would have been no great difficulty in cooking a whole carcass.

Among the pig bones were split vertebrae, perhaps showing that a carcass was split longitudinally. Chops were noted on humeri, tibiae and a femur, and there was one example of chopping across a joint, taking off part of a glenoid cavity of scapula with part of the adjacent proximal humerus.

Sagittally split vertebral bodies of ox are frequent, from all sections of the spinal column anterior to the sacrum and, as with pig, may indicate halving of the carcass. Three thoracic vertebral spines split much as may be seen in the sides hanging in any butcher's shop were found. However, as there were also unsplit spines it is very doubtful if a standard procedure was adopted.

Some chopping of vertebrae, scapula, humerus, and pelvis was noted but splitting was by far the commonest interference. The glenoid angle of scapula, radius and tibia were notably involved, no regular plane of splitting being discernible. Further examples occurred on all other long bones including metapodials and phalanges. Table 6 attempts roughly to quantify the butchering evidence by counting each incident. It illustrates the prevalence of splitting. The indications of dismemberment or jointing which occur, for example, in Romano-British bone collections are largely absent from this sample.

Though it may be assumed that bones were split to get at the marrow, there is no way of knowing for certain whether it was done before or after cooking. The culinary world abounds with instances of one man's meat being another man's poison, so splitting before cooking cannot be dismissed on the grounds that raw marrow lacks appeal as a delicacy. There would, however, have been practical difficulties which, considered with the bone evidence, suggest that cooking took place first rendering the meat easily removable by hand, tooth or implement, the bones being then exposed to attack.

Bones from all sections of the skeleton are present. The bone frequencies set out in Table 7 show, with two exceptions, no striking deficiencies or excesses so animals were most probably killed and eaten in the same place. Metapodials of ox and sheep are often prominent in bone collections. They survive well, being constituted of dense bone and not subject to butchering as they are meatless. The present ox metapodials fall well short of a possible number derived from humerus or radius and tibia. Further, calculation of the possible number of first phalanx (two per metapodial) shows a very high recovery rate of 72%. When based on two per distal humerus plus distal tibia it falls to 35%, a much more realistic rate. A deficiency of ox metapodials is therefore a possibility. Similarly, in the sheep bones, there is a shortfall of metacarpals though metatarsals match up well with their potential number based on tibiae. The lack of metacarpals is neatly explained by reference to the bone

TABLE 3 Ox measurements

Length = overall length.

Proximal and distal widths = greatest medio-lateral dimension across articular surface at right angles to sagittal plane. Figures in brackets are total width of epiphyses including eminences adjoining the articular area.

Mid-shaft width = medio-lateral dimension.

All measurements are in millimetres.

Horn core	<i>Length</i>	120 125	<i>Circumference of base</i>	120	
Scapula glenoid	<i>A-P</i>	68	<i>M-L</i>	57	
		42		40	
		52		45	
	<i>Length</i>		<i>Proximal width</i>	<i>Distal width</i>	<i>Mid-shaft width</i>
Humerus				57	
				c 61	
				50	(2 bones)
				72	
				52	
				63	
				62	
			60		
Radius			71 (80)		
			64		
	250		66 (73)	58	
			54 (57)		
			67 (72)		
			c 60 (c 68)		
		63 (70)			
Metacarpal	167		c 51	53.5	27
	176		53	55	29
			51		
				48	
	c 155		49		
	177		50	54	28
	177		46	50	27
			63		
Femur	c 220 290 (immature)				
Tibia	at least 260			53 (57.5)	
	at least 250			48	
	at least 260			48 (55)	
			85		
				45 (49)	
				47 (51)	
				48 (50) (3 bones)	
				46 (53)	
				51 (56)	
				52 (57)	
				47.5 (51)	
				48 (55)	
				46 (50)	
			51 (56)		
			48 (51)		
			42 (47)		
			49 (54)		
			51 (53)		
Astragalus	57		36	36	
	61		38	36	
	62		38	37	
	61		38	38	
	59		36	36	
	62		41	40	
	49		30	29	
	57		35	34	
	60		36	32	
	60		36	32	
	50		32	31	
	58		36	36	
	57		35	35	
	63		37	36	
	54		31	34	
	60		37	37	
	54		33	30	
	55		34	34	
	57		35	37	
	66		33	33	
60		39	36		

TABLE 3 contd

	<i>Length</i>	<i>Proximal width</i>	<i>Distal width</i>	<i>Mid-shaft width</i>
Os calcis	118			
	112			
	130			
	116			
	105 (immature)			
	112 (immature)			
Metatarsal	199		52	26
	193		40	
	c 180			25
	c 175			21
	230	46	53	26
	220	40	46	21
		47		
		38		
		47		
			43	
			50	
		47		
First phalanx	51	23 (26)	23	
	54	26 (27)	25	
	57	24 (26)	c 22	
	56	22 (23)	22	
	56	22 (25)	22	
	c 51	—	18	
	57	22 (23)	23	
	56	22 (23)	23	
	50	23 (25)	23	
	c 62			
	55	24	23	
	56	25 (28)	23	
	52	22	21	
	57	28	27	
	63	27 (30)	26	
	50	25	22	
	55	c 24	24	
	64	26 (30)	28	
	53	26	26	
	55	23 (26)	24	
	64	26 (29)	25	
	49	—	22	
	58	c 22	22	
	57	24 (25)	24	
	58	c 24	26	
	64	27	25	
	60	27	28	
	60	31	30	
	55	25 (28)	26	
	62	29 (33)	27	
	54	21 (22)	22	
	53	24 (28)	24	
Second phalanx	38	25	c 19	
	47	21	15	
	35	24	—	
	38	25	20	
	43	30	22	
	34	23	17	
	38	24	18	
	37	—	—	
	36	26	19	
	39	c 32	23	
	40	30	24	
	38	28	19	
	33	27	19	
	41	26	17	
	36	—	—	
Third phalanx	67			
	71			
	59			
	56			
	70			
	c 58			
	57			
	62			
	53			
	57			
	50			
	81			
	53			
57				

TABLE 4 Sheep/Goat measurements

All measurements are in millimetres

	<i>Number</i>	<i>Mean</i>	<i>Range</i>	<i>Standard deviation</i>
Humerus, distal width	18	24	22-27	1.3
Radius, proximal width	16	23	20-26	1.4
distal width	11	22	20-24	
Metacarpal, proximal width	13	19	17-20	1.2
distal width	9	21	18-23	1.5
Tibia, distal width	11	20	19-21	
Os calcis, length	12	49	46-55	1.6
Metatarsal, proximal width	10	16.5	15-18	0.8
First phalanx, length	12	32	24-39	4.0

Complete adult bones

	<i>Length</i>	<i>Proximal width</i>	<i>Distal width</i>	<i>Mid-shaft width</i>
Radius	142	25 (27)	23	13
	152	25 (27)	23	14
Metatarsal	130	17	20	9
	134	15	19	9

TABLE 5 Pig measurements

All measurements are in millimetres

	<i>Number</i>	<i>Mean</i>	<i>Range</i>	<i>Standard deviation</i>
M3 length	11	33	29-40	3.9
Humerus, distal width	8	32	27-40	5.6
Radius, proximal width	5	29	28-30	
Astragalus, length	8	40	38-42	

TABLE 6 Butchering evidence from ox bones

	<i>Split</i>	<i>Chopped</i>	<i>Cut</i>	<i>Sawn</i>
Vertebrae	25	3	—	—
Ribs	6	—	5	—
Scapula	7	2	1	—
Humerus	1	2	1	—
Radius	5	—	—	—
Metacarpal	2	—	2	—
Pelvis	3	—	1	—
Femur	2	2	1	1
Tibia	7	1	—	—
Os calcis	—	—	1	—
Astragalus	1	—	—	—
Metatarsal	3	—	—	—
First phalanx	3	—	—	—
Second phalanx	2	—	—	—
Horn core	—	2	—	—

artefacts which include points, for which this particular bone was a favourite material. Sadly, there is no similar explanation to account for the low ox metapodial count.

Many fragments bear tooth marks ranging in degree from slight to extensive gnawing. Discarded bones were probably welcomed by wild and/or domestic carnivores; pigs also behave as omnivorous scavengers if the opportunity arises.

OTHER MARKS

In addition to worked bone described elsewhere, two sets of unexplained marks were noted. First, illustrated in Plate XX, two virtually identical fragments from a pair of immature sheep femora each bearing two depressions in the anterior face above

the epiphyseal junction, so regularly placed as to make tooth marking unlikely. Second, a sheep humerus with a small circular hole towards the lateral border of the anterior face of the distal third of the shaft, with a depression of similar size in the corresponding position on the posterior face. Similar marks are recorded on sheep distal tibiae at All Cannings Cross (Cunnington 1923) and at a Roman site in Staines (Done, unpublished).

COMMENT

More than usual confidence that the bone collection is representative is inspired by two facts. First, the use of sheep metacarpals as a raw material for manufactured articles is reflected in the skeletal sample. Second, pairs of bones, eg right and left humeri of sheep, or articulating bones, eg femur, tibia and os calcis of ox, occur quite often. The inference is that the area investigated received a comprehensive collection of food waste. The nature of the butchering evidence, together with an apparent tendency for bones to be disposed of in related sets, suggests that meat was cooked in large pieces, either in large pots or on spits, in which case eating was more probably a community affair than a family process.

The main meat supply must have been beef, with pork second in importance, and sheep and goat probably valued more for their wool and milk than their meat. Using the minimum numbers of each species and allowing a killing-out percentage of 50 and live weights of 350 kg (ox), 25 kg (sheep) and 100 kg (pig) the amounts of meat are as follows:

Beef	70.4%	(2,800 kg)
Mutton	7%	(275 kg)
Pork	22.6%	(900 kg)

The weight of edible pig meat is underestimated at 50% killing-out as in fact very little of the pig is inedible waste, and the beef weight may also be low as no account is taken of the larger cattle known to be present. The figures are based on many assumptions and serve only as a pointer to the relative importance of each species in terms of food supply.

Signs of a few larger cattle have often been reported from Late Bronze Age/Early Iron Age sites. The small Celtic short-horn predominates at Runnymede; the larger stock may be the sporadic manifestation of a mixed ancestry leading back to the large Neolithic ox and the aurochs. One of the two long metatarsals recorded in Table 3 is very slender and not the bone

TABLE 7 Bone frequency

	Ox	Sheep/Goat	Pig	Horse
Skull fragments (including maxilla and hyoid)	114	39	36	2
Vertebral fragments	189	44	17	
Atlas	12	3	—	
Axis	7	—	1	
Cervical	24	8	1	
Thoracic	26	17	5	
Lumbar	14	1	3	
Sacral	3	5	1	
Caudal	4	—	—	
Horn core	13	9	—	
Mandible	25	40	24	1
Scapula	20	15	34	
Humerus, proximal	8	6	3	
distal	21	30	19	
Radius, proximal	18	22	8	1
distal	3	15	8	
Ulna	10	8	27	
Carpals	16	1	11	4
Metacarpal, proximal	12	14	3	
distal	8	14		
Pelvic fragments	37	23	16	
Femur, proximal	11	6	3	?1
distal	7	12		
Tibia, proximal	13	6	4	
distal	25	13	3	1
Patella	1			
Astragalus	23	6	9	2
Os calcis	19	17	7	
Tarsals	6			1
Metatarsal, proximal	7	14	26	1 (+4 small metapodials)
distal	16	10	16*	1
First phalanx	33	17	15	4
Second phalanx	20	1	10	
Third phalanx	18	2	7	
Accessory metapodials			16	

*metacarpal/metatarsal

of a big animal in the general sense. Analysis of various measurements given in Table 3 indicates that the sample is of normal distribution but it is uncertain how accurately it relates to the population.

To supply meat was probably not the sole purpose of the ox, which may have been used as a draught animal and might perhaps have been collected as a status symbol or as actual wealth.

The considerable age of the horses suggests they were especially valued. The horse estimated at about 14 hands would have been big enough for an adult to ride and could also have been used for draught or packing. There is nothing to indicate that horses were eaten.

The presence of wild pig and red deer might mean a wooded environment within easy reach of the settlement. Red deer were the source of antler from which various objects were made but it is impossible to say if they were hunted for meat. This does not follow from the presence of antler alone as it can be picked up after the natural shedding which occurs annually.

The pig has achieved more prominence than usual, being often poorly represented in bone collections of the period, for example Eldon's Seat (Cunliffe and Phillipson 1968) and Rams Hill (Carter 1975). Factors such as size of sample and nature of environment may account for this. The apparent importance of the pig suggests permanent settlement rather than seasonal or occasional use. The pig is notoriously difficult to drive or herd and unsuited to a system involving transhumance.

The pike bone is from a fish estimated at one metre in length, a useful contribution to a meal if its presence is due to exploitation of the river, although it is possible that the bone represents naturally occurring debris.

Signs of specific disease were absent though a number of bones carried minor exostoses of the kind found in old animals. It is possible, however, that the Runnymede livestock, particularly sheep and cattle, suffered some degree of liver

damage due to the helminth parasite, *Fasciola hepatica* (the liver fluke). Wet conditions and a snail intermediate host, in this case *Limnaea truncatula*, are essential to the complex life cycle of the fluke and both were present at Runnymede (see molluscan analysis). Depending on the infestation, loss of condition in varying degrees, or even death, would follow.

If there was some unthriftiness of livestock it would in this case have played little part in any decision to leave the site in view of the more pressing considerations of flood damage. It may, however, be that, on occasion, failure of livestock to thrive has led to abandonment of a settlement. As direct evidence for disease of soft tissue would be available in only exceptional circumstances, the educated guess based on observation of the total environment must suffice.

ACKNOWLEDGEMENTS

I would like to thank Jennie Coy for help with the bird bones and Alwyne Wheeler who identified the pike.

The Human Bone

A small amount of human bone was found distributed throughout the site. It consisted of fragments of skull and mandible, the shafts of two femora and a tibia, and part of an ulnar shaft. We are indebted to Dr S. Zivanovic, who kindly examined the bones, for the following information:

There is no evidence to suggest that the bones are from more than one individual, of unknown sex and mature age. It is possible that they are of earlier date than Late Bronze Age/Early Iron Age, the morphology of the tibial fragment being similar to that of Neolithic tibiae. There is no sign of disease other than some dental caries.

Molluscan Analysis — by Caroline Evans

Samples were taken from the north-east face of the excavated area. This face was nearest the bank of the Thames (Figs 1 and 3) some 100 m distant. The site of the sampled area was free from vegetation whose roots might penetrate through the modern soil into the underlying occupation deposits and hence disturb the sequence.

The superficial deposits to be studied extended to a depth of 1.5 m, although a sample was taken of the underlying natural clay serving as representative of the fauna existing at a time prior to settlement.

The sample interval chosen was 5 cm with 1 cm removed between each sample to prevent contamination. Due to the friable nature of the deposits samples were extracted from the surface downwards.

Each sample was soaked in a solution of sodium hydroxide and distilled water in order to break up the soil aggregates. The soil was stirred frequently to help this breakdown. Each sample was then placed in the top of a nest of sieves of decreasing aperture and washed through. Aggregates still adhering were broken up by gentle worrying through the sieves. Three sieves were used, 4.76 mm, 2.00 mm, 0.6 mm. Samples were not oven dried before analysis as the shells would have become brittle. The lip and aperture areas are diagnostic of certain species and it is these areas, being more fragile than, for example, whorls, which are more prone to breakage. The time restriction made it necessary to employ a minimum size restraint of 2 mm for the diameter of apical fragments.

The results of the molluscan analysis are presented in Figs 48 and 49. Juvenile specimens of *Succinea*, *Cochlicopa* and *Vallonia* species which are not specifically determinate were

allocated proportionately to the species identified from the adult shells. For the purposes of Fig 48, species which form less than 1.0% of the total sample were entered as 1%.

Table 8 shows the frequency relative to the total sample, Table 9 shows the actual frequency. Where the presence of a species in a sample was represented by a single specimen the frequency is denoted in Table 9 by the letter P. The species are allocated to ecological groups (Fig 49) as suggested by J. G. Evans (1972).

BASAL CLAY

The fauna extracted from the underlying alluvium (Sample 8) is very rich, both in number of species and individuals. However, of the 29 species found at this level, 24% are represented by single specimens only and 11 species appearing here never reappear.

The fauna is typical of a marsh environment. Truly fresh-water species such as *Bithynia* spp. and *Valvata cristata* are evident, indicating slowly flowing water. The presence of *Valvata piscinalis* and *Lymnaea truncatula* are indicative of shallow well-aerated water. Obligatory marsh species are also present. With the exception of *Deroceras* spp., most prefer open habitats. *Succinea putris* indicates the proximity of damp habitats (Ellis 1969). *Succinea* is a terrestrial gastropod which lives high on plants overhanging water. By the Thames, *S. putris* is scattered all over the water meadows, rather than on banks. Some *Deroceras* spp. prefer wetter places than the other obligatory marsh species and are often associated with *Lymnaea truncatula* and *Pisidium* spp. *Carychium minimum* and the dominant *Vallonia pulchella* are slum species, ie they are essentially terrestrial species but they are often found in

TABLE 8 Relative frequency of molluscan species

Sample number Sample depth (cm)	1 -57	2 -63	3 -69	4 -75	5 -81	6 -87	7 -93	8 -108
Species								
<i>Theodoxus fluviatilis</i> (Linné)				0.4	1.5			
<i>Valvata cristata</i> (Müller)								0.5
<i>V. piscinalis</i> (Müller)	0.3							0.5
<i>Bithynia leachii</i> (Sheppard)			0.26					
<i>B. tentaculata</i> (Linné)						1.25		1.71
<i>Carychium minimum</i> (Müller)					1.25			10.24
<i>Lymnaea peregra</i> (Müller)	0.3							
<i>L. truncatula</i> (Müller)				0.87				0.98
<i>Gyraulus albus</i> (Müller)								0.73
<i>G. spp.</i>								0.24
<i>Ancylus fluviatilis</i> (Müller)								0.24
<i>Succinea putris</i> (Linné)								0.5
<i>S. spp. juv. indet.</i>	4.01	0.22	1.83	2.18	2.53	3.75	4.85	2.44
<i>Cochlicopa lubrica</i> (Müller)	1.6	1.74	1.05	1.75	3.03	2.5	4.85	1.46
<i>Cochlicopa spp. juv.</i>		0.43		0.87	2.53	1.25	1.35	2.2
<i>Vertigo pygmaea</i> (Draparnaud)			0.26					
<i>Pupilla muscorum</i> (Linné)	3.3	16.3	4.97	1.3	1.51	1.25	2.7	0.24
<i>Vallonia costata</i> (Müller)			0.26					
<i>V. excentrica</i> (Sterki)	0.3	0.87						
<i>V. pulchella</i> (Müller)	13.38	18.7	26.18	19.21	21.72	15.0	10.81	18.78
<i>V. spp. juv.</i>	13.38	12.83	6.8	9.61	4.04	1.25		5.37
<i>Cochlodina laminata</i> (Montagu)								0.24
<i>Clausilia bidentata</i> (Ström)								0.49
<i>Cepaea nemoralis</i> (Linné)								0.73
<i>Cepaea spp. juv.</i>		0.22	0.26		3.03	1.25		0.24
<i>Cepaea spp.</i>				0.87				0.73
<i>Trichia hispida</i> (Linné)		0.22			3.03			
<i>Trichia striolata</i> (Pfeiffer)	62.21	47.83	56.54	61.57	58.08	67.5	78.38	44.39
<i>Punctum pygmaeum</i> (Draparnaud)								0.49
<i>Discus rotundatus</i> (Müller)					1.51			1.46
<i>Vitrea crystallina</i> (Müller)		0.22		0.44	1.01	1.25		2.2
<i>Oxychilus cellarius</i> (Müller)								0.98
<i>O. spp. juv.</i>			0.26		1.01			
<i>Aegopinella nitidula</i> (Draparnaud)					1.51		1.35	0.73
<i>Deroceras spp.</i>	1.3	0.43	1.31	0.87	1.51	3.75		0.73
<i>Pisidium henslowanum</i> (Sheppard)								0.24
<i>P. nitidum</i> (Jenyns)								0.24
Total no of shells	299	460	382	229	198	80	74	410

association with marsh species. Also recorded are *Cochlicopa lubrica*, *Vertigo pygmaea*, and *Vitrea crystallina*, which, although living in marsh environments, are found typically in more terrestrial habitats. The species mentioned above constitute 49% of the total at this level.

Trichia striolata was, in the prehistoric period, a woodland species, although the species changed its ecological preferences from the Late Iron Age and Roman period to being synanthropic, ie living exclusively in man-made habitats, for example refuse heaps, depending on man for its existence (Ellis 1969, Evans, J. G. 1972).

LAYER 2

Layer 2 is thought to represent the erosion of primary occupation, caused by the gradual encroachment of a water course. Sample 7 was taken from this layer. This assemblage — at the base of the occupation deposits — is noticeably more scarce, both in numbers of species and individuals, than the fauna found in the underlying clay. Only 7 species were recorded, two of which were represented by single specimens only.

Damp conditions are apparent, suggested by *Vallonia pulchella*, *Cochlicopa lubrica* and *Succinea* spp. together accounting for 22% of the total. *Pupilla muscorum* is an open-country form, but Ant (1963), Stratton (1964), Brindley (1904) and J. G. Evans (1972), have recorded the species in light woodland habitats. Boycott (1934) has found *Pupilla* in marsh environments. On a local scale, the species often inhabits bare soil, often the result of instability; the clearance associated with primary occupation could easily give rise to such conditions. However, the fauna is dominated by *Trichia striolata*, which forms 78% of the total. It may be suggested that by the time of

initial occupation of this area, the ecological preference of the species would have become synanthropic.

LAYER 9

Archaeological evidence suggests that this deposit represents wash from the main occupation material together with the domestic refuse of the midden. The use of the area as a refuse heap would have provided a wide variety of habitats. Samples 6, 5, 4 and 3 were taken from this layer. *Trichia striolata* forms a strong synanthropic element in the fauna although a decrease from 67% at the base to 56.5% at the top of the deposit is recorded.

If the obligatory marsh species and freshwater slum species are totalled with those species which tolerate marsh habitats (Evans, J. G. 1972), the trend remains relatively constant at an average of 33%. However, within this group, a number of trends are evident. The freshwater species such as *Bithynia tentaculata* and *Lymnaea truncatula* display a decrease from 1.25% to 'presence' only at the top of the deposit. *Succinea* spp. are seen to decrease from 3.75% at the base to 1.83% at the top, and *Cochlicopa* spp. show a similar trend, decreasing from 3.75% to 1.05%. *Vallonia pulchella*, however, increases from 16.25% at the base to 33% at the top. Ellis (1969) comments that these shells are often very abundant in flood rubbish on alluvial plains. *Pupilla muscorum*, on the other hand, increases from 1.25% to 5% over the same depth.

LAYER 11

The archaeological evidence would suggest that this deposit represents the gradual accumulation of material after the

TABLE 9 Absolute frequency of molluscan species

Sample number Sample depth (cm)	1 -57	2 -63	3 -69	4 -75	5 -81	6 -87	7 -93	8 -108
Species								
<i>Theodoxus fluviatilis</i> (Linné)				P	P			
<i>Valvata cristata</i> (Müller)								2
<i>V. piscinalis</i> (Müller)	P							2
<i>Bithynia leachii</i> (Sheppard)			P					
<i>B. tentaculata</i> (Linné)						P		7
<i>Carychium minimum</i> (Müller)					P			42
<i>Lymnaea peregra</i> (Müller)	P							
<i>L. truncatula</i> (Müller)				2				4
<i>Gyraulus albus</i> (Müller)								3
<i>G.</i> spp.								P
<i>Ancylus fluviatilis</i> (Müller)								P
<i>Succinea putris</i> (Linné)								2
<i>S.</i> spp. juv. indet.	12	P	7	5	5	3	3	10
<i>Cochlicopa lubrica</i> (Müller)	5	8	4	4	6	2	3	6
<i>Cochlicopa</i> spp. juv.		2		2	5	P	P	9
<i>Vertigo pygmaea</i> (Draparnaud)			P					
<i>Pupilla muscorum</i> (Linné)	10	75	19	3	P	P	2	P
<i>Vallonia costata</i> (Müller)			P					
<i>V. excentrica</i> (Sterki)	P	4						
<i>V. pulchella</i> (Müller)	40	86	100	44	43	12	8	77
<i>V.</i> spp. juv.	40	59	26	22	8	P		22
<i>Cochlodina laminata</i> (Montagu)								P
<i>Clausilia bidentata</i> (Ström)								2
<i>Cepaea nemoralis</i> (Linné)								3
<i>Cepaea</i> spp. juv.		P	P			P		
<i>Cepaea</i> spp.				2				
<i>Trichia hispida</i> (Linné)		P			6			
<i>Trichia striolata</i> (Pfeiffer)	186	220	216	141	115	54	58	182
<i>Punctum pygmaeum</i> (Draparnaud)								2
<i>Discus rotundatus</i> (Müller)					P			6
<i>Vitrea crystallina</i> (Müller)		P		P	2	P		9
<i>Oxychilus cellarius</i> (Müller)								4
<i>O.</i> spp. juv.			P		2			
<i>Aegopinella nitidula</i> (Draparnaud)					P			3
<i>Deroceras</i> spp.	4	2	5	2	P	3		3
<i>Pisidium henslowanum</i> (Sheppard)								P
<i>P. nitidum</i> (Jenyns)								P
Total no of shells	299	460	382	229	198	80	74	410

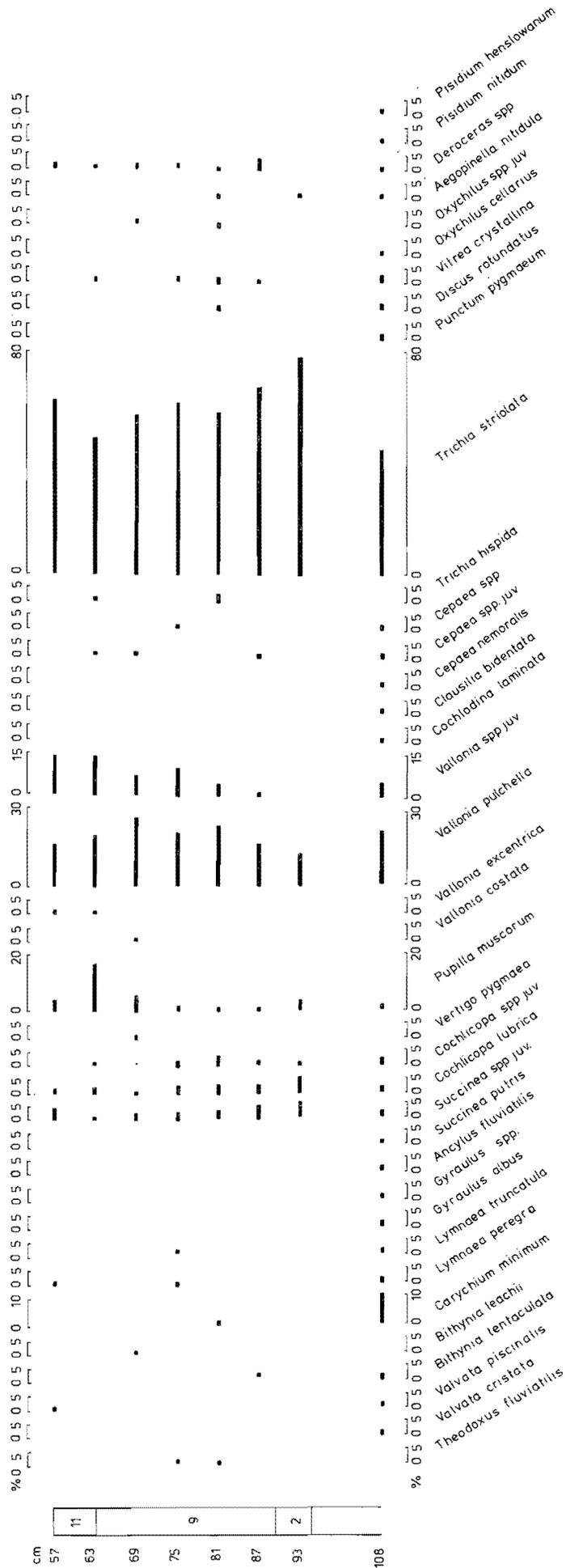


Fig 48 Molluscan histogram

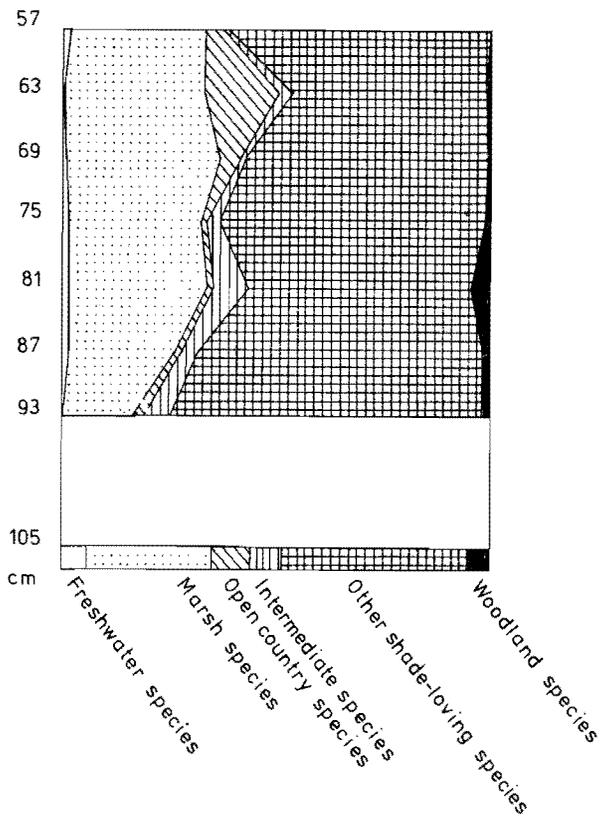


Fig 49 Ecological groups: relative frequency

abandonment of the settlement. In this case, the fauna would reflect a return to wild conditions. The silt-like nature of the deposit would indicate that still conditions prevailed during the deposition of this material. A transported element would be expected if the area was gradually inundated. Samples 1 and 2 relate to this layer. The number of both species and individuals found at the base of deposit 11 would support the possibility of downwashing. This may account for the apparent peak in *Pupilla muscorum* at 63 cm.

Trichia striolata still dominates the assemblages of both samples, forming 62% and 48% respectively. Hence, the influence of man was still considerable although the terrain was too waterlogged for permanent habitation.

ACKNOWLEDGEMENTS

I would like to thank Dr Adrian J. Rundle for all his help, both with identifying many of the shells and reading the manuscript.

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SyAC *Surrey Archaeological Collections*

Res Vol SyAS *Research Volume of the Surrey Archaeological Society*

For other journals, the abbreviations recommended by the Council for British Archaeology in *Signposts for archaeological publication* have been used.

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