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GUSSAGE ALL SAINTS

An Iron Age Settlement in Dorset

by G J WAINWRIGHT

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Summary

A three-acre settlement at Gussage All Saints, Dorset was completely excavated and most of the archaeological deposit removed so as to provide a basis for broader interpretations. Post-holes for buildings, numerous pits, gullies and internal enclosures provided evidence that the settlement was occupied throughout the second half of the first millennium BC, and evidence was recovered for its development, material culture, economy and population. Of particular interest is a collection of bronze-founder's debris, including broken investment moulds, which was found as a rubbish deposit. The excavation was a problem-orientated project within a rescue framework, designed to look back at Dr Gerhardt Bersu's excavation of the site of Little Woodbury, near Salisbury, in 1938 and 1939, which, although a partial excavation, had for many years provided the pattern for Iron Age economy in southern Britain.

Introduction

The Gussage All Saints Iron Age settlement is sited between the 76m and 81m contours on the eastern slope of a ridge 100m high; it overlooks a valley to the north in which now lie the villages of Gussage St Michael and Gussage All Saints (ST 998101). It is roughly circular in plan and three acres in area with a single entrance in the east defined by two pairs of flanking antennae ditches.

The Roman road which crosses the ridge from north to south strikes across the fields some 700m west of the settlement. The 20-acre field in which the latter was discovered overlooks the valley to the north and commands extensive views of the chalk downlands to the north and east. From the west and south the settlement was overlooked by rising ground towards the crest of the ridge. Aerial photographs taken during the excavation indicate the presence of fields now completely destroyed by ploughing to the west and south of the enclosure as well as to the north on the slope down to the village. A brook which runs through this valley provides the nearest source of water. The settlement was founded on chalk bed-rock save in its southern part towards the high ground where the chalk was coated with a brown flinty clay. Pockets of this material occurred in the chalk over the remainder of the settlement but were less numerous on the downhill side. The enclosure was totally excavated on behalf of the Department of the Environment in the spring and summer of 1972 on account of its erosion by ploughing. However, the rescue excavation was the outcome of a research project aimed at reviewing Dr Gerhardt Bersu's excavation of the site of Little Woodbury, near Salisbury, in 1938 and 1939, which has for many years appeared to provide a pattern for Iron Age life in southern Britain.

There are two enclosures in the parish of Britford, southwest of Salisbury. The larger settlement was called Woodbury and to avoid confusion, the smaller settlement 500m to the east was named Little Woodbury. The latter was selected by the Prehistoric Society as the site for a research excavation because its size made total excavation a feasible proposition. The aim of the Prehistoric Society was the total excavation of the settlement to fulfil two objectives:

i. To resolve many problems raised by numerous partial excavations at other sites and to reveal something of the nature and social organisation of Iron Age settlements.
ii. To throw fresh light on the interpretation of markings on aerial photographs.

The work was directed by Dr G Bersu whose pioneer reconstruction of farming practice there has rendered it the type site for the mixed farming economy of the British Iron Age, fundamental to any understanding of settlement types (Bersu 1940, Brailsford 1948, Brailsford 1949).

By the end of the second season considerably more than one-third of the whole settlement of 15,000 sq m had been exposed within an irregular rounded enclosure of about four acres, which had originally been surrounded at least partially by a slight palisade and later by a bank and ditch. All the occupation was assigned to what was called the Iron Age A2—AB (300—100 BC), beginning with situlate jars and haematite coated bowls and ending in the first century BC with saucepan pots in a smooth dark fabric. Unfortunately, no complete plan of the enclosure was ever prepared, but from the aerial photographs it is possible to see that the simple entrance through the earthwork in the east was at least 17.00m wide and flanked by characteristic antennae ditches. Excavation showed that the enclosure ditch had never been completed. Within the investigated area, Bersu excavated 190 pits of varying sizes, most of which he interpreted as being for the storage of consumption grain. On the basis of the aerial photograph a total of 360 pits were estimated for the whole settlement. In addition, irregular oval to circular depressions were investigated and termed 'working hollows'. Bersu considered that they were structurally part of the agricultural cycle and had probably been used for threshing grain. Other structures given agricultural connotations were square arrangements of four posts which had been renewed on several occasions. The ground plans were normally 00.90—1.00m sq and they were interpreted as granaries for seed-corn on the basis of parallels amongst modern agricultural communities. Numerous pairs of posts set between 1.00m and 2.00m apart were interpreted as drying racks. The postholes of two houses were uncovered: House 1 stood in the centre of the settlement and was at least 15.00m in diameter with a central setting of four posts set in a square with sides 3.00m long. House 2 was a simple post-ring 10.00m in diameter.

The influence of Little Woodbury on Iron Age studies in southern Britain has been far-reaching and can be summarised under three main headings.

1. The site has given its name to a *Woodbury type economy* based around single farmstead units rather than villages. It is thought that the economy of such a unit was based on stock-breeding, grain cultivation, the storage of grain for consumption in pits and the seed-corn above ground in four-post granaries. It was also characterised by the practice of roasting or parching grain before storage, by the presence of circular houses, (although the Woodbury House 1 type is unique) by the presence of working hollows for threshing and winnowing grain, and fields from which the crops were harvested with small iron sickles and dried on double posted racks. It was envisaged as a well-characterised agricultural economy, with mixed farming based predominantly on corn growing and with a life span of some four and a half centuries before the Roman conquest. This concept was based almost entirely on the partial excavations at Little Woodbury (Piggott 1958).

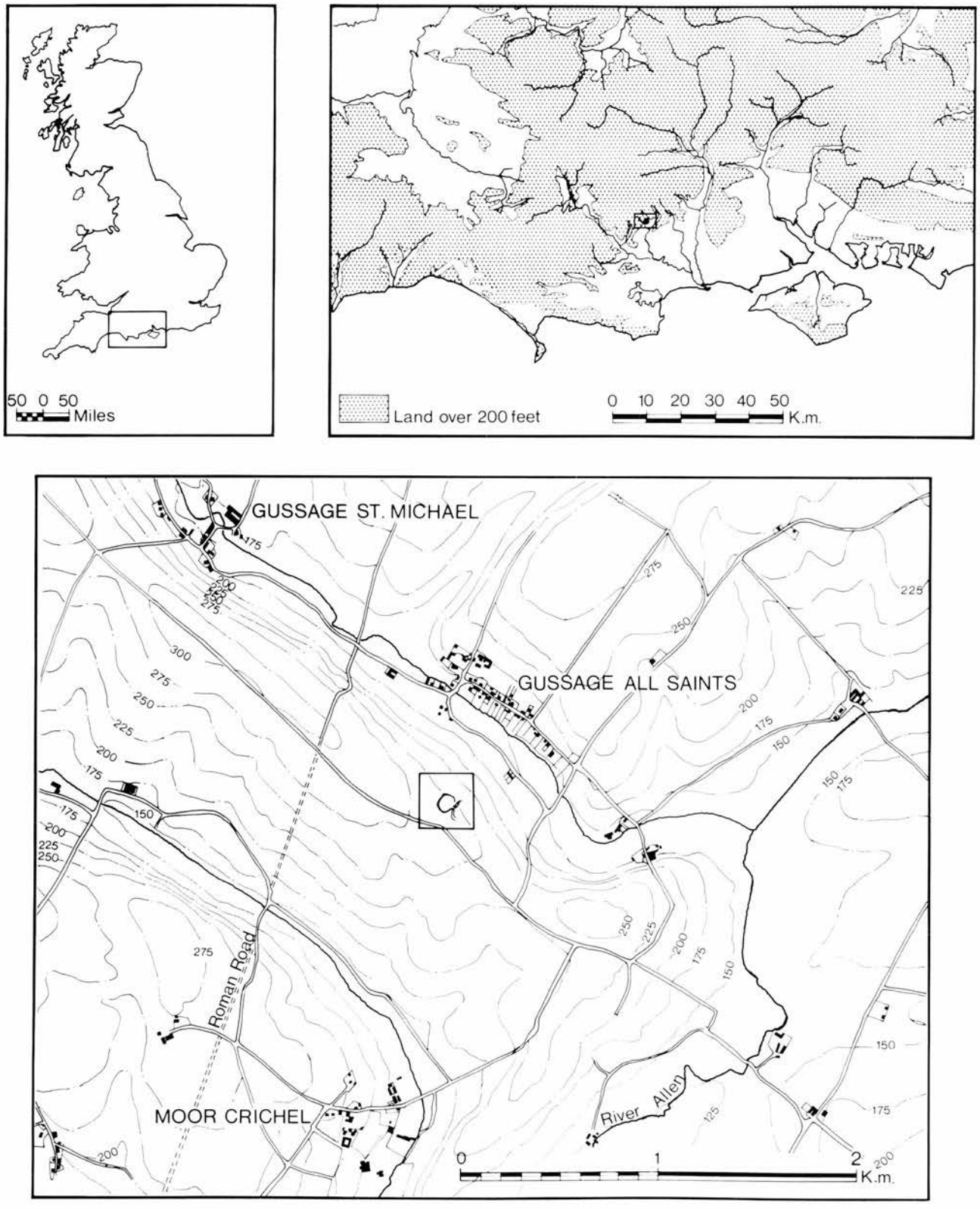

Figure 1 Location Map

2. The site has given its name to an archaeological entity which Professor Hodson has called the *Woodbury Culture* (Hodson 1964A). The latter was seen as a whole series of regional groups related by a series of type fossils – the round house, the bone weaving comb and the ring-headed pin of bronze or iron. To Hodson these three traits hinted at a native cultural tradition fundamentally separate from any Hallstatt or La Tène group on the continent, unified by surviving native Bronze Age traditions. In addition to the round house and weaving comb, all the basic features of the Little Woodbury economy—storage pits, timber granaries, drying racks, working hollows and field systems, were already present in the early first and late second millennia BC.

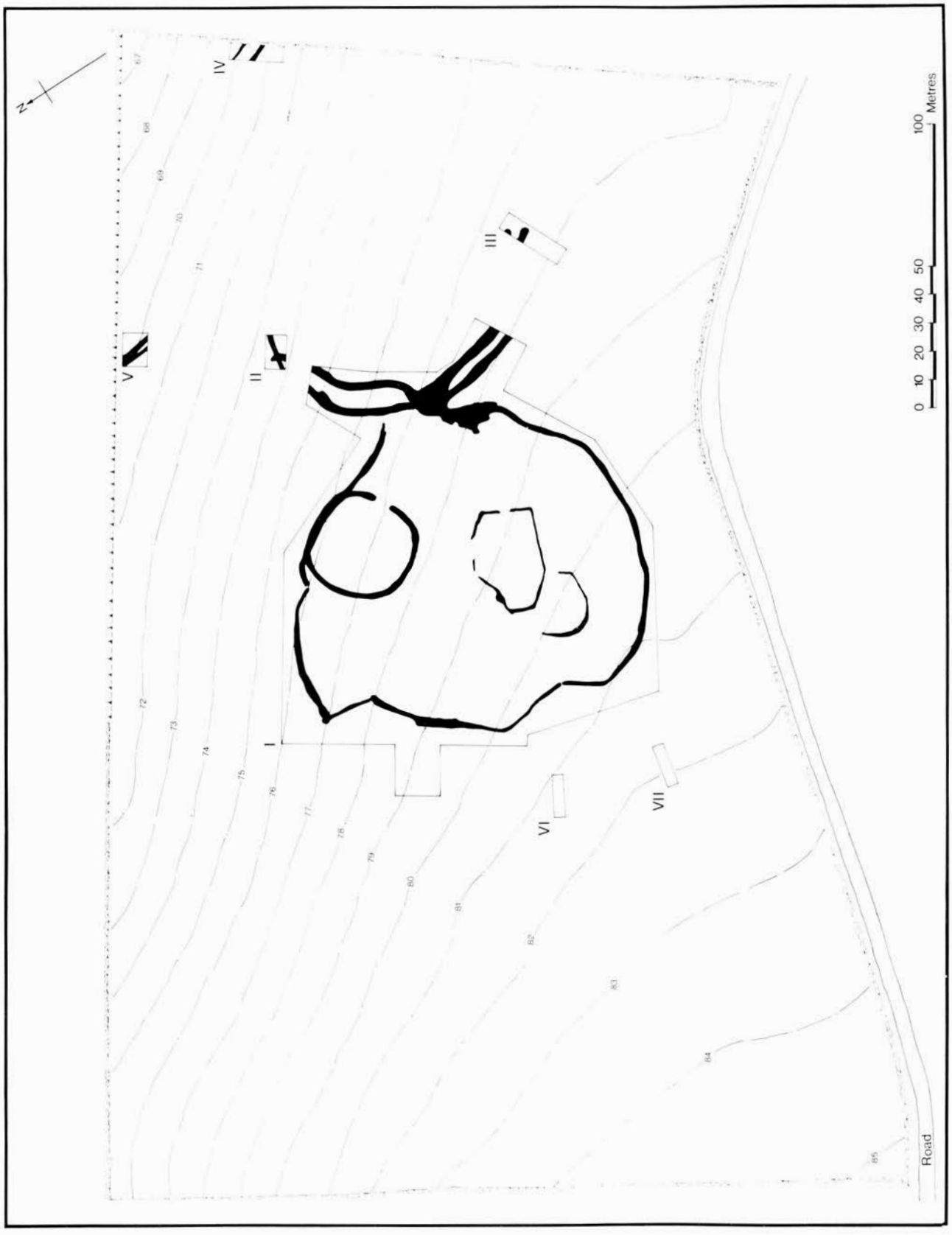

Figure 2 Simplified Site Plan

3. Little Woodbury has given its name to a settlement type characterised by a roughly circular enclosure of three to six acres, a simple entrance gap which is normally in the east and sometimes flanked by antennae ditches, a siting frequently offset from the crest of a ridge and the presence of pits. Comparable enclosures include Meon Hill near Stockbridge in Hampshire, Farleigh Mount to the west of Winchester with at least 60 acres of fields recognisable around it and Gussage All Saints in Cranborne Chase which was discovered from the air by Dr J K S St Joseph and planned as a crop-mark during a summer of intense drought (Bowen and Fowler 1966, Figure 1).

The influence which the Little Woodbury excavations and their interpretations have on Iron Age studies in Britain is all-pervading—Dr Harding indeed has referred to the process as 'this slavish reiteration of the typicality of Little Woodbury' (Harding 1974, 21), and yet the evidence was obtained from a partial excavation. A great deal has been deduced in economic, social and cultural contexts from the site but only one-third of the interior was investigated and arguments have constantly been inhibited on account of this fundamental defect. For many years it has been apparent that the total excavation of a Little Woodbury type enclosure was a prime necessity for the advancement of socio-economic theory in Iron Age studies but the opportunity for such a major project has not arisen since 1938. It is regrettably true that not one such enclosure with flanking antennae ditches at the entrance today survives as an earthwork and the enclosures are recorded only on aerial photographs. With information supplied by the Royal Commission on Historic Monuments the author reviewed the known enclosures in Wessex, most of which are under active erosion by the plough, with a view to the total excavation of one such site before the structural evidence was completely destroyed. Some sites were not suitable on account of their large size which precluded total excavation and a superficial resemblance to the Little Woodbury enclosure seemed desirable. Eventually the enclosure at Gussage All Saints was selected as it appeared to fulfil the basic requirements of size and close resemblance to the Little Woodbury enclosure.

The plough soil was stripped from the site using a Drott Scraper. As a result it was apparent that the aerial photographs obtained by Dr St Joseph had indicated the main pit clusters, the line of the enclosure ditch and the extent of the antennae at the entrance, but the western limits of the enclosure were under a different crop and had not registered. Also shown on the aerial photographs was a circular enclosure attached to the inner edge of the main ditch in its north sector, which itself possessed a single entrance in the east. Excavation showed this enclosure to be subsequent to the main enclosure ditch. The latter describes rather more than two-thirds of an irregular circle 130m from north to south and 115m from east to west. The main entrance was sited in the east and was flanked by pairs of antennae ditches. Excavation showed that the west perimeter was defined by short irregular lengths of ditch which even in plan were clearly not all contemporary. The limit of excavation was maintained at a generous distance from the edge of the enclosure and very few pits and post-holes were found to occur outside it. An extensive interim account was published in 1973 (Wainwright and Spratling 1973) and a second report in 1976 (Wainwright and Switsur 1976) when the radiocarbon dates became available.

The excavation was undertaken as a rescue project by the Department of the Environment with the kind permission of Mrs M Marten and Mr J A Friend, respectively the owner and tenant of the land. Many contributed to the project and some have written sections of this monograph.

The author is deeply grateful to these colleagues and to those whose labours do not appear in print. Before the excavation commenced a geophysical survey of the site was undertaken by staff of the Ancient Monuments Laboratory. This enabled its exact position to be established and also provided a preview of the density of the occupation. As Assistant Director, Mr Peter Donaldson supervised the mechanical stripping of the enclosure, provided many ideas which contributed to the eventual recording framework and co-ordinated the individual site records. In the field, particular responsibility was undertaken by Mrs A Browse, D Buckley, Mrs J Earling, J S Jefferies, C Musson with members of the then Rescue Archaeology Group, J Schweiso, G Smith, Mrs J Smith, Mrs K Stanley, R Williams and D Young. Site photography was undertaken by Mrs S J Wainwright. In the years following the completion of the excavation the author has been particularly indebted to staff of the Ancient Monuments Laboratory and the Ancient Monuments Illustrators Office — particularly in the latter case Mrs C Boddington, who prepared the illustrations of the plans, sections and pottery for this report, Miss D Fulford and Miss M Tremayne. It will be clear from the contents of this monograph that a particular debt of gratitude is owed to J S Jefferies for his contribution in respect of the archival record and his analyses of much of the data. Dr Mansel Spratling was fortunately working on the site when the debris from the bronze foundry was discovered in Pit 209. He has undertaken the study of this important and extensive collection — a full preliminary account of which appears in the volume. In addition, Dr Spratling has provided valued advice in respect of other artefacts recovered from the site. To Miss A Carter and Mrs A Browse goes the author's gratitude for much detailed work on the pottery and other finds from Gussage during the period 1972—1976. The onerous task of editing manuscript and proofs and of liaison with HMSO was undertaken with tact and efficiency by Ms Alison Cook of the Inspectorate's Publication section.

With the generous permission of Mrs M Marten the contents of Pit 209 (i.e. the bulk of the Bronze Foundry debris), has been deposited with the British Museum. The remainder of the finds, including copies of the archival material, are with the Dorset County Museum, Dorchester. This archival material comprises the site record cards in an unedited form supplemented by a computer-based catalogue containing basic information relating to the features such as dimensions, relationships, phasing and recorded artefacts. The archive also contains photostat reductions of the drawn sections and groups of associated pottery together with detailed information in print-out form of the ceramic record from all contexts.

PART I

The Structures

Chapter I
The Enclosure

The Gussage enclosure is a rough circle in plan (see Figure 2) flattened at its west side and with a single entrance in the east defined by two pairs of flanking antennae ditches. It incorporates an area of some three acres with internal dimensions of 100m from west to east and 120m from north to south. The enclosure bank had been totally destroyed by ploughing but excavation established that the enclosure ditch was of two-phase construction with an external bank in both periods which was deduced on the basis of the distribution of the ditch silts. This simple double sequence was matched at the east entrance where an early pair of antennae ditches were replaced by a second pair, each phase being associated with a timber gateway. A number of sherds and other artefacts were associated with the Phase 2 ditch, sufficient to assign it to a period when saucepan vessel types were in use and to relate the ditch to other structures in the interior. This was not the case, however, for the Phase 1 ditch, the deposits of which had been largely dug away in Phase 2 and which were, in any event, singularly bereft of artefacts. However, the small number of sherds recovered relate the Phase 1 ditch to the early period of settlement when coarse shouldered jars with finger-tip decoration, angular bowls, bowls coated with haematite and coarse-ware globular jars were in use. These attributions are supported by radiocarbon dates of 450±75 bc (Q1209) on bone from the Phase 1 ditch and of 230±75 bc (Q1201) on charcoal from the Phase 2 ditch. These dates are expressed in conventional radiocarbon years but when calibrated give a potential range of 750—430 BC (Q1209) and 410—170 BC (Q1201), thus confirming their relationship and associations. The calibrated dates follow the calibration proposed by E K Ralph *et al* (Ralph *et al* 1973). There are minor differences in the dates when they are calibrated according to Clark (Clark 1975, Wainwright and Switsur 1973, 39). Throughout this volume uncalibrated dates with a 5568 half-life have been presented as either bc or ad and calibrated dates as BC or AD.

The method of excavating the enclosure ditch is apparent from Figure 3. It was designated context No 1 and divided into segments, each of which were lettered. The segments were normally 10.00m long but were extended if necessary. On completion some 70% of the ditch silts had been removed and we were reasonably confident that those areas remaining unexcavated were largely devoid of artefacts.

The Phase 1 Enclosure Ditch (Figures 3, 6)

This ditch possessed a shallow V-shaped profile, occasionally with a narrow flat base, that averaged 1.20m wide and 80cm deep. Its alignment had been followed by the larger Phase 2 ditch and it had therefore been totally removed in places, principally around its south sector. In addition to the main entrance in the east, at least four simple gap entrances were identified in the ditch circuit in the north and west; they had not been defended by timber gateways and presumably led into the arable fields to the north, west and south. South of the east entrance the Phase 2 ditch (1Ka) diverged from the earlier alignment (1J, 1K). In this area the Phase 1 ditch is 1.20m wide and 80cm deep with a V-profile and it terminates in 1K south of the east entrance. As elsewhere around the circuit the ditch profile is fresh and unweathered and shows no signs of cleaning out. The bank appears to have been external on the basis of the ditch silts and if this were crowned with a hedge or light fence would have provided the required barrier. North of the east entrance the other Phase 1 ditch terminal was recorded in 1La where it possessed a small V-shaped profile of 1.00m wide and 50cm deep. It survived for a distance of only 4.00m from the terminal where it was destroyed by the Phase 2 ditch in 1L. Around the northern sector the Phase 1 ditch survives only in short stretches as in 1Q where it terminated on the west side of a causeway 7.00m wide. Its dimensions at this point were 1.50m × 70cm but it had largely been removed by a Phase 2 recutting which narrowed the causeway to 1.00m but did not entirely remove it. In this segment the ditch was cut by a pit (620)

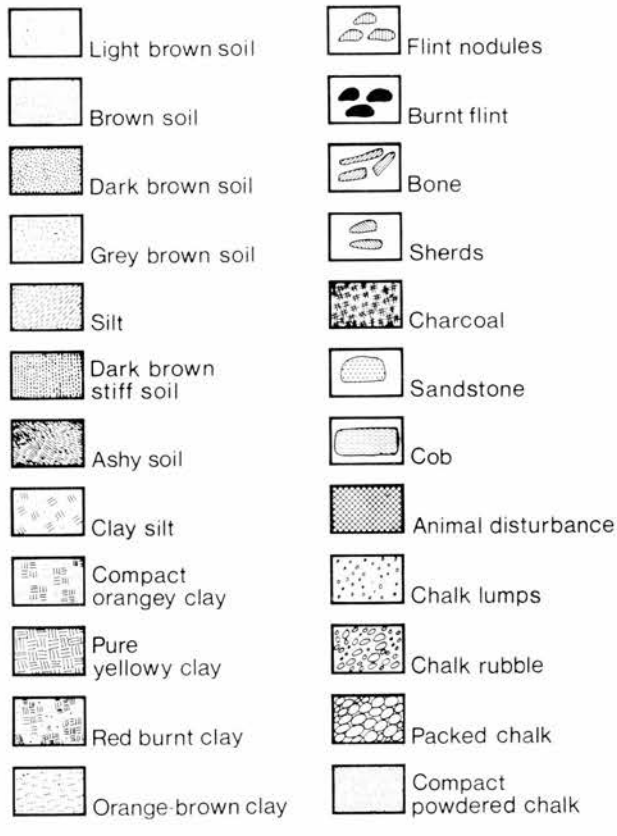

Figure 5 Section Key

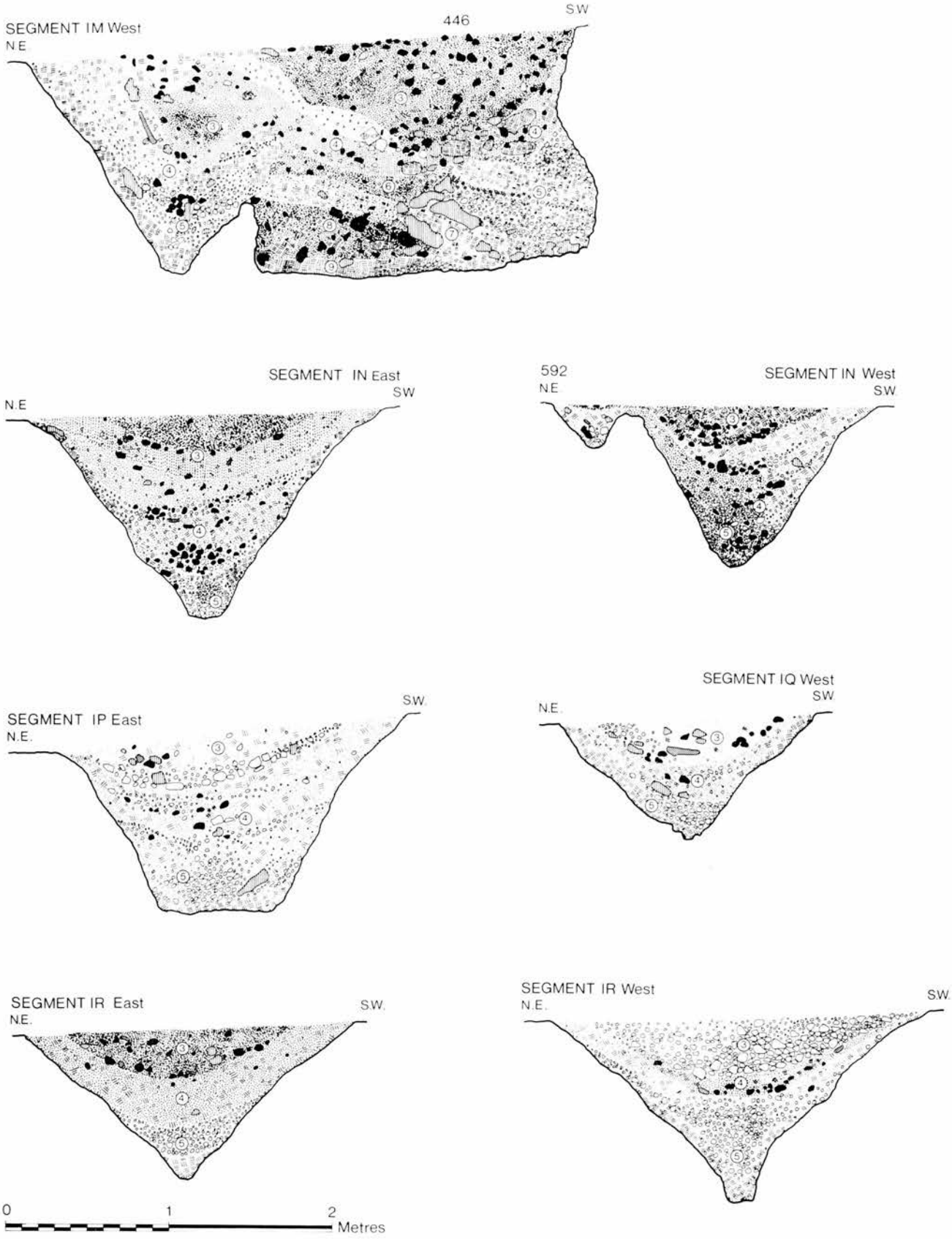

Figure 6 Sections of enclosure ditch IM/446; IN; IN/592; IP; IQ; IR

which was assigned to Phase 2 of the settlement on ceramic grounds. Short lengths of Phase 1 ditch were also recorded in 1S and 1T, the latter incorporating a terminal which was partially removed by the Phase 2 ditch in 1Ta and 1Tb. In segments 1U and 1Va, the Phase 1 ditch survives as a straight 13.00m length, averaging 1.40m wide and 1.00m deep. The original narrow causeway between them was removed in Phase 2 (IV), in the same way as a similar gap between 1T and 1U was blocked (1Tb). South of 1Va, the Phase 1 ditch was largely destroyed as far as segment 1, where it was well-preserved around an angle of the enclosure for a distance of 26.00m. The ditch was of normal V-shaped profile, 1.30m wide and 90cm deep with a squared unweathered channel at its base, and it produced a fine shouldered jar (P161) as well as a radiocarbon date of 450±75 bc (Q1209) on animal bone from layer (4). In this sector the ditch also cuts through pit 862 which is possibly to be assigned to Phase 1 and also possibly pit 431 which is a Phase 2 feature. Short lengths of Phase 1 ditch also occur in 1Y and 1Za.

Sufficient survives of the ditch and its associations to enable its form, plan and date to be established with some degree of certainty. The causewayed nature of the ditch along the west side of the enclosure was an unexpected development. It is clear that simple gap causeways did exist—probably to provide ready access to the arable fields, and that these were blocked in Phase 2. The lack of symmetry in the enclosure plan in this area is also surprising as it would have been more logical for the ditch to have described a full circle. Indeed it may be that traces of such a ditch can be seen on Dr St Joseph's aerial photographs but this is far from certain. No traces of such a ditch were recorded in the subsoil and its existence must remain highly speculative.

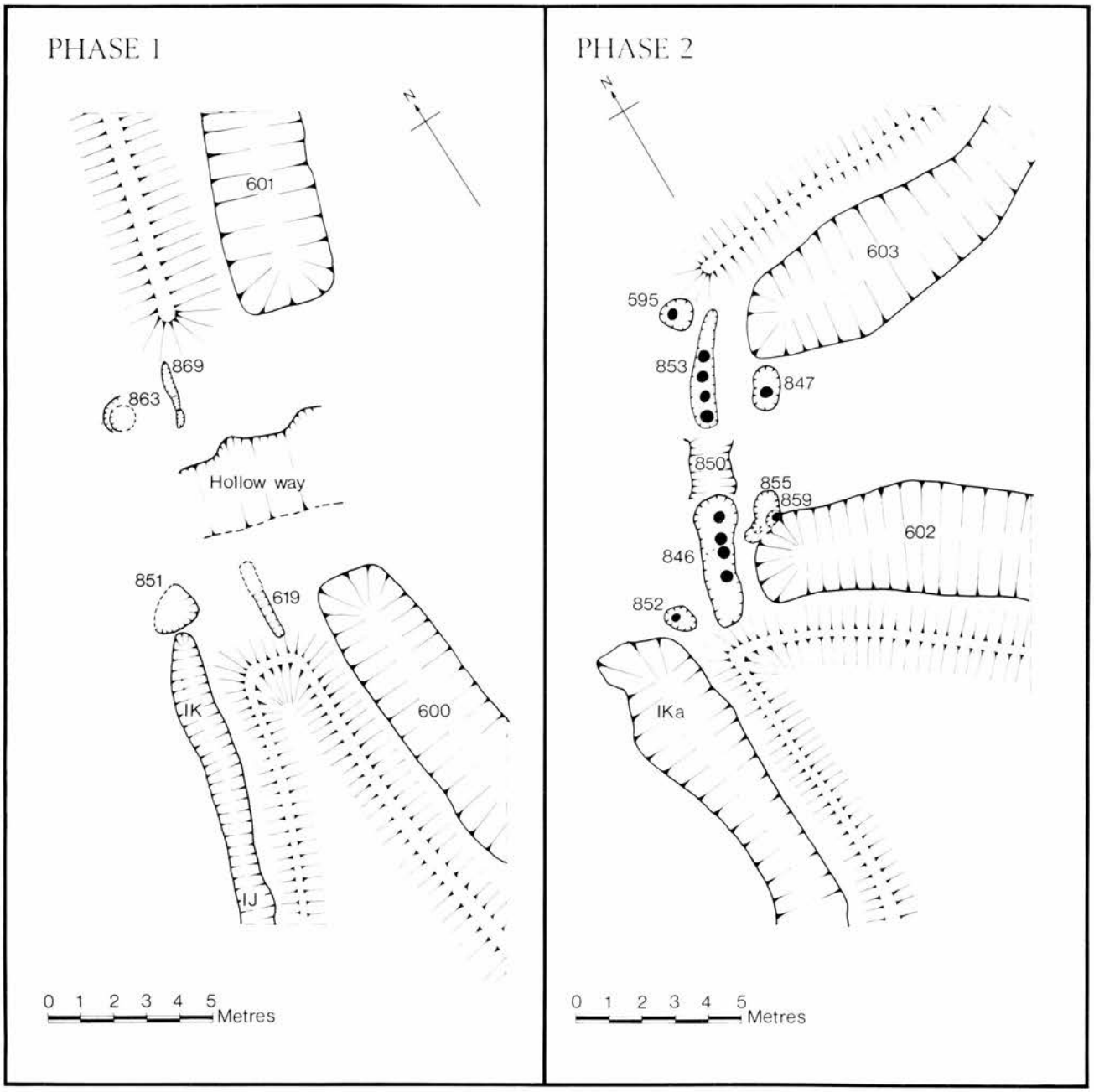

Figure 7 Entrance Plans

The Phase 1 Entrance (Figures 7 – 9, Plates VII – XI)
The siting of the main enclosure entrance was apparent from the original aerial photographs on which it was visible flanked by two pairs of antennae ditches. Characteristically it is sited in the east and faces slightly down-slope. Following the initial clearance it was apparent that two structural phases were represented. These were indicated in general terms by a pair of flanking 'antennae' ditches (600, 601) that were subsequently replaced by similar ditches (602, 603) on different alignments. These ditches had been accompanied by timber structures at the inner edge of the entrance causeway. These structures were initially masked by a thick deposit of ploughsoil that had accumulated in the slight hollow between the flanking ditch terminals (818). There are, in addition, slight indications of earlier structures; notably a straight length of gully or palisade trench (613) and its attendant post-holes that remain undated save for being cut through by both antennae ditches (600, 602) although 613 did produce a little weathered Phase 2 pottery. Such remains are, however, too fugitive to form into any coherent pattern. The two main phases at the entrance can be related with certainty to the two phases of the main enclosure ditch.

A certain amount of evidence for the Phase 1 entrance was destroyed by subsequent developments but sufficient survived for analysis and reconstruction. An entrance causeway 8.00m wide was flanked by the terminals of two ditches (600, 601) which were aligned in wide shallow arcs to the north and south respectively.

600: A single trench across the ditch showed it to be 3.80m wide with irregular sides and base and with a maximum depth of 1.30m. The ditch is aligned south from the entrance in a shallow arc 40.00m long and its north terminal near the entrance was cut by the Phase 2 antenna ditch (602). Its natural silting with some animal disturbance suggests an inner bank, and early Iron Age pottery was obtained from layer (10).

601: A single trench showed this ditch to be 2.80m wide and 1.70m deep, V-shaped in profile with a narrow flat base, the sides being quite fresh and unweathered. For a distance of some 42.00m it describes a shallow arc north from the entrance. It then continues as a narrow ditch north-east for at least 18.00m when it runs beyond the limits of the excavations. It produced no dating evidence but was cut by 603 – the Phase 2 antenna ditch.

It is clear from the general plan (Figure 3) that the terminals of the Phase 1 enclosure ditch (1K and 1La) did not curve around to oppose each other at the entrance gap as is normal but terminated at some distance from it—15.00m north in the case of 1La and 3.00m south in the case of 1K, thus leaving substantial unditched areas to be bridged. It is clear, however, that this would have been overcome by virtue of the Phase 1 enclosure ditch possessing an external bank whereas the upcast from the antennae ditches appears to have been thrown inwards, thus completing the enclosure. The entrance was protected by a timber gate aligned between the presumed bank terminals and opposite the southern ditch terminal 1K. The structure was based on two short lengths of palisade trench (619, 869) and two post-holes (851, 863). With the exception of 869, all features had been partially destroyed by Phase 2 structures.

619: A palisade trench 1.50m long, 30cm wide and 10cm deep. It is shallow, fairly straight-sided and with a flattish bottom but no 'pipes' are visible. There is no evidence for date other than that it was cut by 602.

869: A palisade trench 2.00m long, 50cm wide and up to 60cm deep. It is straight-sided with a flat bottom and was partially back-filled with chalk in Phase 2. Sherds from it suggest a possible Phase 1 attribution.

851: A post-hole 80cm in diameter and 35cm deep, partially destroyed by 846 so that only the chalk packing survives.

863: A post-hole 1.00m in diameter and 40cm deep, cut by 853.

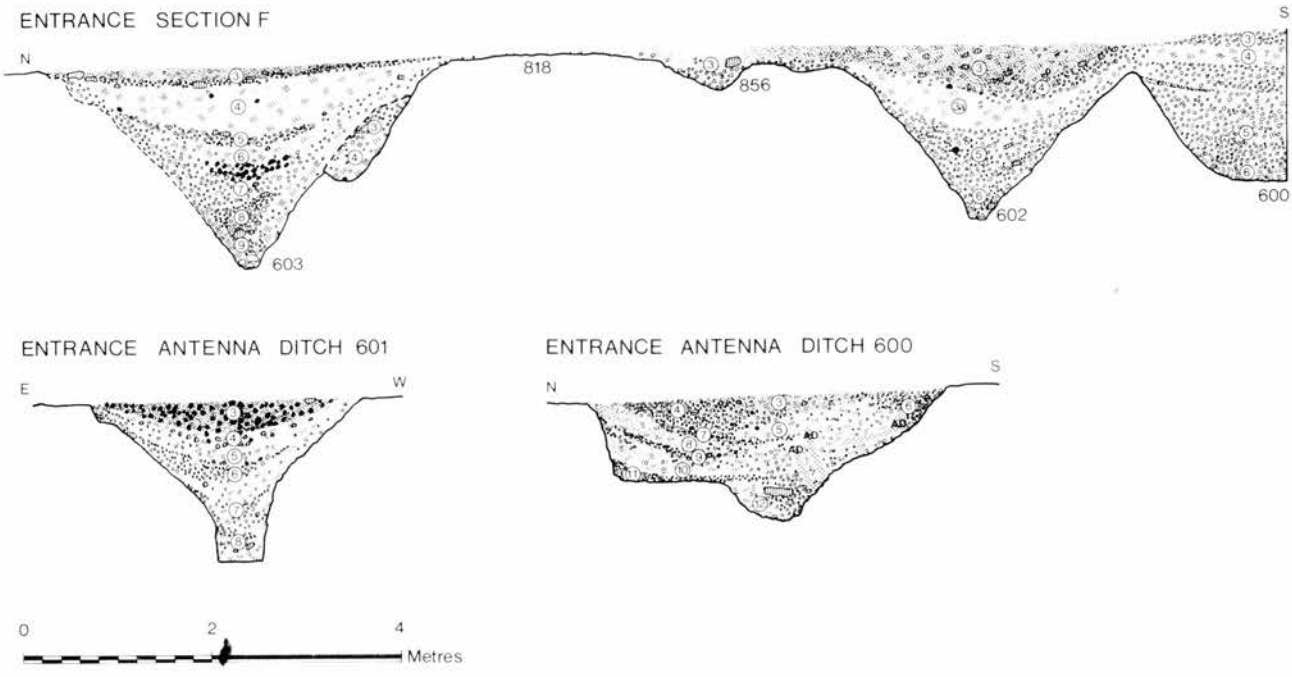

Figure 8 Sections of entrance area: 818

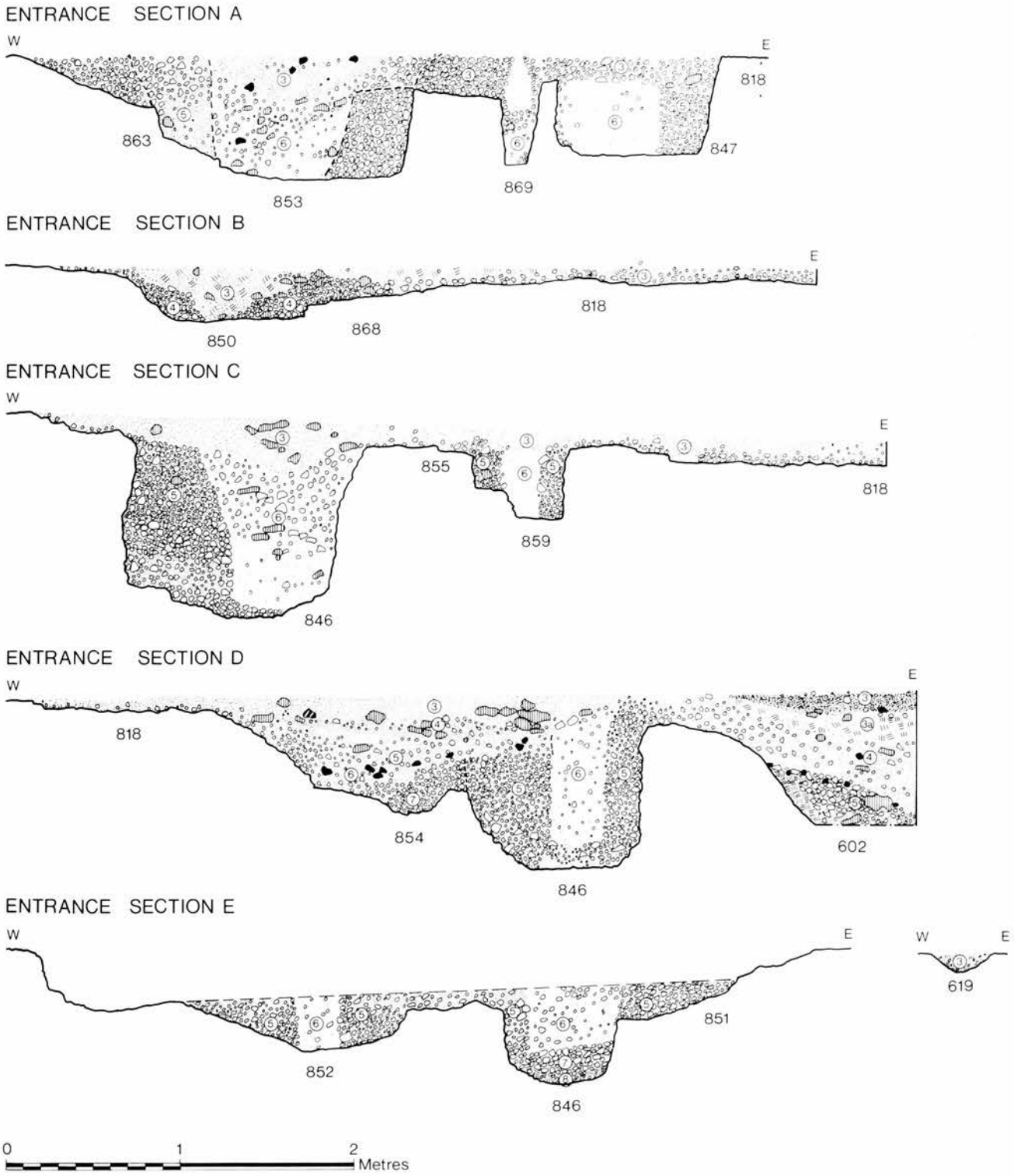

Figure 9 Sections of antennae ditches and entrance area

The probable width of the entrance did not exceed 4.00m—5.00m and it was distinguished by a heavily worn hollow way, the southern part of which had been removed by a Phase 2 antenna ditch (602).

The Phase 2 Enclosure Ditch (Figures 3, 6; Plate XII)
The early ditch was replaced by a larger feature, again V-shaped with a narrow flat base which averaged 2.20m wide and 1.40m deep. It followed the alignment of the Phase 1 ditch which it totally destroyed in the east and the south where it was completed to its full width and depth. The simple gap entrances in the north and west were blocked but elsewhere in these sectors only intermittent re-cutting of the earlier ditch was undertaken. Common to most excavated ditch segments was the occurrence of Durotrigean (Phase 3) pottery and burnt flints in the top of the ditch fill, together with a great deal of comminuted charcoal, splintered bone and occasional trinkets. Middle

Iron Age (Phase 2) pottery occurred in a fresh condition lower down in the ditch filling. The sides of the ditch are normally fresh and unweathered and it had silted naturally with chalk rubble at the base. The nature of the filling suggests an external bank.

In segments 1A—1H the Phase 2 ditch totally destroyed its predecessor but in segment 1Ka the ditch adopted a different alignment inside that of the Phase 1 ditch and terminated south of the east entrance. North of the latter, the Phase 2 ditch terminal occurs in segment 1L where the re-cutting had stopped short of the Phase 1 terminal. In segment 1M layer (4), the ditch produced a great deal of Phase 2 pottery and a radiocarbon date from charcoal of 230±75 bc (Q1201). In the floor of the ditch in this area was a pit (726) which also produced Phase 2 pottery and which appears to have been dug through the ditch floor soon after it had been excavated. It possessed a simple bell-profile 82cm in diameter at the lip, 1.12m in diameter at the base and 1.20m deep. In this area the ditch was also cut by a Durotrigean pit 446. The Phase 2 ditch occurs in 1N and in 1P where it is cut by ditch 310, which is very late in the site sequence. The Phase 1 ditch terminal in this segment was also recut to a point nearer to its counterpart in 1Q, where the Phase 1 terminal is also re-cut at this stage. Intermittent re-cuttings of the enclosure ditch occur in 1R, 1Ta, 1Tb and 1V and a Phase 2 pit 725 was cut by the ditch in 1Tb. South of the area in 1Vb the Phase 1 ditch was extensively and consistently re-dug in a stretch 18.00m long and in the process it cut through three Phase 1 pits (434, 866, 867). The Phase 1 ditch was also re-cut along the length of segment 1Z. Finally it is necessary to draw attention to feature 2—an irregular hollow with maximum dimensions of 10.00m × 7.00m which cut through the Phase 2 enclosure ditch 1Ka and is therefore later than it (Figure 24). Its relevance here is that the base of a single pit (857) was preserved in the bottom of the hollow. The pit did not produce any dating evidence but may well belong with Phase 2 and have been removed by the hollow in part.

The pottery and radiocarbon date from the ditch place it firmly in Phase 2 of the site sequence—that characterised ceramically by vertical sided saucepan vessels, jars with rounded and beaded rims, barrel jars and jars with thick pedestal bases. Such assemblages are normally dated between the third and first centuries BC and for Gussage we have the radiocarbon date already quoted from the ditch (Q1201) which when calibrated gives the range 410—170 BC. This compares with a charcoal sample from Pit 437 which produced a similar ceramic assemblage to that from the ditch along with a radiocarbon date of 210±75 bc (Q1205), which when calibrated gives the range 410—140 BC. The date and ceramic associations of the Phase 2 ditch in relation to its predecessor and to the settlement within it therefore seem secure. It is evident that some continuity of tradition must be allowed for in that the ditch followed so precisely the line of its predecessor.

The Phase 2 Entrance (Figures 3, 7)

The Phase 2 entrance was more elaborate and better preserved than that of Phase 1. It is to be related to the Phase 2 re-modelling of the enclosure ditch. The antennae ditches were retained but they were re-dug on completely new alignments (602, 603).

602: This southern antenna ditch follows a sinuous profile for a distance of some 77.00m and cuts across its Phase 1 predecessor (600). It was sectioned by a single trench near its terminal where it flanks the entrance and was found to have a fresh V-shaped profile 3.00m wide and 2.00m deep and to have silted naturally. There was no sign of any clearing out and the bank was on the inner side.

603: This northern antenna ditch follows a sinuous alignment for a distance of some 56.00m and cuts across its predecessor (601). Its terminal flanks the entrance causeway where it was sectioned and found to cut an earlier unnumbered ditch which is probably part of 601 although this is not certain. The fresh V-shaped profile was 4.50m wide and 2.20m deep and had silted fairly rapidly. Middle Iron Age pottery (Phase 2) was obtained from well down in the ditch (layers (6) and (8)).

The new antennae ditch alignments constituted a rudimentary funnel entrance instead of simple opposed terminals as in Phase 1. Between the ditch terminals and to the rear between the presumed bank terminals were post-holes and palisade slots representing the remains of a more elaborate structure than in Phase 1.

847: An oval, vertical sided and flat-bottomed post-hole 1.20m × 90cm in diameter and 50cm deep with a 'pipe' 60cm in diameter. Derived packing had subsequently spread across the top of the pipe.

855: An oval post-hole with vertical sides and flat base 1.00m × 70cm in diameter and 50cm deep which either replaced or was replaced by 859.

859: An oval post-hole with vertical sides and flat base 50cm × 40cm in diameter and 75cm deep with a pipe 20cm in diameter. It either replaced or was replaced by 855.

846: A palisade trench 4.00m long, 1.00m wide and 1.10m deep with vertical sides. Four post-pipes were visible in the packing, 60cm, 50cm, 30cm and 30cm in diameter respectively. The trench was dug through 854.

853: A palisade trench 4.00m long, 70cm wide and 80cm deep. It has vertical sides and broadens towards the entrance way. Traces of four pipes were visible in the packing and ranged from 70cm to 40cm in diameter. The trench was cut into 863 and produced derived Early Iron Age pottery.

850: Linking the terminals of the two palisade trenches (846, 853) was a broad shallow gully, 1.20m wide and 25cm deep. Its purpose is unknown but it was presumably associated in some way with the timber gate.

595: An irregular post-pit 1.00m × 90cm in diameter and 26cm deep with a possible post-base in its floor.

852: A post-hole, oval in plan and flat-bottomed, 90cm × 60cm in diameter and 35cm deep, containing a pipe 22cm in diameter.

The entrance gap was 3.00m wide between post-holes 847 and 855/859 that were sited between the ditch terminals, and a maximum of 2.50m wide between the inner posts of palisade trenches 846 and 853. The original structure appears to have been an outer timber gate between the ditch terminals, to the rear of which were short-lengths of substantial timber walling between the bank terminals, combined with a narrowing of the entrance way. The embankments of the antennae ditches would have spread north and south from this gateway thus providing an impressive entrance into the settlement.

Chapter II
The Pits

by J S Jefferies

Introduction

Pits are common on Iron Age settlements, and vary greatly in size and shape. These variations may on occasion be a reflection of sub-soil conditions but can also indicate differential usage[1]. In addition, experiments have shown that certain pits offer advantages for the purpose of storing grain, so it may be possible to find evidence for the evolution of an optimum pit-shape (Bowen and Wood 1968). Any significant changes in pit shapes may reflect changes in economy during the settlement occupation.

Factors affecting pit shape

Certain factors at Gussage other than deliberate design may have affected shape or size. They include:

i. The nature of the sub-soil and the presence of constituents such as flint nodules.
ii. Erosion from the hill has removed an unknown amount of chalk. All pits are measured from the present chalk surface.
iii. Erosion of the pits themselves. Extensive natural silting of pits is rare at Gussage. Most pits were back-filled after the termination of their primary use.

Methods

The initial approach was to attempt some objective classification of profile shapes based on computer cluster analysis. This was done by digitizing the pit profiles using a D Mac plotter and then processing the resulting co-ordinates by a program in the PLUTARCH library designed for experimental classification of pottery shapes (Wilcock 1974). This program smooths the curve of the pit side, rotates it to calculate volume and then interpolates ten equi-spaced diameters. The diameter of each pit is then compared with the equivalent diameter of every other pit in the sample. From this a pythagorean distance matrix is computed and the profile classification performed by average link cluster analysis. This work was done on the ICL 41/30 at Keele and was directed by Dr J D Wilcock. The results of the initial analysis were not very useful, showing that the pits had continuously varying characteristics rather than discrete divisions between particular profile types. Furthermore, it was difficult to recognise common characteristics within groups. This is possibly a result of considering together the variables of profile shape and size, which was confusing and was aggravated by the rather small sample employed in the experiment.

An alternative approach was to evolve a classification which reflected characteristics which are likely or which have been shown experimentally to have an effect on the function or efficiency of the pit and to give arbitrary mathematical limits to this classification. This means that although the initial classes are arbitrary the repetition amongst samples is consistent.

Profile Classification

It seemed useful for comparative purposes to start from the classification used by Bersu (Bersu 1940) but to modify it as follows:

i. Profiles D and E are too similar to be usefully distinguished in practice and have been combined.
ii. Profiles A and C are similar in the relationship of their diameters but differ in their diameter-depth ratio. This ratio was considered separately and therefore A and C were also combined.
iii. It was recognised that any of the profile forms may have an eroded top, which may have occurred after the abandonment of the pit's original function (or indeed may have caused that abandonment). However it is still possible to predict the original profile from the uneroded portion.

The resulting classification is shown in Figure 10.

For those samples processed by the PLUTARCH suite all necessary dimensions were available, but for pits not already processed, manual measurements were necessary as no graphic facilities were available. The method used was a simple mechanical device which gave ten equi-spaced diameters on the profile drawing. These were measured and the results punched onto paper-tape. A program was then written on Honeywell mark III Timesharing Service, to analyse the data. This was done by considering the wall slope at various positions in the pit and placing it in one of the three main categories (or its eroded version). Other factors which may have a bearing on function or efficiency such as depth, volume were considered separately. (see Figure 11)

Table I. Pit profiles

	1	1A	2	2A	3	3A	*Total*
Phase 1	15	10	50	5	5	1	86
Phase 2	12	12	12	5	6	—	47
Phase 3	26	32	42	6	19	2	127
Total	53	54	104	16	30	3	260
	20%	21%	40%	6%	12%	1%	
	41%		46%		13%		

Individual percentages are also shown graphically in Figure 11.

1. This chapter deals with an analysis of pits from the whole period of settlement. Further comments on pits from individual phases occur in Chapters III and IV and general remarks in Chapter XIV. Only representative pit sections have been published — the remainder have been maintained as an archive.

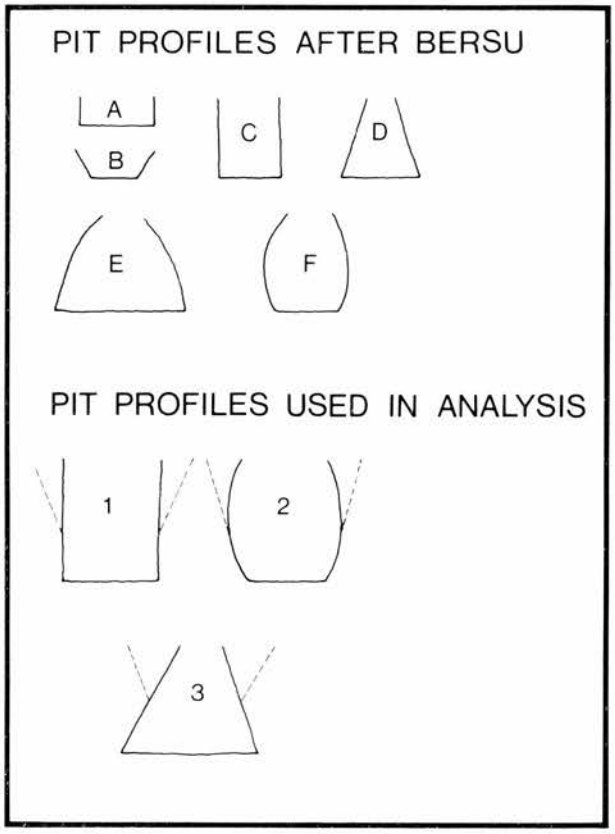

Figure 10 Diagrams of pit profiles

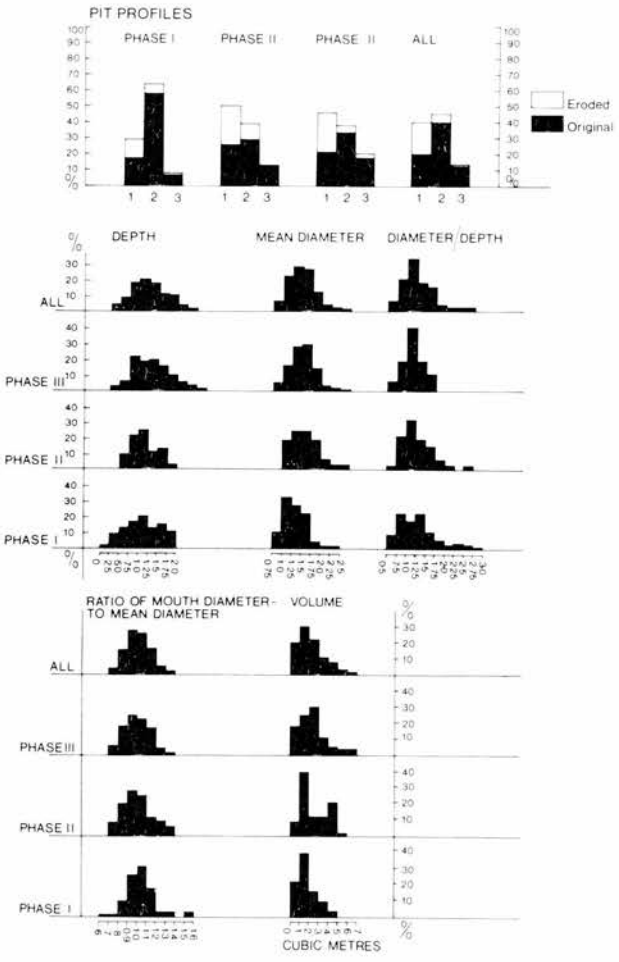

Figure 11 Histogram relating profiles, dimensions and volumes of the pits

Table II. Depth

	Number In Sample	Mean Depth	Min Depth	Max Depth	Std Deviation
Phase 1	86	1.14m	0.24m	1.96m	0.46
Phase 2	47	1.33m	0.56m	2.80m	0.47
Phase 3	127	1.33m	0.32m	2.60m	0.47

Mean depth for all pits = 1.26m

Table III. Mean diameter

	Number In Sample	Mean Diameter	Min Diameter	Max Diameter	Std Deviation
Phase 1	86	1.33m	0.78m	2.37m	0.29
Phase 2	47	1.58m	1.03m	2.66m	0.37
Phase 3	127	1.50m	0.80m	2.70m	0.34

Mean diameter is here calculated as the diameter of a cylinder which would have the same volume and depth as the pit being considered. Mean diameter for all pits = 1.45m.

Table IV. Ratio of mean diameter to depth

	Number In Sample	Mean Diameter Depth	Min Ratio	Max Ratio	Std Deviation
Phase 1	86	1.39	0.57	4.70	0.70
Phase 2	47	1.28	0.65	2.70	0.39
Phase 3	127	1.24	0.66	4.45	0.50

Mean ratio for all pits = 1.29.

Table V. Ratio of mouth diameter to mean diameter

	Number In Sample	Mean Ratio	Min Ratio	Max Ratio	Std Deviation
Phase 1	86	1.05	0.66	1.57	0.15
Phase 2	47	1.03	0.77	1.35	0.15
Phase 3	127	1.00	0.63	1.52	0.15

The ratio may have significance in the efficiency of the pit and was the main factor considered by Reynolds in his experiments (Reynolds 1974).

Volume

The calculation of pit volumes is important for, if they were to be used for storage, they are likely to have been constructed to a certain volume. Other parameters such as diameters and depth may then be varied. If certain assumptions are made, some estimate of population may be made by considering grain storage capacity.

The facilities of the PLUTARCH system were used to calculate volumes for a sample of pits but the majority were calculated from the diameters measured from section drawings for the profile analysis. The method used was to consider the sliced profile as a series of conic frusta for each of which the volume is given by:

$\frac{\pi h}{3}(R^2 + Rr + r^2)$ Where R and r are the two radii and h the distance between them. (In this case depth /9).

The volume of the pit is then the sum of these (nine) frusta.

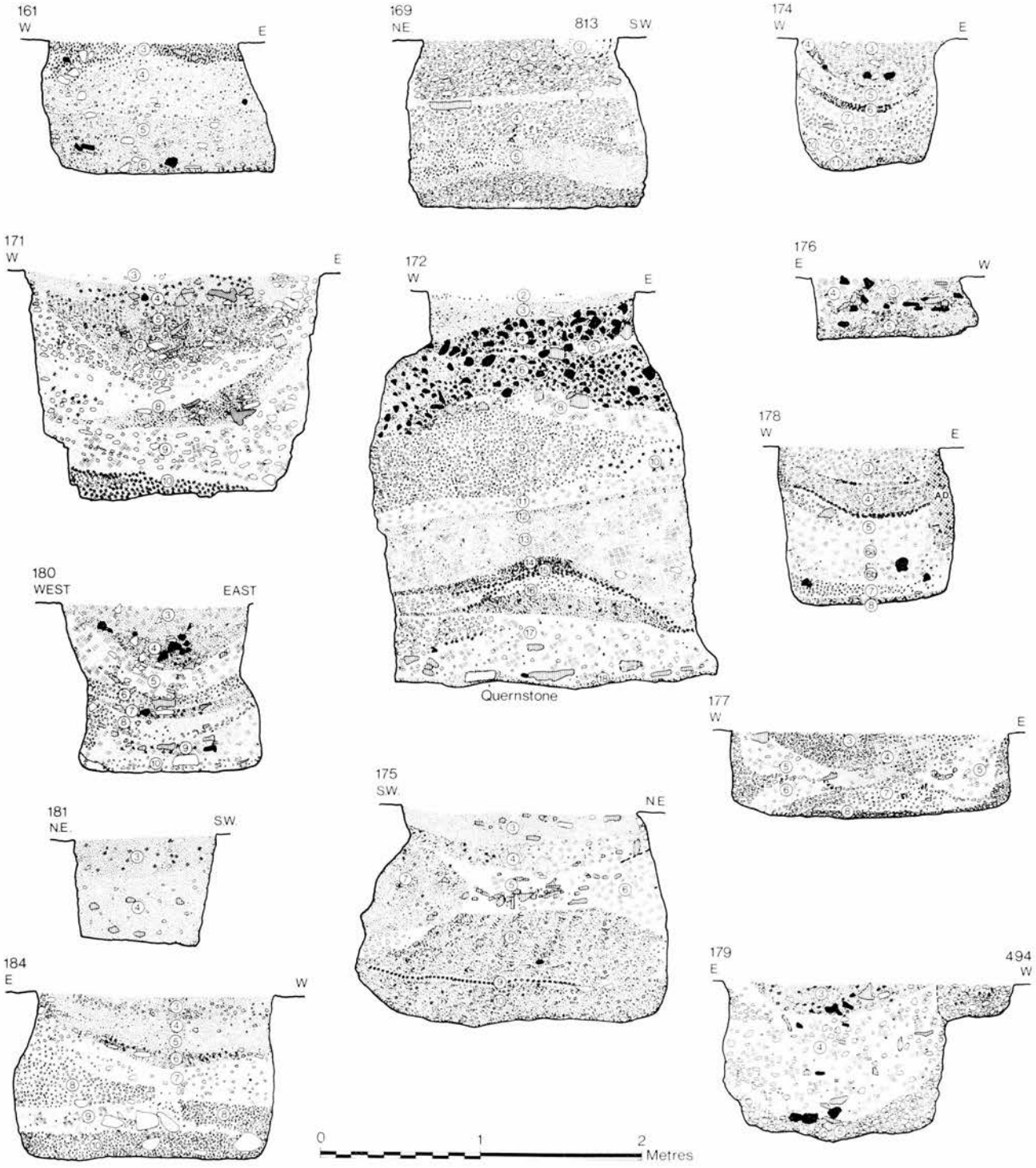

Figure 12 Sections of 161, 169, 171–2, 174–187, 494, 813

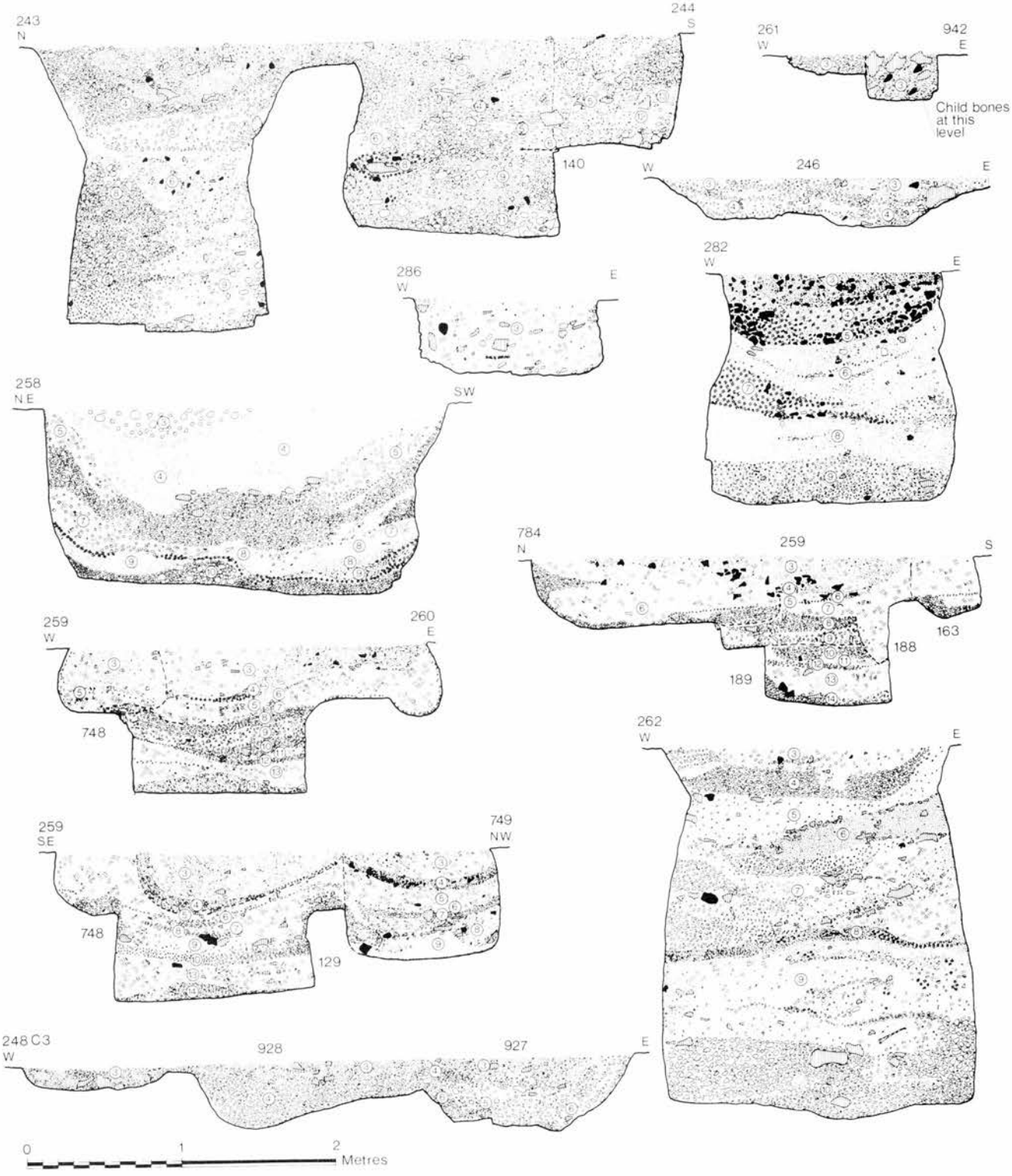

Figure 13 Sections of 129, 140, 163, 188–9, 243–4, 246, 248, 258–62, 282, 286, 748–9, 784, 927–8, 942

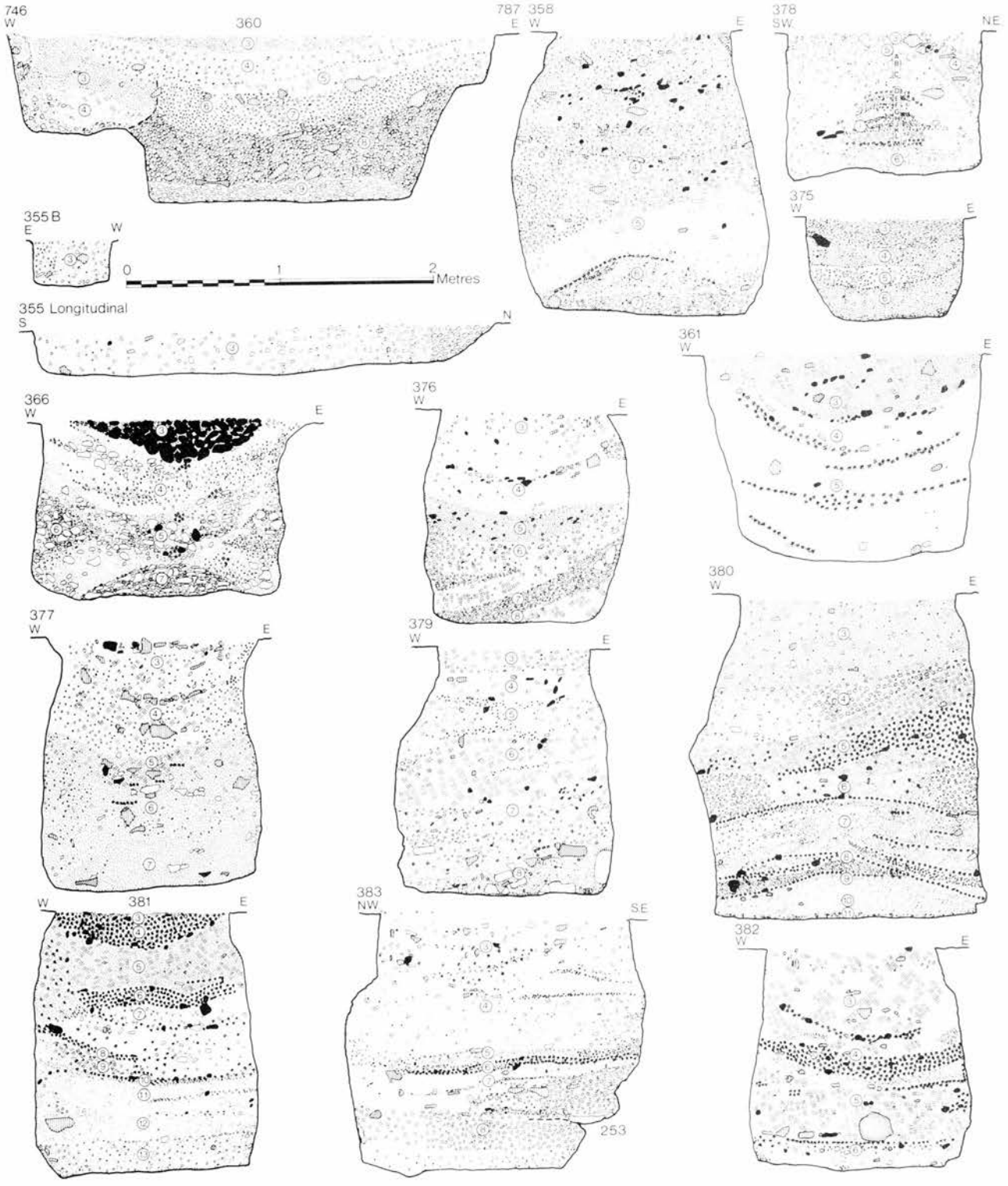

Figure 14 Sections of 355, 358, 360–1, 366, 375–83

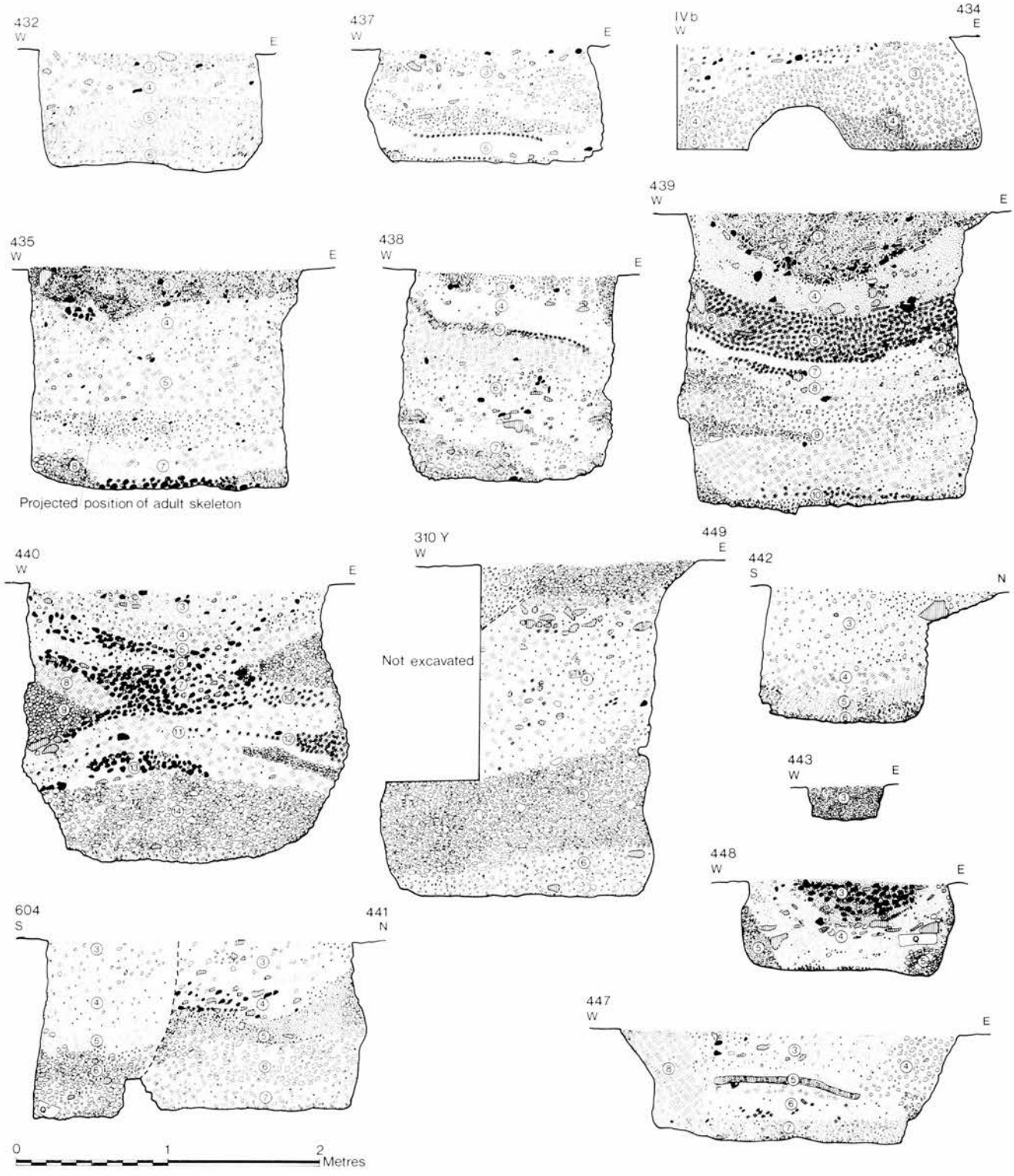

Figure 15 Sections of 310, 432, 434–5, 437–443, 447–9, 604

Table VI. Volume

	Number In Sample	Mean Vol	Min Vol	Max Vol	Std Deviation	Total for Sample	Total Number of Pits	Total Vol for each Phase
Phase 1	86	1.79m³	0.23	5.1m³	1.18	154m³	128	229m³
Phase 2	47	3.00m³	0.50	12.6m³	2.45	141m³	69	207m³
Phase 3	127	2.77m³	0.27	15.2m³	2.15	343m³	184	497m³

Mean volume for all pits sampled = 2.45m³
Total pit volume for all phased pits = 933m³
Estimate for undated pits = 125m³
Total = 1,060 *approx* m³

The total storage capacity for the site is thus in the region of 1,000 cubic metres i.e. about 27,500 bushels.

The problems and unknowns which surround any attempt to estimate population from pit volumes have been clearly stated (Bowen and Wood 1968) but are worth repetition here.

i. Not all pits were necessarily used for grain storage. It may be possible however to eliminate some pits as being unsuited to this purpose. Bersu chose to consider pits less than 1m deep as being for a purpose other than the storage of grain. However, experiments have shown that pits 0.6m deep can store grain successfully. Discounting pits less than 0.75m deep would reduce total storage by about 7.5%. Pits in which the ratio of mean diameter to depth exceeds 1.5 would again reduce capacity by about 7.5%.
ii. The annual *per capita* consumption of corn is not known with any certainty. Bersu used the 1938 value for Britain of 4.5 bushels per head but it has been indicated elsewhere that a figure of two or three times this amount would be more appropriate. Some estimate for seed corn should also be included.
iii. All experiments so far have been with modern threshed barley. Other species or varieties may reduce the weight considerably.
iv. The use of a lining would reduce the effective volume of a pit by perhaps 25%. Although it is possible to store grain in unlined pits, there is little evidence for pit linings at Gussage.
v. The 'life' of a pit is unknown. It has been shown that with cleaning and possibly sterilization by burning the life of a pit could be extended. Bersu guessed at a figure of ten years.

In view of these uncertainties it is clearly difficult to make a reliable absolute estimate of population from grain storage capacity, but it is perhaps desirable to make a useful guess at some variables so as to have some idea of maximum and minimum values. The most difficult estimate is the useful life of a pit and so population has been first expressed in terms of pit years, which can be used to compare with other sites.

Assuming a settlement of 600 years duration the available storage capacity is about 1.5m³ per year of pit life.

If the annual consumption (including seed corn) is in the region of 0.25—0.5 tonnes, (equivalent to 6.5—13 bushels calculated on modern threshed barley), this would give a value of three to six adults per pit year. This is likely to be a maximum value. Using for comparative purposes the Bersu figure of ten years this gives an estimate of 30—60 individuals for the population of Gussage.

Comments

Although the counts of pit profiles show a general preference for the barrel-shaped type, (2.2A) this is due to large numbers of these pits in Phase 1 (63%) which is not the case in Phase 3 (38%). This is contrary to the prediction that the barrel shaped pit was derived from the simple cylinder. The mean ratio of mouth diameter to mean diameter, however, is consistently close to unity for the three periods. As natural erosion would tend to increase this ratio, it may be assumed that there was a tendency to produce pits in which the mouth was smaller than the rest of the pit. The experiments by Reynolds (Reynolds 1974) have shown that pits in which the mouth diameter is smaller than the rest of the pit have different and probably superior characteristics for corn storage from those pits which are more or less cylindrical. Reynolds also suggests that repeated cleaning of the lower parts of the pits may have helped to evolve this type of profile. The progressive percentage increase in later phases of such bell-shaped pits with inward sloping walls (7%, 13% and 16%, respectively) could possibly be a reflection of this process although the sample size is too small to be significant.

There is a significant increase (approx 17%) in both mean depth and mean diameter of pits in later phases and this results in considerably greater volumes. The ratio of mean diameter to depth, however, falls slightly in pits of the later settlement.

Examination of various dimensions and ratios failed with this sample to show signs of multi-modality and there was no means of demonstrating that functional demands played any part in determining profile shape. There is little evidence that there was any significant development in profile shape during the period considered. It is, however, interesting to note the considerable increase in average pit volume between Phases 1 and 2 where an almost equivalent storage volume was achieved with only a little over half the number of pits. This higher average is only slightly reduced in Phase 3.

The method of pit classification used, while not being much superior to simple inspection, does have the great advantage that it may be consistently repeated as the shapes have mathematical definitions. The consistent examination of other pit samples may throw some more light on the problems but there is also a need for more practical experiments if useful results are to be obtained. The original and other derived data together with the mathematical definitions of the profiles have been deposited in the archive.

Chapter III
The Early Iron Age Settlement: Phase 1

This section is concerned with the structural evidence for the Phase I settlement other than the enclosure ditch and entrance which have been described in Chapter I. It will be recalled that the Phase 1 enclosure comprised a three-acre area surrounded by a shallow ditch which averaged 1.20m and 80cm deep with an external bank which has been inferred on the basis of the ditch silts. The main entrance in the east was flanked by a single antenna ditch on either side of an 8.00m wide causeway and was defended by a timber gateway. The evidence for settlement is on the whole contained within this boundary and very few pits occur outside it. The features represented in this phase are pits, post-hole structures and 'working hollows', which, when isolated from the later features form a consistent pattern.

An examination of the Phase 1 settlement plan (Figure 16) indicates that the pits and working hollows are distributed in a roughly penannular setting around groups of post-holes which in some cases form four-post-hole structures. The gap in the ring of pits is orientated towards the east entrance. The distribution of the pits nowhere approaches the enclosure ditch save in its west sector. Indeed, in the south the intra-mural space is 15.00m, at the east entrance 20.00m and to the north 27.00m. This broad, blank area is very noticeable and serves to emphasise the ordered nature of the settlement plan. Within this outer ring of pits in a circular area approximately 50.00m in diameter are the four-post structures. Very few contemporary pits encroach into the central area, access to which was facilitated by a gap some 20.00m wide in the pit distribution. The compactness of the settlement and the symmetry of the plan is emphasized by at least 14 intersections of Phase 1 structures with others of the same date, yet clearly there was no lack of space into which the settlement could spread.

Unlike the enclosure ditch where finds were very sparse, the attribution of the pits to Phase 1 of the settlement has been achieved purely on ceramic grounds. Supporting this attribution are two radiocarbon dates of 420 ± 90 bc (Q1203) on charcoal from pit 379 (layers (7) and (8)) and 570 ± 80 bc (Q1204) on charcoal from pit 297 (layer (8)). The calibrated ages from these samples are 730—420 BC (Q1203) and 790—480 BC (Q1204). These dates should be compared with that from a sample already quoted from the Phase 1 enclosure ditch with a calibrated age of 750—430 BC (Q1209). There is a good correlation both between the two pit samples and between those samples and that from the Phase 1 enclosure ditch.

The dating of the post-holes, however, is a different matter. Erosion of the site had been extreme and only the bases of the post-holes had survived in most cases. Under these circumstances it was felt that ceramic evidence was insufficient for dating purposes as the likelihood of subsequent intrusion was very strong. Therefore, although post-holes may appear in the ceramic record as belonging to a particular phase, greater reliance has been placed on intersections and relationships where these are available.

The Pits

A full description of the pits has been given in Chapter II where their profiles and volumes have been discussed and only a summary account of data relevant to Phase 1 is given here. Only a selection of pit sections have been published and the remainder retained as archival material with detailed accounts of their dimensions and contents. The total number of pits attributed to Phase 1 is 128—27% of the site total of 477[2]. Of these, 25 are of cylindrical type or eroded versions of it (30%), 55 are barrel types (63%) and 6 are bell shapes (7%). Compared with the general site analysis of profiles of all pits (41% cylinder; 46% barrel and 13% bell) there is a much higher than average percentage of pits with barrel profiles, there are fewer than average pits with cylindrical profiles, and few pits with bell profiles. The mean depth of Phase 1 pits is 1.14m as compared with a mean depth for Phase 2 and Phase 3 pits of 1.33 and a mean depth for pits of all periods of 1.26m. The mean diameter of Phase 1 pits is 1.33m as opposed to 1.58m for Phase 2 and 1.50m for Phase 3 and a mean diameter for all pits of 1.45m. Therefore, in general Phase 1 pits are much smaller with a much higher proportion of barrel shaped types. The mean volume for Phase 1 pits is 1.79m^3 as compared with 3.00m^3 for Phase 2 and 2.77m^3 for Phase 3 and a mean volume for all pits of 2.45m^3. The total volume for all Phase 1 pits is 229m^3 as opposed to 207m^3 for Phase 2 and 497m^3 for Phase 3.

It is of interest, but not altogether surprising, to note that simple numbers of pits provide no indication as to actual storage capacity—the volume for Phase 1 pits only slightly exceeds that for Phase 2 with nearly twice the number of pits.

The Four-Post Structures (Plates XIV – XVI)

The evidence for timber structures at Gussage is conditioned by the erosion of the site. This has removed the upper parts of the surviving post-holes and must have destroyed the evidence for the lighter elements of the buildings such as small post and stake-holes. Buildings composed of such light elements, evidence for which has been recorded at many better preserved sites in Britain, would not have survived. Earlier in this section, doubts were cast on the validity of ceramic dating for the post-holes. Small weathered sherds of Phase 3 type were recorded from eight post-holes representing six structures, but it is felt that such sherds may well have been introduced subsequently. Similarly, one post-hole produced sherds of Phase 1 character. Greater reliance has therefore been

2. 96 of this total were undatable (20%).

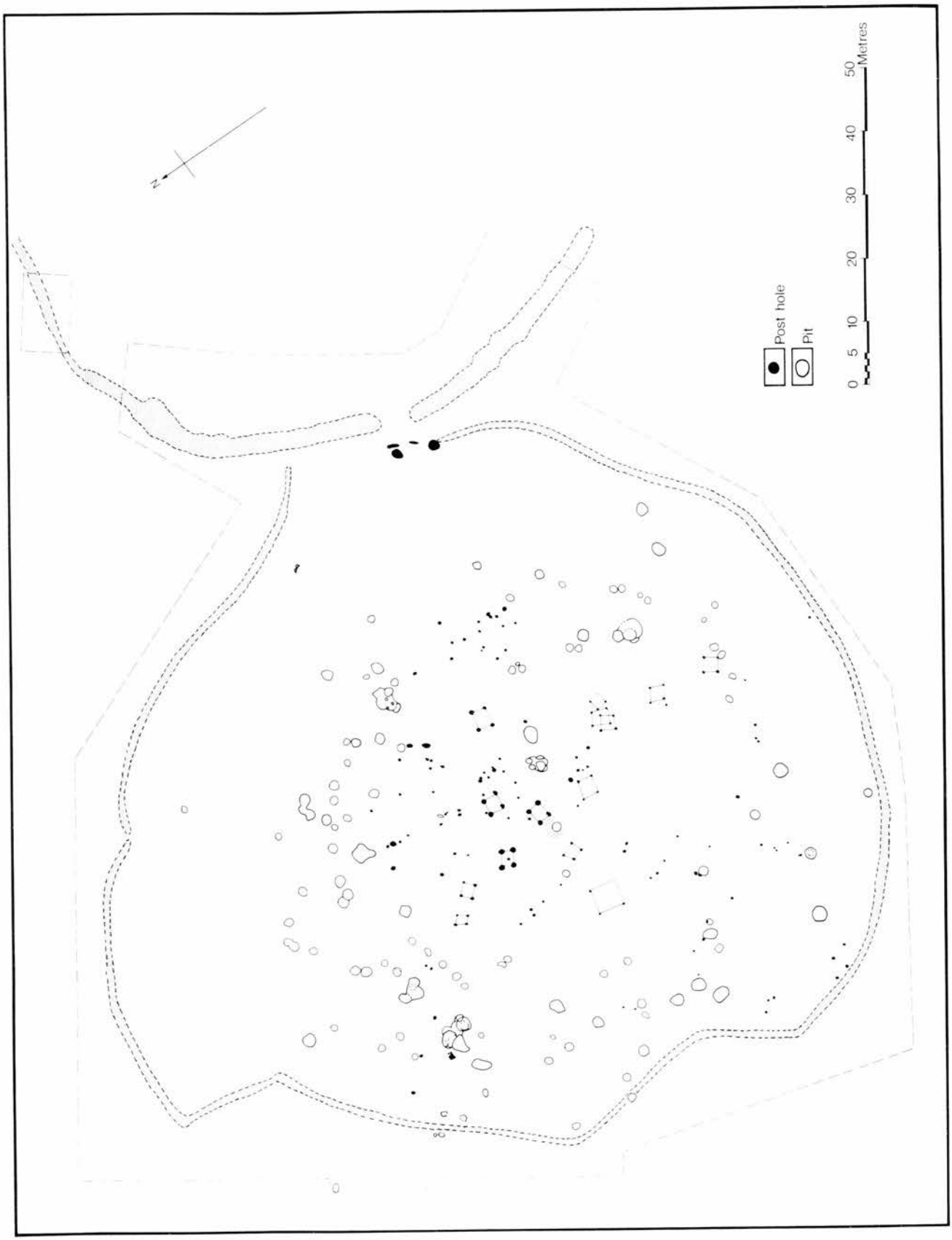

Figure 16
Plan of the Phase 1 settlement

placed on relationships with other structures and whilst the evidence is not conclusive it tends to indicate a Phase 1 attribution for the 'quartets'. The detailed evidence is presented in tabular form below (Table VII).

The distribution of the four-post structures has already been remarked upon. They are grouped on the whole, but not exclusively, in the centre of the enclosure where they are surrounded by the Phase 1 pits, although a gap in the pit distribution lies between them and the entrance. This distribution is considered to be significant and should indicate a Phase 1 date for the four-post buildings. Eight significant relationships between them and other structures were recorded. One of these relates to four-post structure 12/13/14, the fourth post for which was cut away by the Phase 2 enclosure ditch 1Zb, thus implying a Phase 1 date for the structure. Of the remaining seven relationships, six demonstrate four-post structures as being earlier than Phase 3 pits or ditches and there is only one instance of such a structure being later than a Phase 1 pit (493/494/495/496). The bulk of the evidence therefore suggests a Phase 1 attribution.

Seventeen 'quartets' can be identified and of these two were replaced twice (162/164/166/487; 334/280/333/808/484/809) and one was replaced once (268/270/273/274). Of the 17 structures, 13 are square in plan with dimensions which range from 1.70m to 2.50m although most are between 2.20m—2.50m square. One structure is 4.00m square and another 5.00m square. The remaining four structures are rectangular in plan (3.00m × 2.50m; 3.00m × 2.20m; 2.50m × 2.00m and 2.30m × 2.00m). Of those structures that were re-built, 162/164/166/487 comprises three four-post structures built on slightly different alignments and presumably replacing each other, whilst 334/280/333/808/484/809 also represents three four-post structures, the replacements occurring on more or less the same alignment. In addition, several post-holes in individual structures were replaced at least once. Owing to erosion, evidence for actual post sizes was rare. Such evidence occurred in structure 317/320/321 in which two post-pipes were recorded, each 35cm in diameter. The post-holes of this structure were unusually large and deep, one of them had been replaced, and a single post-hole at the centre of the setting may have supported a floor. Post-pipes were also recorded in structure 493/494/495/496, 25cm and 27cm in diameter respectively, all the post-holes in this structure yielded evidence for burning, and in structure 284/298/299 a single post-pipe 35cm in diameter was recorded. Other post-settings tentatively assigned to Phase 1 are pairs, either in isolation (possible drying racks), or adjacent to features which leads one to believe that they may have been four-post structures when complete (e.g. 529/530; 514/894). The majority are incoherent arrangements of post-holes which were probably the heavier supports for structures of which the evidence for the lighter elements has long since been eroded. This applies to the Gussage evidence at all periods and the only recognisable Phase 1 structures are those represented by square or rectangular settings of post-holes.

Table VII. Details of the four-post structures

Feature no	Diam cm	Depth cm	Ceramic phase	Comments
143	30	3	—	143 has an indeterminate relationship with 144 which is a Phase 3 pit.
145	28	16	—	The post-holes form a rectangular setting with sides 3.00m and 2.50m
146	30	5	—	long
154	30	22	—	
162	26	11	—	Square setting with sides 2.20m long which with quartets 165:168:525:488
164	32	14	—	and 486:526:167 represent three four-post structures built on slightly dif-
166	30	15	3	ferent alignments and presumably replacing each other
487	30	12	—	
165	28	19	—	Square setting with sides 2.30m long
168	30	16	—	
525	24	19	—	
488	27	10	—	
486	30	14	3	Probably a square setting with the fourth post removed by 169: a Phase
526	27	10	—	3 pit. The quartet has sides 1.70m long
167	26	15	—	
284	65	24	—	Rectangular setting with post spacings of 3.00m and 2.20m. Post-hole
298	62	22	3	298 has a 'post-pipe' 35cm in diameter. The fourth post of the quartet
299	60	24	3	was partially removed by 248—a Phase 3 ditch
150	30	15	—	Square setting with sides 2.20m long
151	35	15	—	
152	50	5	—	
153	25	10	3?	

Feature no	Diam cm	Depth cm	Ceramic phase	Comments
494	45	20	—	494 cuts 179: a Phase 1 pit. All four post-holes show evidence of burning. Post-pipes were recorded in 493 (25cm) and 496 (27cm). The post-holes form a square setting with sides 2.30m long
495	37	13	—	
496	40	17	—	
493	35	12	—	
317	80	48	—	A quartet in which the fourth post has been removed by 318 which is a Phase 3 pit. The rectangle has sides 2.50 and 2.00m long. Post-holes 320 and 321 had pipes 35cm in diameter and 317 is a probable double post-hole. At the centre of the square was sited post-hole 319 which may belong with the group
320	75	52	—	
321	90	53	—	
334	80	26	—	Square setting with sides 2.50m long. Post-holes 280 and 334 were replaced at least twice and 334 had a pipe 25cm diameter. Post-holes 333 and 484 had been re-cut at least once and probably replaced 808 and 809 respectively. The whole structure therefore appears to have been replaced at least twice on the same alignment
280	68	62	—	
333	83/59	27	—	
808	48	12	—	
484	67/57	23	3?	
809	48	15	—	
101	25	12	—	A quartet with the fourth post removed by 130 which is a Phase 3 ditch. A large square setting with sides 4.00m long
102	26	7	—	
502	25	10	—	
756	30	38	—	A square quartet with sides 5.00m long
758	34	28	—	
759	35	35	—	
760	35	21	—	
135	35	29	—	Remains of a square quartet with sides 2.00m long, the fourth post having been removed by the Phase 3 ditch 131
136	34	14	—	
137	35	19	—	
353	35	21	—	Square setting with sides 2.00m long. Post-hole 357 was replaced on one occasion
354	31	24	—	
356	41	21	—	
357	48	14	—	
268	76	50	3?	Rectangular setting with sides of 2.30m, and 2.00m. All post-holes were replaced at least once and 274 was cut by a Phase 3 ditch 131
270	78	42	—	
273	77	38	3?	
274	88	42	—	
362	21	13	—	Square setting with sides 1.90m long. 364 and 365 are double post-holes, having been replaced at least once, and 363 possessed a pipe 10cm in diameter
363	31	14	—	
364	30	16	—	
365	30	7	—	
489	23	8	—	Rhombic structure with sides 2.30m long
490	24	5	—	
491	24	14	—	
492	23	12	—	
12	57	20	1?	Probable quartet with the fourth post removed by the Phase 2 enclosure ditch. Square setting with sides 2.50m long
13	50	20	—	
14	50	12	—	

The Working Hollows (Plates XVIII – XIX)

Structures that have been given the general name 'working-hollows' have been recorded from many Iron Age settlement sites where they have been interpreted as areas used for the threshing and winnowing of grain, following Bersu's original interpretation of them at Little Woodbury. There is, however, no objective evidence for their use in this way. They are normally irregular hollows of variable size

which have pits dug through their floors. These pits were open at the same time as the hollows but the fill of the latter post-dates them. This fill is normally of natural origin with very few artefacts, although the pit fillings are of normal 'rubbish deposit' type. Later pits are also frequently dug through the hollow filling. Seven such complexes were recorded from the Gussage settlement. Of these, six could be assigned to Phase 1 and the seventh (feature 2) to Phase 3. No additional evidence was obtained which contributes to our understanding of them.

i. A shallow flat-bottomed hollow (884) which was probably originally circular in plan 4.00m—4.50m in diameter and 30cm deep. In its floor are two pits (866, 867), 1.00m and 60cm deep respectively which are sealed by the hollow filling of brown clayey soil with a little small chalk. This deposit is of natural origin and produced no datable finds. The two pits however produced Early Iron Age pottery and the whole complex is cut by the Phase 2 enclosure ditch (IVb), thus assigning it to Phase 1 of the settlement, probably in an entrance gap of that date.

ii. A large irregular hollow of 5.20m maximum diameter and 50cm deep on average (412). The surface of the walls and floor are very irregular, ledges are frequent and one major hollow occurs in the floor. The fill consists of an orange brown clay with scattered chalk fragments. It is entirely of natural origin with very few finds but these are Phase 1 in date. In the floor of the hollow are two pits (411, 263) which contain tips of domestic rubbish including Early Iron Age finds. Cut into the working hollow filling are three pits (705, 805, 806) and a gully (423). Pit 805 is of Phase 1 date and is itself cut by pit 806 which is probably of Phase 2 date. On the edge of the complex is 785 from which the finds may indicate a Phase 2 date and the hollow is also cut by 423, an undated gully.

iii. An irregular oval hollow (384) with dimensions of 4.10m × 2.25m and an average depth of 35cm. The walls are of varying slope and the floor irregular with shallow pits and hollows. The filling is entirely natural, consisting of yellow brown clay with scattered chalk lumps and fractured flints. Finds are few but are all Phase 1 in date. Also forming part of the hollow complex is 386—which has similar filling and which is also Phase 1 in date. Cut through the hollow filling is 385—a slightly belled flat-bottomed pit 1.72m deep belonging to Phase 1, whilst on the edge of the complex is a shallow cylindrical Phase 1 pit (803), 79cm deep.

iv. A large irregular hollow, 2.40m from north to south and filled with a brown orange clay and flints (748). The few sherds suggest a Phase 3 date but this is unlikely in view of pit 259 in the floor of the hollow. This cylindrical pit is 1.00m deep, showed a normal silting profile with lenses of ash and clay, produced Phase 1 pottery and was sealed by the natural fill of 748. A similar pit (260) in the floor of the hollow produced Phase 1 pottery and the evidence from a third pit was inconclusive (784). Undated pits, scoops and ledges occurred around the edge of the hollow (163, 188, 189) and a Phase 3 pit (784) was dug through the north-west edge of 748.

v. An irregular hollow (757), 4.50m from north to south and 3.50m from east to west and averaging 20cm deep. In its floor are a series of pits (761, 764, 789, 790 and 896), all of which should be contemporary with the hollow. The fill of the latter is a brown clay with occasional chalk lumps and flints. Finds are few but are Phase 1 in date. One pit (296) is cut through the south-west edge of 751 and confirms its Phase 1 attribution as it is itself Early Iron Age in date. The pit was 1.00m deep and its fill was rich in charcoal and dumps of domestic refuse. Of the pits in the floor of the hollow, 761, 790 and 896 produced Phase 1 sherds whilst the ceramic evidence from 764 and 789 was inconclusive.

vi. A small irregular hollow (98, 103, 118) 35cm deep containing a natural fill of brown clay, chalk fragments and flints. It is undated but in the floor of the hollow is pit 182 which is sealed by the filling and which produced Phase 1 pottery. An undated bell-shaped pit (182) was dug through the filling of the hollow.

The Human Remains

The only human remains recorded in Phase 1 contexts were the fragmentary bones of an infant skeleton in a shallow circular pit 70cm in diameter and 9cm deep.

Chapter IV
The Middle Iron Age Settlement: Phase 2

This chapter is concerned with the structural evidence for the Phase 2 settlement other than the enclosure ditch and entrance which have been described in Chapter I. There is some evidence for continuity between the Phase 1 and Phase 2 settlements. Marked by the appearance of new ceramic types, although older forms persisted, the Phase 2 enclosure ditch was re-dug and enlarged on the same alignment as in Phase 1, the early antennae ditches at the east entrance were replaced by a new pair on different alignments, the east entrance was itself maintained though reconstructed, and within the enclosure ditch the distribution of Phase 2 pits is virtually mutually exclusive to those of Phase 1, thus implying a natural expansion of pit-digging activity up to the boundaries of the settlement. All these factors indicate continuity and the Phase 2 settlement was therefore a three-acre enclosure surrounded by a ditch 2.20m wide and 1.40m deep with an entrance in the east that was protected by an elaborate timber gateway. The Phase 2 settlement is contained within this boundary and only a few pits occur outside it.

The structures related to this phase are pits (representing some 14% of the total number of pits), a single round house and traces of a second. The attribution of these structures to Phase 2 of the settlement has been achieved purely on ceramic grounds which are discussed in a later chapter. There are at least five relationships in which Phase 2 features are demonstrably later than those of Phase 1, and one pit (620) was dug through the Phase 2 enclosure ditch. The radiocarbon chronology for Phase 2 was obtained on samples from pits and the enclosure ditch. It will be recalled that a sample of charcoal from segment M layer (4) of the Phase 2 enclosure ditch produced a radiocarbon date of 230±75 bc (Q1201) which gives a calibrated age of 410—170 BC. A sample of charcoal from a Phase 2 pit 437 layer (5) gave a radiocarbon date of 210±75 bc (Q1205) which gives a calibrated age of 410—140 BC, in excellent agreement with Q1201. In addition, two charcoal samples were submitted from pit 209 which produced debris from a bronzesmith's workshop. One sample from the base of the deposit (Y) produced a date of 150±65 bc (Q1207) which gives a calibrated age of 390—10 BC and the second from near the top of the deposit ((10B)) produced a date of 70±70 bc (Q1206) which gives a calibrated age of 190 BC—50 AD. The balance of probability is that the re-organisation of the enclosure boundary and entrance occurred during the third century BC.

The distribution of the Phase 2 settlement is largely mutually exclusive to Phase 1 save for an area of overlap in the west. The Phase 2 pits are distributed in a broad arc around the north and west limits of the enclosure in areas that were left mainly blank in Phase 1. A small group of pits also occurs in the south of the enclosure, suggesting that following the reorganisation of the enclosure boundary and entrance the settlement continued to expand outwards into areas that were not yet covered by pits (Figure 17).

The Pits

A full description of the profiles and volumes of the pits has been given in Chapter II and only a summary account of the data relevant to Phase 2 is given here. The total number of pits attributed to Phase 2 is 69 – 14% of the site total of 477. Of these, 24 (51%) are of cylindrical type or eroded versions of it, 17 are barrel types (36%) and 6 are bell-shapes (13%).

Compared with the general site analysis of profiles from all pits there is a decrease in the numbers of barrel-type pits compared with Phase 1 and a corresponding increase in the percentages of cylindrical and bell-shaped pits although the actual numbers of these two groups remain constant. The mean depth of Phase 2 pits is 1.33m as compared with 1.14m for Phase 1 and 1.33m for Phase 3 and 1.26m for all pits. The mean diameter is 1.58m as opposed to 1.33m for Phase 1 and 1.50m for Phase 3 and 1.45m for all pits. The Phase 2 pits are therefore on average deep and broad with a much smaller number of barrel shapes. The mean cubic volume for Phase 2 pits is 3.00m^3 as compared with 1.79m^3 for Phase 1 pits and 2.77m^3 for Phase 3 pits and a mean volume for all pits sampled of 2.45m^3. The total volume for all Phase 1 pits is 207m^3 as opposed to 229m^3 for Phase 1 and 497m^3 for Phase 3. The total storage capacity for the Phase 2 pits is therefore only a little less than that for Phase 1 which has nearly twice as many pits.

The Huts (Figure 18, Plate XVII)

i. Only one certain hut structure is related to Phase 2—a circular hut 9.00m in diameter defined by a shallow gully with an entrance in the south-east 2.00m wide, flanked by post holes. It is sited near the western boundary of the enclosure. The hut is defined by three lengths of shallow gully (712, 713, 714) which average 24—26cm wide and 3cm—18cm deep. The bases of the gullies are flat, the walls vertical and they are filled with clayey earth and small chalk lumps. Clearly the structure is much eroded and there is no means of establishing objectively whether the gullies were for drainage or for walls, but the latter seems the more likely. Phase 2 pottery was obtained from these gullies and 713 is cut by a Phase 3 pit (715). The dating of an adjacent pit which also appears to cut the gully is less certain. The hut entrance in the south-east is flanked by two post-holes (930, 949) which are respectively 54cm diameter and 22cm deep and 42cm diameter and 19cm deep. Near the centre of the hut is a single post-hole (931) 56cm in diameter and 18cm deep. Within the hut are two pits (888 and 889), both possibly of Phase 1 date though this is extremely uncertain. The siting of gully 714 south of the main wall line may indicate a re-building, but in view of the eroded nature of the

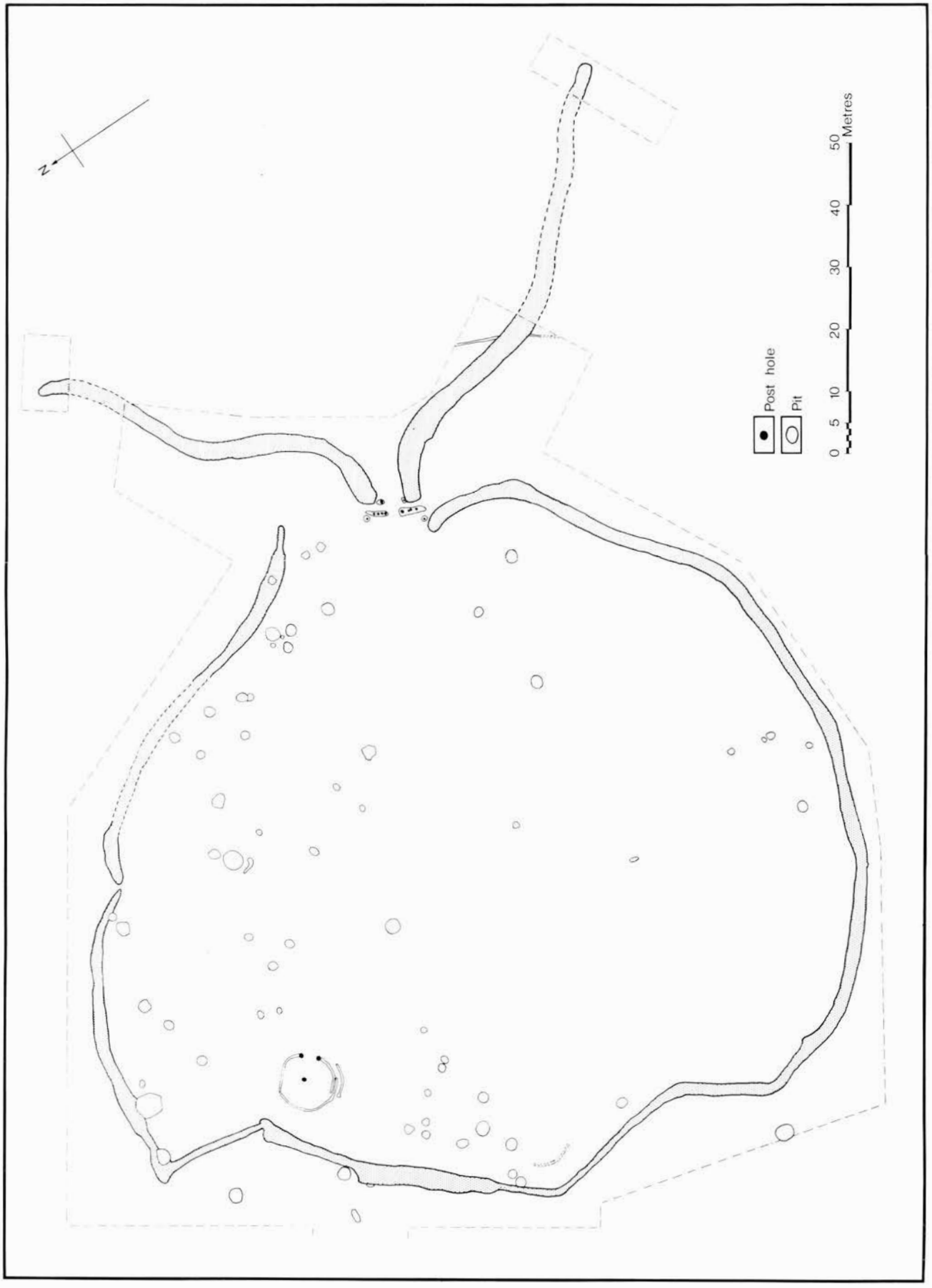

Figure 17
Plan of the Phase 2 settlement

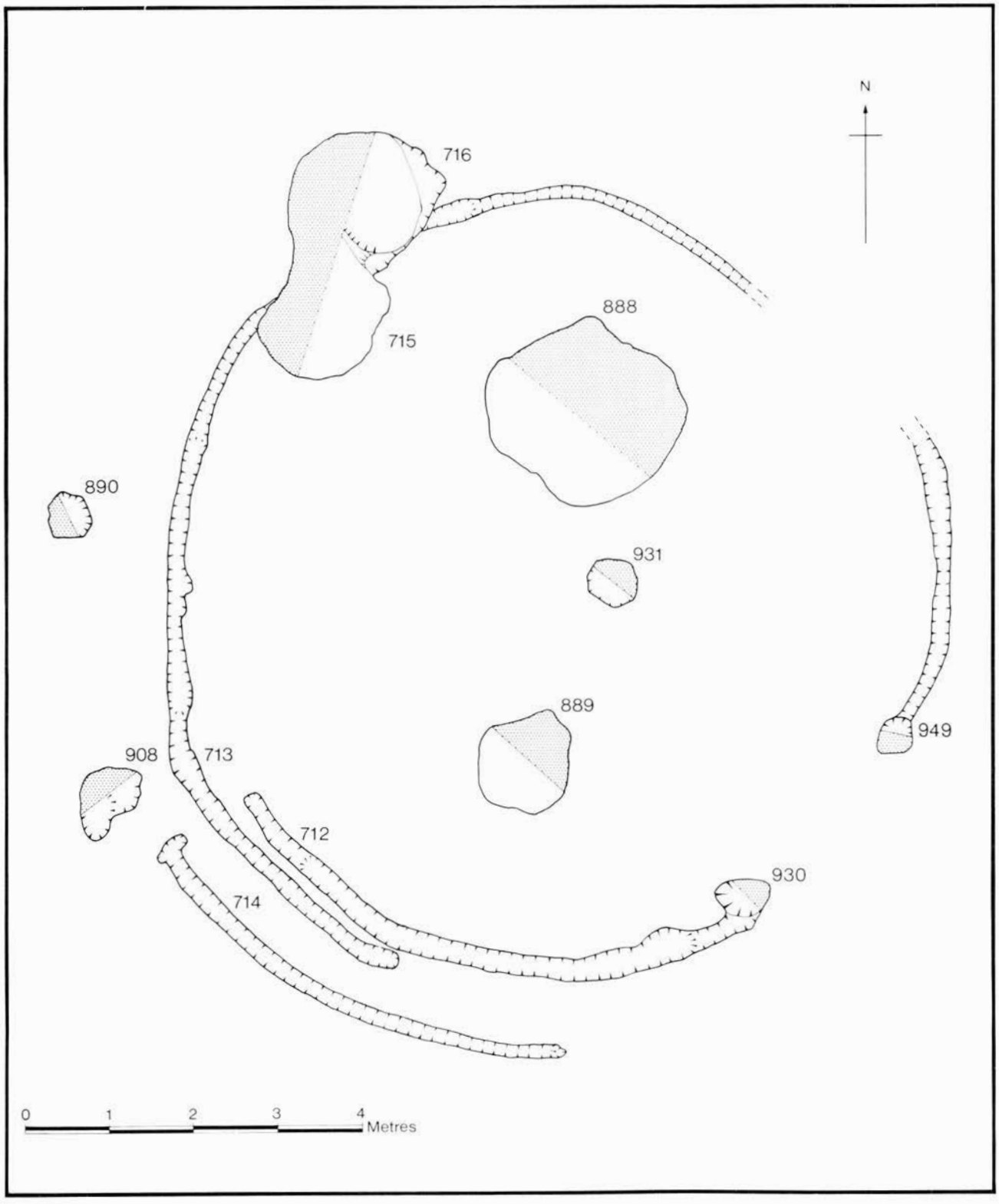

Figure 18 Plan of the circular hut

evidence it is not possible to draw any firm conclusions.

ii. The traces of a second circular hut were recorded some 32.00m south of 712/3/4. It survived only as an arc of gully 6.00m long, 10—20cm wide and maximum depth 5cm. It was filled with clay and represented the last traces of a round hut of similar size to 712/3/4. There is a strong possibility that other huts existed and have now been destroyed by ploughing.

Gullies

558: a flat-bottomed gully with sloping sides 2.60m long, 30cm wide and 20cm deep. It was filled with a brown clayey soil with chalk and flint lumps.

613: a straight length of gully associated with three post-holes (912, 922, 923) which was cut by 600 and 602—the entrance antennae ditches. The gully was 30cm wide and 15cm deep and although it produced some weathered

Phase 2 sherds, such an attribution seems unlikely in view of its relationship with 600 and 602.

The human remains

IG: the disarticulated remains of a new born infant were recorded from layer (4) in the enclosure ditch.

IR: the disarticulated bones of an infant aged 0—2 months were recorded from layer (4) in the enclosure ditch. In addition, a number of fragmentary human bones were recorded from the Phase 2 enclosure ditch as follows:

C(4) fragmentary skull frontal and part of the orbit
G(3) fragments of skull parietals
G(4) fragmentary left femur shaft
M(4) fragments of skull parietals
M(5) fragments of a nearly complete skull vault
N(4) fragments of a mid-femur shaft
P(4) fragments of skull parietals
P(4) fragmentary palate of a young adult

209 layer (6): a fragmentary left parietal.

426 layer (6): a fragmentary left femur shaft.

428 layer (5): a fragmentary occipital bone.

435: an adolescent female skeleton crouched with its head to the south facing west. The skull, neck and upper rib cage rested on a thin deposit of brown clay and an intermittent line of chalk blocks and flint nodules outlined the back and skull. It was recorded at the junction of layers (4) and (5) in a partially filled cylindrical pit 1.45m deep. (Figure 26)

439: an infant burial crouched on its side and its head to the north facing east. It was recorded at the top of layer (9) near the base of a cylindrical pit 1.90m deep.

470: the disarticulated bones of a new-born infant burial from layer (7) in the floor of a cylindrical pit 90cm deep. In the same deposit was recorded a fragmentary right femur.

531: a crouched infant burial on its side with its head to the west facing north. It was recorded at the junction of layers (4) and (5) near the top of a partially silted cylindrical pit 1.70m deep.

584 layer (12): a fragment of skull vault.

769: the disarticulated bones of a new born infant were recorded from layer (5) near the base of a cylindrical pit 1.65m deep.

Chapter V
The Durotrigean Settlement: Phase 3

The final Iron Age settlement is attributable to the first century BC and first century AD and normal convention has been followed in applying the tribal name of the Durotriges to what is a well defined material culture. There was no immediate refurbishing of the enclosure ditch or of the entrance and the pits of Phase 3, (approximately 41% of the whole from the site), are distributed over the total enclosure area—in some cases cutting through the earlier enclosure ditch (Figure 19). However, some continuity can again be assumed, for the Phase 3 settlement respects on the whole the limits of the earlier settlements and only five pits were recorded beyond the enclosure. Moreover, the Phase 2 entrance gap continued to be used and it may be that although the Phase 2 ditch was not cleared out and enlarged a hedge may have been maintained on the external bank at that time—and similarly on the banks associated with the antennae ditches. Whatever the nature of the settlement boundary, and an embanked hedge seems the most likely, a degree of settlement continuity can be assumed, together with an increase in the digging of pits and the construction of subsidiary enclosures within the settlement.

Three such enclosures were dug—a crudely semi-circular arc open to the north (25), a trapezoid enclosure with a timber gateway which opened to the east (130, 131, 248, 265) and a substantial ring-ditch (310) with a timber gateway orientated in the direction of the main enclosure entrance. In addition, short lengths of ditch can be assigned to Phase 3 (e.g. 224, 327, 331 and 367). It seems likely that the ring-ditch (310) was intended to provide greater security to timber structures of indeterminate plan which are represented by post-holes and sited at its centre. Its silts contained quantities of Durotrigean pottery of the Late Pre-Roman Iron Age, in addition to a small number of Gallo-Belgic sherds and bronze brooches of mid-first century AD type. A charcoal sample from the primary silts of the ditch (310 L/N layer (4)) gave a radiocarbon date of ad 20±75 (Q1202) which gives a calibrated age of 60 BC—130 AD.

The Phase 3 settlement is characterised by a well-defined ceramic assemblage which had rapidly evolved from the preceding styles as a result of introducing the potters wheel in the early part of the first century BC. Five of the rubbish pits, however, produced Claudian and Flavian samian sherds, indicating that the settlement continued into the last quarter of the first century AD when it was finally abandoned. The intensity of this ultimate Iron Age occupation is difficult to assess because no appreciable change occurred in the coarse wares and only the presence of samian sherds or a few brooches is indicative of a post-conquest date. Radiocarbon measurements on some charcoal from Pit 139 layer (5) in which were found some sherds of Claudian samian, produced a date of ad 50±65 (Q1208), the calibrated age being 30—150 AD. For the purposes of this report the post-conquest aspects of the settlement have been taken as one with the pre-conquest Phase 3 occupation. Certainly, little cultural change occurred and the settlement did not survive for more than four decades after AD 43—4. Similarly, a late third century AD Romano-British coffin burial found outside the enclosure (815) has been appended to the account of the Phase 3 human remains for the sake of completeness.

The Pits

A full description of the profiles and volumes of the pits has been given in Chapter II and only a summary account of the data relevant to Phase 3 is given here. The total number of pits attributed to Phase 3 is 184—39% of the site total of 477. Of these, 58 are of cylindrical type or eroded versions of it (46%), 48 are barrel types (38%) and 21 are bell or eroded versions (16%). Compared with the general site analysis of profiles from all pits there is an increase in the percentage of bell-shaped pits and not much change in the percentages of cylindrical and barrel pits from those recorded from Phase 2. The mean depth of Phase 3 pits is 1.33m—the same as that for Phase 2 and compares with 1.14m for Phase 1 and a mean depth for all pits of 1.26m. The mean diameter is 1.50m as compared with 1.33m for Phase 1 and 1.58m for Phase 2 and a mean diameter of 1.45m for all pits. The overall dimensions of Phase 3 pits are therefore somewhat smaller than those of Phase 2 with a higher percentage of bell-shaped types. The mean cubic volume for Phase 3 pits is 2.77m^3 as compared with 1.79m^3 for Phase 1 and 3.00m^3 for Phase 2 and a mean volume for all pits sampled of 2.45m^3. The total volume for all pits is 497m^3 as compared with 229m^3 for Phase 1 and 207m^3 for Phase 2.

Although details of pit sections and contents have been regarded as archival material several pits are deserving of particular attention.

45: A cylindrical pit 1.60m deep with its mouth sealed by a layer of red clay.

60: A bell-shaped pit 1.35m deep with a red burnt clay capping which had subsided.

61: In the upper part of Pit 61 (layer (7)) were the articulated remains of a cow that had died as the result of a difficult calving. The cow lay on its side, head to the east and feet to the south, and its head bent backwards over its shoulder. Within the pelvis were the remains of a calf whose forelegs projected through the pelvis. (Figure 109, Plate XXX).

139: A pit 1.47m deep with vertical walls which converge near the mouth. In the north face of the pit were four clay-plugged holes some 7cm deep with suggestions of others in the south face. Lumps of red clay occurred on the floor of the pit and are thought to be the eroded remains of a lining.

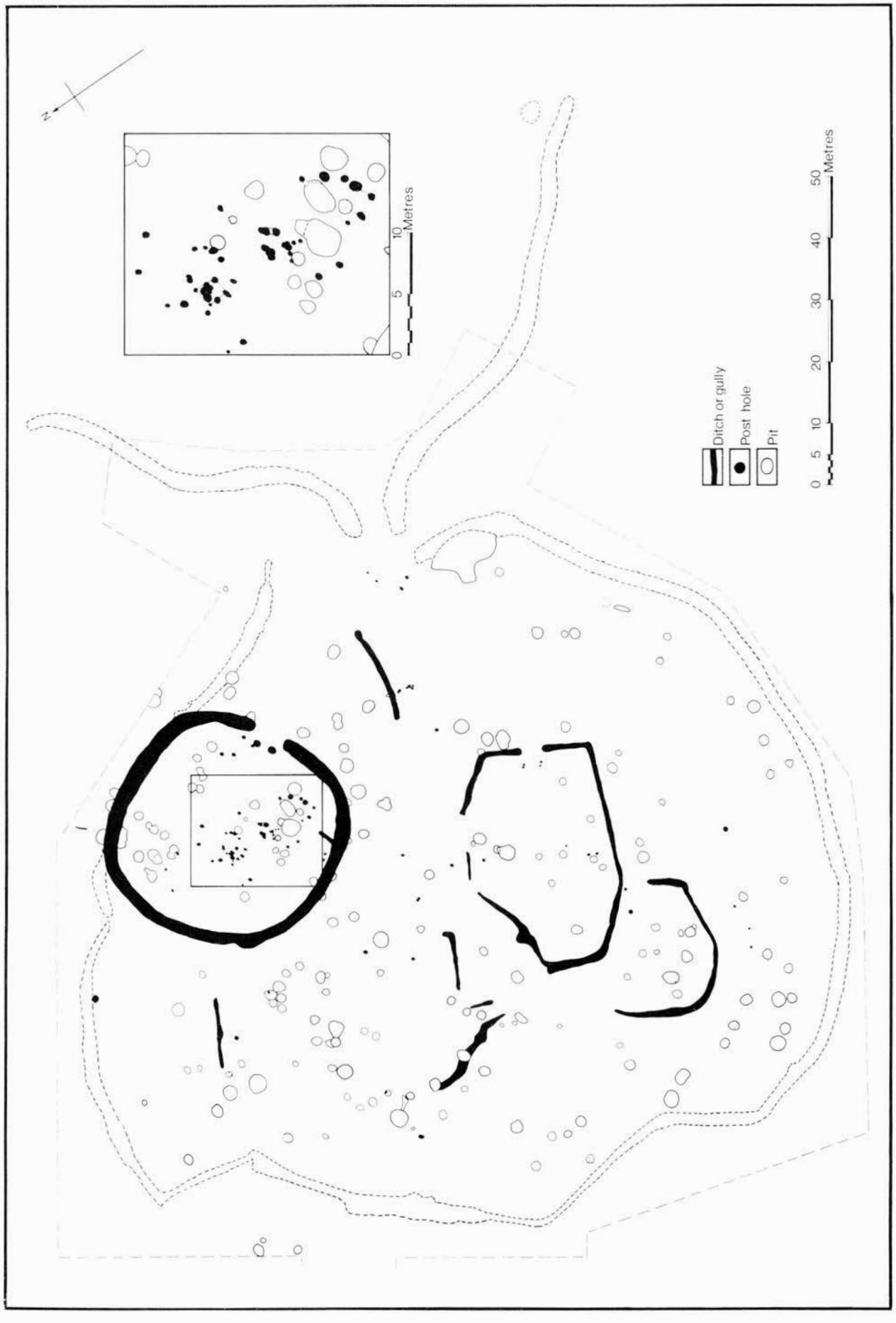

Figure 19 Plan of the Phase 3 settlement

380: A cylindrical pit 2.15m deep. Clay plugged holes were recorded in its north wall.

Subsidiary Phase 3 enclosures

i. *Enclosure 310* (Figures 20, 21; Plates XX, XXII, XXIII) This enclosure was visible on pre-excavation aerial photographs appended to the inner edge of the main enclosure ditch in its north sector. Excavation revealed a fairly substantial V-shaped ditch which averaged 2.00m wide and 1.40m deep with a narrow flat base, surrounding a circular area 32.00m in diameter. For purposes of recording, the ditch was divided into 23 segments (A – Y) of variable length according to need. Alternate segments were excavated and longitudinal sections obtained for the ditch terminals at the entrance. In plan, the enclosure is squared rather than circular, with rounded corners. The ditch was broken by a single entrance causeway 5.00m wide facing east towards the main entrance into the large enclosure. The causeway had been protected by a timber gateway at its inner edge represented by two large post-holes (455, 456) which effectively restricted the entrance gap to 1.20m wide and which had supported oak posts at least 30cm in diameter. Within the enclosure were pits and scatters of post-holes that might be contemporary.

It is probable, though not conclusively proved, that the bank was external to the ditch. It is evident, however, from the silting of the latter and the numerous profiles that were obtained, that the ditch silted up very rapidly and was not cleaned out. The sides of the ditch and its base were fresh and unweathered and it was clearly dug in response to a particular need which was of a temporary nature. It was established that the ditch cut through and was later than every feature with which it came into contact. It is later than the Phase 2 enclosure ditch which it cut through and replaced. It was also demonstrably later than at least eight undated features, six Phase 1 features, two Phase 2 features and four Phase 3 pits. Nowhere was it shown to be earlier than another structure. Its silts produced finds derived from these earlier structures and quantities of Durotrigean pottery of the late Pre-Roman Iron Age in addition to

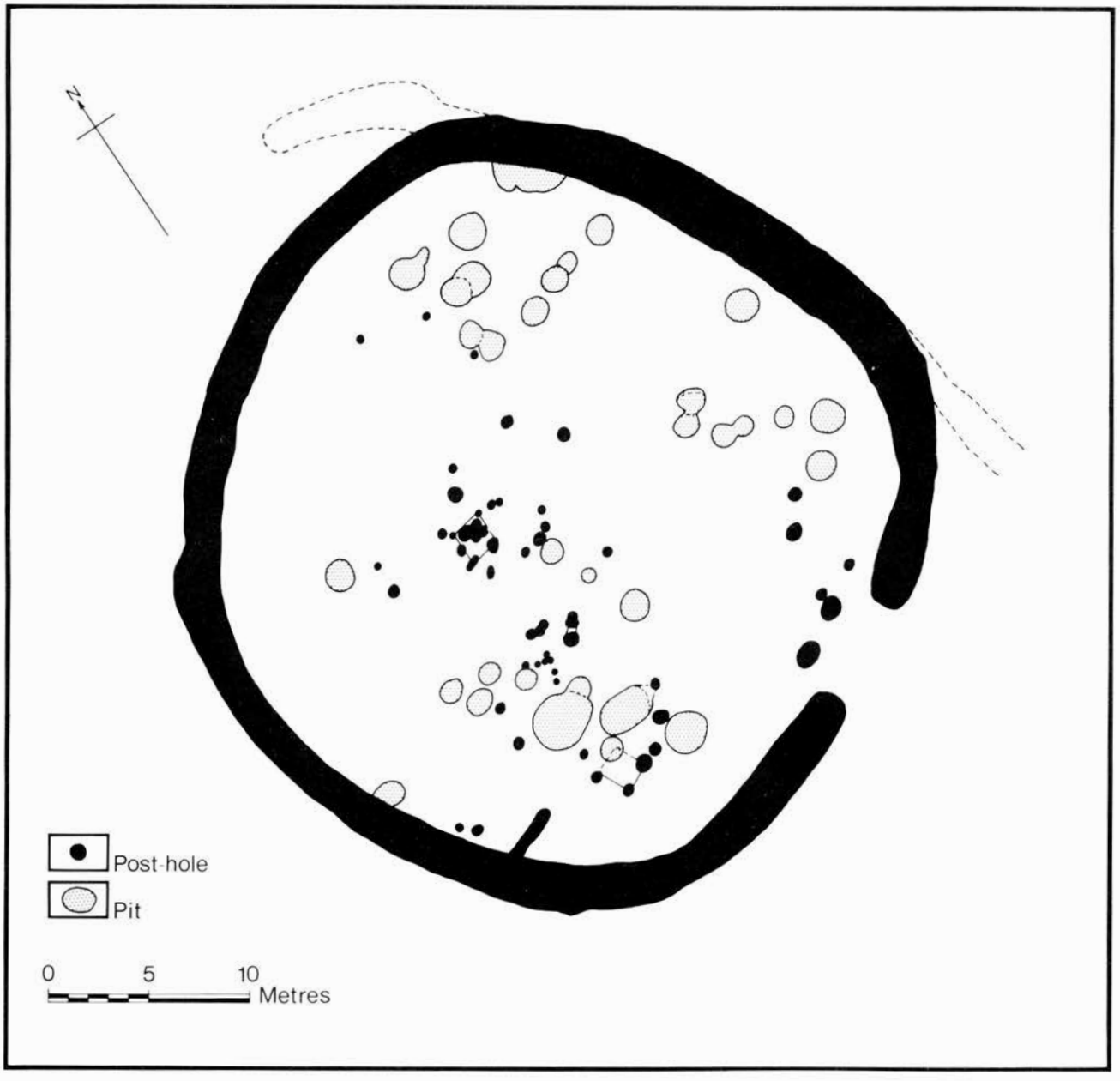

Figure 20 Plan of enclosure 310

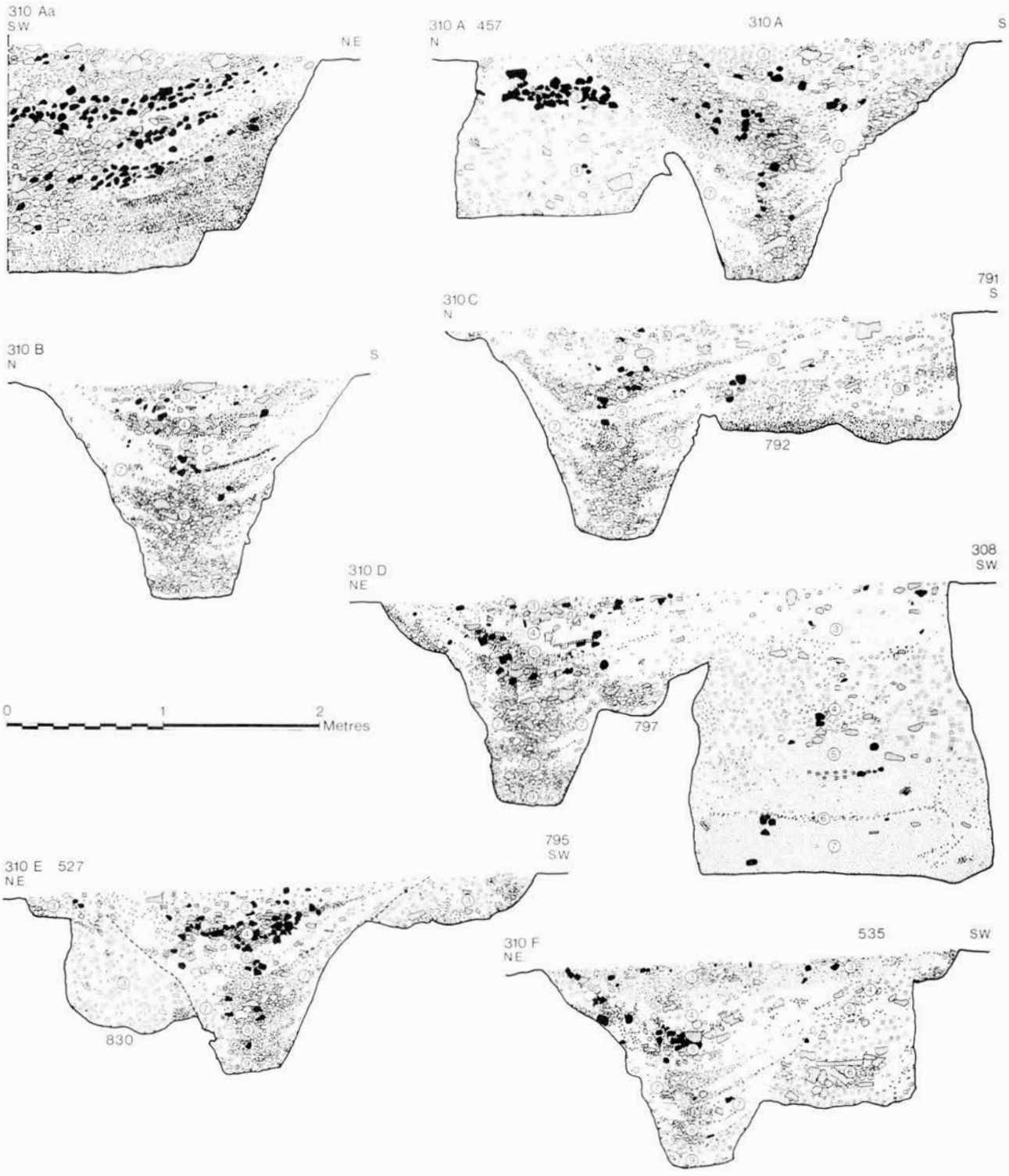

Figure 21 Sections of 310 enclosure ditch including sections of pits 308, 457, 527, 535, 791–2, 795, 797, 830

bronze brooches of mid first century AD type. The radiocarbon date of ad 20±75 (Q1202 310 L/N layer (4)) has already received comment. It is therefore considered to be very late in the history of the settlement—probably in the second quarter of the first century AD on the basis of the pottery and metalwork in its silts, and was intended to give greater security to timber structures of indeterminate plan that were sited within it. The ditch had silted rapidly and had not been cleared out so that the need for such an enclosure was probably short-lived.

Within the enclosure were groups of post-holes which did not form any coherent patterns. One possible four-post structure can be identified (516, 517, 891) with sides of 1.80m and a fourth post removed by a Phase 3 pit, (518). However, this structure is undated and may belong with the earlier settlement. Some post-holes had been re-cut on several occasions but they occur in isolation and the settings cannot be dated. The grounds for assigning them to the Phase 3 settlement, and more specifically to the 310 enclosure is the siting of the largest group at the centre of

that enclosure. This attribution is tentative and cannot be conclusively proved, nor can any specific building plans be identified, although possible four-post structures can be seen.

ii. *Enclosure 130/131/248/265* (Figures 22, 23; Plate XXI) Approximately 33.00m west of the east entrance was a shallow ditch which enclosed a trapezoidal area 36.00m from west to east and 23.00m from north to south. The ditch of this hexagonal enclosure was very variable in depth and had been entirely eroded around part of its north side. The four essentially discrete lengths of ditch comprising the enclosure were given separate context numbers (130/131/248/265 *vide* Figure 3) and were divided into lettered segments in the normal way. A single entrance faced east in the general direction of the main enclosure entrance. It was 3.00m wide between the ditch terminals and possessed a double-post timber entrance set back from the causeway (249/250/251/252) with an entrance gap 2.00m wide. The post-holes of the entrance structure were very shallow—2—12cm deep. The position of the bank in relation to the ditch is uncertain but the siting of the gateway suggests that it may have been internal.

The ditch of the hexagonal enclosure was of variable depth and showed clear signs of intermittent re-cutting. In its southern half (130) it was from 80 – 95cm wide and 20 – 50cm deep, becoming progressively deeper towards the western end of the enclosure. In its deeper sections the sides were straight with a flat or rounded base.

Sector 130 was re-cut at least once in part and where it defined the west edge of the enclosure was 1.20m wide and 80cm deep at which point the re-cut sector terminated and the ditch reverted to becoming narrow and shallow, 80cm wide and 16 – 35cm deep at most (131). In its northern sector the ditch had virtually been completely destroyed and was represented by a short surviving length only some 5cm deep (265). The north-east angle of the enclosure and south to the entrance was represented by 248—a ditch of variable width and depth, from 1.20m to 70cm wide and 25cm to 5cm deep. The fill of the entire enclosure ditch was consistently clayey brown soil with chalk lumps, shattered flints and occasional patches of charcoal. It contained Durotrigean pottery and was cut by a Phase 3 pit (132) whilst itself cut through a Phase 1 pit (247) and a Phase 2 pit (885). Three infant burials were recorded from 130/131 whilst four such burials were recorded from pit 132 (which cuts 131) and two from pit 139 which lies within the enclosure. Comparatively few contemporary pits were recorded from within the latter.

iii. *Enclosure 25*
This enclosure is defined by a ditch approximately 40.00m in overall length which describes a crude arc, open to the north, with a chord of 21.00m between the terminals. It

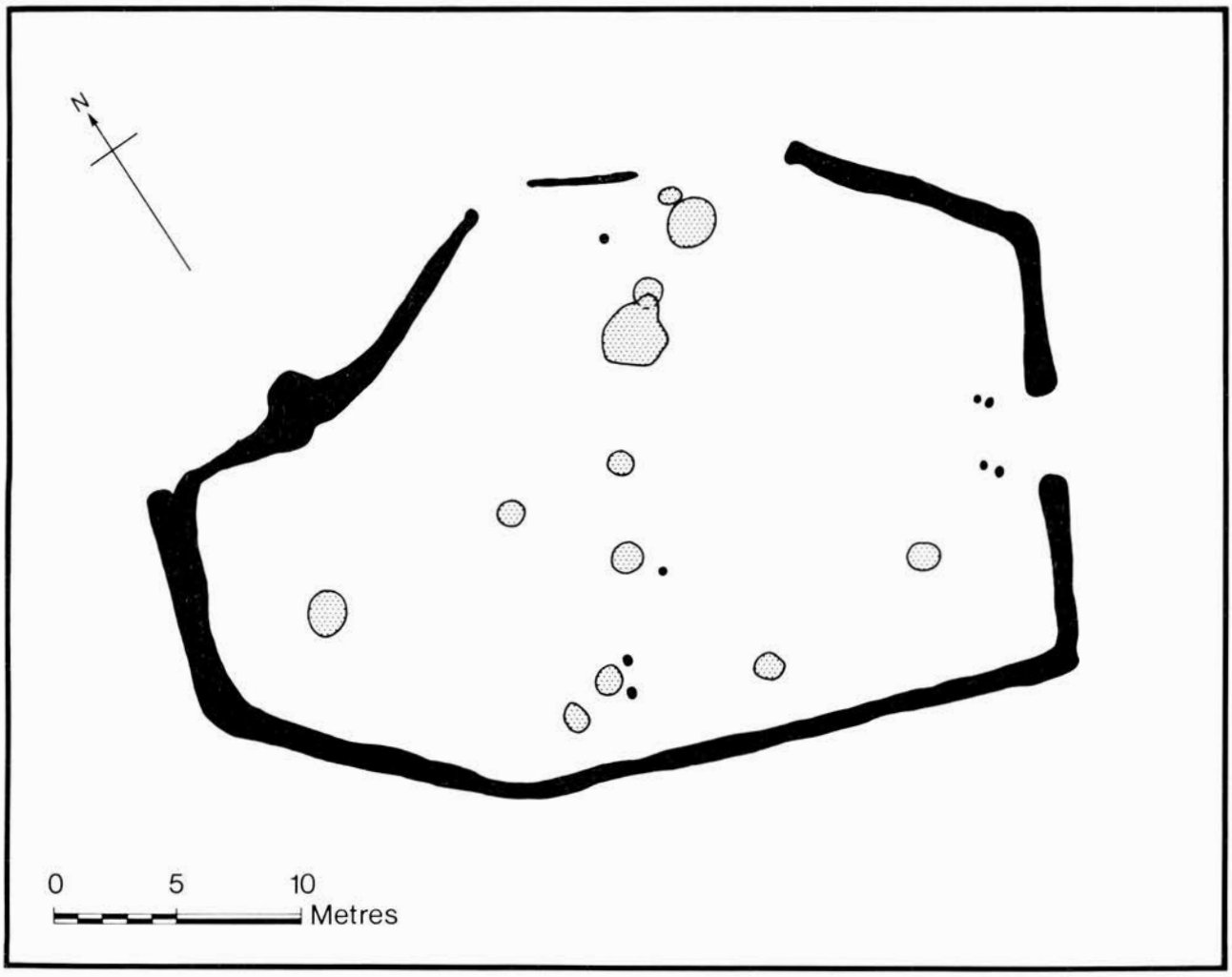

Figure 22 Plan of enclosure 130

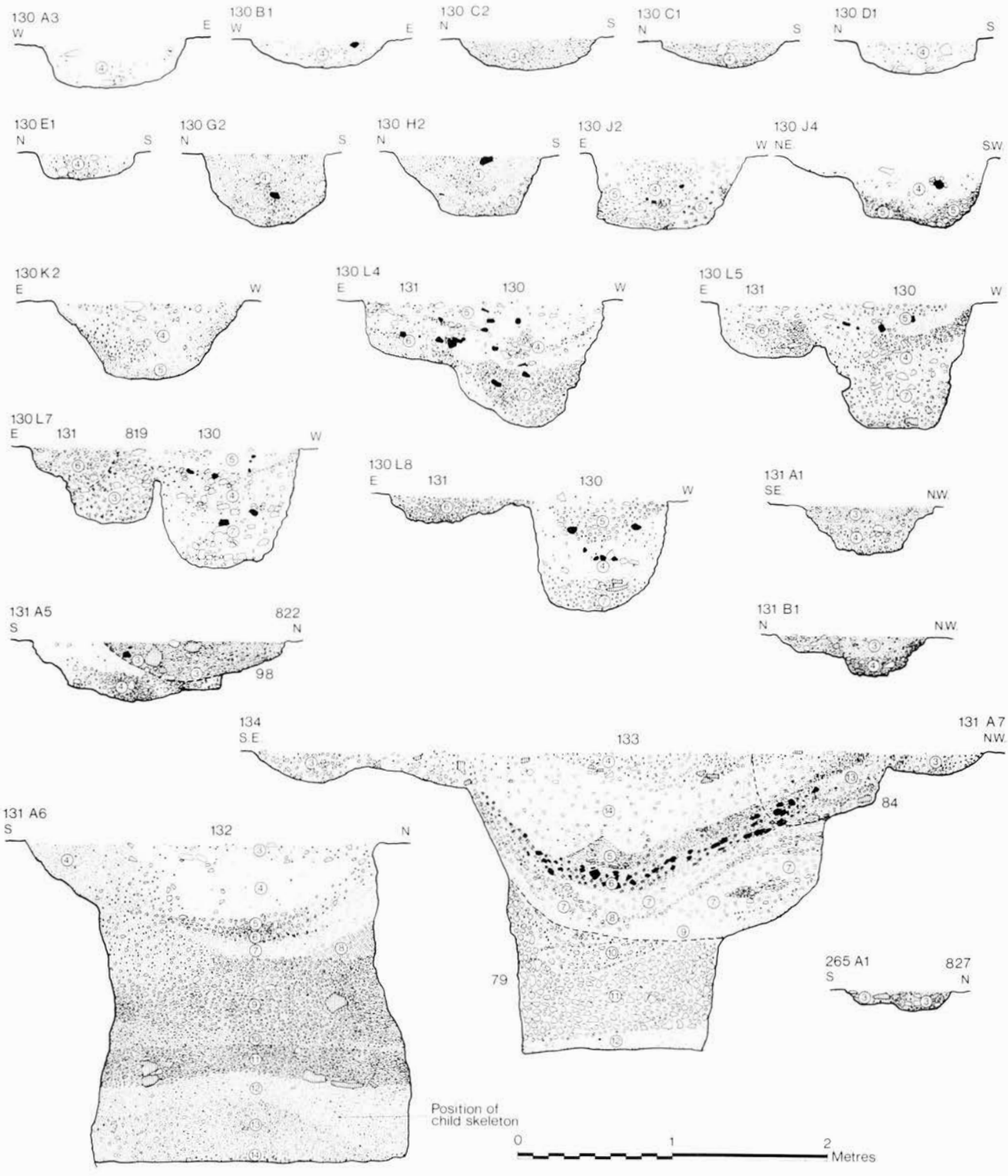

Figure 23 Sections of 130 enclosure ditch incorporating sections of pits and ditches 79, 84, 98, 131–4, 265, 819, 822, 827

may have been sited so as to provide an annexe to enclosure 130, but this is uncertain. For the purposes of excavation it was divided into roughly 6.00m segments which were varied in length according to need and these were given the letters A—F. The eastern terminal of the ditch may have been re-cut but only for the first four metres, following which the ditch swung sharply west and at the same time became more shallow and narrow, changing from an average width of 1.40m and depth of 50cm to 50cm wide and 20cm deep. Some 9.00m west the ditch again deepened and broadened and swung north where it cut through Phase 1 pit 107, becoming more narrow and shallow towards its terminal. The ditch fill is mainly chalk lumps and flint nodules in brown soil, the disposition of which suggests an internal bank. It produced Durotrigean pottery and has been assigned to Phase 3 of the settlement.

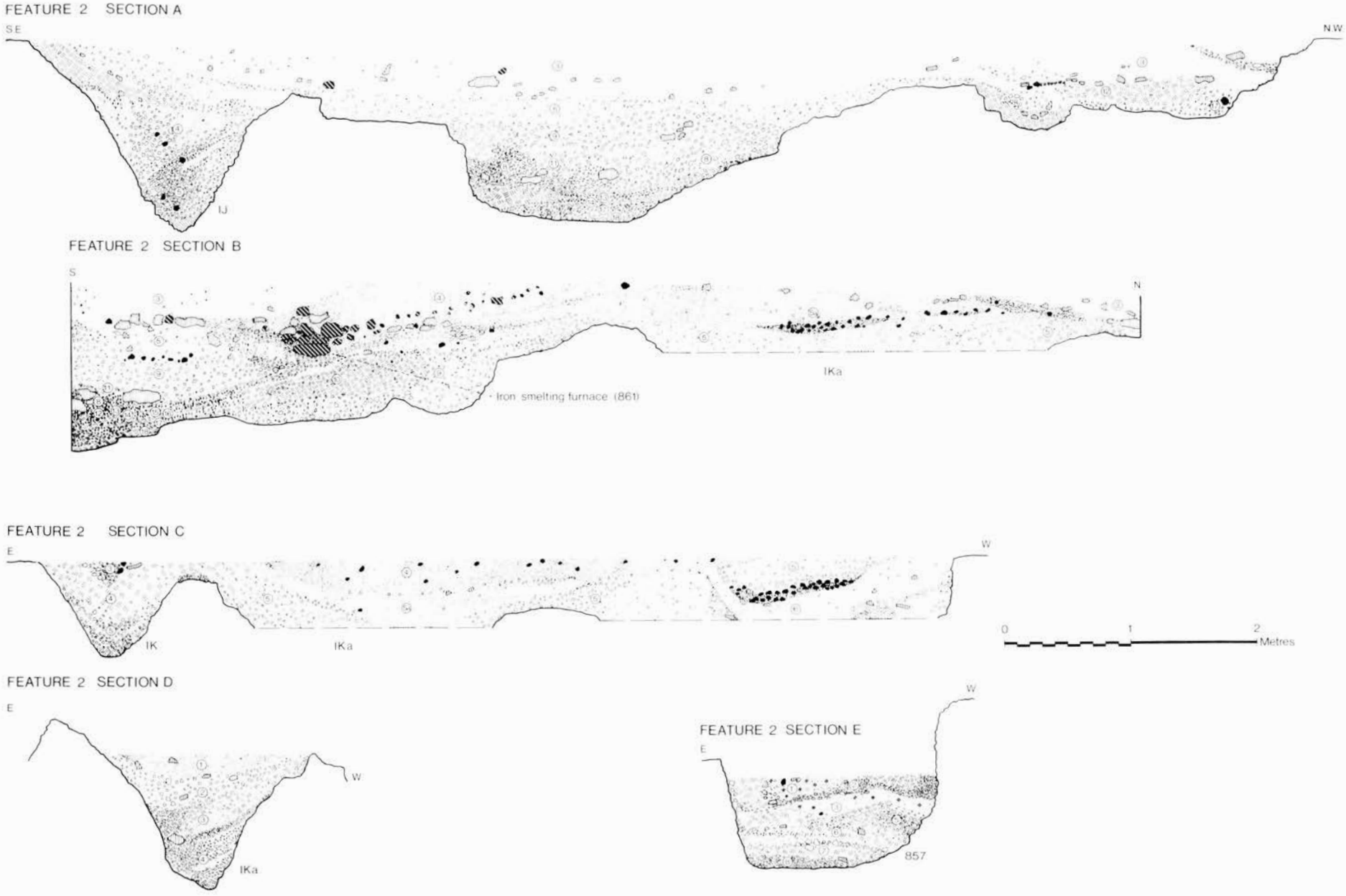

Figure 24 Sections of 2, IJ, IK, 857, 861

Other Ditches and Gullies

Under this heading are described those ditches and gullies which can be assigned to the Phase 3 settlement but occur in isolation and do not form enclosures.

224/225: A gully 16.00m long, 1.00m – 1.20m wide and 12 – 18cm deep; at its east end it is 32cm deep (225). It is cut by pit 754 and filled with a brown clayey soil with flint nodules and chalk lumps.

327: A gully 4.10m long, 67cm wide and 51cm deep, fairly flat-bottomed and filled with a brown clayey earth with evenly scattered chalk and small flint. The sides are vertical but no evidence for post-packing was recorded.

331: A 10.75m length of gully, L-shaped in plan, with an average width of 75cm and between 40 – 15cm deep. It has a variable but generally U-shaped profile filled with brown clayey earth with chalk fragments and numerous burnt flints near the surface.

367: An irregular length of gully 16.50m long, 1.25m wide on average and 5 – 65cm deep. It includes two major re-cuttings and is cut into pits 295, 300, 369, 370, 371. It was filled with brown clayey soil containing numerous chalk fragments and flints.

392: A short length of curved gully 30cm wide on average and from 9cm to 30cm deep. It has a U-shaped section with a rounded base and was filled with a light brown clayey earth which contained scattered lumps of cob and numerous small chalk granules.

527: A 2.80m length of gully, 50cm wide and 20cm deep which is cut by ditch 310.

In addition, a series of undated gullies were recorded, details of which can be obtained from the site archive. They are as follows: 195, 219, 220, 226, 287, 322, 323, 324, 355, 407, 423, 451, 592, 618, 671, 816, 926, 943.

Hollows

2: An irregular hollow with maximum dimensions of 10.00m × 7.00m of which one-half was excavated and which cut through the Phase 2 enclosure ditch (1Ka) and is therefore later than it. A number of irregular hollows occurred in the floor of the depression, including an undated pit 857 which may belong to the Phase 2 settlement. Where excavated the hollow had a maximum depth of 1.35m and it contained a series of naturally accumulated deposits with occasional dumps of stone or burnt flint which have been assigned to the later phases of the settlement. In its uppermost layers ((3), (4) and (5)) the hollow produced evidence for post-conquest settlement, namely the base of an iron-smelting furnace (861), brooches and other artefacts of the latter part of the first century AD. (Figure 24; Plate XXXIII).

The human remains (Figures 25 – 7; Plates XXV – XXVIII).

31: An adolescent female skeleton on its face with head to the north facing downwards and slightly to the west. Arms and legs were slightly flexed, the right-hand resting below the pelvis. It was recorded near the base (layer (6)) of a cylindrical pit 1.57m deep. A number of large flints in the layer may have been related to it but formed no consistent pattern.

34: The disarticulated bones of four infants from layer (8) at the base of a slightly bell-shaped pit 1.90m deep.

62: A slightly crouched female adult skeleton on its side with head to the north facing west against the pit wall, the feet against the south wall. The left arm was flexed and extended in front of the face, the right arm extended downwards with the hand below the right thigh. Both legs were slightly bent at the knee. It was recorded at the junction of layers (7) and (8) near the base of a virtually cylindrical pit 1.17m deep.

96: An infant skeleton at the base of a cylindrical pit 1.24m deep. The skeleton lay on the pit floor against the eastern wall and had been covered with large flint nodules. It lay on its back, head to the north-west, facing west with arms by its side and legs doubled up.

121: The disarticulated bones of a new-born infant from layer (5) near the base of a cylindrical pit 90cm deep.

130/131: Three infant burials were recorded from the ditch of the trapezoid enclosure.

i. 130L a hunched skeleton with the skull pushed forward and resting on the rib cage. The arms and legs were contorted, giving the impression that the body had been thrown into the ditch at an early stage in its silting.

ii. 130L a skeleton on its stomach with head resting on a pile of pot-boilers, the right leg and pelvis were missing. The left leg was bent upwards towards the skull and the remains again gave every appearance of having been thrown into the ditch at random, rather than being deliberately buried.

iii. 131A layer (4) very fragmentary infant burial with both legs missing which again appears to have been thrown in at random.

132: Four fragmentary infant burials were obtained from the silts of a deep (2.10m) cylindrical pit. The skeletons were on their backs with arms by the sides and knees drawn up. Two burials from layers (5) and (9) had their heads orientated north and west respectively and those from layer (12) had their heads orientated north.

139 i: A lightly crouched female adult skeleton lying on its left side with head to the east facing south. It was recorded at the top (layer (3)) of a slightly belled pit 1.47m deep with assorted animal bones which did not appear to be directly associated.

ii: Two lightly crouched new-born infant skeletons were recorded from layer (4) immediately below the adult skeleton described above.

172: The disarticulated bones of a new born infant at the top (layer (4)) of a cylindrical pit 2.35m deep.

204: A tightly crouched female adult skeleton on its left side with head to the east facing south. The knees were drawn up tightly in front of the chest, both arms bent on either side of the rib cage and the head bent forward. It seems likely that the body was bound before being placed in a partially silted cylindrical pit at the junction of layers (8), (10) and (11).

205: A lightly flexed female adult skeleton on its right side with head to the east facing north. The left arm was extended in front of the face and was slightly flexed. The right arm was extended below the body. The legs were slightly bent and the skeleton had been deposited in a partially silted cylindrical pit 1.27m deep.

285 i: A lightly flexed young male adult skeleton on its back with head to the north-east facing north. The arms were tightly flexed in front of the chest with hands by the shoulders and the legs were slightly bent. The skeleton had been deposited in the top layer (layer (3)) of a cylindrical pit 1.23m deep and two iron fragments (1033) were found at the waist. Marks of injuries caused by a sharp implement were recorded on the skull and left arm, some of which were inflicted immediately prior to death.

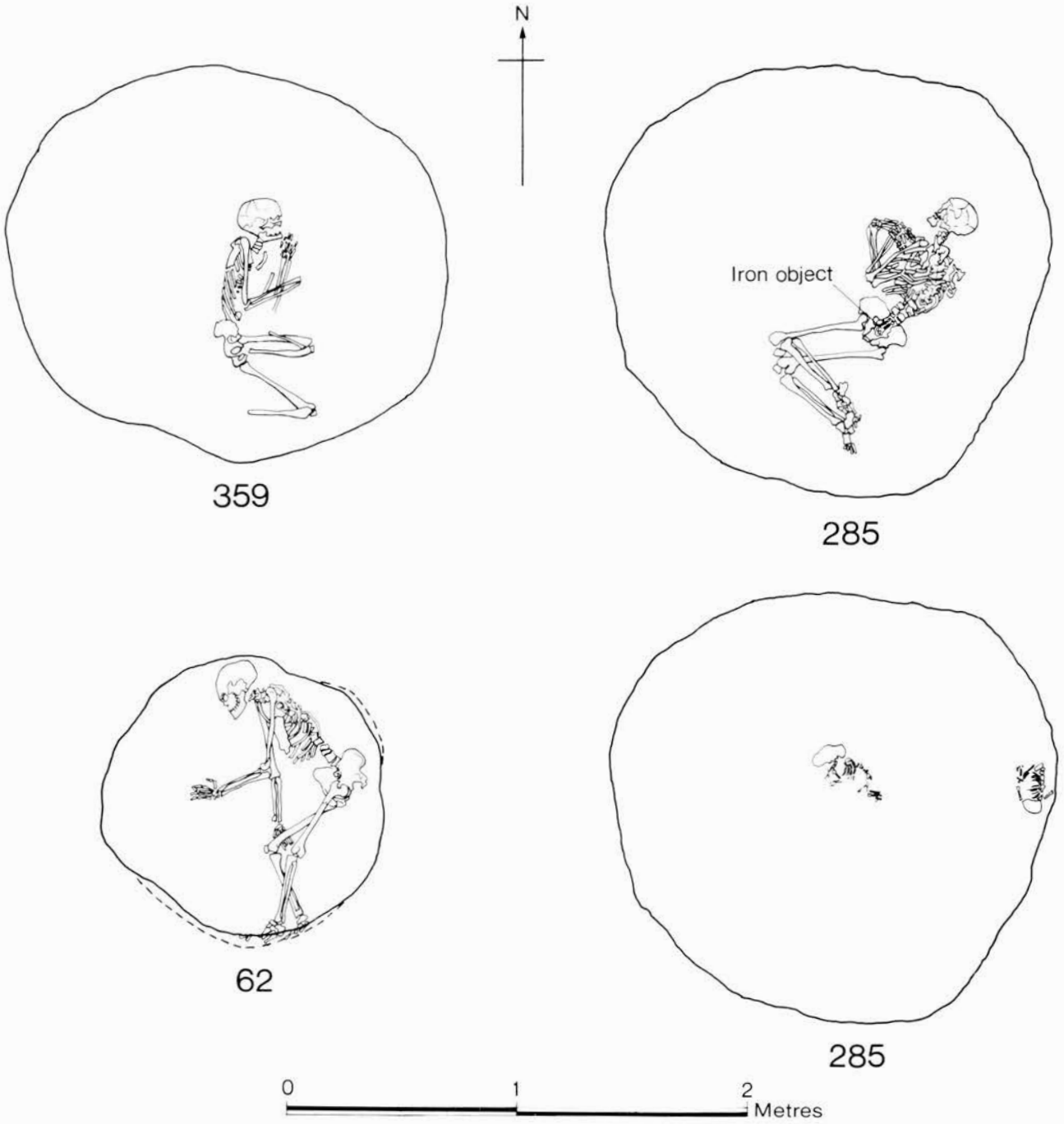

Figure 25 Plans of burials 62, 285, 359

ii: Two crouched infant skeletons were found near the top of layer (6) in the partially silted pit below the adult skeleton described above. Their heads were to the north-west and to the south, respectively.

290: The disarticulated bones of a premature infant burial from the base (layer (5)) of a cylindrical pit 85cm deep.

293: Three infant burials scattered in the fill of a cylindrical pit 1.50m deep. Two skeletons mid-way in the silting (layers (5) and (4)/(6)) were extended with their heads to the north. The bones of a new-born infant near the base of the pit (layer (7)) were disarticulated.

310W: The bones of two new-born infants were recorded near the base (layer (7)) of ditch 310 and a fragment of a femur shaft from segment G.

347: The disarticulated bones of a new-born infant were recorded from near the base (layer (6)) of a bell-shaped pit 1.79m deep.

359: A lightly flexed male adult skeleton lying on its side with head to the north facing east. The arms were flexed in front of the chest, the left hand being in front of the face. The legs were tightly bent at the knee and the body had been placed in a partially silted cylindrical pit 1.25m deep at the junction of layers (4) and (5).

381: A fragment of a skull-vault from the base (layer (3)) of a cylindrical pit 1.71m deep.

387: A tightly crouched adult male skeleton lying on its side with head to the north facing west. The arms and legs were flexed, the former being drawn up in front of the chest. The skeleton was found in a deposit (layer (6)) at the base of a cylindrical pit 1.97m deep along with

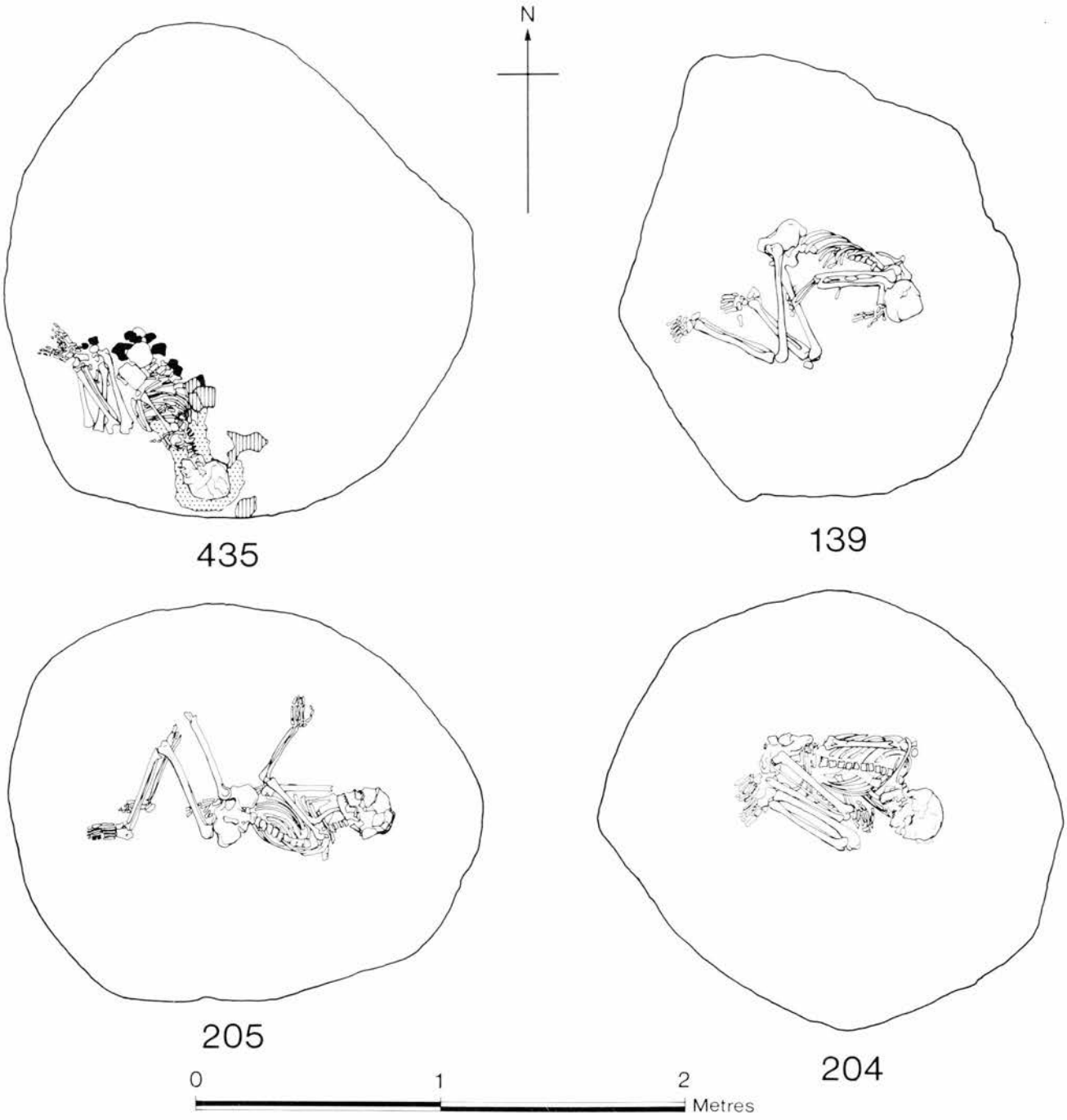

Figure 26 Plans of burials 139, 294–5, 435

numerous animal bones and the articulated remains of dog and horse. Fragments of a right femur and fibula were obtained from layer (4) in the same pit.

410: A lightly flexed female adult skeleton on its back with head to the east facing north. The arms were drawn up in front of the chest and the legs were flexed. It had been placed in a partially silted cylindrical pit 2.13m deep.

418: Remains of a new-born infant skeleton were recorded on the floor (layer (8)) of a cylindrical pit 1.40m deep.

468: The fragmentary shaft of a left femur was recorded from near the base (layer (4)) of a cylindrical pit 85cm deep.

661: The disarticulated remains of an infant burial from near the base (layer (6)) of a cylindrical pit 1.07m deep.

709: Remains of two new-born infants from a partially silted cylindrical pit 1.35m deep (layers (4) and (5)).

781: The disarticulated remains of an infant burial from near the top (layer (4)) of a cylindrical pit 1.85m deep.

942: A very fragmentary new-born infant burial at the base of a rectangular pit aligned north-west/south-east, 44cm × 32cm and 30cm deep. The sides of the pit were vertical and the bones were covered by soil and fine chalk rubble sealed by a layer of large flint nodules. The grave pit was dug into pit 261 which has been assigned to Phase 3.

815: An extended adult skeleton in a rectangular grave pit 2.05m long, 85cm wide and 54cm deep, orientated north-south with the head to the south. At the head of the grave was a V-sectioned stake-hole 14cm in diameter and 22cm deep. Around the periphery of the grave were recorded a number of nails from a wooden coffin, the outline of

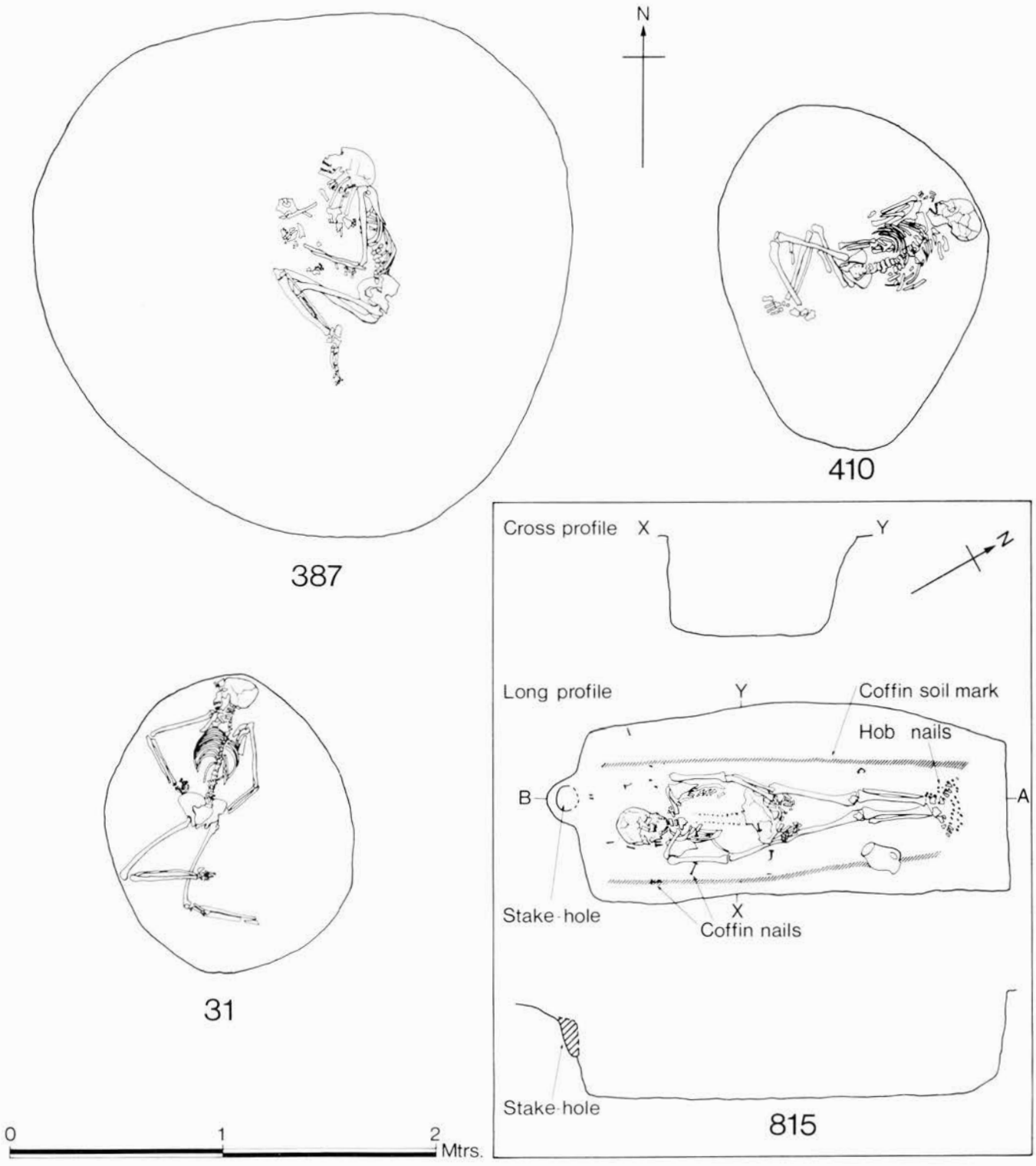

Figure 27 Plans of burials 31, 387, 410, 815

which was also recorded in the grave fill. Around the feet were grouped a number of hob-nails, and a small pottery jug lay by the knees to the east. The grave was north-east of the enclosure. It is much later than the latter and can be assigned to the late third century AD on the basis of the jug.

Undated burials

311: A very fragmentary infant burial in a shallow vertical-sided pit aligned north-east/south-west which narrows at both ends into a coffin shape. The pit is 88cm long, 35 – 42cm wide and approximately 12cm deep. There is no evidence for date but a Phase 3 attribution seems likely as there are similar dated burials elsewhere on the site.

814: A very fragmentary infant burial in a pit 45cm long, 30cm wide and 30cm deep which was probably cut by ditch 131 (Phase 3), although the evidence was not unequivocal.

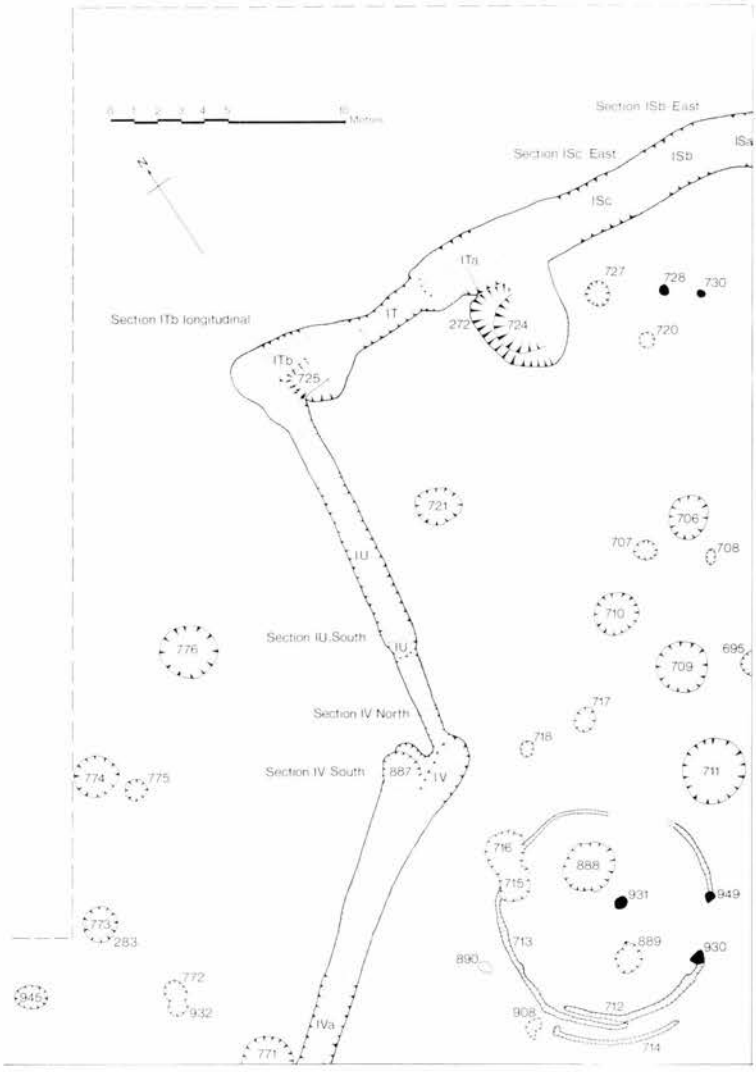

Figure 28 Detailed plan of Area F

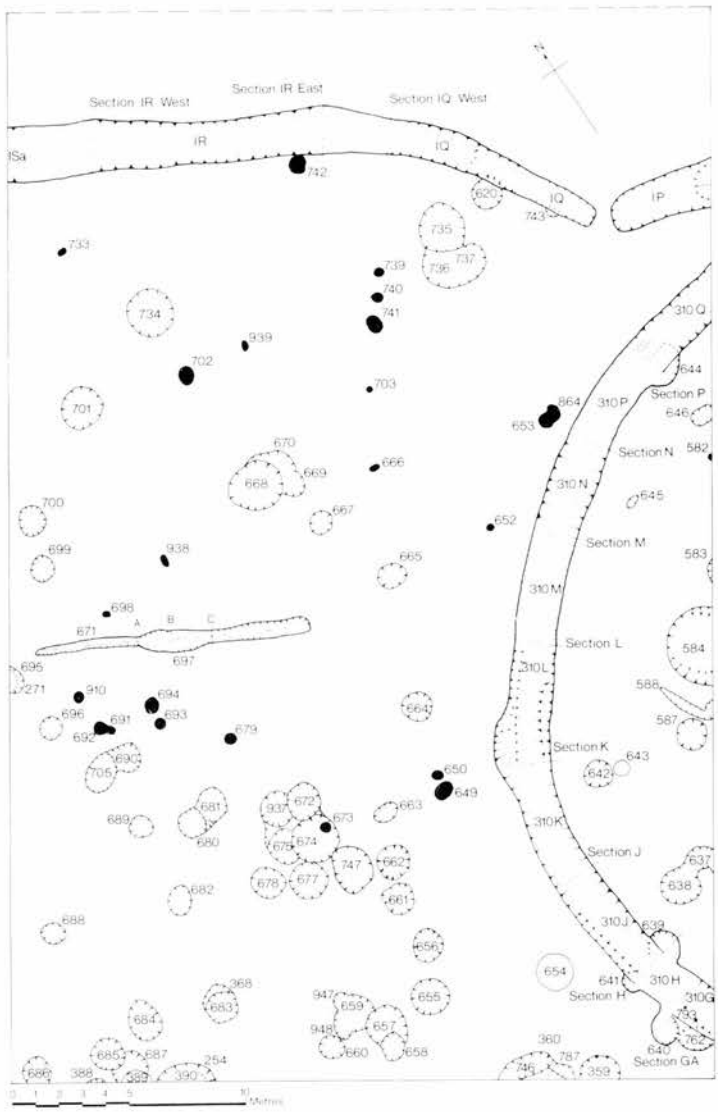

Figure 29 Detailed plan of Area G

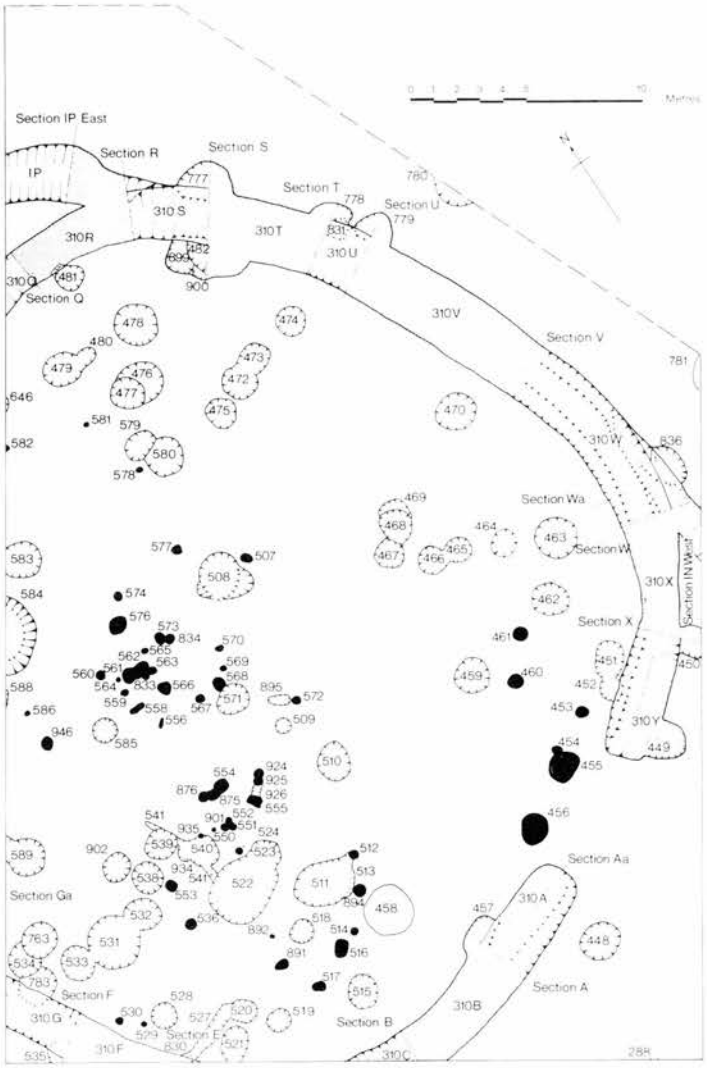

Figure 30 Detailed plan of Area H

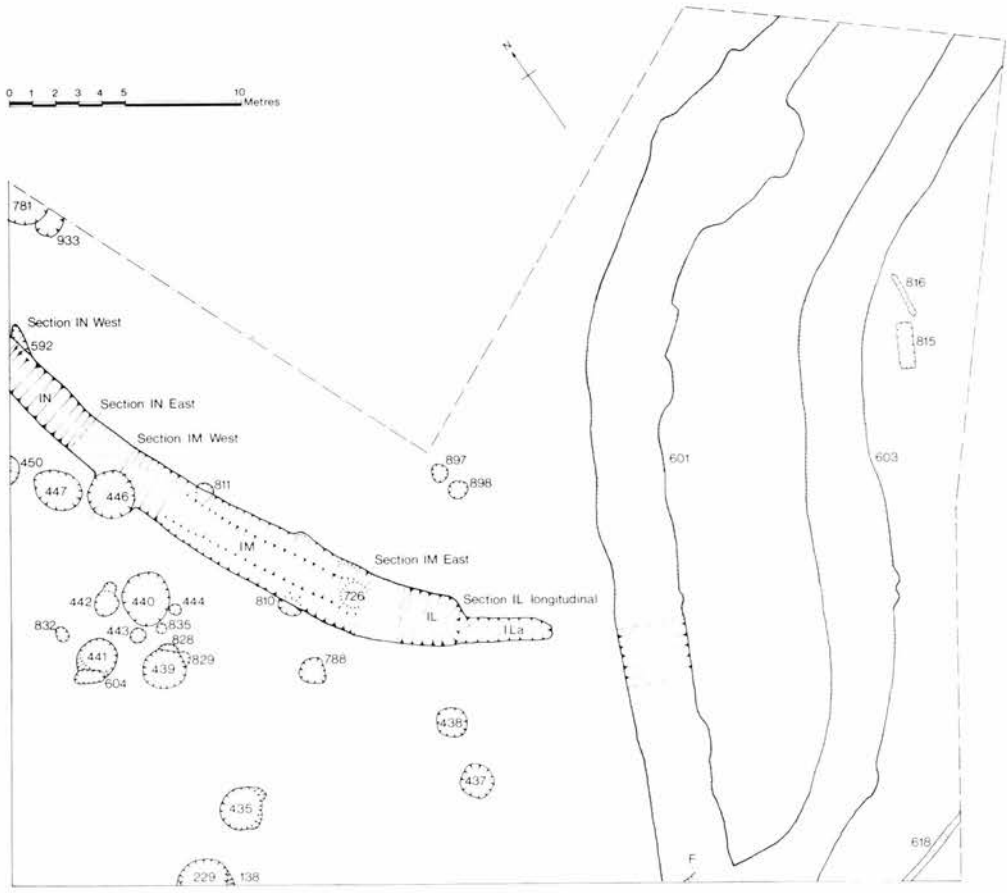

Figure 31 Detailed plan of Area J

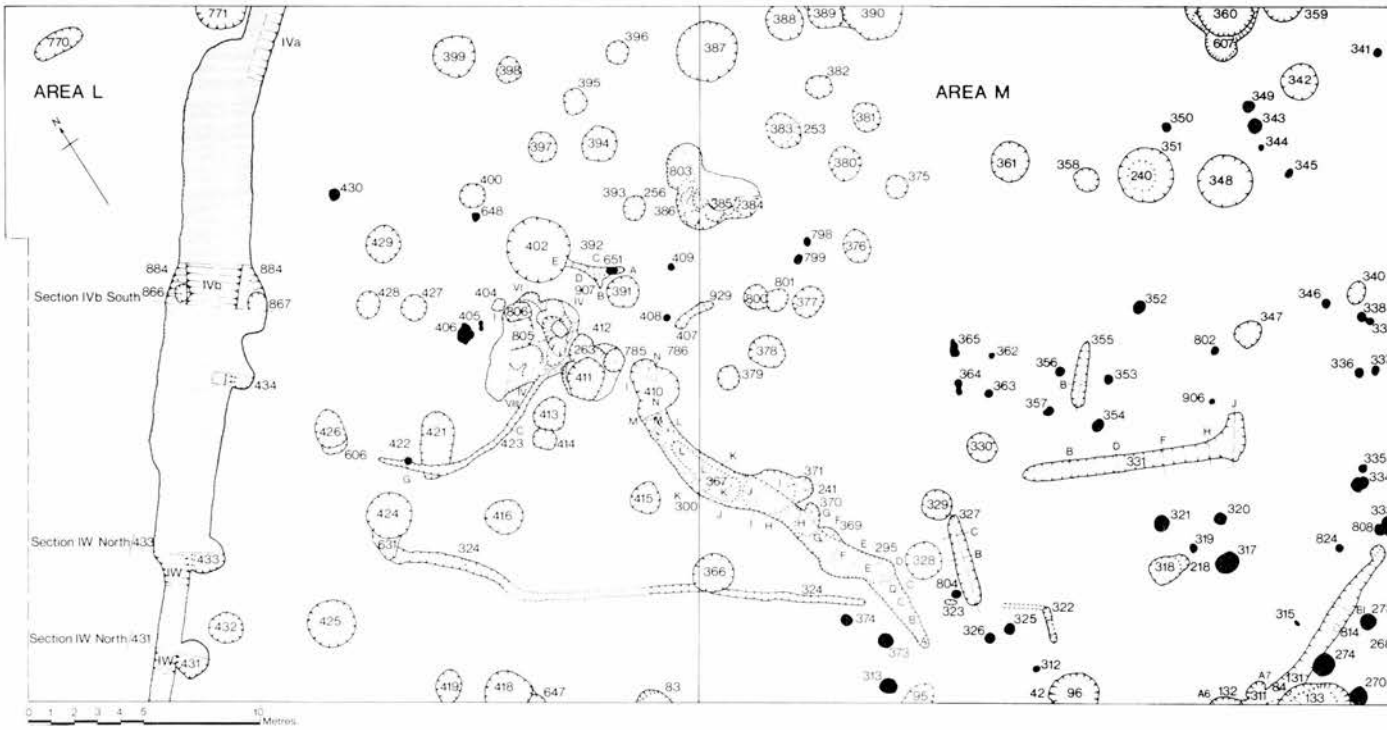

Figure 32 Detailed plan of Area L/M

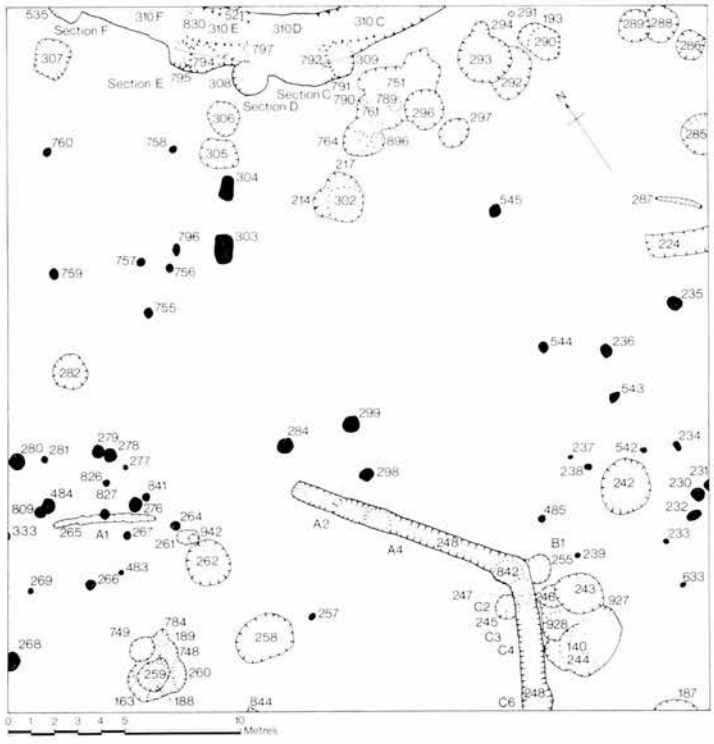

Figure 33 Detailed plan of Area N

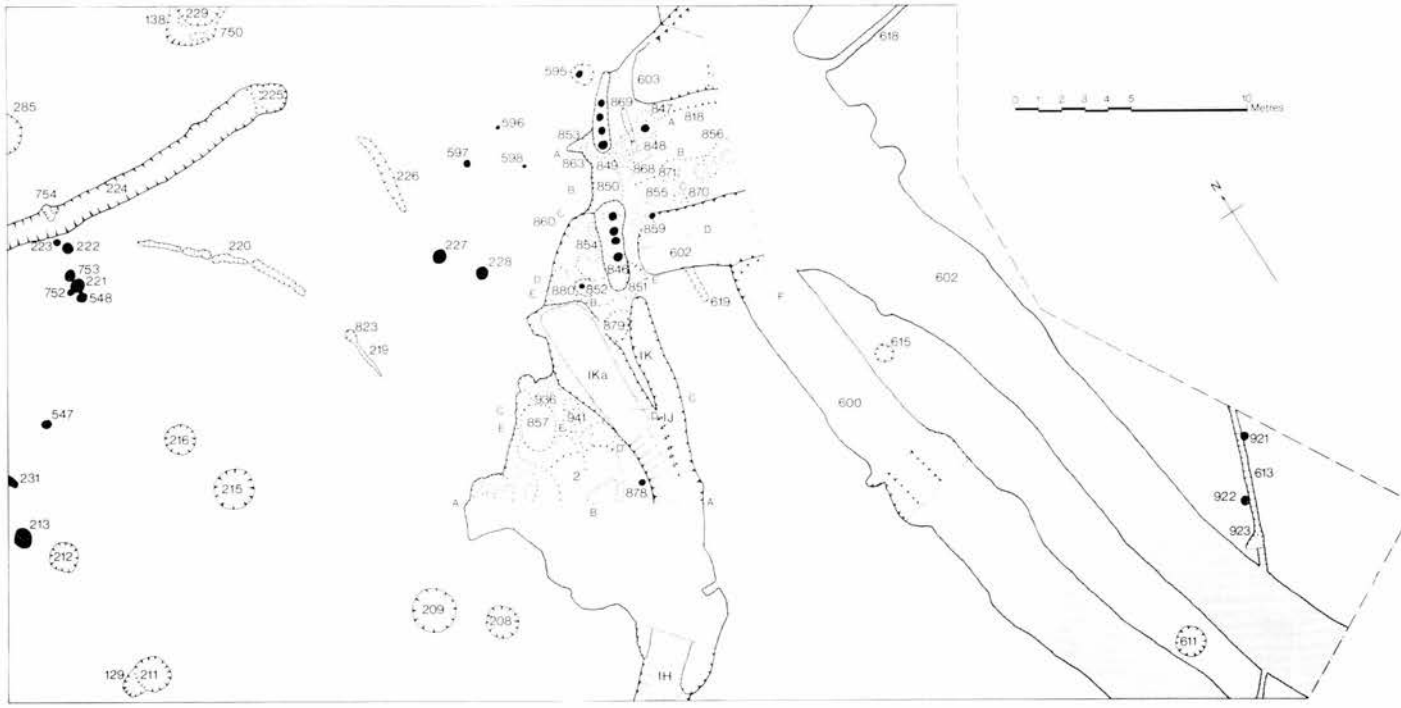

Figure 34 Detailed plan of Area P

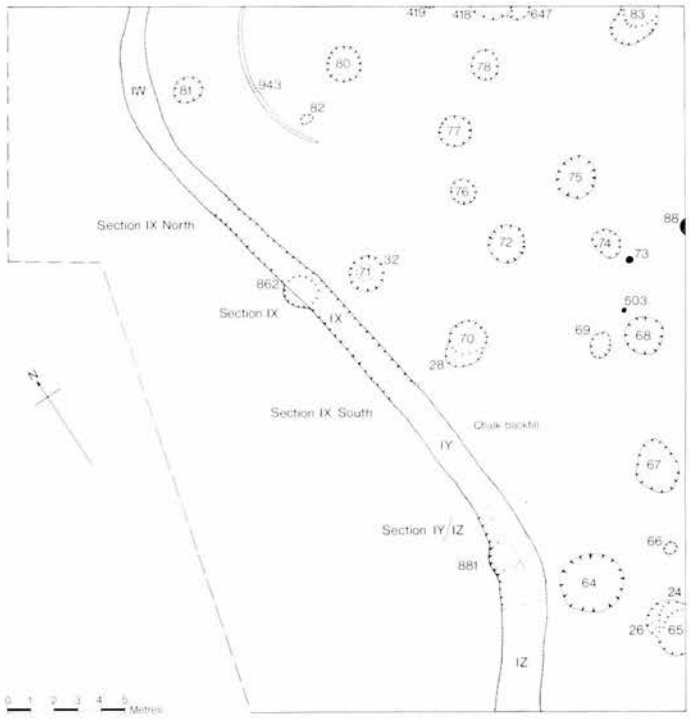

Figure 35 Detailed plan of Area R

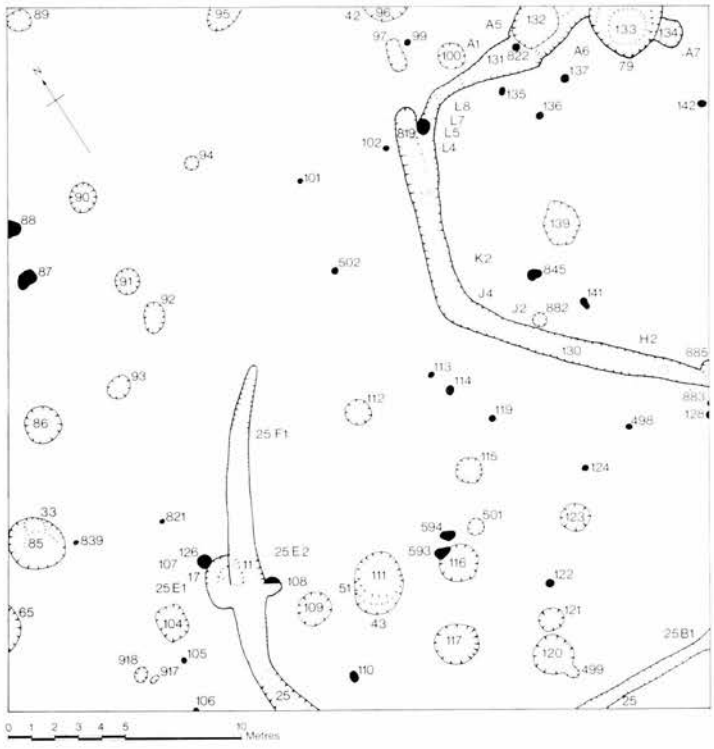

Figure 36 Detailed plan of Area S

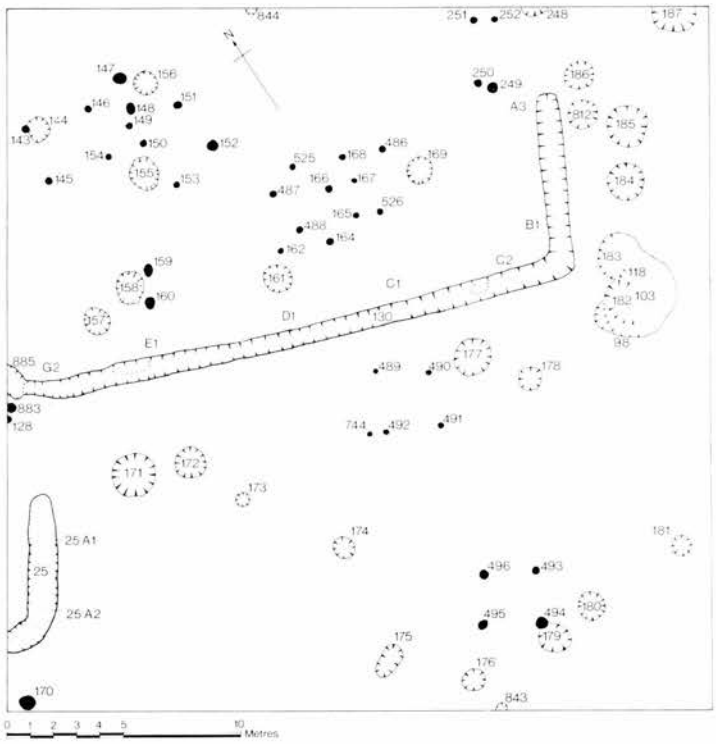

Figure 37 Detailed plan of Area T

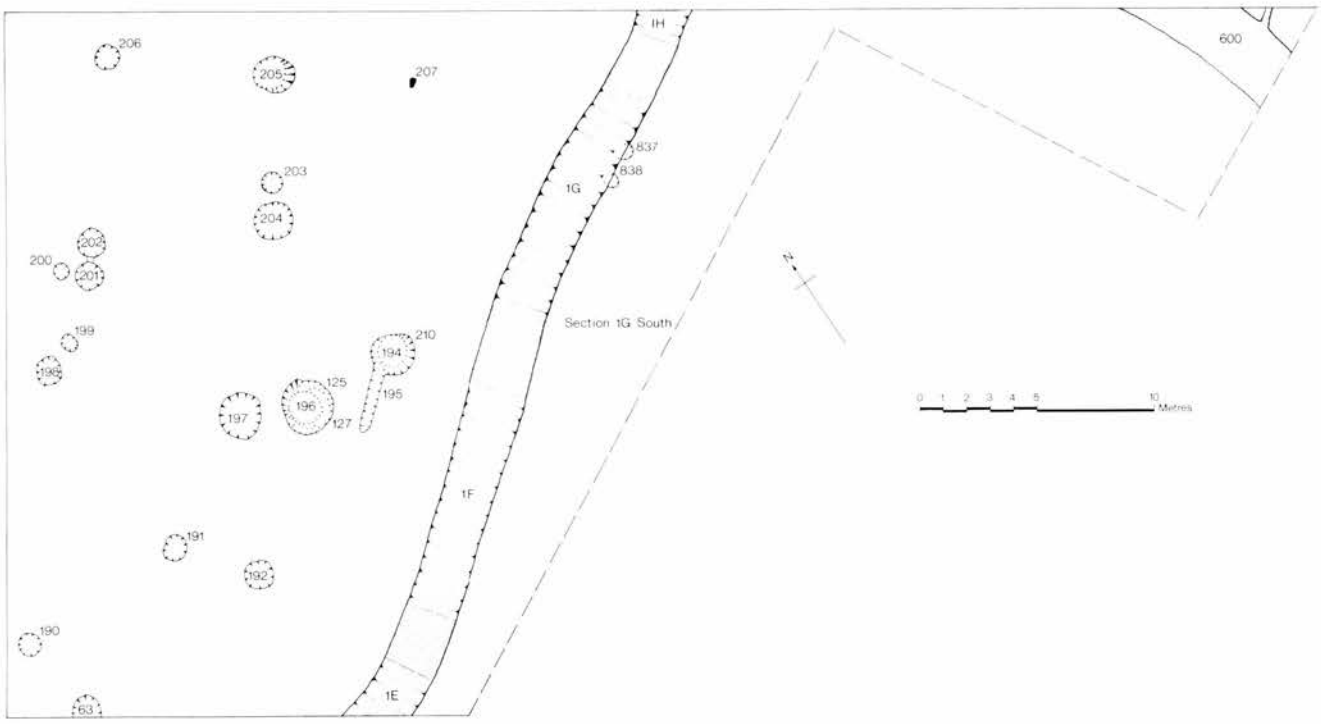

Figure 38 Detailed plan of Area U

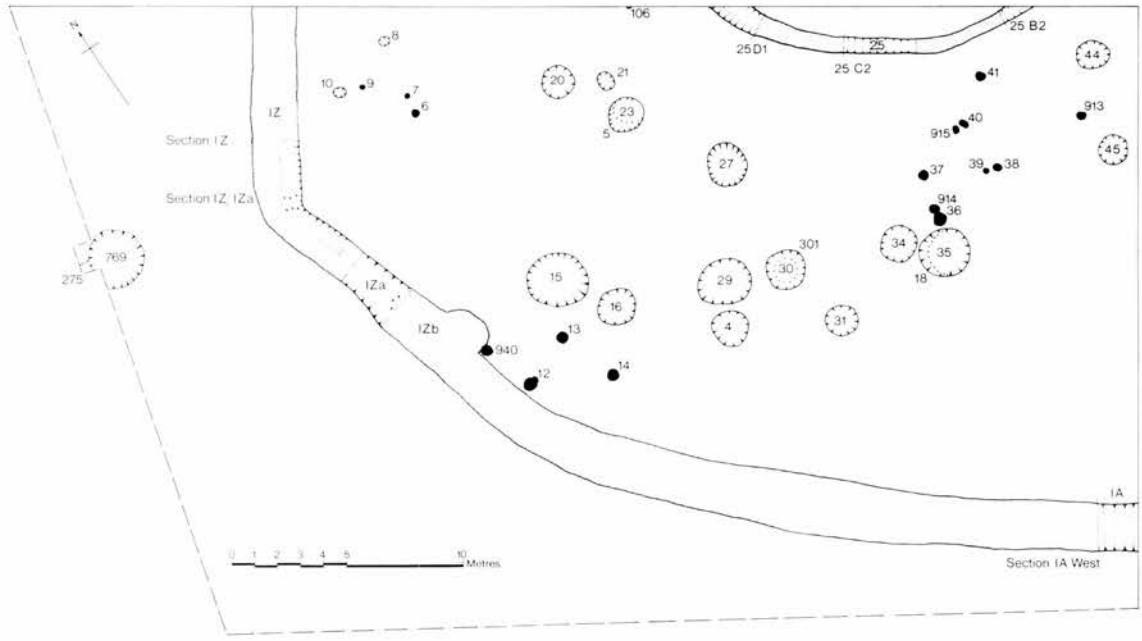

Figure 39 Detailed plan of Area W/X

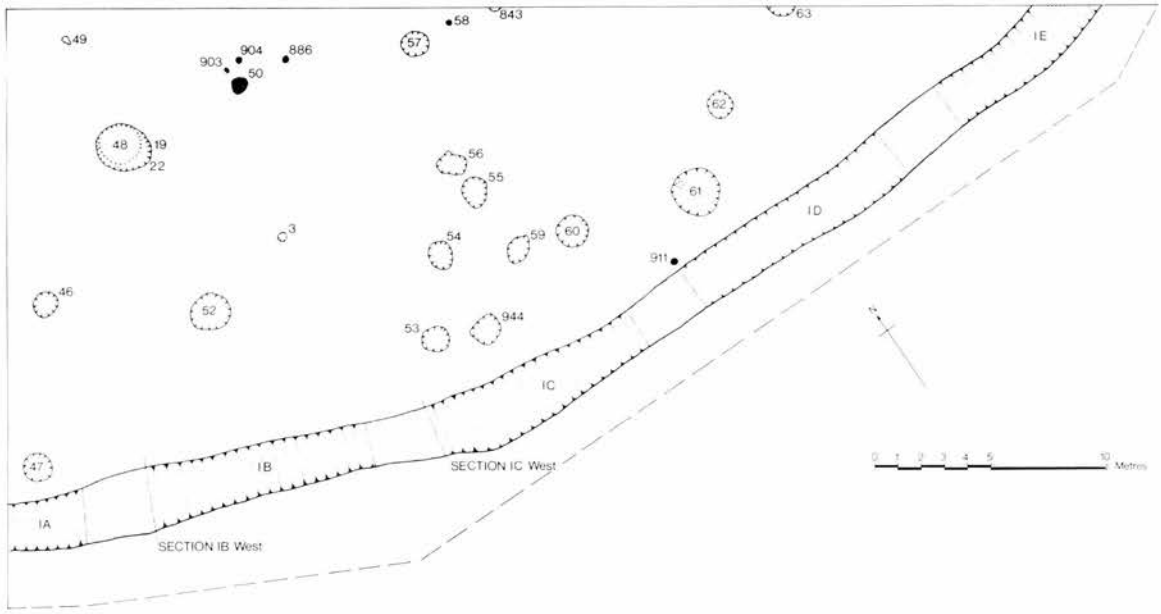

Figure 40 Detailed plan of Area Y

PART II

The Finds

Chapter VI
The Pottery

Introduction

The sheer bulk of the pottery from Gussage presented considerable sorting and description problems. It was washed and marked on site and the laborious task of the preliminary sorting and re-building undertaken during the following winter by Miss Amanda Saunders. Each sherd was fabric-typed visually in the first instance and representative samples of each fabric type were then submitted to Mrs F Gale (Department of Archaeology, University of Southampton) who subjected these to further analyses and was able to refine the classification. Her report is included in this chapter. The material was not weighed but vessels and diagnostic sherds were categorised into 60 groups representing a total of 10,205 vessels of which 6,192 could not be typed. This analysis is the basis for a broad tripartite division of the history of the settlement. It has been suggested elsewhere that the settlement was occupied continuously and a more detailed taxonomic study will clearly result in a refinement of this assessment which must be regarded as preliminary. It would have been unrealistic to have delayed this report so as to enable the completion of a more detailed ceramic study. Such a project is best regarded as a separate exercise and the author's concern in this chapter has been to present a factual statement of the ceramic types represented and the fabrics of which they were made. To facilitate this further study Mr J S Jefferies has devised a computer programme in which the detailed data from each context, (numbers of sherds, vessel types and fabric), are available as a print-out. This bulky material is available as an archive. More than 1,000 vessels (1–1034) have been drawn by Mrs C Boddington and the bulk of this illustrative material has also been retained as an archive. In this published account selected vessels illustrate the taxonomic groups (Figures 44–53) and representative groups have also been figured (Figures 54–67). It must be stressed, however, that what follows is a preliminary account of a major ceramic assemblage which will deserve further study as a topic in its own right. It has been thought unnecessary at this stage to attempt detailed ceramic comparisons. The ceramic groups can be broadly paralleled, for example, in Cunliffe's survey of this subject (Cunliffe 1974, Appendix A, 315–51) and it would be repetitious to make constant reference to forms that have been widely recognised previously.

The Ceramic Fabrics

by F E Gale

The excavation of Gussage All Saints produced 76,602 sherds of pottery. A preliminary examination by the excavator identified 26 fabric types, of which 24 were sent for analysis. (Fabrics 25 and 26 being miscellaneous and samian, respectively). One sherd of each was studied and any results obtained relate to this sample only. Computer print-outs listing vessel types and their fabrics were provided by the excavator as well as two correlation matrices of fabric, and vessel types. These data provide the basis for comments on typology.

From an initial macroscopic, then microscopic, examination of the 24 fabrics submitted, seven distinct divisions could be made, corresponding broadly to origin. These are described below following the descriptions of the excavator's fabrics. Munsell colour charts are used throughout to record surface colours and the figures quoted refer to these, although free descriptive terms are used.

Description of fabrics identified by the excavator

Fabric A

The surface of the sherd is a dark grey, black colour (7.5YR N3/). Very smooth outer surface, rougher on the inside. The fabric is hard and thick (6.5mm). Its fracture is rough and the small inclusions present are evenly distributed through the fabric.

Fabric A/B

The sherd is dark, black in places (10YR 4/1). It has a rough outer surface although the fabric is hard and has a smooth break. At its thickest the sherd measures 8mm. Small inclusions are evenly distributed through the fabric.

Fabric A/C

The outer surface is light brown (10YR 5/2), while the inner surface is almost black in places. The sherd is smooth, hard and thick (9mm). Large inclusions protrude at the fracture.

Fabric B

The surfaces of the sherd are dark grey (7 5YR N3/) but the core is red (2.5YR 5/6). The surface is rough with many inclusions present. The sherd is hard but friable and thick (9mm).

Fabric C
The sherd is light buff, orange (5YR 6/6), while the core is greyish brown. The surface is rough and hard although the fabric itself is friable. The sherd is thick (12mm).

Fabric D
The outer surface of the sherd is dark grey, brown (10YR 4/1), the core however is a red, brown colour. The surface is smooth and hard and the fabric is thin (5mm).

Fabric E
The outer surface of this smooth sherd is grey, brown (10YR 4/1). It is hard and thin (5mm).

Fabric F
Throughout the sherd is an even orange colour (2 5YR 5/6). The fabric is soft and crumbly and quite thick (7mm).

Fabric G
The sherd is a brown red colour (5YR 5/2). It has a smooth and soapy feel, and it is hard and thick (8mm).

Fabric H
The sherd is light buff in colour (5YR 6/4) with a smooth hard surface, although the fabric itself is friable. The sherd is thick (11mm).

Fabric J
This small sherd is dark grey in colour (10YR 3/1) with a smooth and 'nail' hard surface. The sherd is thick (8.5mm).

Fabric K
The outer surface is light pink, orange (2 5YR 5/4), but the inner surface is black in places. The sherd feels rough but is hard and thin (5.5 mm).

Fabric L
The sherd is light brown, buff (10YR 5/2), although the internal surface is dark grey in places. It is smooth but soft and easily scratched. It is very thick (13mm).

Fabric M
The surface of the sherd is light brown to red (5YR 5/4). It is smooth and soapy to the touch but is soft and easily scratched. The fracture is rough due to the type of inclusions present (shell). It is thick (9.5mm).

Fabric N
This fabric is represented by a small rough sherd whose surface is orange to brown (5YR 3/4). It is hard and thick (11mm), with large inclusions present.

Fabric O
The sherd is a brown, grey colour (5YR 4/1). It feels smooth and soapy and is quite hard. The sherd is thick (8.5mm).

Fabric P
This small sherd has a brown, grey surface (10YR 4/3), which is hard and rough although the fabric is crumbly. The sherd is thick (9mm).

Fabric Q
This orange sherd (5YR 6/6) is rough and thick (8mm).

Fabric R
The outer surface is dark grey (10YR 4/2). It has a rough surface, and it is hard and thick (7.5mm).

Fabric S
This brown sherd (7 5YR 5/4) is soft and crumbly. It is about 8mm thick.

Fabric T
This smooth, hard sherd is brownish grey on the outer surface (10YR 4/2). It is thick (8.5mm).

Fabric U
The outer surface is black (7.5YR N3/). It is rough and hard but the fabric itself is crumbly and thin (6mm).

Fabric V
The surface of this sherd, which is smooth, hard and soapy, is a pink orange colour (5YR 6/4). The sherd is thin (5.5mm).

Fabric W
This small pink, buff sherd (5YR 6/4) is smooth, soft and soapy. The fracture is rough and the sherd is thick (11mm).

Description of fabric groups
Group One (Figure 41)
The Fabric
Group One is made up of the excavator's fabrics A, B, C, D, E and K. They are all sand-tempered, appearing under

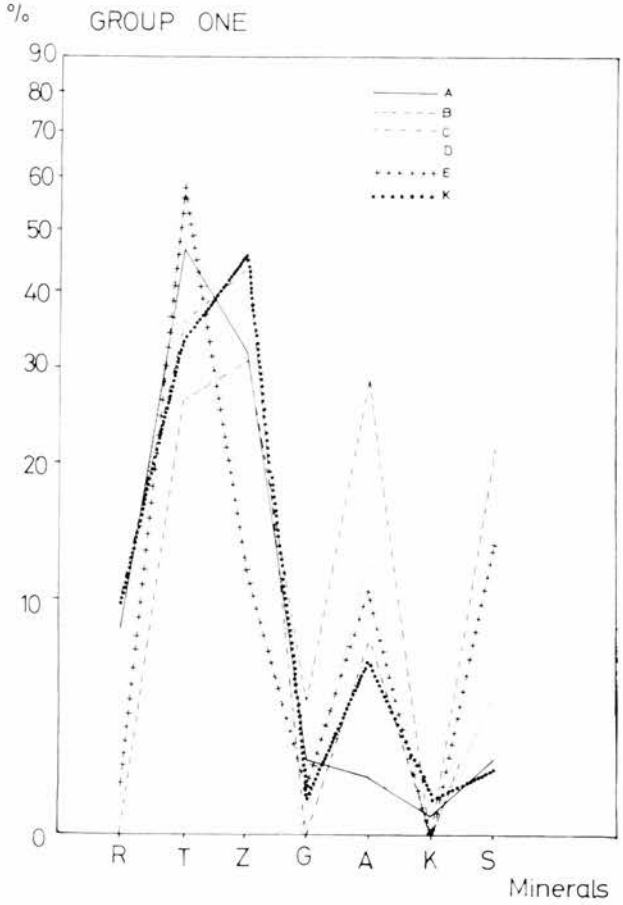

Figure 41 Group One: percentages of heavy minerals superimposed showing similarity within the group. Minerals shown (*vide* figs 42–3) R: Rutile, T: Tourmaline, Z: Zircon, G: Garnet, A: Andalusite, K: Kyanite, S: Staurolite

the binocular microscope to contain predominantly quartz and quartzite within an otherwise very clean clay matrix. Their surface colour is generally dark, although fabrics C and K are light orange. Fabrics A, D and E have a very smooth surface while B, C and K are rough. The sherds submitted for analysis vary in thickness from C, which is 12mm thick to D and E, which are only 5mm.

Petrological examination clearly revealed the homogeneity of this group. Thin section confirmed the predominance of quartz inclusions of a uniform size and roundness, average grain size about 0.27–1mm and roundness varying between 0.3–0.5. Quartzite is present in all the sherds as are small iron stained grains. Flint and calcite are also present in small quantities. Fabrics C and D contain occasional discrete pellets of clay which may be particles not broken down during preparation.

Percentages of heavy minerals are listed in the table and graphs appended. A characteristic of this group is a high tenor of both tourmaline and zircon.

Typology

Unfortunately, most vessels of this group cannot be classified. Sixty four per cent consist of unidentified vessels. Of those which have been identified, the majority are styles generally considered typically Durotrigean, and include bead rim vessels, flat rimmed barrel jars, countersunk lugs and lids. In general the vessels are wheel made. This almost exclusive use of Group One for late Iron Age pottery is clearly shown in the computer print-out of vessel type against fabric type.

Origins

Results obtained from heavy mineral analysis of this fabric, particularly the high percentage of tourmaline and zircons, perhaps point to the Tertiary sands south of Gussage All Saints as a possible source. Petrological work undertaken of sands in this area has produced a similar mineral assemblage for deposits at Fitzworth, Ower and Shipstal Point in the north of the Isle of Purbeck (Williams 1975). Thus perhaps we can see the Wareham-Poole harbour area of Dorset as a source for the pottery of Group One.

Group One is by far the largest group of pottery present; 69.6% of all the vessels, identified and unidentified, are made of this fabric.

Group Two (Figures 42, 43)

The Fabric

This group consists of the excavator's fabric divisions A/B, F, J, L, P, Q, R, T and V. Preliminary macroscopic examination showed, once again, that the group is sand tempered, with quartz and quartzite inclusions dominant. The colour range is broad, from fabric J which is dark grey through orange to the light brown buff of fabric L. The surface texture varies between the sherds represented. Some, like V, are smooth and soapy to the touch, others, fabric F for example, are rough. The sherds have an average thickness of 7.5mm although V is only 5.5mm, and L 13mm thick.

This group is defined on a petrological basis; the predominant temper is once again quartz, with some quartzite. Unlike Group One, the quartz grains have an average size below 0.27mm and the grains are more angular, ranging from 0.2–0.3. Also visible in thin section are dark brown rounded grains whose average size is approximately 0.16–0.35mm. Their identification is difficult but it is possible they could be altered glauconite, although further

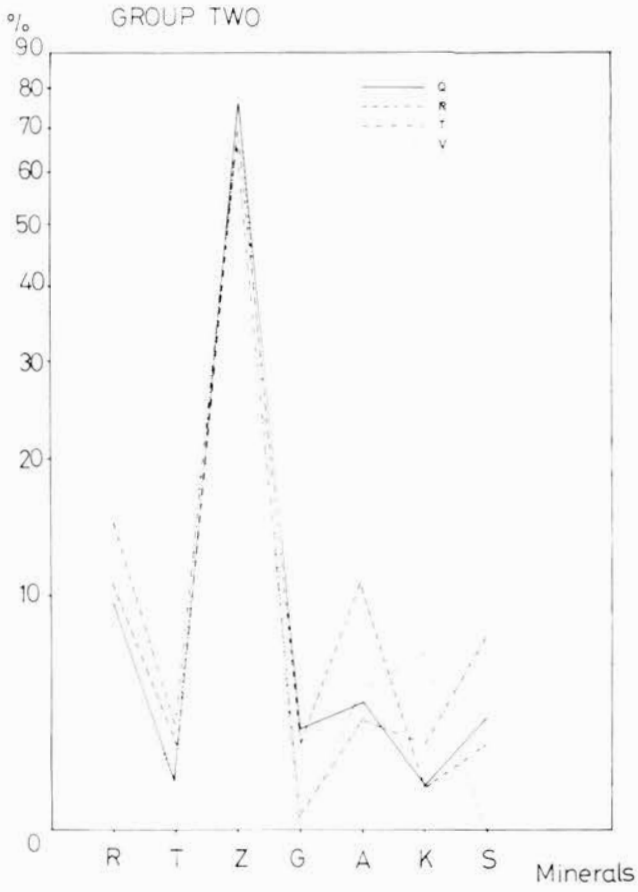

Figure 42 Group Two: percentages of fabrics A/B, F, J, P and L superimposed to show similarity of composition within the group

work and perhaps chemical tests are required to confirm this.

The heavy mineral assemblage produced by this group is distinct from Group One, and has a low tourmaline and high zircon content, and sometimes comparatively high garnet and rutile.

Typology

Group Two is typologically mixed comprising a variety of types including coarse shouldered jars and bowls, saucepan pots, fine shouldered jars and bowls and haematite coated vessels.

Origins

Comparative petrological work has been carried out on one type represented in Group Two, the haematite coated bowls. Similar pottery from Eldon's Seat and Encombe Farm on the Isle of Purbeck was examined by both thin section and heavy mineral analysis (Cunliffe 1968 and Partridge 1974). Results showed the fabric to be quartz tempered with a very high tourmaline content, unlike Group Two, which has a low tourmaline count. Thus, the fabrics are very different although the sites are barely 20 miles apart. If large-scale pottery manufacture is envisaged it would be reasonable to expect a fabric to be widespread in the production region. On the evidence available this does not appear to be the case for the haematite vessels of Dorset. Therefore, it is possible that Group Two, of which Gussage All Saints haematite vessels are made, is locally produced, in the home or by a single potter, serving a small

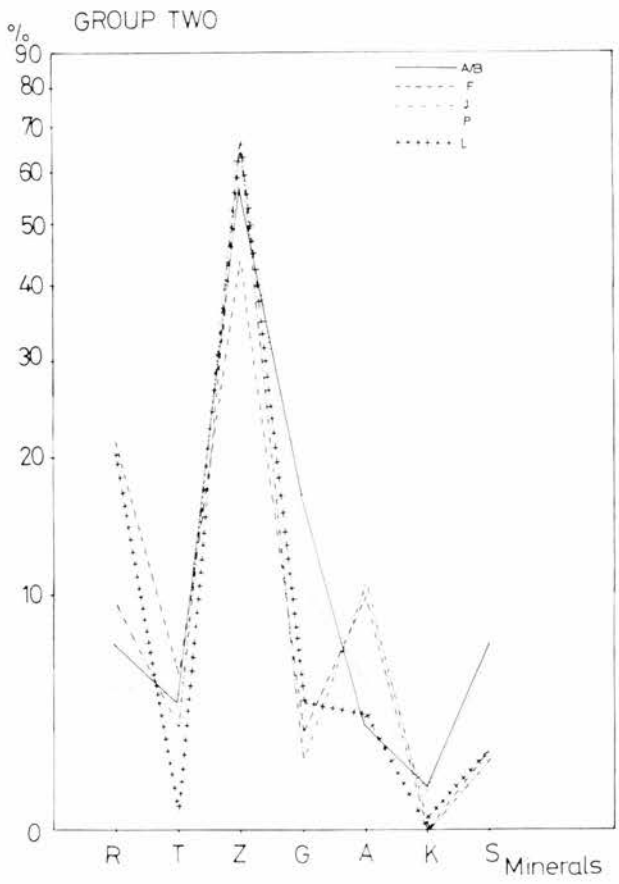

Figure 43 Group Two: percentages of fabrics Q, R, T and V superimposed to show similarity of composition within the group

community. A more precise geographical location would require extensive study of local geological deposits.

It seems, however, that occasionally haematite coated vessels were transported. This is suggested by the oolitic ware of Group Five. Two of the four vessels classified are haematite coated. In all likelihood the ooliths originated in deposits of the Jurassic Ridge to the north of Gussage All Saints. These two vessels, however, comprise only 0.05% of the total pottery assemblage.

Group Three

The Fabric

Group Three contains only one of the excavator's fabric divisions; A/C. In macroscopic examination it appears very similar to Groups One and Two, being predominantly sand-tempered but with some shell inclusions. The sherd is light brown with a smooth, hard surface. The fabric is quite thick.

When viewed in thin section, it is seen to be similar to Group Two as it is made up of a fine matrix of small quartz and quartzite grains with the rounded dark brown specks evident in Group Two. It is distinguished by the presence of fossiliferous shell in large quantities.

A similarity to Group Two is born out by the low tourmaline and high zircon content of the heavy mineral assemblage.

Typology

Of 209 vessels in this fabric, only 26 have been classified, the majority are described as having flat bases while six fall into the category of coarse jars. Since so few have been identified no positive conclusions can be drawn except perhaps that the fabric is coarse.

Origins

Thin section analysis showed the shell temper to be fossiliferous, due to the calcite recrystallisation visible in the shell fragments. This points to the Jurassic Ridge as a likely source of the clay. The nearest outcrop of shelly limestone is in the Portland beds about 20 miles to the north of Gussage but since this group represents only 2% of the total fabric assemblage a more distant source is possible.

Group Four

The Fabric

This group is characterised by the use of shell temper and encompasses the excavator's fabrics H, M and O. All three sherds are light in colour and have a smooth, soapy finish. The fabric is very crumbly, and in all cases thick.

The thin sections confirmed the presence of shell as temper. It was possible to see recrystallisation of calcite suggesting that it was fossiliferous, like that in Group Three. Small quantities of limestone and quartz occur within the clay matrix.

Very few heavy minerals were extracted. This is to be expected from a non-sand-tempered fabric. Any results quoted cannot be held to be statistically viable, but it is interesting to note the very low proportion of tourmaline present. It only occurs in small numbers, in fabric O; collophane is also present, and fabric M contains 2 grains of a rare mineral identified as chloritoid.

Typology

Once again the majority of vessels made of this fabric are unidentified. Only 46 out of a total of 380 vessels have been classified. It is difficult, therefore, to ascribe any clear typological breakdown when so few identifications have been possible, however, the nature of the shell inclusions would tend to limit the use of this fabric to coarse pottery manufacture. This is partly confirmed by fabric O where nine vessels are described as coarse globular jars and three as having 'flat bases'.

Origins

The presence of fossiliferous shell indicates a source in a shelly limestone region. Fabric M contains the mineral chloritoid which is known to be present in Upper Kimmeridge clay and Portland sand (Milner 1962, 79–80). A deposit of this is present to the north-west of Gussage All Saints, on the outskirts of the Jurassic Ridge. However, it seems probably that the fabric must originate somewhere in the region of the Jurassic Ridge where fossiliferous shell deposits abound.

Shell tempered wares represent 3.7% of the total fabric assemblage at Gussage.

Group Five

The Fabric

Group Five is made up of the excavator's fabric W and is only represented by four vessels. Preliminary macroscopic examination shows clearly the use of ooliths as temper. The sherd is a pink buff colour and is smooth and soapy to touch but it is soft, crumbly and thick.

Thin section reveals the ooliths more clearly and it is possible to see their concentric structure within the limestone body, and in a few cases the nucleus around which

the oolith formed. Quartz and red 'iron' grains are present but in small quantities and there are a few large grains of limestone and orthoclase.

Like the shell tempered wares, very few heavy minerals were separated. Once again no tourmaline was noted, only rutile, zircon, andalusite and kyanite, present in roughly equal proportions.

Typology
Fabric W comprises four vessels, of which one cannot be classified. Of the three remaining, two are haematite coated bowls and one is a globular jar.

Origins
The presence of ooliths used as temper points to the Jurassic Ridge as a possible source. The nearest outcrop lies about 17 miles north-west of Gussage All Saints, near Milborne Port. As mentioned previously when discussing Group Two, this does seem to provide evidence for the very limited transport of haematite coated vessels, however, Group Five constitutes only 0.1% of the total fabric assemblage.

Group Six
The Fabric
As was to be expected from a site on the chalk, a group of flint tempered pottery emerged. Group Six is made up of the excavator's fabrics N, S and U. The sample sherds vary in colour from black (7 5YR N3/) to orange brown (5YR 3/4) and in thickness from 6–11mm.

Large angular grains of flint were visible in thin section and also small quartz grains. The heavy minerals recovered varied in quantity between the sample sherds. Fabrics N and U produced very few, although both were characterised by a high percentage of zircon and extremely low tourmaline count. Sherd S produced many more grains but the overall pattern was confirmed.

Typology
Over half of the vessels making up this group have not been identified thus making any typological distinctions difficult. In general it would seem that this flint tempered fabric is used for the shouldered jars and bowls which can be classed as typical of the earliest Iron Age.

Origins
Little can be said about the origins of this fabric except that it may have been manufactured on or near the chalk. On the face of it, this would seem to suggest a local origin but this fabric accounts for only 1.0% of the total assemblage. It seems more likely that it originated in the chalklands towards Hampshire where flint gritted pottery is predominant in this period.

Group Seven
The Fabric
The last group to be identified consists of the excavator's fabric G. The sherd submitted for analysis is brown in colour, hard, smooth and soapy to the touch and thick.

In thin section it quickly becomes evident that the temper used is grog i.e. crushed up fragments of pottery. Both the clay matrix and the grog contain small grains of quartz. When examining the heavy minerals, contamination caused by the grog must be considered. The example from Gussage All Saints contains predominantly zircon with no tourmaline present. This tentatively links the fabric with that of Group Two.

Typology
Only 23 vessels are in Group Seven and once again over half are unidentified. Of those classified nearly all are jars, one is a flat rimmed barrel jar, while another has a bead rim. This could be taken to indicate a date in the later Iron Age for the use of this fabric but no firm conclusions can be drawn from the evidence of two pots.

Origins
As previously mentioned, the heavy mineral assemblage seems to indicate a similarity with the fabric of Group Two. The thin section is also similar to the extent that it contains small quartz grains. The contamination factor must be allowed for, but it would seem possible that Group Seven has the same local origin as Group Two.

Discussion
An interesting point to emerge from the petrological study is the question of 'Hengistbury Class B Bowls', a term implying imported vessels of the later Iron Age. In the Gussage All Saints assemblage 38 fragments have been described as such, and of these 20 are made of fabric One. Therefore, in reality, it would seem that these are British made copies originating in the same area as the typically Durotrigean pottery.

More important, however, is the difference to emerge between Groups One and Two. Together they account for 93% of the total assemblage (69.64% fabric one, 23.3% fabric two). Using accepted typological divisions of vessel styles, a broad chronological distinction can be identified. In general, Group Two is found in earlier forms than Group One. With a knowledge of origins, it is possible to build up from this a picture of pottery production in the Iron Age as seen at Gussage All Saints.

In the earliest phases local production by either the community or an itinerant potter working with local clays seems to predominate. In either case, petrological examination of the pottery would produce the same results. However, Group Five seems to contradict this. Two haematite coated vessels, traditionally accepted as typical of the earliest phases of the Iron Age, are made of an oolitic tempered fabric originating in the Jurassic Ridge. This represents only 0.05% of the total assemblage and does not change the overall view of local transportation of pottery even in this early period.

A transition occurs in the middle and later Iron Age when the local market appears to be flooded and completely taken over by Group One, and the typically Durotrigean styles it embodies. It is likely that this fabric originates in the Wareham-Poole harbour area of Dorset and of course it could be argued that a movement of clay rather than pottery is represented. This is unlikely since there are plentiful supplies of suitable potting clays close to Gussage. In all probability, pottery manufacture is no longer locally based, and pots are travelling considerable distances. A more organised and commercially oriented industry than that present in the local production of Group Two is envisaged.

The above generalisations are based upon a small sample of the total assemblage. Further work might have clarified the detail and produced more data, but it is doubtful whether the overall picture would be altered. It should be noted that valid interpretation is only possible because the excavator was able to supply full statistical details with the samples submitted.

Table VIII.

Fabric	No. Grains Counted	Tourmaline	Rutile	Zircon	Andalusite	Kyanite	Garnet	Staurolite	Accessories
Group One									
A	157	46.7	8.3	31.8	1.9	0.6	2.5	2.5	Amphibole 0.6%
B	42	26.2	—	30.9	28.6	—	4.8	21.4	
C	39	35.9	10.3	43.6	7.7	—	—	2.6	
D	76	57.9	5.3	18.4	13.2	—	—	5.3	
E	65	58.5	1.5	12.3	10.8	—	1.5	13.8	
K	92	33.7	9.8	45.6	6.5	1.1	1.1	2.2	
Mean		48.8	7.0	30.4	10.4	0.8	2.5	8.0	
Standard Deviation		13.4	3.3	12.1	8.5	0.2	1.4	7.2	
Group Two									
A/B	520	4.6	7.3	56.7	3.6	1.3	16.9	7.3	
F	704	6.0	20.7	43.7	9.9	1.1	3.3	2.6	Topaz 0.1% Collophane 4.0%
J	85	3.5	9.4	65.9	11.8	—	2.3	2.3	Collophane 4.7%
L	506	0.6	20.5	66.4	4.1	0.2	4.7	2.6	Collophane 0.2%
P	344	4.9	5.2	65.7	5.5	1.2	10.8	6.7	
Q	432	1.6	9.5	75.5	4.6	1.4	3.5	3.9	
R	75	2.8	10.8	69.3	10.8	1.3	2.8	2.8	
T	559	3.6	14.8	66.9	3.8	2.9	0.4	7.7	
V	59	1.7	8.5	78.0	5.1	6.8	—	—	
Mean		3.2	11.8	70.4	6.6	2.0	5.6	4.5	
Standard Deviation		1.7	5.3	10.8	3.1	1.9	7.0	2.2	
Group Three									
A/C	832	2.8	18.9	60.9	2.0	3.8	10.0	1.2	
Group Four									
H	Less than 35 grains counted, verbal descriptions below								
M									
O									
Group Five									
W	Less than 35 grains counted, verbal descriptions below								
Group Six									
N	37	—	—	75.7	5.4	—	13.5	5.4	
S	454	1.8	7.5	66.5	8.4	—	9.2	4.4	Collophane 0.9%
U	Less than 35 grains counted, verbal descriptions below								
Group Seven									
G	69	—	8.7	68.1	—	5.8	4.3	8.7	Collophane 4.3%
Sands									
Fitzworth	286	65.49	3.15	27.52	1.4	1.05	—	0.7	Epidote 0.35% Anatase 0.35%
Shipstal Point	441	77.1	1.36	17.69	2.72	0.45	—	—	
Redcliff Sand	786	52.13	1.27	40.23	2.55	2.55	—	1.27	
Ower	596	47.23	4.84	38.62	4.78	0.76	—	17.75	Epidote 0.76%

Heavy mineral analyses containing less than 35 grains

Fabric H

This shell tempered ware produced only 14 grains of heavy minerals to be counted. Zircon, andalusite, garnet and collophane were present in roughly equal proportions.

Fabric M

Another shell tempered ware, it produced only 13 grains to be counted despite the fact that two slides had to be made up due to the apparent abundance of heavy minerals. The 13 grains were made up of equal percentages of andalusite and collophane, followed by equal percentages of rutile, garnet and chloritoid, with the lowest proportion of zircon.

Fabric O

Two slides were made up from the same shell tempered pot but only 22 grains could be counted on slide 1 and 17 on slide 2. Slide 2 contained large quantities of collophane

with one grain each of rutile, garnet and zircon. Slide 1 gave a rather better proportional breakdown of the heavy mineral assemblage. The predominant mineral was zircon with equal quantities of garnet and rutile and small amounts of staurolite, tourmaline and collophane.

Fabric U
This flint-tempered fabric produced only seven heavy mineral grains of which six were zircons and one was kyanite.

Fabric W
Only 31 non-opaque grains were produced from this oolitic tempered fabric. Of the heavy minerals present, the majority were zircons, with small amounts of andalusite, rutile and kyanite.

Character of grains identified during heavy mineral analysis

Group One
Tourmaline
Medium sized, rounded grains, dark brown to grey/green in colour.

Zircon
Fine, clear, oval or elongate grains, in some cases pyramid terminations are visible.

Rutile
Deep red to brown, medium sized, elongate grains.

Staurolite
Medium sized, irregular grains.

Kyanite
Long, coarse clear grains.

Andalusite
Medium sized, clear irregular grains.

Garnet
Medium sized clear grains, generally with a slight pink colouring.

Group Two
Tourmaline
Medium sized, rounded or elongate grains, light brown or yellow.

Zircon
Fine, rounded or oval shaped grains.

Rutile
Fine to medium, deep red, elongate grains.

Staurolite
Medium sized, irregular grains.

Kyanite
Clear, elongate grains, coarse.

Andalusite
Fine, irregular shaped grains.

Garnet
Fine to medium, irregular shaped grains.

Group Three
Tourmaline
Medium sized, rounded stumpy grains.

Zircon
Fine, clear, oval grains.

Rutile
Fine, deep red, elongate grains.

Staurolite
Fine, irregular shaped grains.

Kyanite
Medium sized, clear, elongate grains.

Andalusite
Medium sized, clear grains, irregular shaped with many inclusions.

Garnet
Fine to medium, pink grains.

Group Four
Tourmaline
Medium sized rounded grains.

Zircon
Fine, clear grains. Some fragmentary.

Rutile
Medium, elongate grains.

Staurolite
Medium, pitted grains.

Andalusite
Fine, irregular grains.

Garnet
Fine to medium, irregular grains.

Group Five
Zircon
Fine, clear, oval shaped grains.

Rutile
Fine, rounded, deep red grains.

Kyanite
Fine to medium, fragments of clear, elongate grains.

Andalusite
Fine, clear grains.

Group Six
Tourmaline
Fine, dark grains, pleiochroism barely visible.

Zircon
Fine, clear, elongate grains.

Rutile
Fine, red, elongate grains.

Staurolite
Fine to medium grains.

Kyanite
Medium, elongate clear grains.

Andalusite
Fine to medium, irregular shaped clear grains.

Garnet
Medium to coarse, irregular shaped pink grains.

Group Seven
Zircon
Fine, rounded, clear grains.

Rutile
Fine, elongate red grains.

Staurolite
Fine to medium, irregular grains.

Kyanite
Medium sized, clear, elongate grains.

Garnet
Fine to medium, irregular, clear and slightly coloured grains.

The terms fine, medium and coarse, refer to the Open University classification of grain sizes, where fine is less than ¼mm, medium between ¼ and 1mm, and coarse larger than 1mm.

The Ceramic Forms

1. Coarse shouldered jars (Figure 44, 348, 374, 520, 523, 611, 866–7, 870, 872–3). Thick-walled jars of variable size with upright rim and lightly defined or rounded shoulder with a flat unperforated base, rarely decorated on the shoulder or rim with finger-tip or finger-nail impressions. Of the 303 vessels of this type, 285 (94.06%) are of Group Two fabric, which is sand tempered with quartz and quartzite inclusions dominant with a colour range from dark grey, through orange to light brown buff. Other forms in this fabric include coarse shouldered bowls, saucepan pots, fine shouldered jars and bowls and haematite coated vessels—all forms related to the Phase 1 ceramic assemblage. Twelve vessels were in Group Six fabric (3.96%)—a flint tempered fabric which was also used for the shouldered bowls and therefore appears to be predominantly a feature of Phase 1. Of the vessels of this type found in dated contexts, 69% can be assigned to Phase 1 although the type does occur in Phases 2 (12%) and 3 (19%) where they may be derived.

2. Fine shouldered jars (Figure 45, 586). A finer and thinner-walled version of ceramic type 1 with upright rim and angular shoulder. Of the 46 vessels of this type, 34 (73.91%) are in Group Two sand-tempered fabric and 11 vessels (23.91%) in Group Six—the flint-tempered fabric. Of the vessels of this type recorded in dated contexts 78% were from Phase 1; it is also found in Phase 2 (17%) and 3 (5%).

3. Coarse round shouldered bowls (Figure 45, 597–600). Thick-walled bowls with rounded-shoulders and hollow necks with everted rims. Of the 95 vessels of this type, 89 (93.68%) are of fabric Group Two and of those found in dated contexts, 76 (93%) come from Phase 1. The 7% recorded from Phase 3 contexts probably represent derived specimens.

4. Fine round shouldered bowls (Figure 45, 349, 389). A thinner-walled and smaller version of vessel type 3. Of the 64 vessels, 48 (75%) are of fabric Group Two and 13 (20.31%) of fabric Group Six—the standard Phase 1 fabric types. Of the vessels of this type found in dated contexts, 51 (98%) were recorded from Phase 1.

5. Saucepan pots (Figure 45, 338, 833–4, 981). Thin-walled vessels with bodies that rise from a mainly imperforate base in either a curved or straight profile. Occasionally the base is sagging and the rim bulbous if not actually beaded. Such vessels have been recognised over a large area of south England and south Wales. They are frequently decorated but this is a rare feature among the specimens from Gussage. Of the 157 vessels. 132 are in fabric Group Two (84.08%), whilst 13 vessels are in fabric Four (8.28%). The former is the sandy fabric common to Phase 1 vessels whilst the latter group is characterised by the use of shell-temper. The presence of such fossiliferous shell should indicate a source of manufacture in the region of the Jurassic Ridge where such deposits abound. Of the vessels of this type found in dated contexts, 16 (20%) and 62 (76%) come from Phases 1 and 2 respectively, whilst the 4% of vessels from Phase 3 are clearly derived. Only 52% of the vessels identified come from dated contexts for when found in isolation they are not necessarily diagnostic of either Phases 1 or 2.

6. Coarse globular jars (Figure 45, 326, 328, 605). Thick-walled jars with a straight-walled or slightly globular body and a rim which is everted and slightly beaded. Of the 22 vessels, 17 (71.27%) are of fabric Group Two—the sand-tempered fabric and 19 (90%) of those in dated contexts come from Phase 1.

7. Large jars with everted rims (Figure 46, 355, 767). Large coarse jars with a high rounded shoulder and globular body with a rim which is upright or slightly everted and expanded internally. The two vessels illustrated are decorated with a double row of denticulated swags on the shoulder. Of the

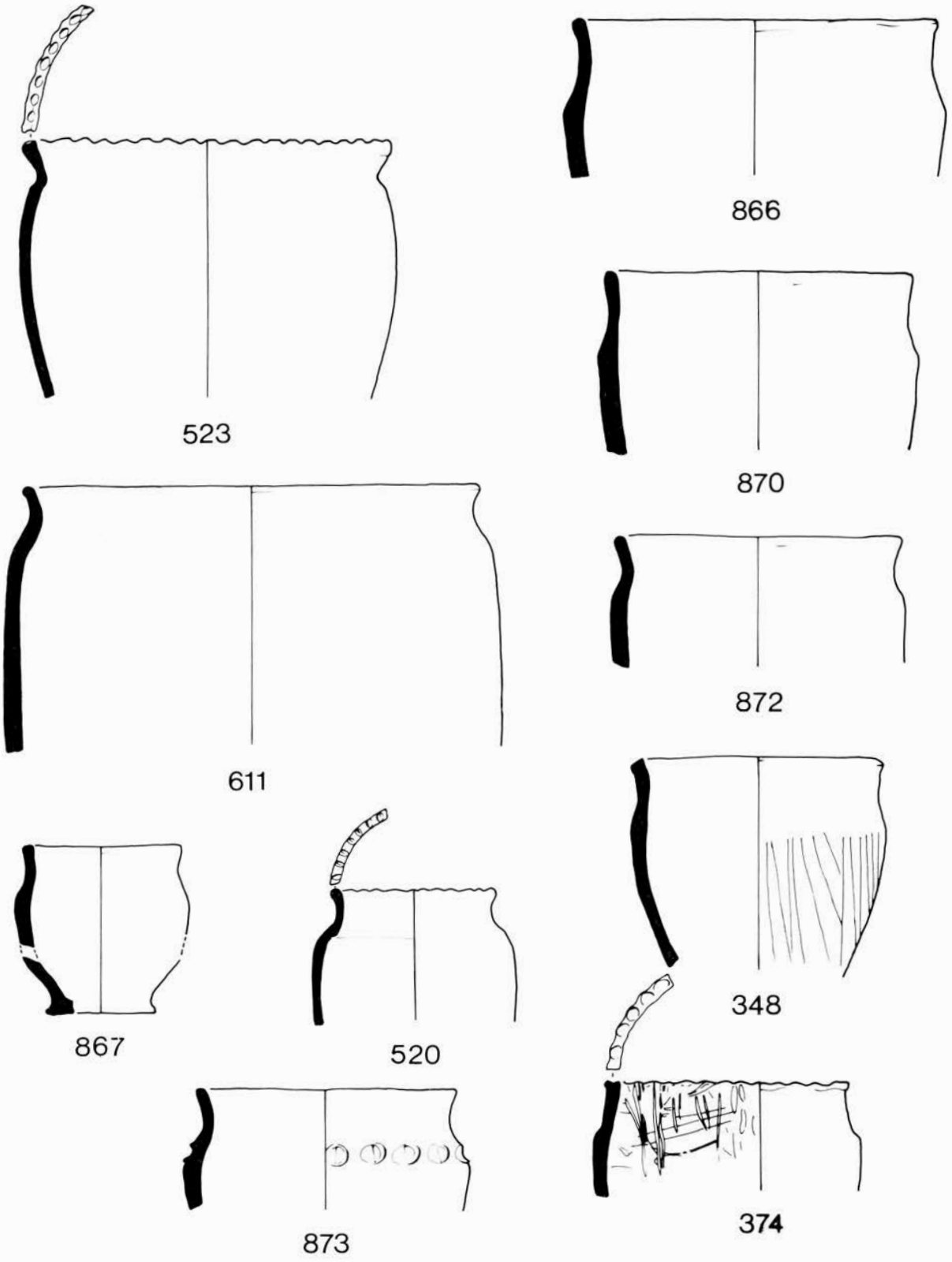

Figure 44 Vessel type 1 (Scale 1:4)

Table IX. Correlation of vessel types and fabric groups expressed as total vessels

Vessel types	Fabric Groups							*Total*
	1	2	3	4	5	6	7	
1 Coarse shouldered jars	3	285	2	1	—	12	—	303
2 Fine shouldered jars	1	34	—	—	—	11	—	46
3 Coarse round shouldered bowls	4	89	—	—	—	2	—	95
4 Fine round shouldered bowls	3	48	—	—	—	13	—	64
5 Saucepan pots	5	132	7	13	—	—	—	157
6 Coarse globular jars	—	17	—	1	—	4	—	22
7 Large jars with everted rims	2	15	—	—	—	1	—	18
8 Globular bowls	—	9	—	—	—	2	—	11
9 Haematite coated bowls	—	27	—	—	2	—	—	29
10 Straight sided dishes	—	2	—	—	—	—	—	2
11 Angular bowls	—	16	1	—	—	1	—	18
12 Decorated sherds	18	4	—	—	—	—	—	22
13 Externally expanded rims	—	2	—	2	—	1	—	5
14 Strap lugs	3	9	—	—	—	3	—	15
15 Flat bases with footrings	—	1	—	—	—	1	—	2
16 Omphaloid bases with footrings	2	2	—	—	—	—	—	4
17 Flat bases	516	258	10	4	—	8	—	796
18 Flat perforated bases	70	15	—	—	—	—	—	85
19 Wasters	—	1	—	—	—	—	—	1
20 Proto-bead rim bowls and jars	53	155	2	1	—	—	—	211
21 Shallow bowls	9	35	—	4	—	—	—	48
22 Deep bowls	—	38	—	—	—	3	—	41
23 Flat rimmed barrel jars	27	11	—	2	—	—	1	41
24 Large jars with bead rims	—	4	—	2	—	—	—	6
25 Barrel jars	—	16	3	3	—	—	1	23
26 Bowls with externally expanded rims	—	7	—	—	—	2	—	9
27 Furrowed bowls	—	—	—	1	—	—	—	1
28 Cordoned bowls	41	3	—	—	—	1	—	45
29 Moulded rims	—	4	—	—	—	—	—	4
30 Necked bowls	3	2	—	—	—	—	—	5
31 Simple lugs	—	5	—	—	—	2	—	7
32 Bases with low footrings	22	2	—	—	—	—	—	24
33 Pedestal bases	92	3	—	—	—	—	—	95
34 Flat bases with protruding feet	15	12	—	—	—	3	—	30
35 Miscellaneous bead rims	920	19	—	1	—	—	1	941
36 Bead rim bowls	147	2	—	4	—	—	—	153
37 Bead rim jars	13	—	—	1	—	—	—	14
38 Jars with upright rims	170	2	—	—	—	—	—	172
39 Hengistbury Class B bowls	20	18	—	—	—	—	—	38
40 Flat rimmed jars	134	4	—	1	—	—	—	139
41 Fine bowls with hollow necks and simple rims	39	1	—	—	—	—	—	40
42 Shouldered bowls	4	2	—	—	—	—	—	6
43 Shallow dishes	2	—	—	—	—	—	—	2
44 Bowls with hollow necks and rolled rims	66	—	—	1	—	—	—	67
45 Bowls with a channel round the rim	10	—	—	—	—	—	—	10
46 Corrugated jars	1	—	—	—	—	—	—	1
47 Large storage jars	12	1	—	3	—	—	2	18
48 Globular jars	1	9	1	1	1	—	—	13
49 Tankards	2	—	—	—	—	—	—	2
50 Samian sherds	—	—	—	—	—	—	—	0
51 Amphorae	—	—	—	—	—	—	—	0
52 Gallo-Belgic imports	—	—	—	—	—	—	—	0
53 Flagons	1	—	—	—	—	—	—	1
54 Lids	45	—	—	—	—	—	1	46
55 Countersunk lugs	52	1	—	—	—	—	—	53
56 Platters	2	—	—	—	—	—	—	2
57 Burnished jars	6	—	—	—	—	—	—	6
58 Multiple bead rims	3	—	—	—	—	—	—	3
59 Bases with thick footrings	1	—	—	—	—	—	—	1
60 Unidentified vessels	4,567	1,052	183	334	1	38	17	6,192
61 Total vessels	7,107	2,374	209	380	4	108	23	10,205

Table X. Correlation of vessel types and fabric groups expressed as percentages

Vessel types	Fabric Groups							*Total*
	1	2	3	4	5	6	7	
1 Coarse shouldered jars	0.99	94.06	0.66	0.33	—	3.96	—	303
2 Fine shouldered jars	2.17	73.91	—	—	—	23.91	—	46
3 Coarse round shouldered bowls	4.21	93.68	—	—	—	2.11	—	95
4 Fine round shouldered bowls	4.69	75.00	—	—	—	20.31	—	64
5 Saucepan pots	3.18	84.08	4.46	8.28	—	—	—	157
6 Coarse globular jars	—	77.27	—	4.55	—	18.18	—	22
7 Large jars with everted rims	11.11	83.33	—	—	—	5.56	—	18
8 Globular bowls	—	81.82	—	—	—	18.18	—	11
9 Haematite coated bowls	—	93.10	—	—	6.90	—	—	29
10 Straight sided dishes	—	100.00	—	—	—	—	—	2
11 Angular bowls	—	88.89	5.56	—	—	5.56	—	18
12 Decorated sherds	81.82	18.18	—	—	—	—	—	22
13 Externally expanded rims	—	40.00	—	40.00	—	20.00	—	5
14 Strap lugs	20.00	60.00	—	—	—	20.00	—	15
15 Flat bases with footrings	—	50.00	—	—	—	50.00	—	2
16 Omphaloid bases with footrings	50.00	50.00	—	—	—	—	—	4
17 Flat bases	64.82	32.41	1.26	0.50	—	1.01	—	796
18 Flat perforated bases	82.35	17.65	—	—	—	—	—	85
19 Wasters	—	100.00	—	—	—	—	—	1
20 Proto-bead rim bowls and jars	25.12	73.46	0.95	0.47	—	—	—	211
21 Shallow bowls	18.75	72.92	—	8.33	—	—	—	48
22 Deep bowls	—	92.68	—	—	—	7.32	—	41
23 Flat rimmed barrel jars	65.85	26.83	—	4.88	—	—	2.44	41
24 Large jars with bead rims	—	66.67	—	33.33	—	—	—	6
25 Barrel jars	—	69.57	13.04	13.04	—	—	4.35	23
26 Bowls with externally expanded rims	—	77.78	—	—	—	22.22	—	9
27 Furrowed bowls	—	—	—	100.00	—	—	—	1
28 Cordoned bowls	91.11	6.67	—	—	—	2.22	—	45
29 Moulded rims	—	100.00	—	—	—	—	—	4
30 Necked bowls	60.00	40.00	—	—	—	—	—	5
31 Simple lugs	—	71.43	—	—	—	28.57	—	7
32 Bases with low footrings	91.67	8.33	—	—	—	—	—	24
33 Pedestal bases	96.84	3.16	—	—	—	—	—	95
34 Flat bases with protruding feet	50.00	40.00	—	—	—	10.00	—	30
35 Miscellaneous bead rims	97.77	2.02	—	0.11	—	—	0.11	941
36 Bead rim bowls	96.08	1.31	—	2.61	—	—	—	153
37 Bead rim jars	92.86	—	—	7.14	—	—	—	14
38 Jars with upright rims	98.84	1.16	—	—	—	—	—	172
39 Hengistbury Class B bowls	52.63	47.37	—	—	—	—	—	38
40 Flat rimmed jars	96.40	2.88	—	0.72	—	—	—	139
41 Fine bowls with hollow necks and simple rims	97.50	2.50	—	—	—	—	—	40
42 Shouldered bowls	66.67	33.33	—	—	—	—	—	6
43 Shallow dishes	100.00	—	—	—	—	—	—	2
44 Bowls with hollow necks and rolled rims	98.51	—	—	1.49	—	—	—	67
45 Bowls with a channel round the rim	100.00	—	—	—	—	—	—	10
46 Corrugated jars	100.00	—	—	—	—	—	—	1
47 Large storage jars	66.67	5.56	—	16.67	—	—	11.11	18
48 Globular jars	7.69	69.23	7.69	7.69	7.69	—	—	13
49 Tankards	100.00	—	—	—	—	—	—	2
50 Samian sherds	—	—	—	—	—	—	—	0
51 Amphorae	—	—	—	—	—	—	—	0
52 Gallo-Belgic imports	—	—	—	—	—	—	—	0
53 Flagons	100.00	—	—	—	—	—	—	1
54 Lids	97.83	—	—	—	—	—	2.17	46
55 Countersunk lugs	98.11	1.89	—	—	—	—	—	53
56 Platters	100.00	—	—	—	—	—	—	2
57 Burnished jars	100.00	—	—	—	—	—	—	6
58 Multiple bead rims	100.00	—	—	—	—	—	—	3
59 Bases with thick footrings	100.00	—	—	—	—	—	—	1
60 Unidentified vessels	73.76	16.99	2.96	5.39	0.02	0.61	0.27	6,192

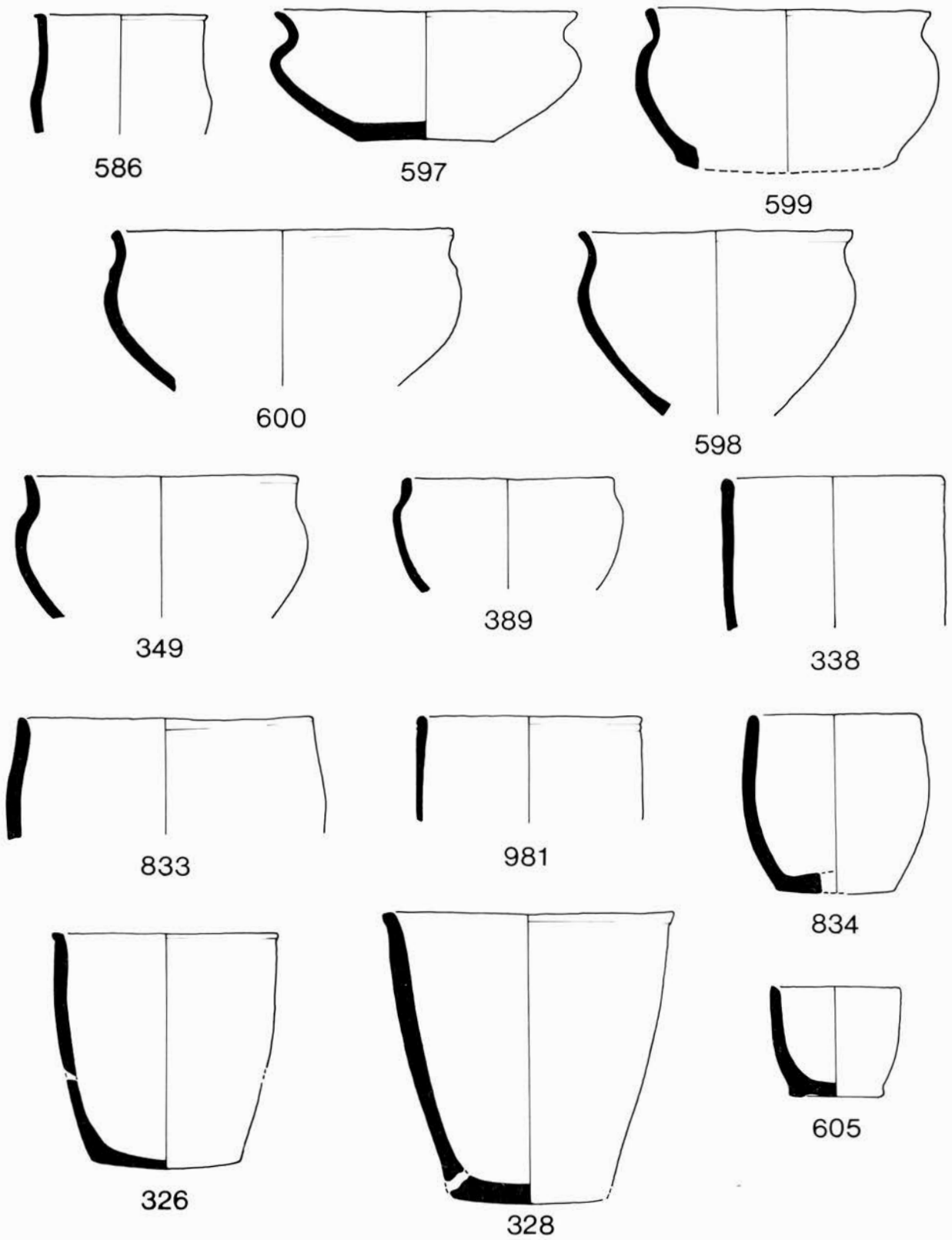

Figure 45 Vessel types 2: 586; 3: 597–600; 4:349, 389; 5:338, 833, 981, 834; 6:326, 328, 605 (Scale 1:4)

18 vessels, 15 (83.33%) are of fabric Group Two and 12 (80%) of those in dated contexts come from Phase 2.

8. Globular bowls (Figure 46, 696). Only 11 examples of this vessel type were recorded. They are deep, thick-walled bowls with a broad flat base and globular body with an everted rim. Nine of the vessels (81.82%) were of fabric Group Two and all were recorded from Phase 1 contexts.

9. Haematite coated bowls (Figure 46, 567, 585, 602, 645, 647, 668). Fine-walled bowls with a pronounced shoulder and a straight or slightly everted rim. The common feature is that they are coated with haematite. Of the 29 examples of this vessel type, 27 (93.10%) were of fabric Group Two, although two vessels were in the oolitic ware of fabric Group Five, suggesting that occasionally these haematite coated vessels were transported. Of those bowls in dated contexts (97%), 26 (93%) came from Phase 1.

10. Straight-sided dishes (Figure 46, 568). Shallow dishes with straight, thick walls and relatively narrow bases. Only two vessels of this type were recorded, both were in fabric Group Two and both were recorded in Phase 1 contexts.

11. Angular bowls (Figure 46, 617, 766). Bowls with sharp shoulders, pronounced necks and everted thickened or beaded rims. Of the 18 vessels of this type, 16 (88.89%) were of fabric Group Two. One illustrated example (617) is unusually shallow and possesses a base with a low foot-ring. Of the examples from dated contexts (94%), seven (41%) are from Phase I and nine (53%) from Phase 2.

12. Decorated sherds. This category comprises those body sherds that were decorated but could not be attributed with certainty to any particular vessel type. Only 22 such sherds were recorded. This is indicative of the lack of decorated vessels in all ceramic phases at Gussage. Of the 22 sherds, 18 (81.82%) were of fabric Group One, a sand-tempered ware which was almost exclusively used for Phase 3 pottery. Of the sherds from dated contexts (87%), four (21%) were recorded from Phase 1, two (10%) were recorded from Phase 2 and 13 (69%) were recorded from Phase 3.

13. Externally expanded rims (Figure 46, 566, 644). This category comprises rim sherds which are flat-topped and externally expanded. The vessels are of uncertain form but are apparently large storage jars with straight or globular walls. Of the five rim-sherds recorded, two were of fabric Group Two, two of fabric Group Four and one of fabric Group Six. Of the four examples in dated contexts all belong to Phase 1.

14. Strap lugs (Figure 46, 565, 601). Simple, hand-made lugs, circular or slightly oval in section and found in isolation from their parent vessels. Fifteen such lugs were recorded of which nine (60%) were of fabric Group Two, three (20%) were of fabric Group One and three (20%) of fabric Group Six. Of the examples found in dated contexts (53%) all belong to Phase 1.

15. Flat bases with foot-rings. Only two flat bases with foot-rings were recorded in isolation from their parent vessels—both in Phase I contexts.

16. Omphaloid bases with foot-rings. Four omphaloid bases with foot-rings were recorded in isolation from their parent vessels. Of these, two were recorded from Phase 1 and two from Phase 2 contexts.

17. Flat bases. A total of 796 flat bases were recorded in isolation from their parent vessels. Of these, 576 (64.82%) were of fabric Group One and 258 (32.41%) of fabric Group Two. Of those sherds in dated contexts (69%), 319 (58%) were recorded from Phase 3, 112 (20%) from Phase 2 and 121 (22%) from Phase 1.

18. Flat perforated bases. A total of 85 flat perforated bases were recorded in isolation from their parent vessels, the perforations mostly having been made after firing. Of these base fragments, 70 (82.5%) were of fabric Group One and 15 (17.65%) of fabric Group Two. Of those sherds from dated contexts (5.9%), 42 (84%) were from Phase 3, five (10%) from Phase 2 and three (6%) from Phase 1.

19. Wasters. One waster in fabric Group Two from a Phase 1 context was recorded. Although the rim was missing it appears to have been from a large shouldered jar.

20. Proto-bead rim bowls and jars (Figure 47, 780, 783, 853, 970, 978A, 991). This category comprises hand-made globular bowls and jars with rims that are crudely beaded—either finished with a spatula or finger but not thrown on a wheel. Of the 211 vessels, 155 (73.46%) are of fabric Group Two and 53 (25.12%) are of fabric Group One. Such jars and bowls have been assigned to Phase 2 of the settlement and it is of interest to note the continuing dominance of the Group Two fabrics together with the emergence of Group One fabrics as a significant percentage. The latter became the dominant fabrics of Phase 3. Of the vessels recorded from dated contexts (82%), 163 (95%) were recorded from Phase 2, five vessels from Phase 1 (3%) and four vessels from Phase 3 (2%). Its dominance as a Phase 2 ceramic type is therefore plain.

21. Shallow bowls (Figure 47, 784, 809, 988). Small rounded-shouldered bowls with incipient beaded rims. Of the 48 vessels of this type, 35 were of fabric Group Two (72.92%), nine of Group One (18.75%) and four of Group Four (8.33%). Of those vessels from dated contexts (63%), 25 (83%) belong to Phase 2 and five (17%) to Phase 1.

22. Deep bowls (Figure 47, 803, 806, 978B). A large version of vessel type 21 with a high shoulder and crudely beaded rim . Of the 41 vessels of this type, 38 (92.68%) are in fabric Group Two and of the vessels from dated contexts (90%), 37 (100%) belong to Phase 2.

23. Flat rimmed barrel jars (Figure 47, 979, 983). Large thick-walled globular jars with high shoulders and flat rims that are frequently defined with a spatula. This form is related to vessel type 40, to which it is presumably ancestral. Of the 41 vessels of this type, 27 (65.85%) were of fabric Group One and 11 (26.83%) of fabric Group Two. Of those vessels from dated contexts (83%), 34 (100%) belong to Phase 2.

24. Large jars with bead rims (Figure 48, 813). Large globular vessels with thick walls and heavy beaded rims. Of the six recorded vessels, four were of fabric Group Two and two of fabric Group Four. Of those vessels in dated contexts (83%), four (80%) belong to Phase 2 and one (20%) to Phase 3.

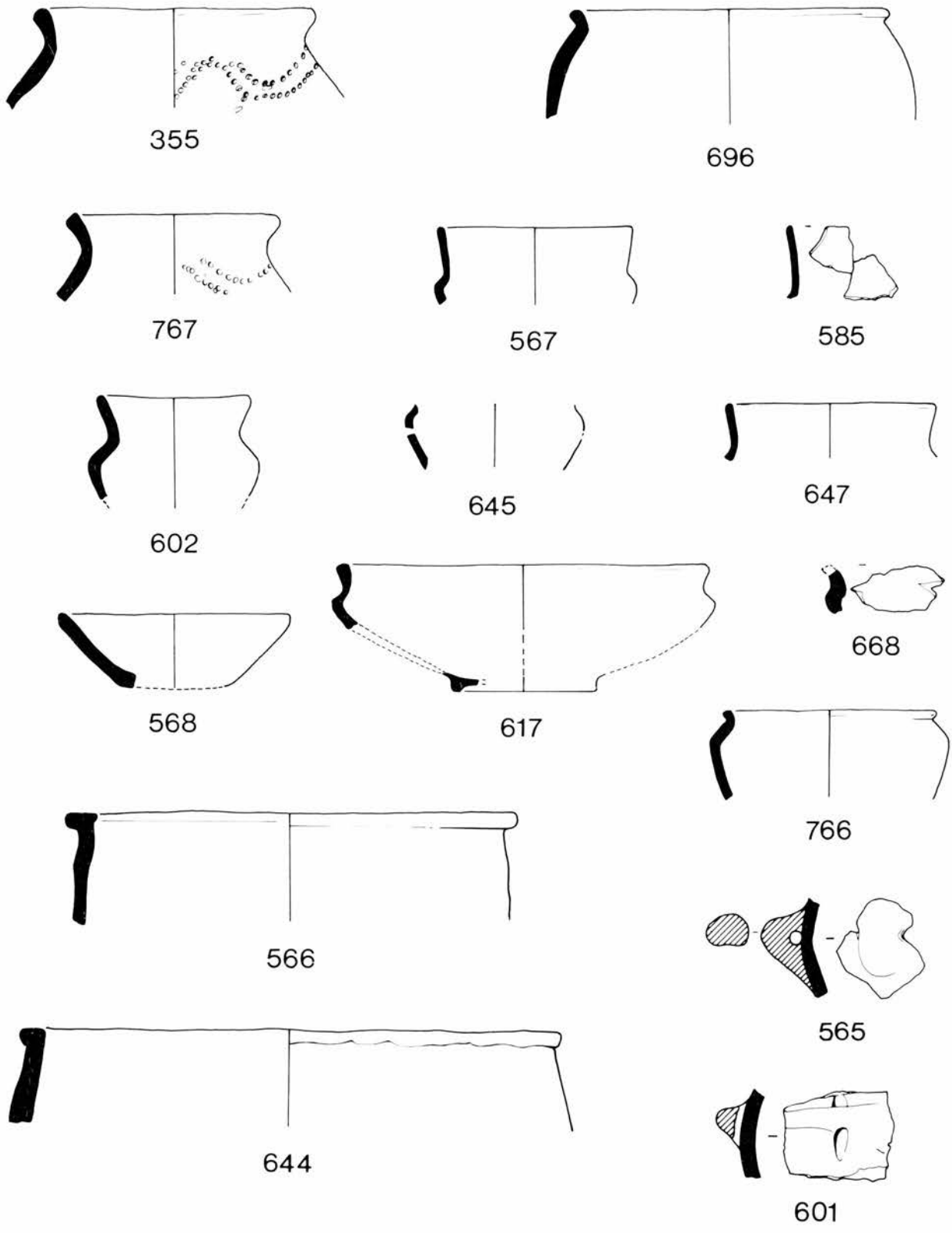

Figure 46 Vessel types 7: 355, 767; 8:696; 9:567, 585, 602, 645, 647, 668; 10:568; 11:617, 766; 13:566, 644; 14:565, 601 (Scale 1:4)

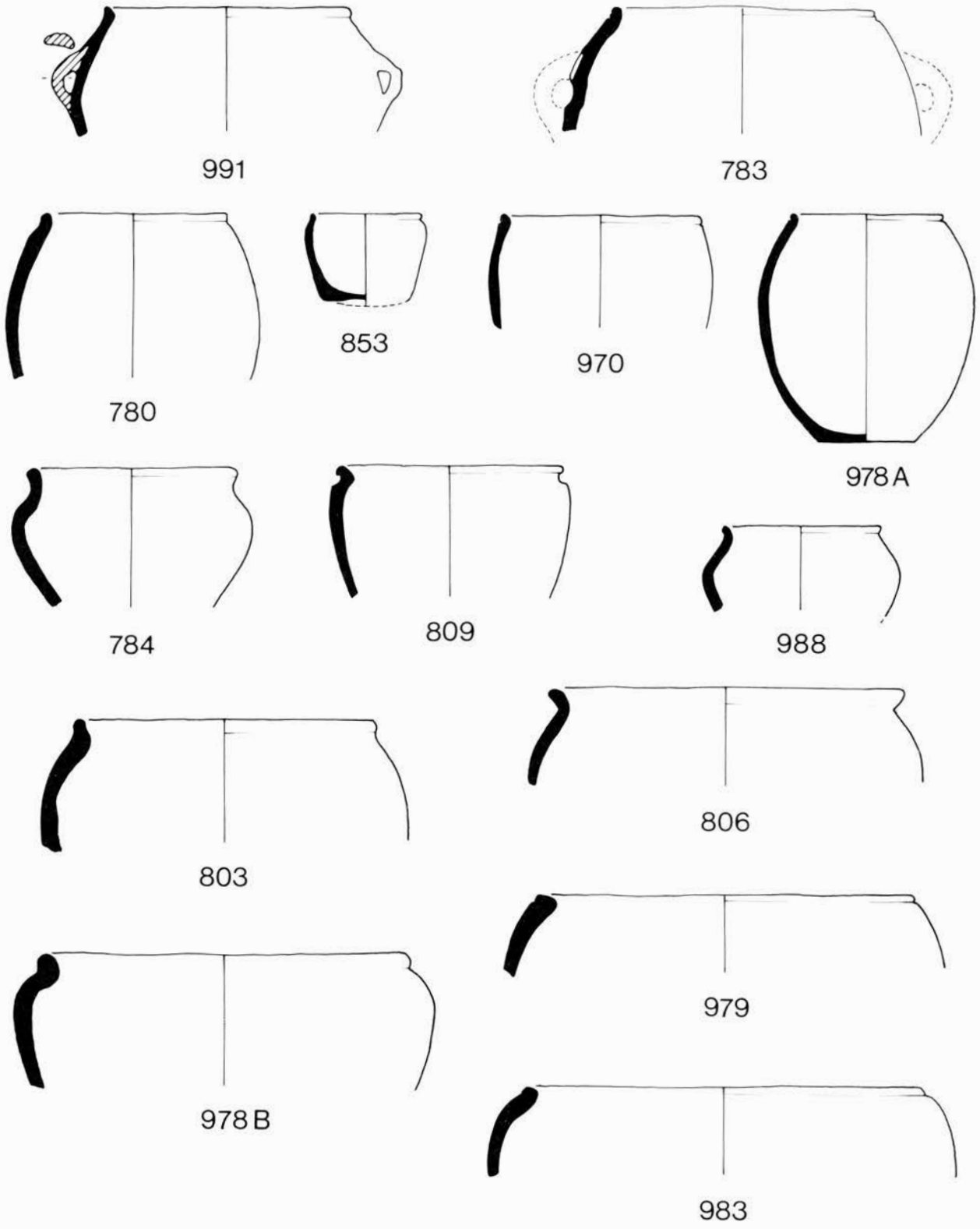

Figure 47 Vessel types 20: 780, 783, 853, 970, 978A, 991; 21:784, 809, 988; 22:803, 806, 978B; 23:979, 983 (Scale 1:4)

25. Barrel jars (Figure 48, 985–7, 989). Large thick-walled jars with straight or slightly globular walls. Of the 23 examples of this vessel type, 16 (69.57%) are in fabric Group Two and of those vessels in dated contexts (91%), 20 (95%) belong to Phase 2 and one (5%) to Phase 3.

26. Bowls with externally expanded rims (Figure 48, 776). Shallow bowls with rounded shoulder and externally expanded rim. The vessel type is not common, only nine were recorded—seven of fabric Group Two and two of fabric Group Six. All vessels found in dated contexts (89%), were from Phase 2. The externally expanded rims classified as vessel type 13 are thicker and heavier.

27. Furrowed bowl. A single fragment of one such bowl was recorded. It was in fabric Four—tempered with fossiliferous shell and was derived from an undated context.

28. Cordoned bowls (Figure 48, 206, 246, 686). Fine round-shouldered bowls with hollow necks and a cordon normally on top of the shoulder. Its association with the Phase 2 ceramic assemblage is of some interest, bearing in mind that of the 45 vessels of this type, 41 are of fabric Group One. However, of those cordoned bowls in dated contexts (78%), 30 (86%) belong to Phase 3 and five (14%) to Phase 2.

29. Moulded rims (Figure 48, 778). Only four examples of this rim type were recorded, all in fabric Group Two. They are from globular bowls with complex rims. Two specimens were recorded from Phase 3 deposits.

30. Necked bowls (Figure 48, 278–9). Large fine bowls with thin or slightly beaded rims, hollow necks and high but rounded shoulder. Of the five examples, three are in fabric Group One and two in fabric Group Two. All were recorded from Phase 2 deposits.

31. Simple lugs. Smaller and lighter versions of the strap lugs recorded as ceramic type 14. Of the seven examples, five were of fabric Group Two and two of fabric Group Six. Of the four specimens in dated contexts, three belong to Phase 2 and one to Phase 1.

32. Bases with low foot-rings. Finer versions of vessel type 15. They are essentially a Phase 3 ceramic phenomenon and of the 24 examples, 22 are of fabric Group One. Of those recorded in dated contexts (58%), all were recorded from Phase 3.

33. Pedestal bases. These well-known base types were fairly common, 95 examples were recorded of which 92 were in fabric Group One. Of those from dated contexts (67%), all were recorded from Phase 3.

34. Flat bases with protruding feet. These base types are characterised by an outward projection of the wall at the base, thus producing a small protruding foot. Thirty examples were recorded of which 15 were of fabric Group One and 12 of fabric Group Two. Of those from dated contexts (87%), 14 (54%) were obtained from Phase 1 and 10 (38%) from Phase 3.

35. Miscellaneous bead rims. This is essentially a Phase 3 or Durotrigean ceramic form which is too well known to require further description. The rims are of miscellaneous type in the sense that it is not possible to establish whether they are from bowls or jars. Of the 940 fragments, 920 (99.77%) are of fabric Group One. Of the examples from dated contexts (75%), 695 (98%) were from Phase 3.

36. Bead rim bowls (Figure 49, 297, 301, 735). Shallow bowl forms with a height approximately equal to the mouth diameter. Of the 153 examples, 147 (96.08%) are of fabric Group One. Only 55% of such vessels were recorded in dated contexts, and they all belonged to the Phase 3 settlement.

37. Bead rim jars (Figure 49, 302, 411). Jars with a height approximately 1.5 times the mouth diameter in the best examples. Only 14 specimens were recorded of which 13 were of fabric Group One. They were all recorded from Phase 3 contexts.

38. Jars with upright rims (Figure 50, 590–1, 626, 682). Large jars with high rounded shoulders and upright vertical rims which are often slightly beaded. Burnished lattice decoration is fairly common on the shoulder and neck. Of the 172 examples recorded, 170 were of fabric Group One and of the 75% in dated contexts, 128 (99%) were from Phase 1.

39. Hengistbury Class B bowls (Figure 51, 249, 311, 486, 724, 726, 751). This term has been employed to describe fine, well-made, burnished bowls with hollow necks, rounded shoulders and foot-ring or pedestal bases. The vessels are normally decorated with cordons on the body and neck. Such vessels have been regarded on occasion as imports and are characteristic of late Pre-Roman Iron Age assemblages such as that from Gussage Phase 3. However, of the 38 specimens from Gussage, 20 are of fabric Group One and 18 of fabric Group Two. It is clear, therefore that they are British-made copies originating in the same areas as the typically Durotrigean pottery. Of the 79% of these vessels found in dated contexts, all were recorded from Phase 3.

40. Flat rimmed jars (Figure 51, 679, 823). Large, thick-walled, high shouldered jars with flat-topped rims. They are sometimes decorated and when complete are associated with countersunk lugs (ceramic type 55). Of the 139 examples recorded, 134 are of fabric Group One and of the 76% from dated contexts, 100 (95%) were from Phase 3. They are in effect finer wheel-thrown versions of ceramic type 23.

41. Fine bowls with hollow necks and simple rims (Figure 49, 817). Small, fine bowls with rounded shoulders below hollow necks and rims that are normally thin and fine. Of the 40 examples recorded, 39 are of fabric Group One, and of the 70% from dated contexts all are from Phase 3.

42. Shouldered bowls (Figure 49, 814, 818). Deep, thick-walled vessels with a pronounced shoulder and rim which is sometimes thickened internally. Of the six examples, four were of fabric Group One and two of fabric Group Two. Of those from dated contexts (50%), all were from Phase 3.

43. Shallow dishes (Figure 52, 59, 211). Two examples of this vessel type were recorded—both from Phase 3 contexts and in Group One fabric. They are shallow, flat-bottomed dishes, one of which (211) has a handle and a base with multiple perforations.

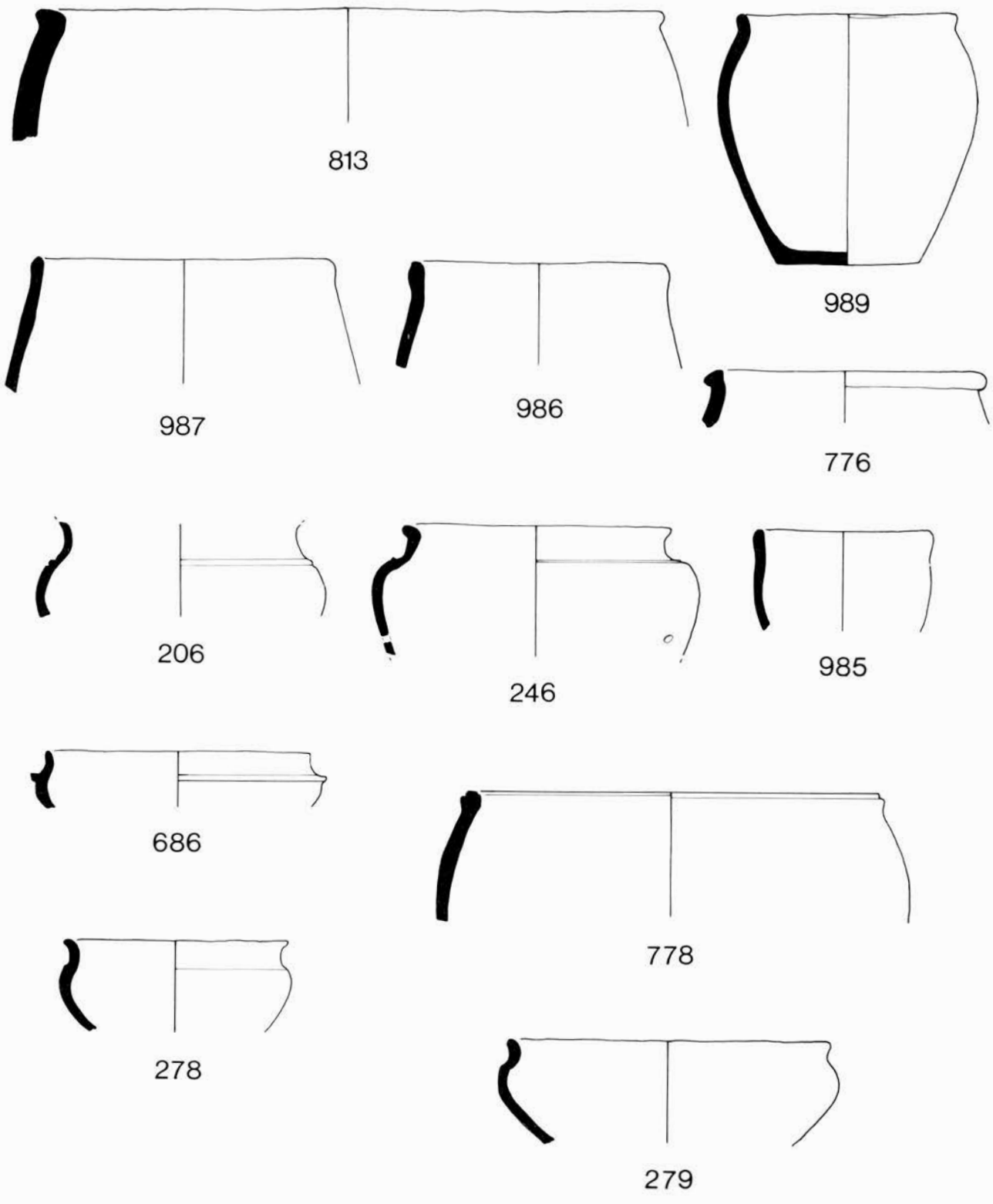

Figure 48 Vessel types 24:813; 25:985–9; 26:776; 28:206, 246, 686; 29:778; 30:278–9 (Scale 1:4)

44. Bowls with hollow necks and rolled rims (Figure 52, 657). These vessels resemble ceramic type 41 except that they are larger, thicker-walled and the rims are more bulbous and often rolled. Of the 67 examples of this type, 66 are in fabric One. Of those from dated contexts (64%) all are from Phase 3.

45. Bowls with a channel round the rim (Figure 52, 405, 828). These vessels are similar to cordoned bowls (ceramic type 28) save that they possess an external thumb-groove below the rim. Only four of the 10 recorded specimens came from dated contexts and all were of Phase 3.

46. Corrugated jar (Figure 52, 91). A single sherd from the neck of a wheel-made jar with two horizontal cordons. The sherd was in fabric Group One and from an undated context.

47. Large storage jars (Figure 52, 581, 710, 1023). Large jars with beaded, upright or everted rims. Eighteen examples were recorded of which 12 were in fabric One (66.67%) and three vessels (16.67%) in fabric Four. All the vessels were recorded from Phase 3 contexts.

48. Globular jars (Figure 52, 547–8, 837). Thick-walled jars with a globular body and everted, slightly beaded rim. Thirteen vessels of this type were recorded of which nine were in fabric Group Two. Of the examples from dated contexts (84%), seven (64%) were from Phase 2 and four (36%) from Phase 3.

49. Tankards (Figure 53, 560B, 636). Tankards are a familiar Durotrigean ceramic form and two were recorded at Gussage. The bases are flat with a low foot-ring, the walls are vertical with horizontal cordons, the rims are beaded and each was provided with a single handle. Both vessels are in fabric Group One and were recorded from Phase 3 contexts.

53. Flagon[3] (Figure 53, 1000). A small jug or flagon was recorded from a timber-lined inhumation grave. It is in New Forest fabric and is of a type discussed by Mrs Swan (Swan 1973) who quotes numerous parallels indicating that this particular jug form normally occurs with burials of the late fourth or early fifth century. The jug is typical of its class with a wide neck, slack shoulder profile and weak spout (Swan 1973, 122–3, Figure 8, 13).

54. Lids. The provision of lids for vessels is entirely a Durotrigean phenomenon. Of the 46 examples, 45 are in fabric Group One and of those in dated contexts (80%), all belong to Phase 3.

55. Countersunk lugs (Figure 53, 436). The terminals of these lugs are sunk into the wall of the vessel which is normally a flat-rimmed jar or a jar with an upright rim. Of the 53 examples, 52 are in fabric One and of those from dated contexts (68%), all belong to Phase 3.

56. Platters (Figure 53, 466, 545). Only two examples of this vessel type were recognised, both of fabric Group One

3. Samian sherds (50), Amphorae (51) and Gallo-Belgic imports or their copies (52) have been discussed in specialist reports below.

Table XI. Totals of vessel types recorded from each phase

Vessel type	Phase 1	Phase 2	Phase 3	Total from dated contexts
1	176 (69%)	30 (12%)	50 (19%)	256 (85%)
2	32 (78%)	7 (17%)	2 (5%)	41 (89%)
3	76 (93%)	—	5 (7%)	81 (85%)
4	51 (98%)	—	1 (2%)	52 (82%)
5	16 (20%)	62 (76%)	3 (4%)	81 (52%)
6	19 (90%)	2 (10%)	—	21 (96%)
7	1 (7%)	12 (80%)	2 (13%)	15 (84%)
8	11 (100%)	—	—	11 (100%)
9	26 (93%)	2 (7%)	—	28 (97%)
10	2 (100%)	—	—	2 (100%)
11	7 (41%)	9 (53%)	1 (6%)	17 (94%)
12	4 (21%)	2 (10%)	13 (69%)	19 (87%)
13	4 (100%)	—	—	4 (80%)
14	8 (100%)	—	—	15 (53%)
15	2 (100%)	—	—	2 (100%)
16	2 (50%)	2 (50%)	—	4 (100%)
17	121 (22%)	112 (20%)	319 (58%)	552 (69%)
18	3 (6%)	5 (10%)	42 (84%)	50 (59%)
19	1 (100%)	—	—	1 (100%)
20	5 (3%)	163 (95%)	4 (2%)	172 (82%)
21	5 (17%)	25 (83%)	—	30 (63%)
22	—	37 (100%)	—	37 (90%)
23	—	34 (100%)	—	34 (83%)
24	—	4 (80%)	1 (20%)	5 (83%)
25	—	20 (95%)	1 (5%)	21 (91%)
26	—	8 (100%)	—	8 (89%)
27	—	—	—	—
28	—	5 (14%)	30 (86%)	35 (78%)
29	—	—	2 (100%)	2 (50%)
30	—	5 (100%)	—	5 (100%)
31	1 (25%)	3 (75%)	—	4 (57%)
32	—	—	14 (100%)	14 (58%)
33	—	—	64 (100%)	64 (67%)
34	14 (54%)	2 (8%)	10 (38%)	26 (87%)
35	5 (1%)	5 (1%)	695 (98%)	705 (75%)
36	—	—	84 (100%)	84 (55%)
37	—	—	14 (100%)	14 (100%)
38	—	1 (1%)	128 (99%)	129 (75%)
39	—	—	30 (100%)	30 (79%)
40	—	5 (5%)	100 (95%)	105 (76%)
41	—	—	28 (100%)	28 (70%)
42	—	—	3 (100%)	3 (50%)
43	—	—	1 (100%)	1 (50%)
44	—	—	43 (100%)	43 (64%)
45	—	—	4 (100%)	4 (40%)
46[4]	—	—	—	—
47	—	—	18 (100%)	18 (100%)
48	—	7 (64%)	4 (36%)	11 (84%)
49	—	—	2 (100%)	2 (100%)
50	—	—	6 (100%)	6 (100%)
51	—	—	3 (100%)	3 (100%)
52	—	—	9 (100%)	9 (100%)
53	—	—	4 (100%)	4 (100%)
54	—	—	37 (100%)	37 (80%)
55	—	—	36 (100%)	36 (68%)
56	—	—	2 (100%)	2 (100%)
57	—	—	6 (100%)	6 (100%)
58	—	—	3 (100%)	3 (100%)
59	—	—	1 (100%)	1 (100%)
60	27.6%	21.0%	51.4%	

4. One specimen from an undated context.

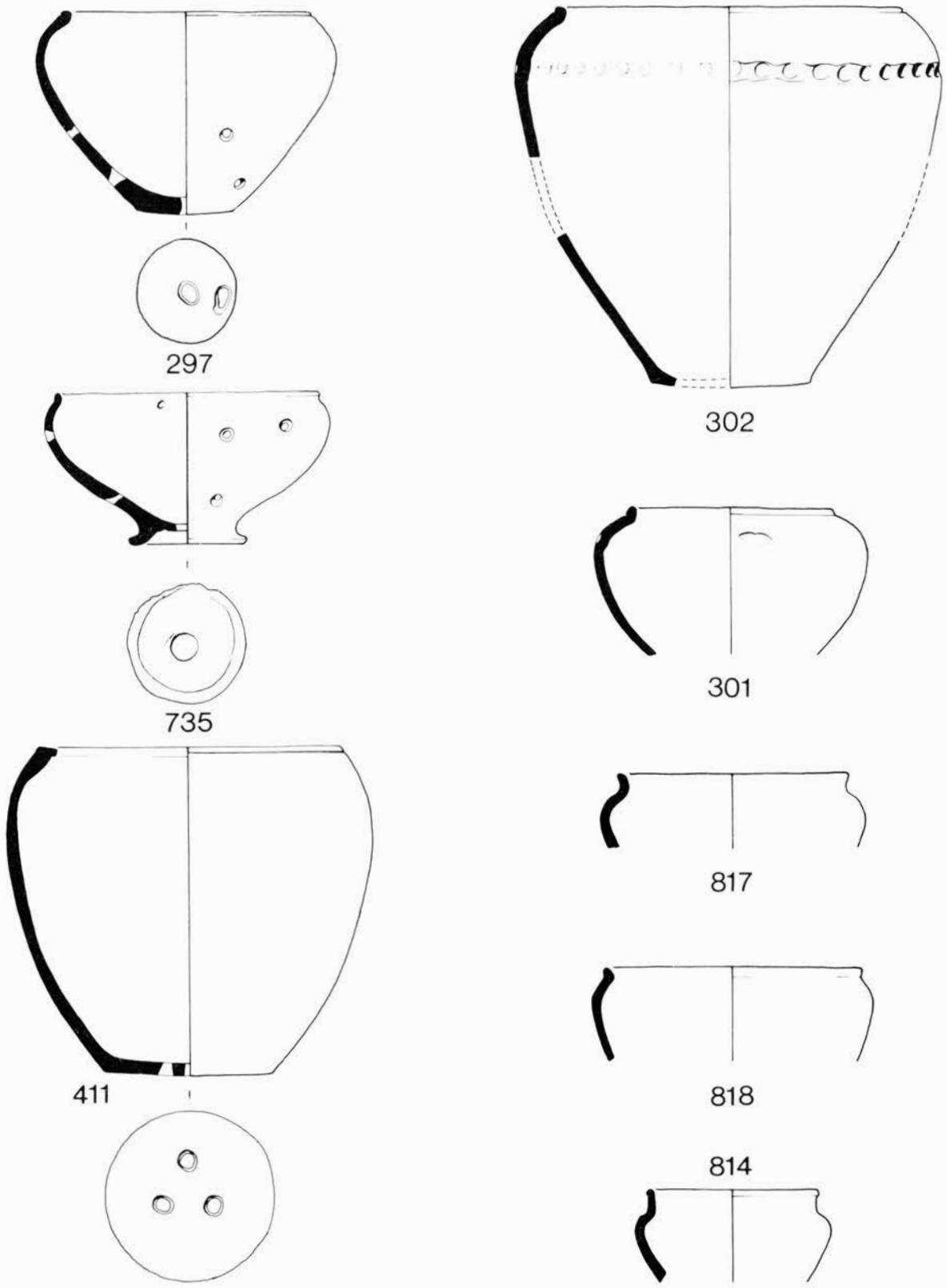

Figure 49 Vessel types 36:297, 301–2, 735; 37:411; 41:817; 42:814, 818 (Scale 1:4)

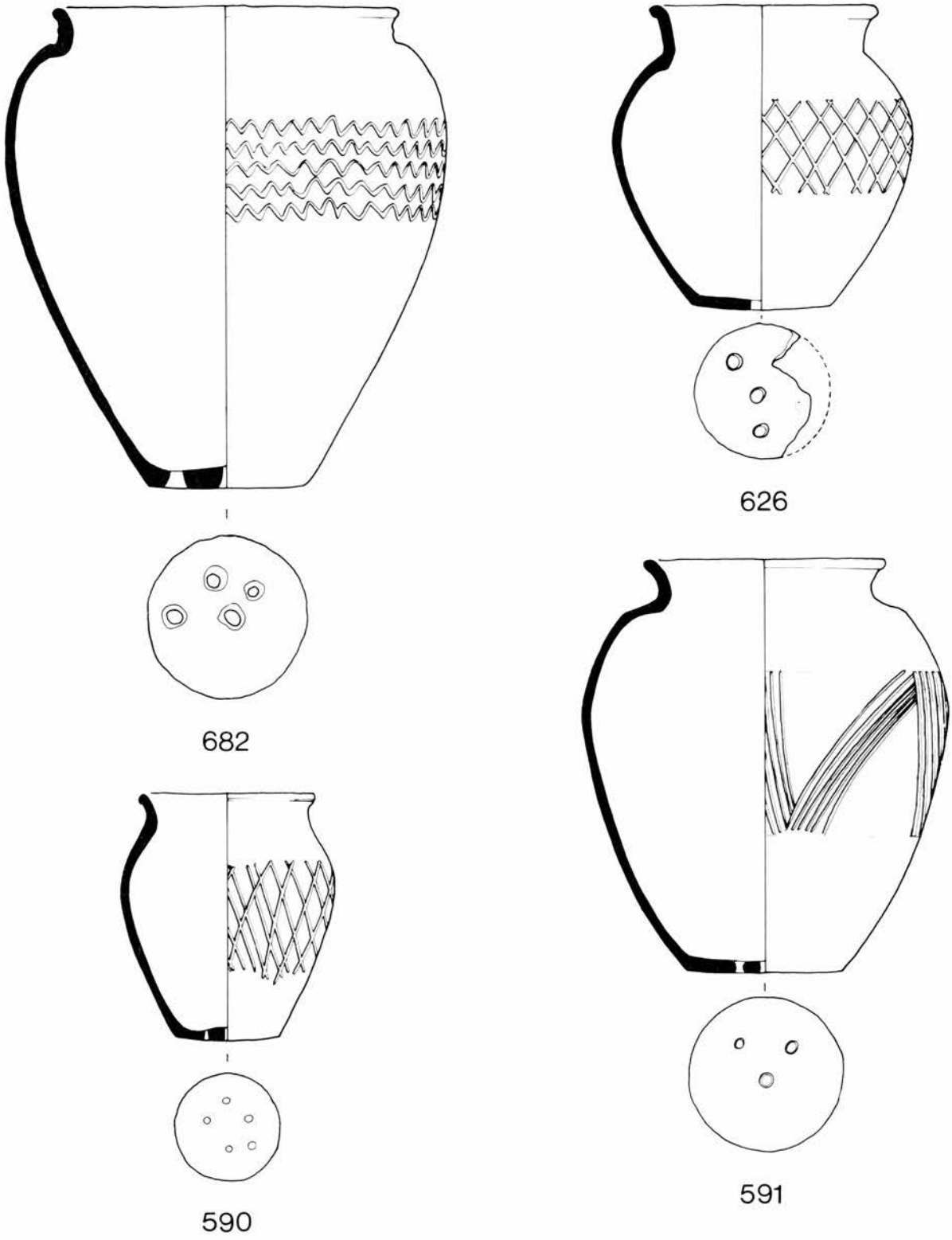

Figure 50 Vessel type 38 (Scale 1:4)

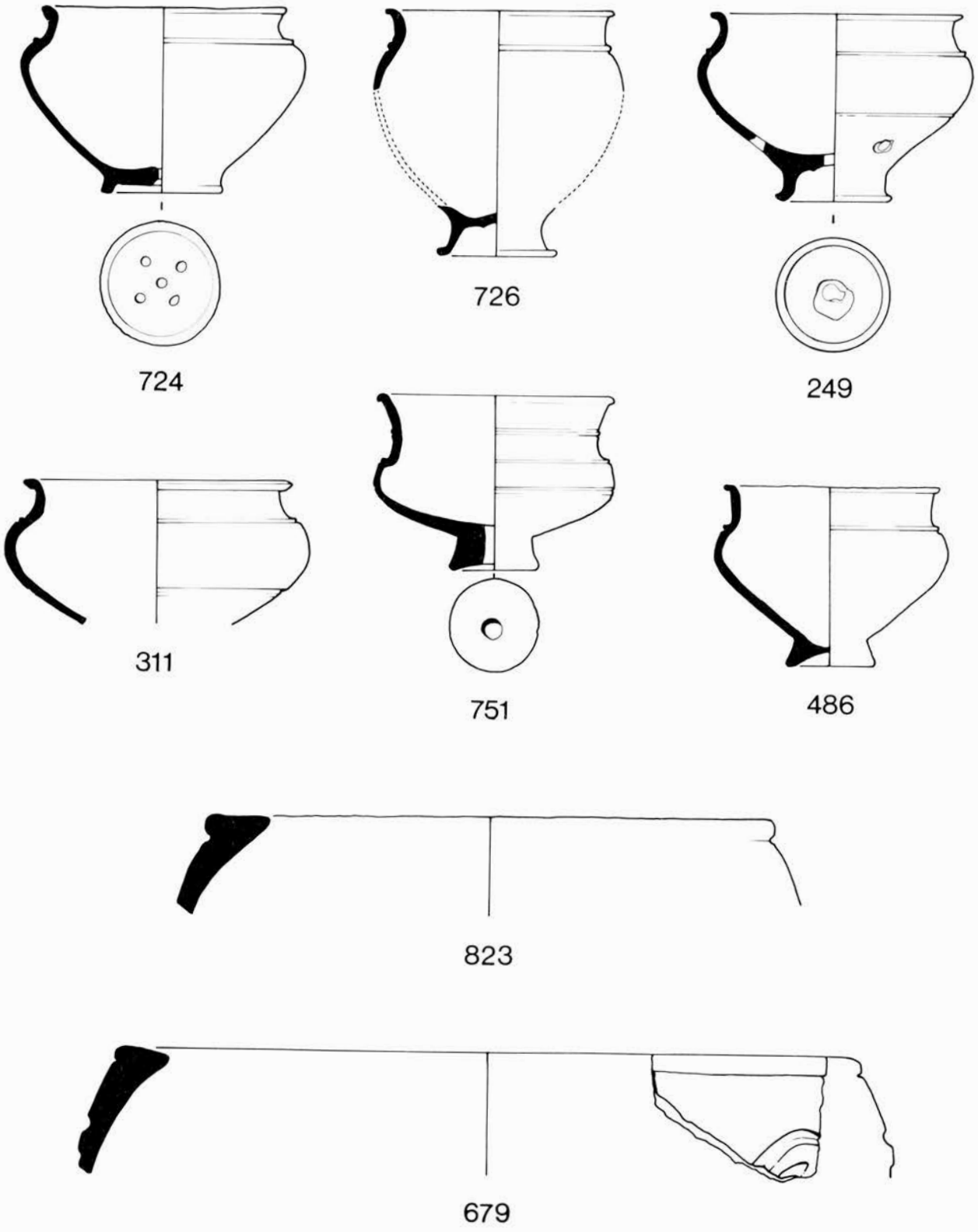

Figure 51 Vessel types 39:249, 311, 486, 724, 726, 751; 40:679, 823 (Scale 1:4)

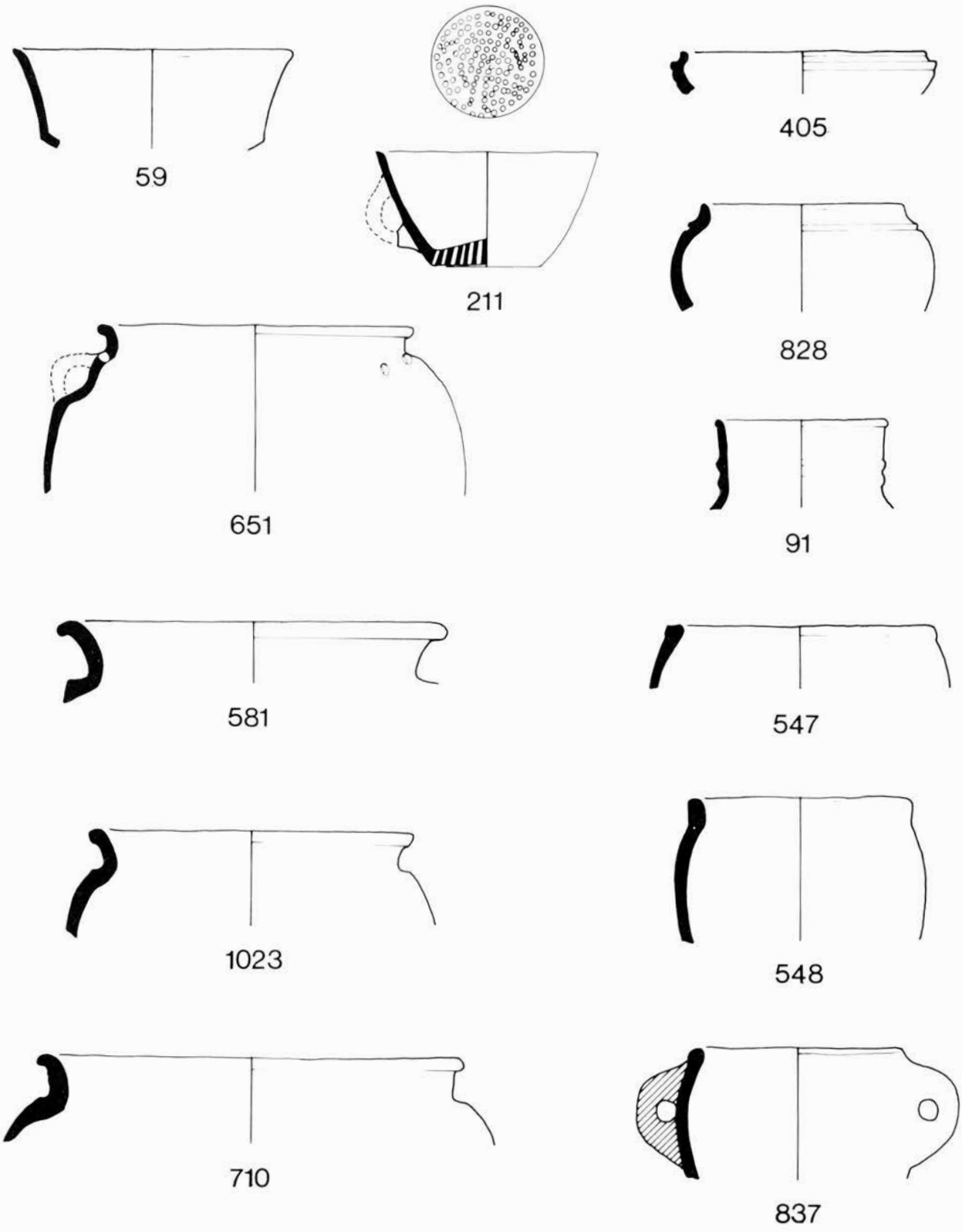

Figure 52 Vessel types 43:59, 211; 44:651; 45:405, 828; 46:91; 47:581, 710, 1023; 48:457–8, 837 (Scale 1:4)

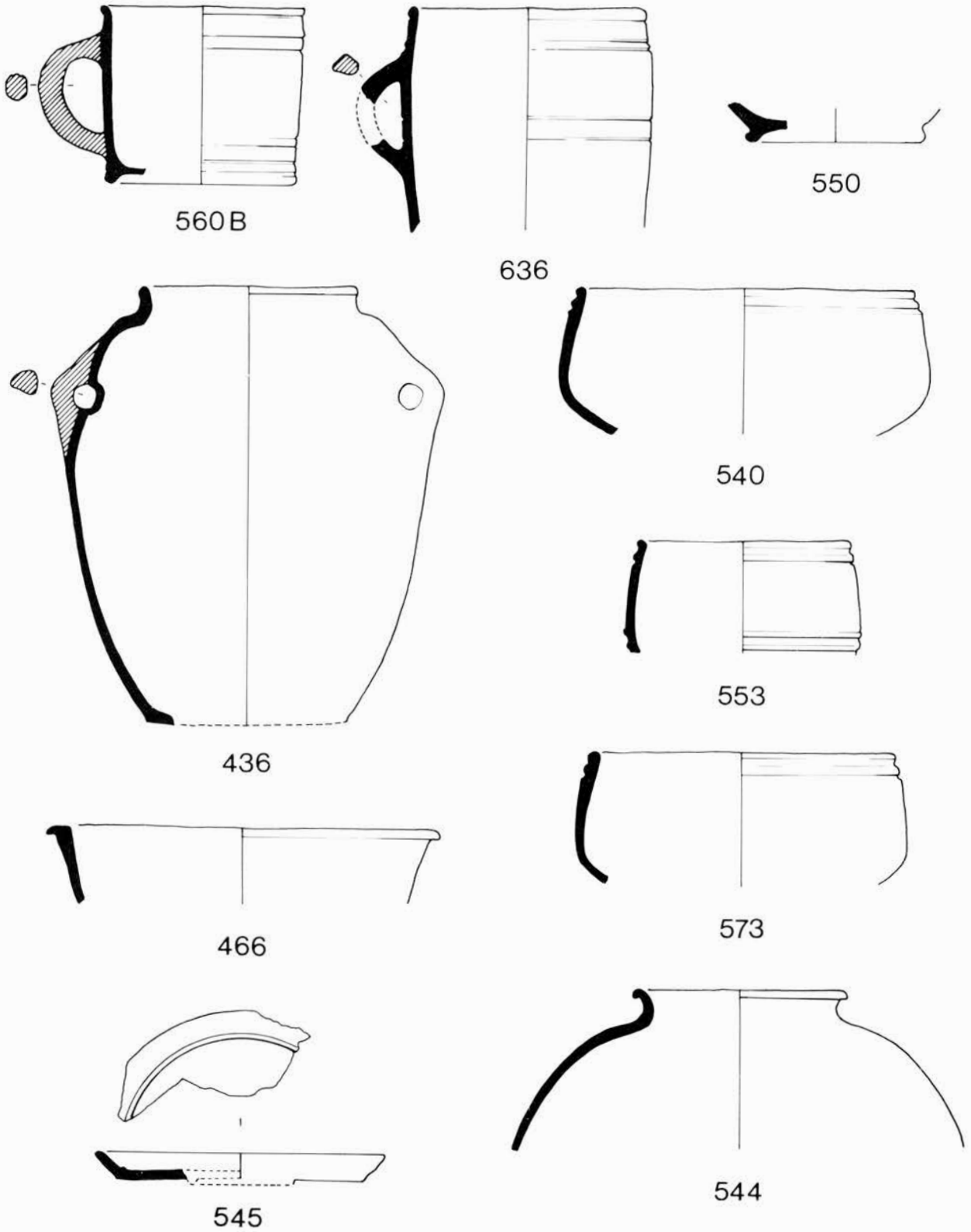

Figure 53 Vessel types 49:560B, 636; 55:436; 56:466, 545; 57:544; 58:540, 553, 573; 59:550 (Scale 1:4)

and in Phase 3 contexts. They are flat vessels with low straight splayed walls.

57. Burnished jars (Figure 53, 544). Six examples of this vessel type were recorded—all of fabric Group One and from Phase 3 contexts. They are finely made, thin-walled, with high rounded shoulders and rolled rims. The external surface is invariably highly burnished.

58. Multiple bead rims (Figure 53, 540, 553, 573). Straight sided bowls with 2 or 3 zones of beading at the rim. Of the three examples, all were of fabric Group One and all from Phase 3 contexts.

59. Bases with thick foot-rings (Figure 53, 550). A single example of a thick, heavy foot-ring in fabric Group One from a Phase 3 context.

Conclusion

The analysis of vessel types in Table XI and the discussion of fabrics by Mrs Gale provide convenient summaries of forms and fabrics attributable to each site phase. It will be apparent that in some cases there is an overlap of ceramic types to an extent which cannot be explained solely by derivation from earlier deposits. It is to be expected that in a settlement occupied for 500–600 years there should be a continuity of ceramic forms and that the definition of site phasing on this basis is not clear-cut. Such a large body of material provides its own taxonomy and the author has deliberately refrained from inserting this into previously defined ceramic groupings. In general, however, the ceramic forms from Gussage in their early variants have affinities with the All Cannings Cross and Kimmeridge traditions. Those forms most common in Phase 2 belong to the ceramic continuum covering a large area of southern Britain in the third and second centuries BC in which saucepan vessels and bead-rim bowls and jars predominate, whilst the sophisticated forms of Phase 3 are typical of the Durotrigean ceramic range of the first century BC and first century AD (*vide* Cunliffe 1974, 315–51). With a few exceptions, all the Phase 3 ceramic forms can be traced to types current in the area in the preceding centuries though benefiting in sophistication as a result of the introduction of the potter's wheel and demonstrating a considerable degree of commercialism.

The Amphorae

by D P S Peacock

Dressel 1 sp (minimum 2 vessels)[5]

27 (3) : 2 body sherds
76 (6) : 1 body sherd
310U (5) : 1 body sherd
381 (10) : 2 body sherds

All are in an unusual streaky laminated fabric with numerous rounded red-brown inclusions of decayed lava up to c 5mm across. The fabric is known from Hamworthy and from Niton, Isle of Wight, where it occurs as Dressel 1A rims. I have seen this fabric as complete vessels in French museums (e.g. Brive and Angoulême), but always as Dressel 1A and never as the B form. It is thus possible that the sherds come from a vessel, or vessels, of the A form dating, say, second century—mid first century BC.

71 (4): body sherd in my Dressel 1 fabric.
This piece comes from the junction of the neck and shoulder: the neck was broken off and the breach seems to have become smoothed either because of wear during secondary use of the body or due to use of the sherd as a whetstone.

Spanish Globular

2(5A): 1 body sherd in a thick buff-red fabric with prominent white and colourless inclusions.

The sherd was examined in thin section under the petrological microscope, revealing large (0.5mm) inclusions of quartz, quartzite, potash and some plagioclase felspar together with fragments of quartzite sandstone, chert, limestone and quartz-mica-schist. These are set in a comparatively clear brown optically isotropic matrix with a scatter of quartz felspar and mica (c 0.1mm across). The fabric is identical with that of globular amphorae in my collection. The sherd can thus be confidently identified as a Spanish globular oil amphora, originating somewhere along the Guadalquivir between Seville and Cordoba. The contexts at Gussage suggest a post conquest date for this piece.

Unassigned

45 (7) : 1 body sherd
45 (9) : 4 body sherds
310F (3) : 1 body sherd

These pieces possibly from the same vessel are in a fabric superficially similar to that of Dressel 1. However, on closer examination the surface can be seen to be peppered with small vesicles (c 0.5mm across) where calcium carbonate has dissolved out. A thin section reveals rounded inclusions of limestone (or voids) with reaction rims, and grains of quartz set in a clean optically isotropic matrix of fired clay. The origin of this material is difficult to diagnose, but it is almost certainly another Dressel 1 fabric.

5. The classification of vessel forms and fabrics are those cited by Peacock (Peacock 1971).

Gallo-Belgic Imports

by V Rigby

6012 302 (5)
A sherd from the wall of a larger platter of Camulodunum form 5, in TR2—dark orange fine-grained paste, worn coral-red surfaces with no finish surviving.[6] An import.

The form was manufactured from the Augustan to the Claudian periods in TR. In comparison with examples in TN, those in TR are much less common and have a more restricted area of distribution in Britain concentrated in the south-east, so that this find is peripheral. (No 1)

6014, 6015 and 6022 302 (14), (6), (15)
Body sherds from a butt beaker, a variant of Camulodunum form 112, in typical TR3—bright orange, fine-grained paste and a 'fumed' chocolate brown highly polished exterior surface. There is at least one zone of rouletted decoration delimited at the neck by two cordons. An import.

The basic form was manufactured in various types of TR3 from the late Augustan to the Neronian period. Examples occur relatively frequently in post Conquest contexts, particularly the smaller and more curvaceous variants (see below No 3). The area of distribution is concentrated mainly to the area south and east of the line of the Fosse. (No 2)

6016 302 (4)
Sherds from the lower body of a butt beaker, probably the small and curvaceous variant Camulodunum form 112Cb or 112Ca. It is typical TR3, but worn so that little of the original finish survives. (No 3)

6013 302 (5)
A rouletted body sherd in TR3, probably from the same vessel as No 3. (No 4)

6029 310C (4)
A plain sherd from a beaker in typical TR3 with a worn exterior surface. The vessel form is either like that of No 2 and 3, or it is a girth beaker similar to Camulodunum form 84. (No 5)

Flagons
6019 229 (5)
The mouth piece from a single-handled flagon Camulodunum form 154, in typical white fine-grained ware, with sparse red grog grits. Not an import. The form was current from the Claudian to the early Flavian period. (No 6)

6039 172 (17)
Base sherds from a flagon with a relatively tall and well made footring, in hard pink sandy micaceous ware, with a cream slip on the exterior surface. It is slightly burnt and discoloured on the inside.

The form and the fabric suggest that it is an import and pre-Flavian in date. (No 7)

6031 602 (3)
The handle from a flagon in pale buff fine-grained powdery ware. The width and shape of the handle suggest that it is from a single handled flagon with an undercut collar Camulodunum form 163. Probably not an import. Pre-Flavian. (No 8)

6048 310W (5)
A body sherd from a flagon in typical white fine-grained powdery ware. (No 9)

Groups of Sherds
446 (3) and (4) Not imports
Base from a flagon in a sandy RB coarseware, with a grey core and cream surfaces. 'Local'.

Two sherds from a flagon in fine-grained pink ware with cream exterior. Body sherds from a cordoned jar. Same ware as the flagon base. 'Local'.

501 (3)
Sherds from a globular jar, with a bead rim, in a coarse-grained sandy ware, with a grey core, brown cortex and a polished coral slip on the exterior surface. The fabric closely resembles one of the coarse-grained varieties of 'Pompeian Redware' used for platters of Camulodunum form 17; the coarser wares occur in contexts as late as the Hadrianic period.

The base of a cup with a cross incised on the underside of the base, within the footring. Dark grey sandy core, with brown surfaces, burnished on the exterior. The form is probably a copy of the G-B import Camulodunum form 56. Copies were made as early as the Tiberian period but the fabric which is 'Romanised', suggests it is a post-Conquest product.

673 (3)
Sherds from a globular jar with a bead rim in light brown sandy self-coloured ware, with burnished exterior surface and lightly incised lattice decoration on the shoulder. Pre-Flavian.

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6. TR — terra rubra; TN — terra nigra. The classification of vessel forms and fabrics are those cited by C F C Hawkes and M R Hull (Hawkes and Hull 1947).

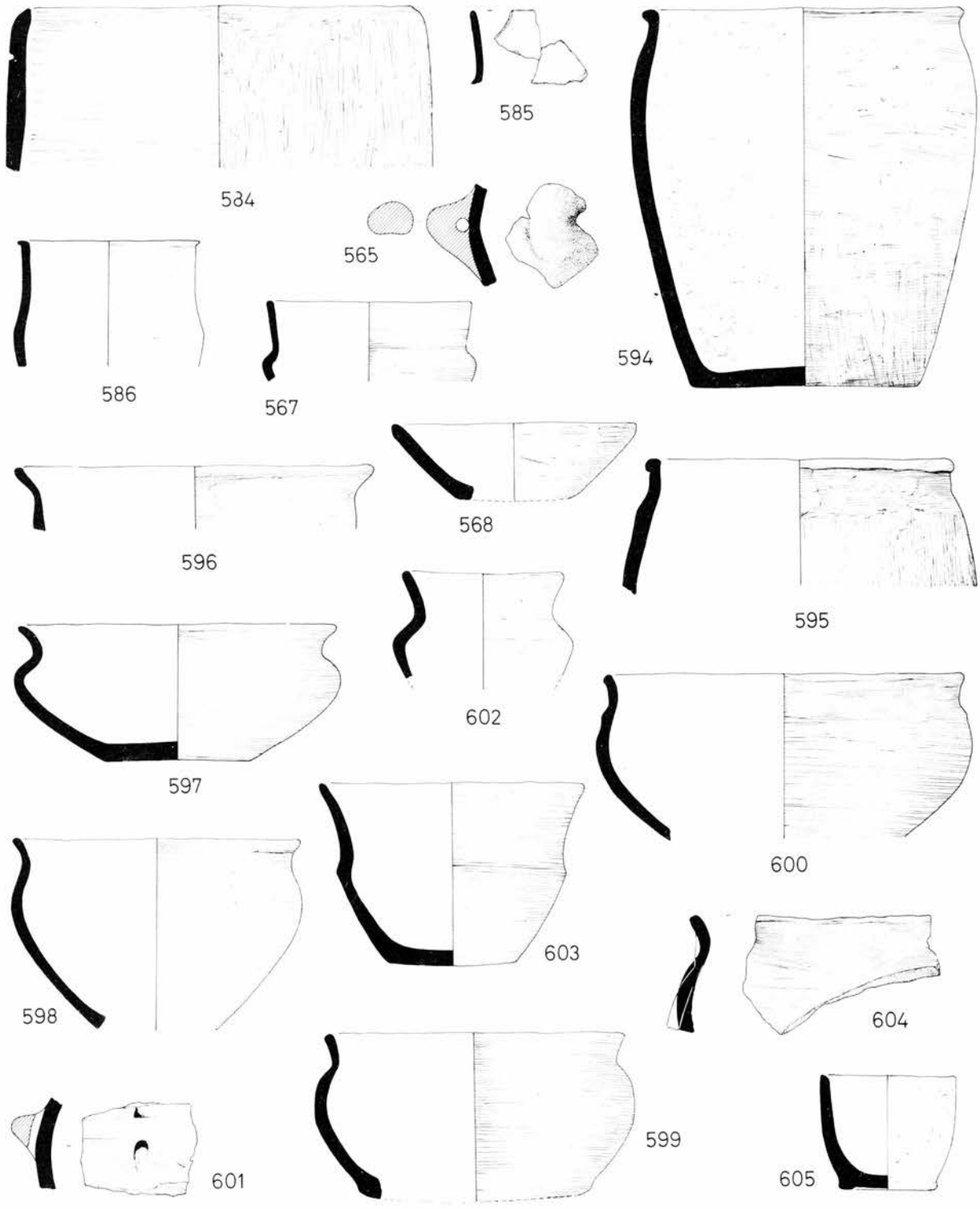


Figure 54 Ceramic groups: Phase 1 565, 567–8: 286(3); 584:292(4); 585:292(5); 586:292(7); 594–604:296(6); 605:296(8) (Scale 1:4)

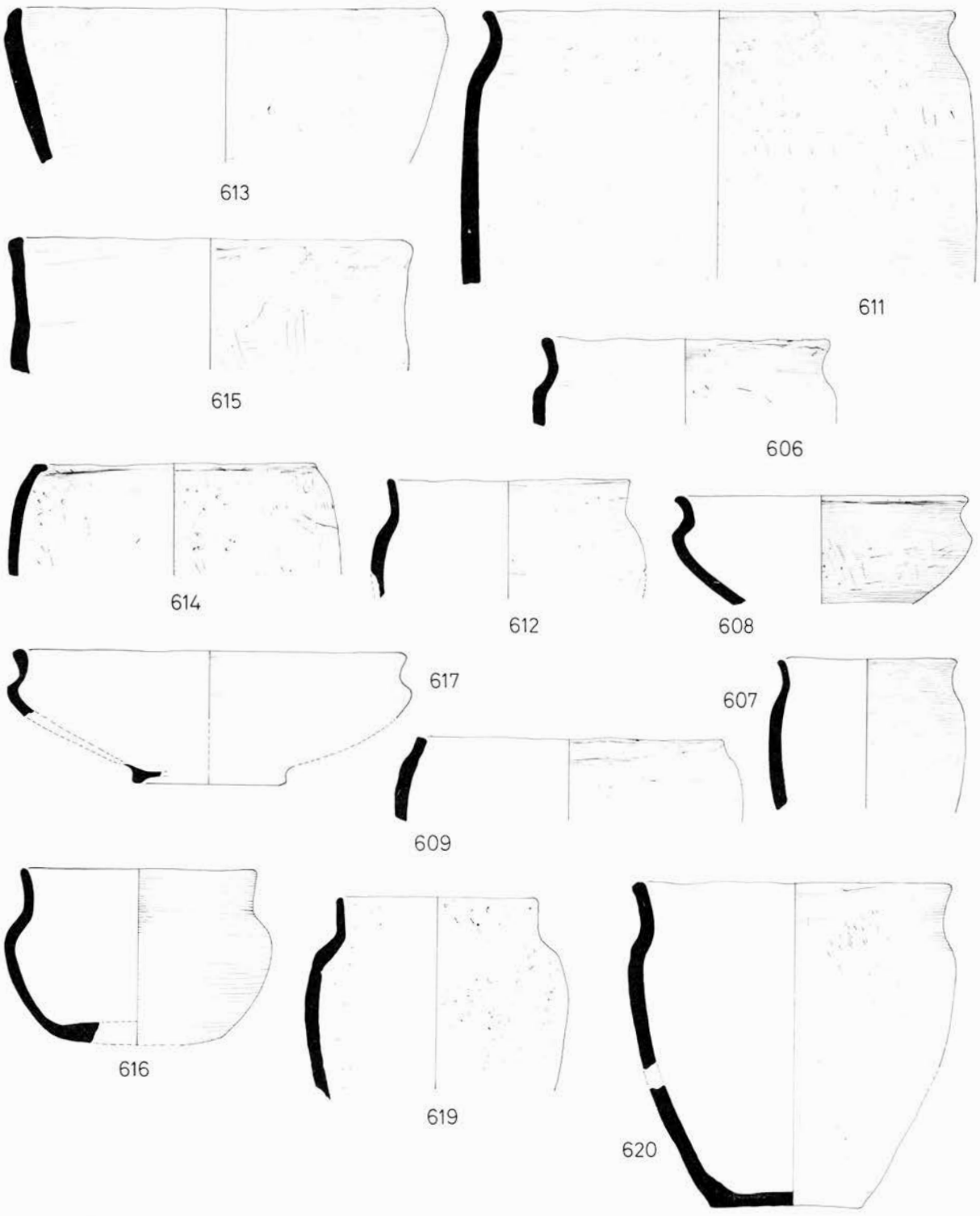


Figure 55: Ceramic groups: Phase 1 606–7:296(11); 608–9:296(12); 611–3:297(5); 614:297(7); 615–7:297(8); 619:305(5); 620:308(5), (Scale 1:4)

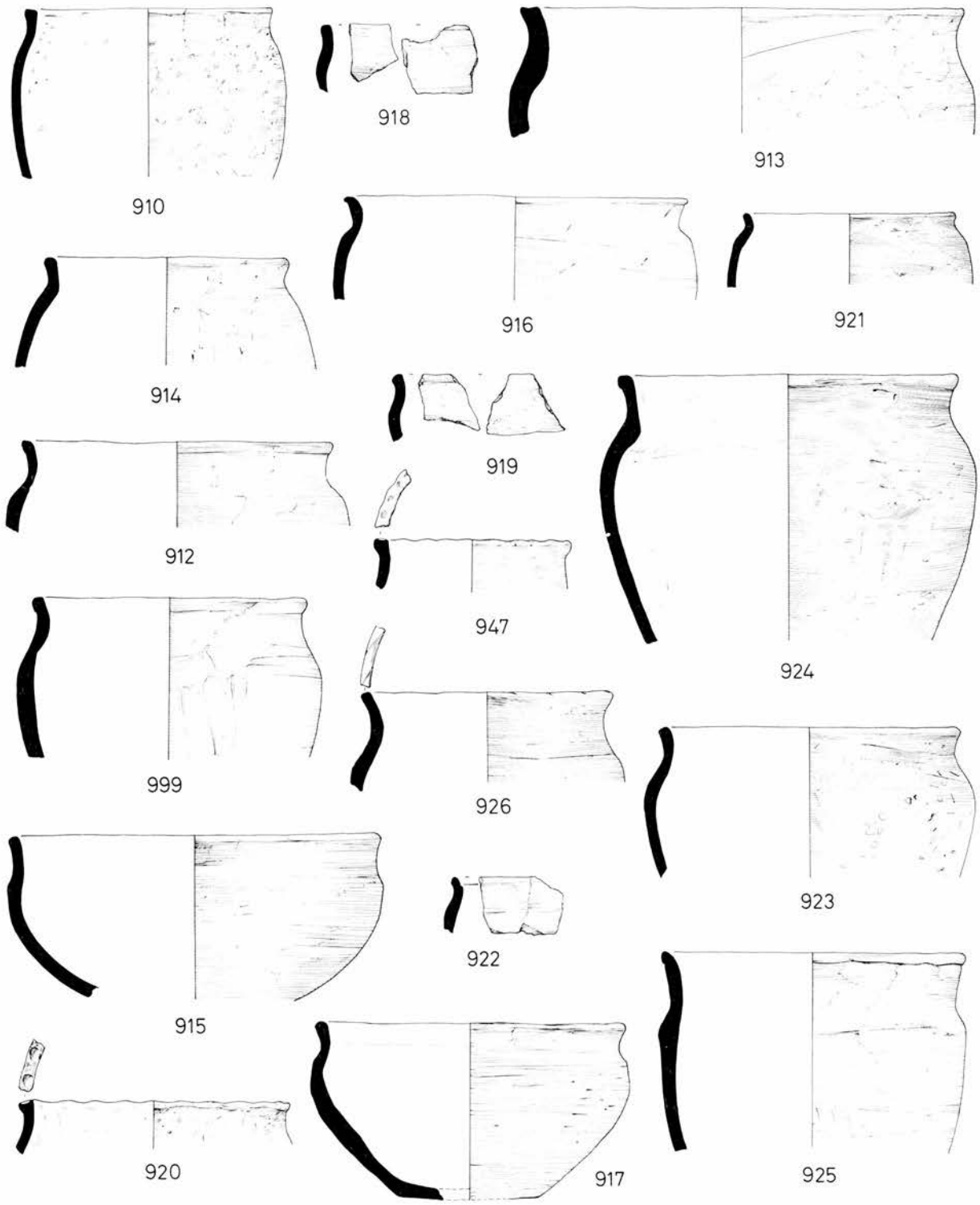


Figure 56: Ceramic groups: Phase 1 910:606(4); 912–3:637(3); 914–20:639(5); 921–2:639(6); 923:642(4); 924:655(9); 925–6:655(10); 947:682(4); 999:812(4); (Scale 1:4)

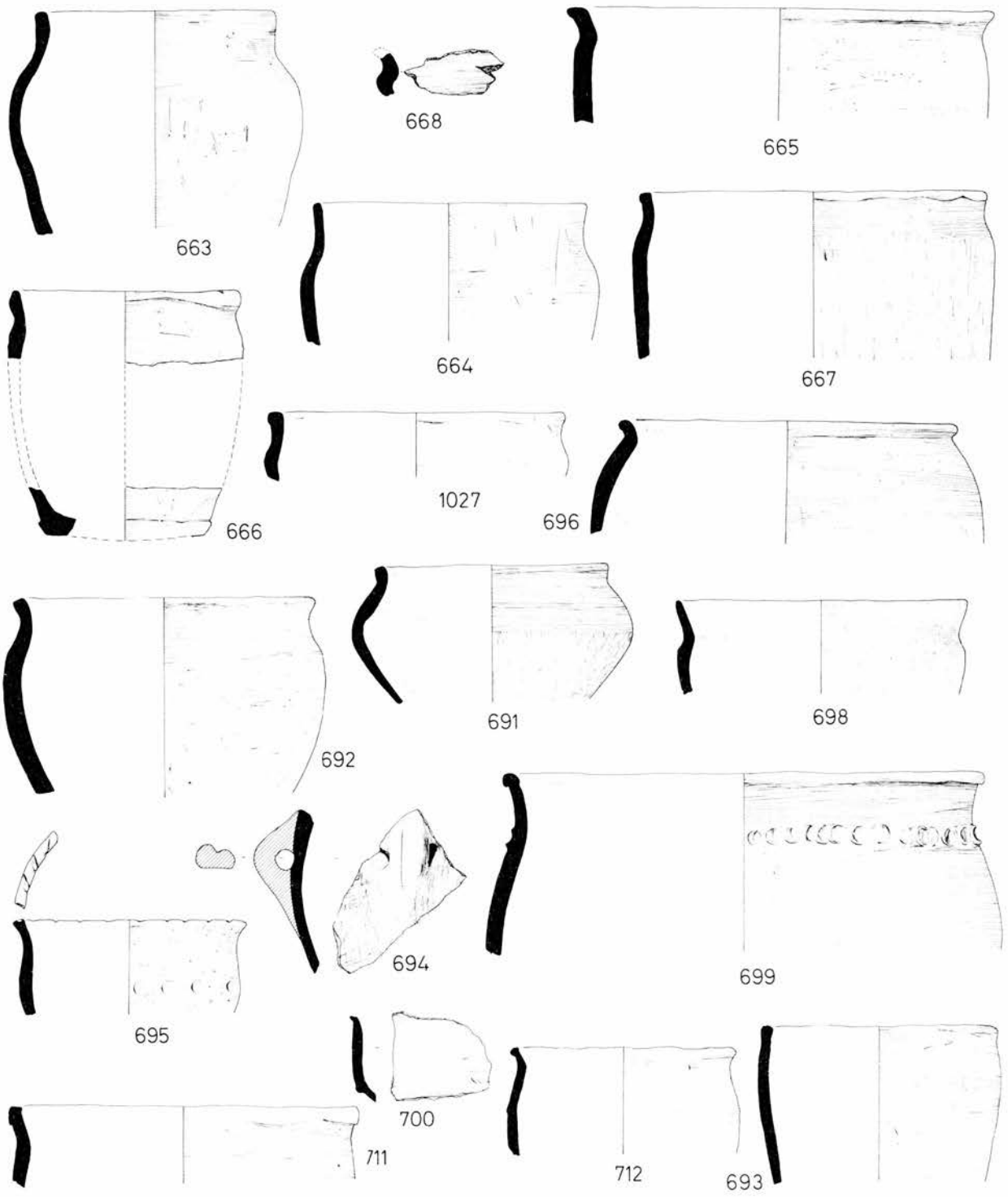


Figure 57: Ceramic groups: Phase 1 633:379(7); 664 – 8, 1027:379(8); 691 – 4:382(5); 695 – 6:383(3); 698:383(4); 699 – 700:383(6); 711 – 2:388(6); (Scale 1:4)

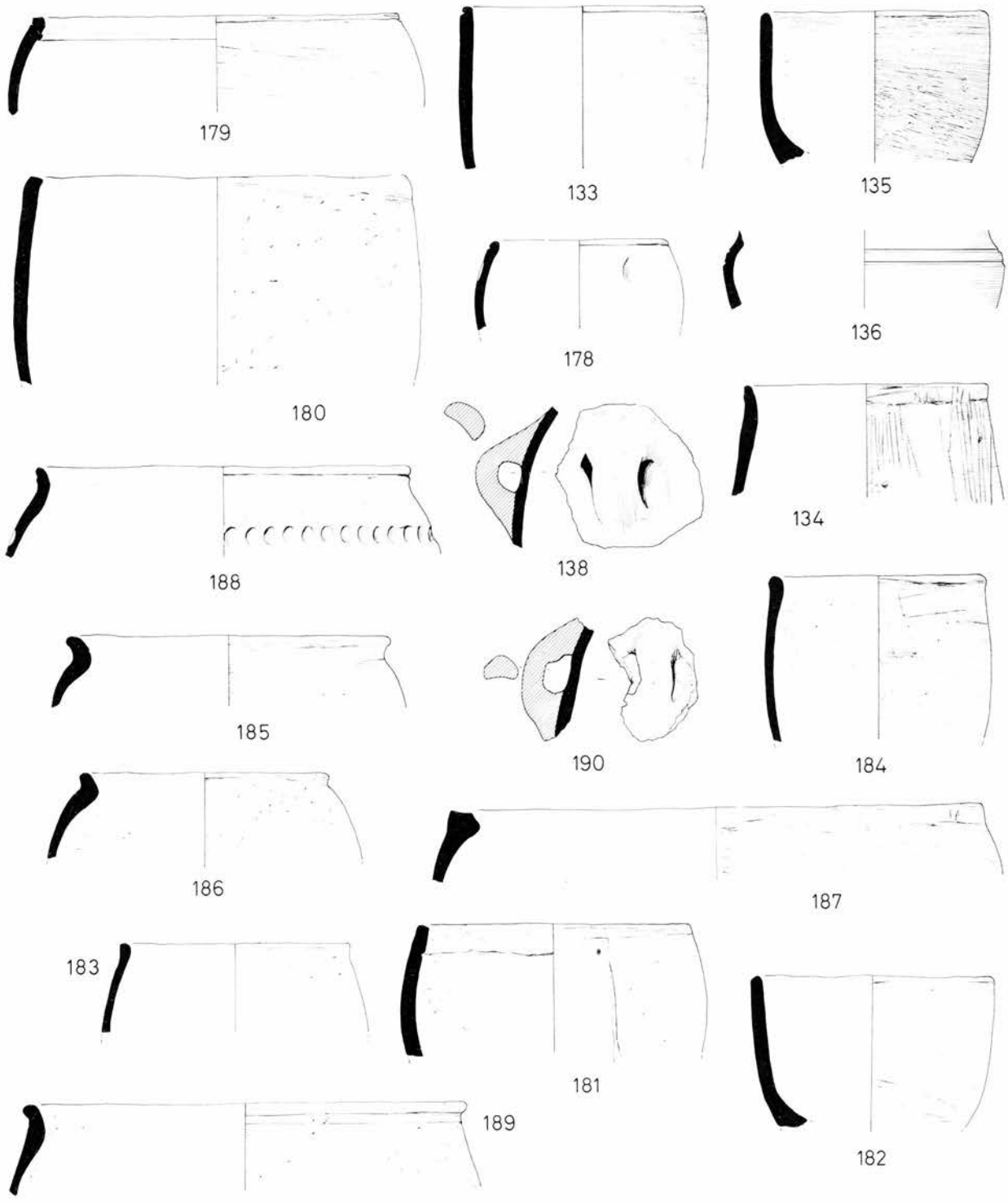


Figure 58: Ceramic groups: Phase 2 133–6, 138:IM(3); 178–190:IM(4); (Scale 1:4)

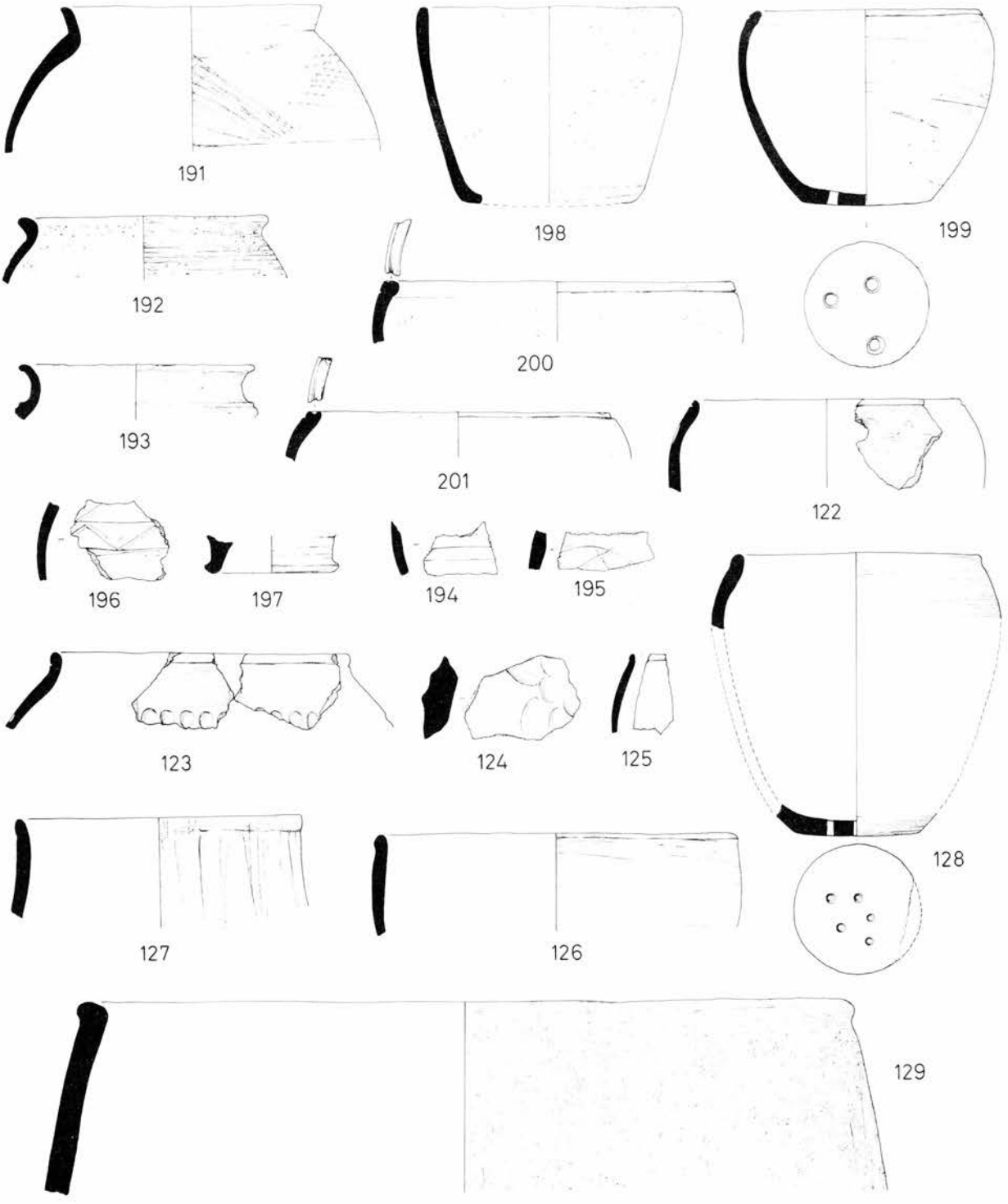


Figure 59: Ceramic groups: Phase 2 191–7:IM(4); 198:IM(5); 199–201:IM/N(3); 122–4: IN(3); 125–9:IN(4) (Scale 1:4)

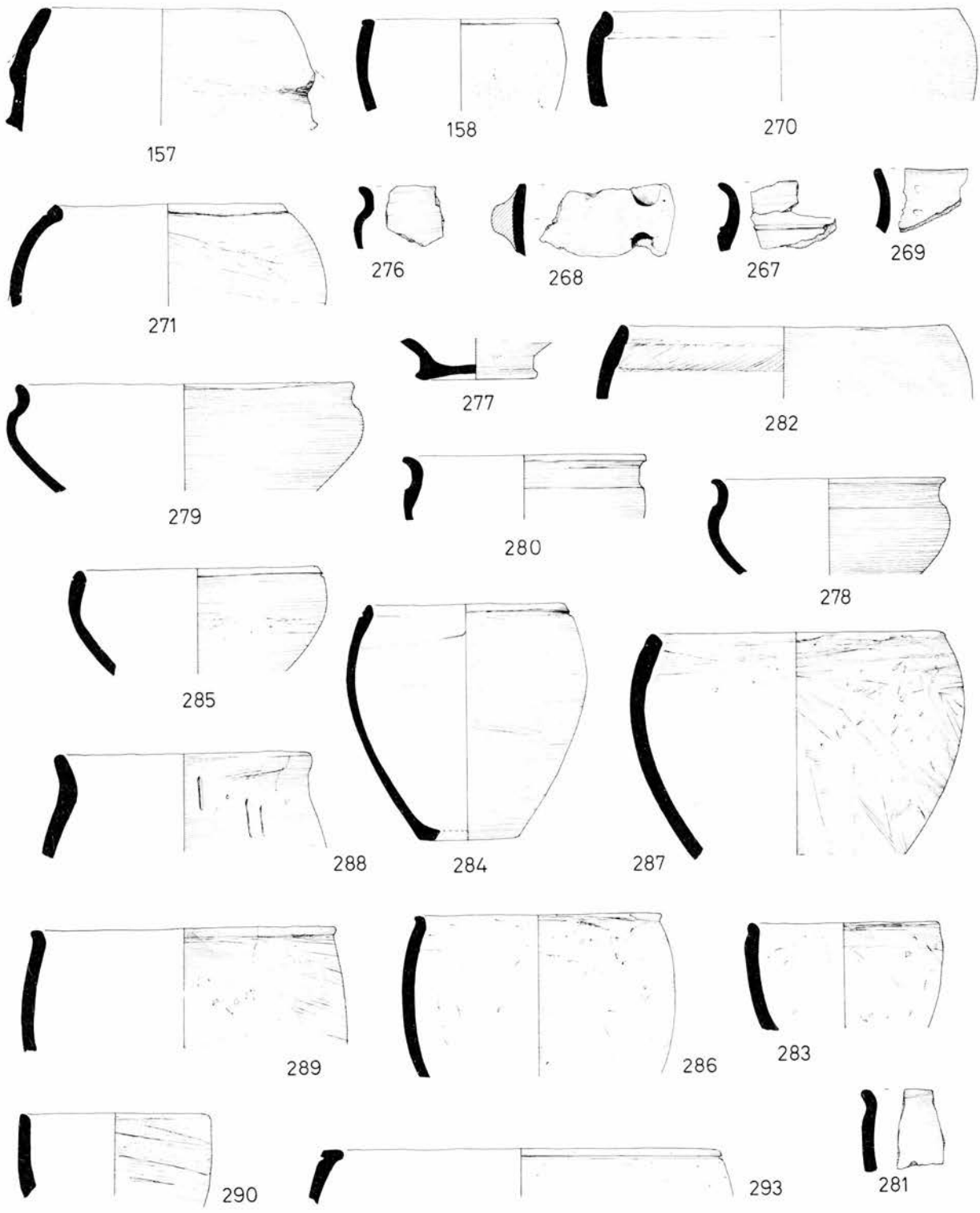


Figure 60: Ceramic groups: Phase 2 157:603(6); 158:603(8); 270–1:53(6); 267:52(3); 268:52(7); 269:53(4); 276–7:55(5); 278–82:55(7); 283–4:57(5); 285:57(6); 286–8:57(7); 289–90:57(8); 293:57(9) (Scale 1:4)

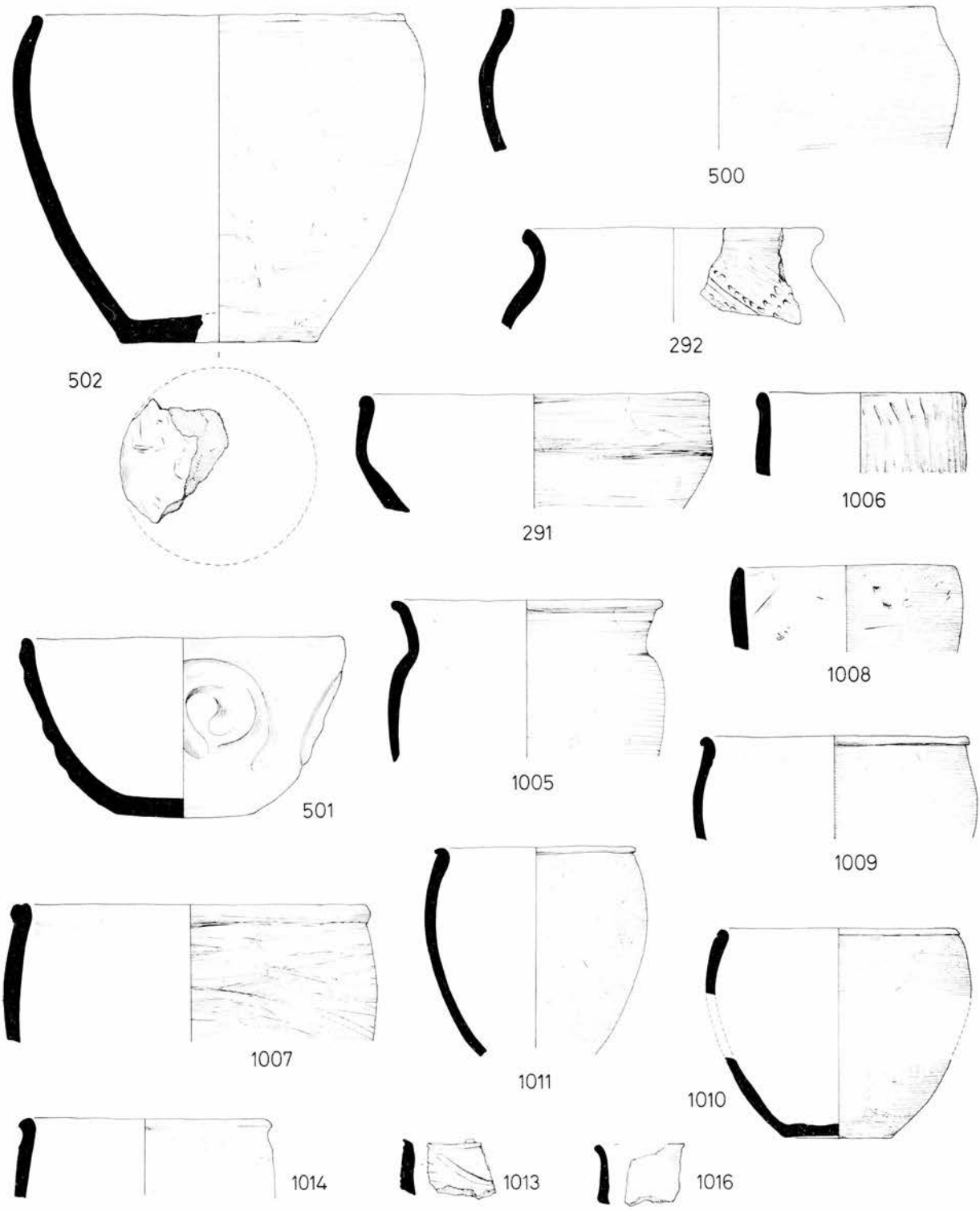


Figure 61: Ceramic groups: Phase 2 291–2:57(8); 500:187(3); 501–2:187(7); 1005:209(4); 1006:209(8); 1007–9:209(10J); 1010:209(10J); 1011:209(11Q); 1013:209(11T); 1014; 1016:209(12Z) (Scale 1:4)

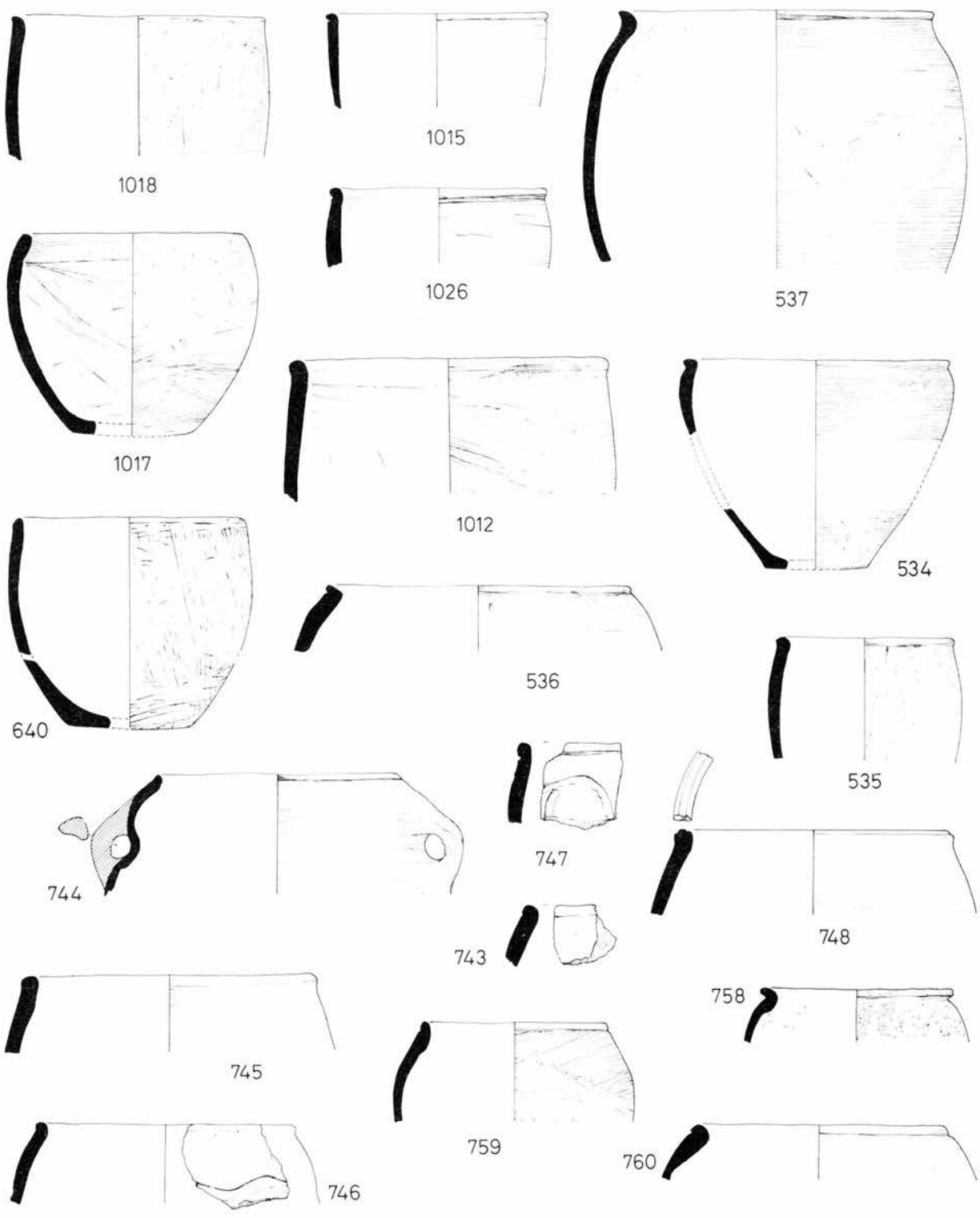


Figure 62: Ceramic groups: Phase 2 1012:209(11T); 1015:209(12Z); 1017–8:209(11); 1026:209(12X); 534–5:215(5); 536:215(8); 640:351(3); 743–5:416(3); 746:416(4); 747–8:416(5); 758:424(6); 759–60:424(9), (Scale 1:4)

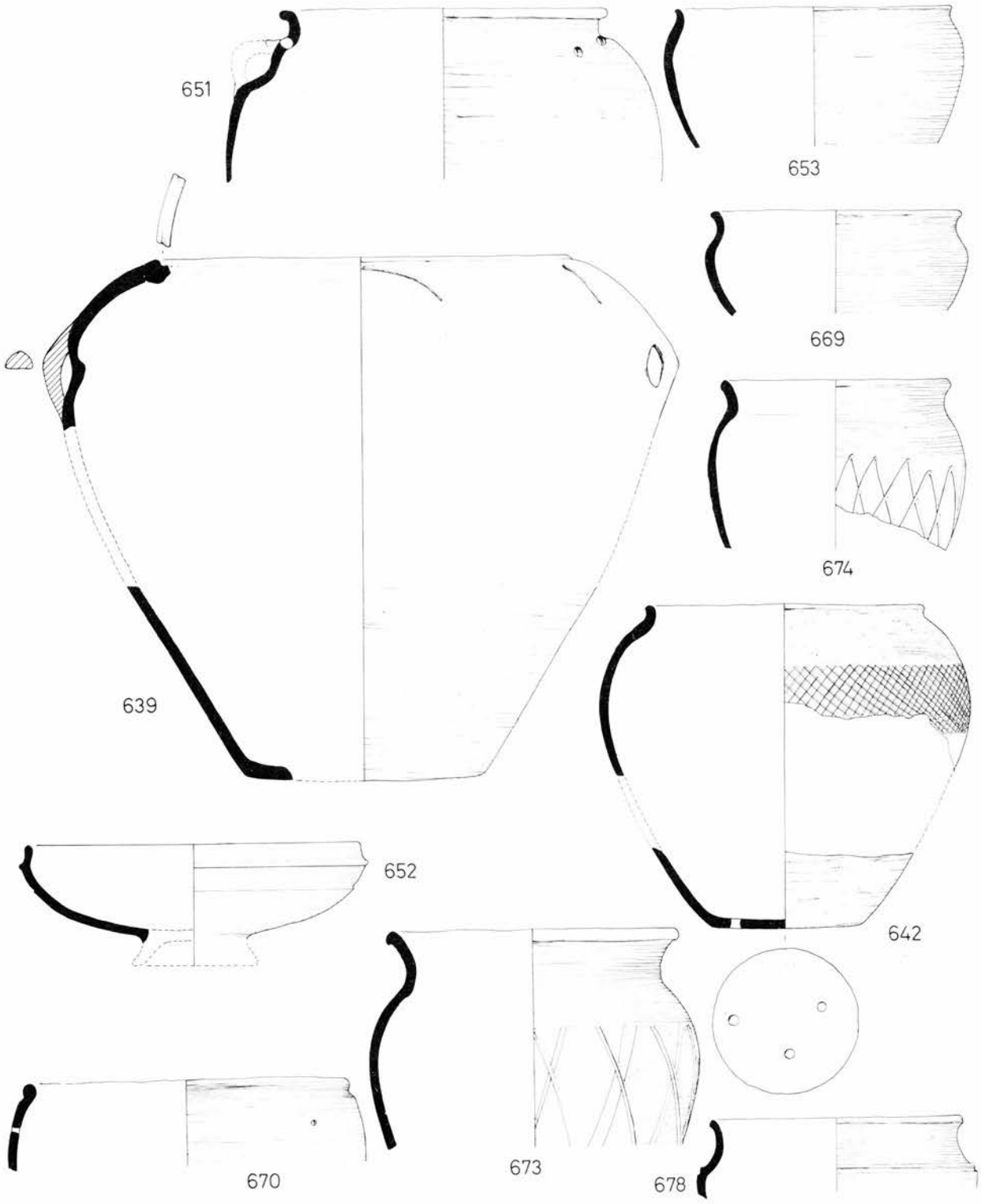


Figure 63: Ceramic groups: Phase 3 639:342(5), 651:371(5), 652:371(8), 653:371(10), 642:359(4), 669:380(3), 670, 673–4, 678:380(6), (Scale 1:4)

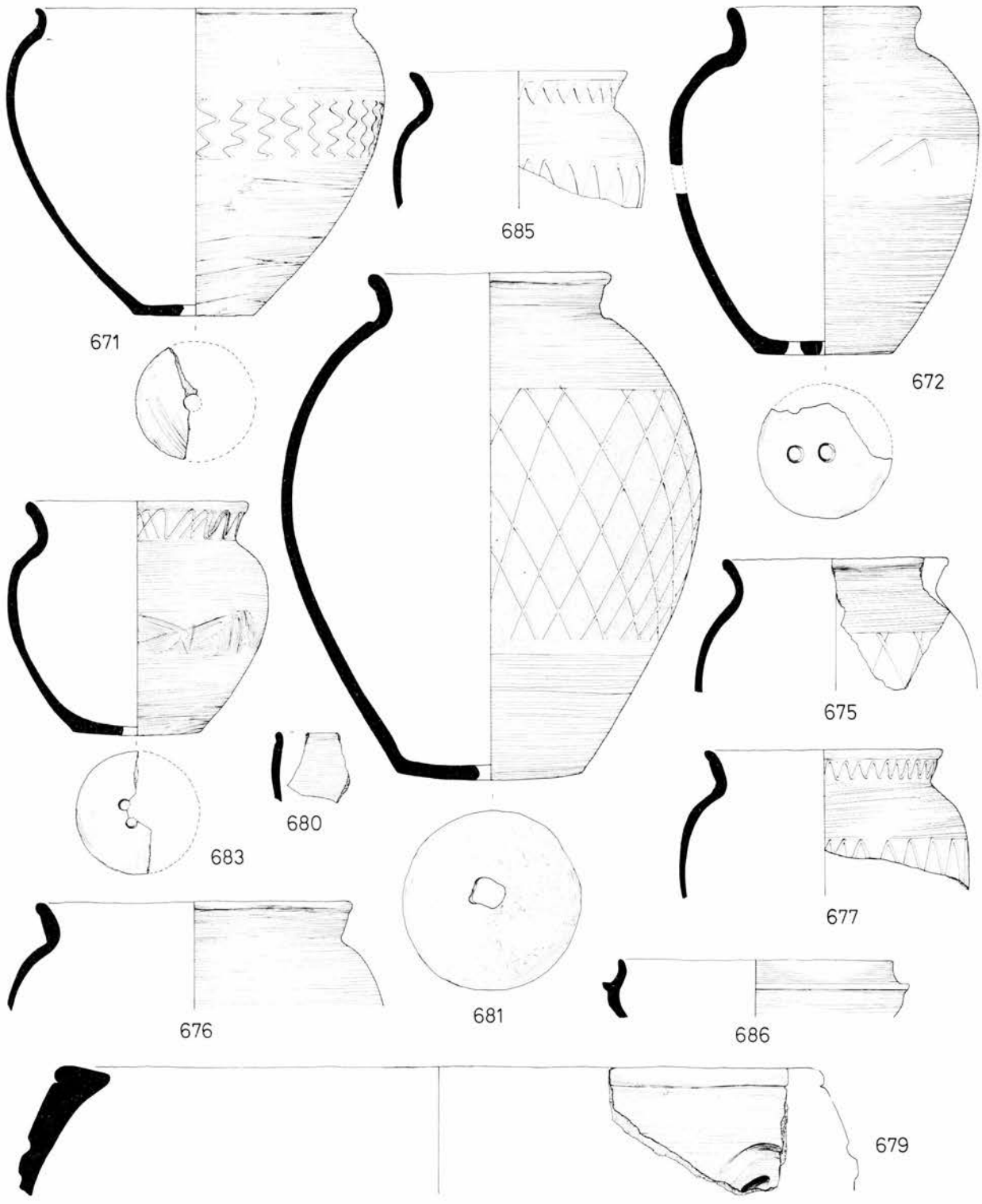


Figure 64: Ceramic groups: Phase 3 671–2, 675–7, 679:380(6), 680–1, 683, 685–6:380(7), (Scale 1:4)

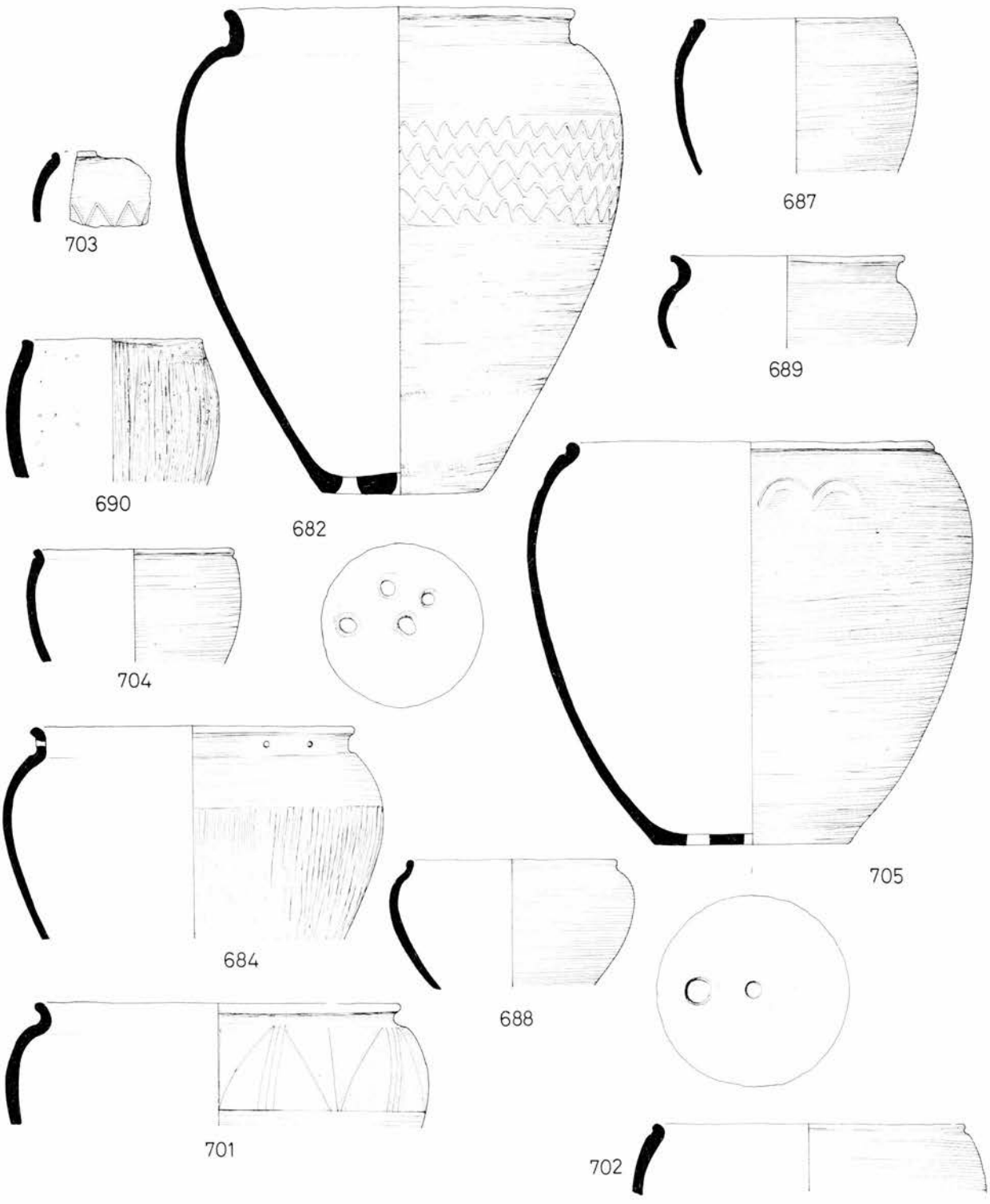


Figure 65: Ceramic groups: Phase 3 682–4:380(7), 687–8:380(8), 689:381(5), 690:381(10), 701:387(3), 702–3:387(4), 704–5:387(6), (Scale 1:4)

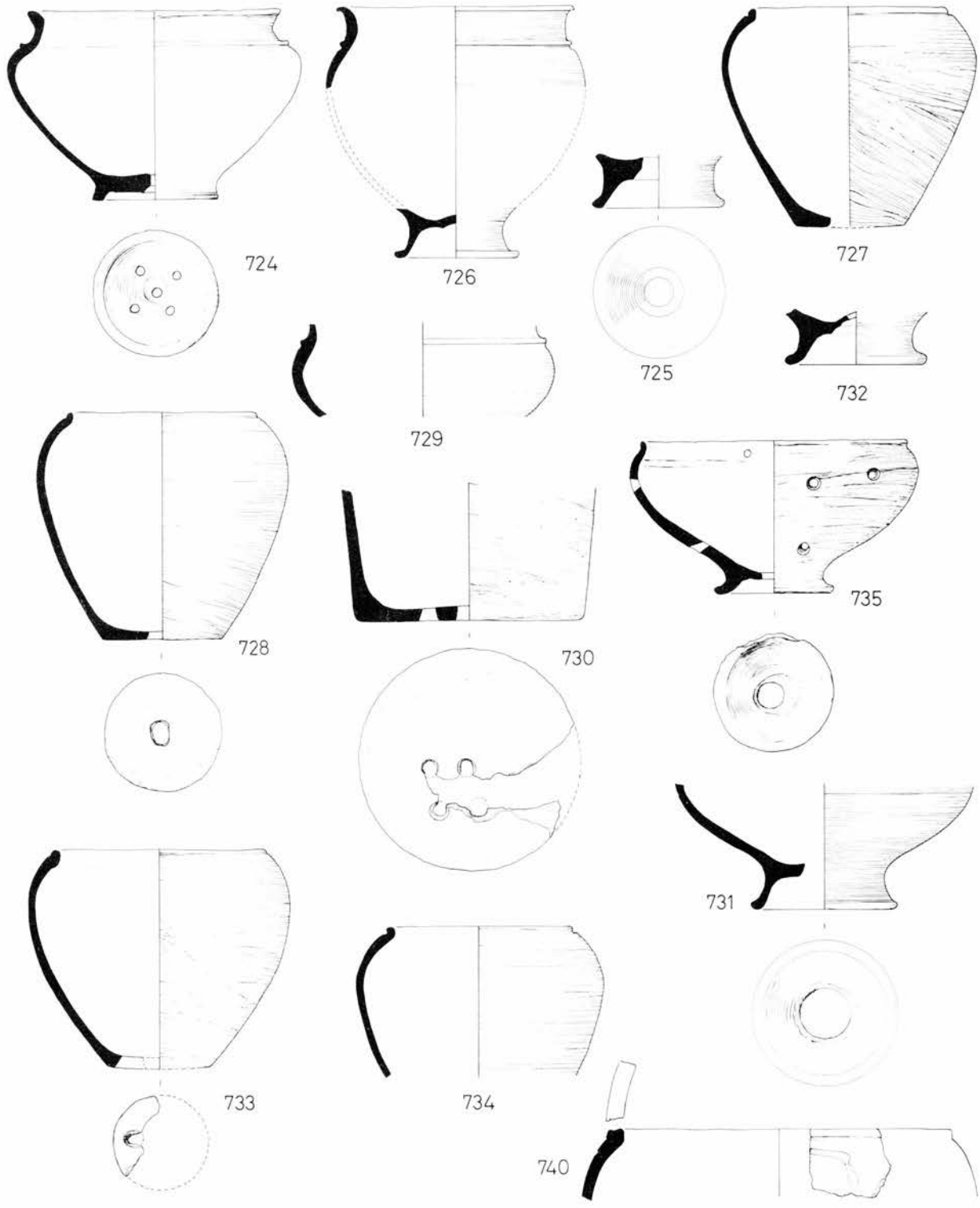


Figure 66: Ceramic groups: Phase 3 724:402(9), 725:410(5), 726:410(6), 727–32:410(8), 733:410(9), 734–5:410(10), 740:415(6), (Scale 1:4)

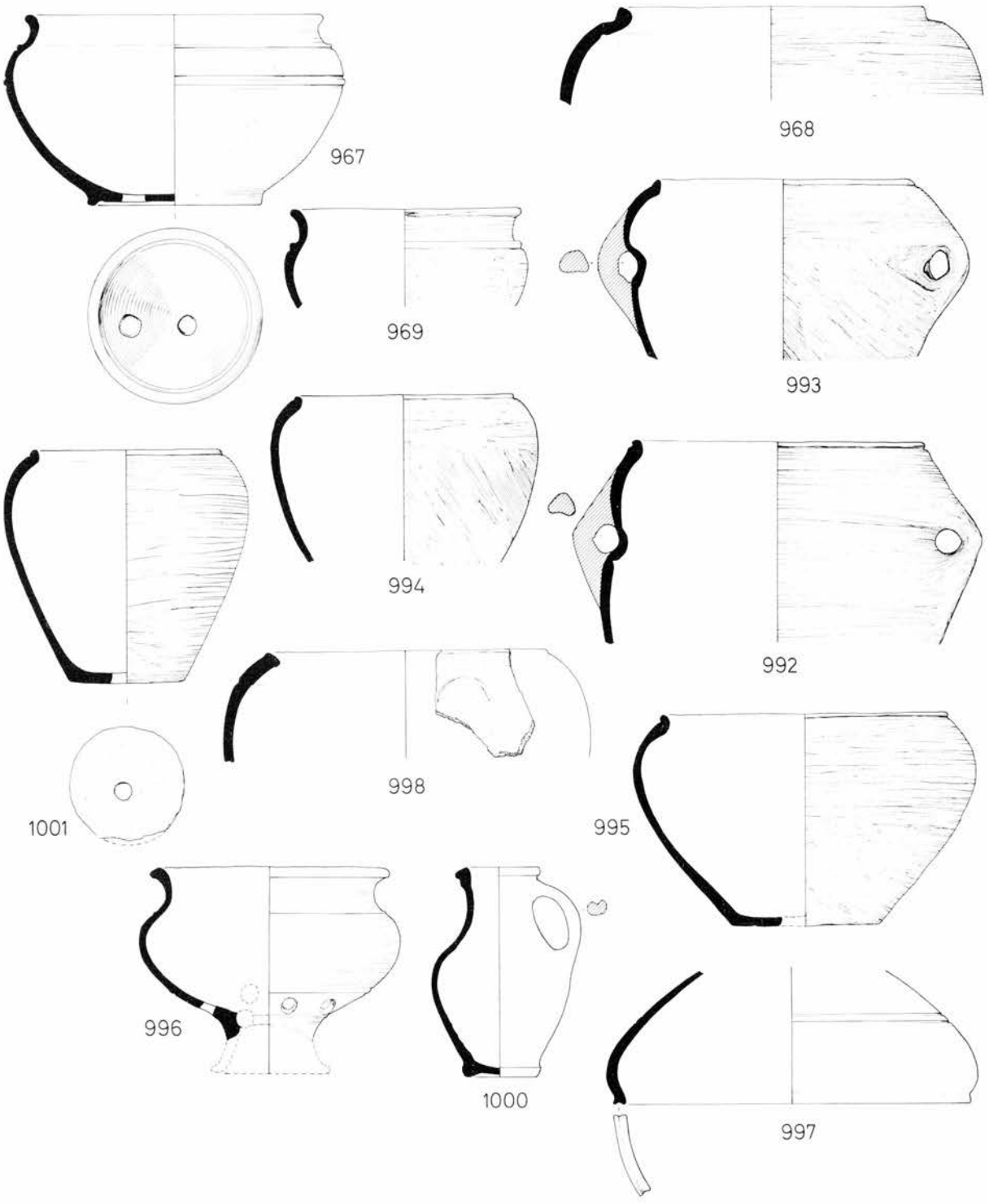


Figure 67: Ceramic groups: Phase 3 967:709(5), 968:709(7), 969:711(7), 992–3:781(4), 994–7:781(5), 998:781(5)/(6), 1001:933(3), 1000:815 (Scale 1:4)

The Arretine and Samian Sherds

by Dr Grace Simpson FSA

Arretine sherd

6043 571 (4)

A tiny sherd with a very fine, dense, fabric which is brown-red in colour. The gloss is brown-red and of good quality and very smooth. By the kindness of Mrs A C Brown and David Brown Esq, I matched both fabric and gloss with a number of genuine and larger sherds in the collections of the Ashmolean Museum, Oxford. The form is uncertain, but the curvature and fine grooves on the inside indicate a cup, such possibly as Loeschcke 8A or 11[7] Possibly late Augustan to Tiberian.

Samian Sherds

The fabrics of six sherds contain tiny yellowish-white speckles which are normally to be seen on the fabrics of La Graufesenque in South Gaul at all periods, but they are more obvious on the late first century products.

6021 2 (5A)

Form uncertain: a tiny sherd from the base of a small-size and thin-walled platter. The gloss is smooth and silky to the touch. Probably made during the Claudian period, AD 43—54.

6002 155 (9)

Form uncertain. Three arrowheads are all that remain of the decoration. These seem to be pointed at the top, and to have five barbs. The nearest to this kind is illustrated at Wroxeter (Bushe-Fox 1913, pl xiii, 4) stamped PRIMI, a Flavian potter. Arrowheads copied from this bowl are illustrated by Oswald and Pryce (Oswald and Pryce 1920, pl xxxvii, 30, and pp 240—1). All their examples are late Neronian or Flavian, and so also are those illustrated by Knorr (Knorr 1919, Taf. 54 A, 55 H, and 64 G). In the Claudian-Neronian periods, leaf-tips were used to fill spaces in scrolls and panels, and the arrowhead seems to be a later development. Probably Flavian.

6003 156 (1)

Probably Form 35 or 36. An ivy-leaf *en barbotine* is all that survives. This form was manufactured from the Claudian period until the late second century AD. The sherd has the speckled La Graufesenque fabric, and presumably it is of the first century.

6049 243 (7)

Dr. 30. Very roughly finished, inside and outside. The relief is poor and impressed twice. The ornament is a corner-tendril of an unusual kind because it has a double loop like Knorr, 1919, Taf 28 B, with the mould-maker's name M CRESTIO, AD 70 – 90. Good gloss, Flavian.

6020 293 (4)

SF 6044 293 (6)

Dr. 18. Two rim sherds join. The wall is of medium height, with rough rilling on the outside, but the inside has been smoothed. The gloss is red and lustrous. Probably Neronian, AD 54—68.

7. Hawkes and Hull 1947, 185–6, S11 and S14.

Chapter VII
The Stone

by D G Buckley
(Identifications by Dr F W Anderson)

The considerable quantity of stone derived from Gussage All Saints fell into three main groups: Greensand, Tertiary ferruginous sandstone and Tertiary gritstone, with only small quantities of other stone types. The Greensand is predominant; almost all of it is Lower Greensand, for only a small amount of Upper Greensand is present. All the fragments of these three stone-types were weighed giving the following period and overall totals; the dominance of the Greensand is clear (Table XII).

Most of the utilized fragments are of Lower Greensand; only a few of the Tertiary ferruginous sandstone and gritstone fragments are utilised. The total number of utilised fragments of these three types is 310; 145 of these have been identified as quernstones. In addition there are four quern fragments made of other rocks. Table XIII indicates the numbers of quern fragments for each phase of the site:

Table XII. Weights of stone types

	Greensand	Tertiary sandstone	Tertiary gritstone
Phase 3	128.15	40.28	6.63
Phase 2	23.02	14.52	5.20
Phase 1	92.24	24.09	1.41
Undated	3.76	0.20	—
Total weights (kg)	241.17	79.09	13.24

Table XIII. Numbers of quern fragments in each phase

	Total no utilised	Saddle-quern	Saddle-quern rubber	Rotary-quern lower-stone	Rotary-quern upper-stone	Rotary-quern upper or lower stone
Phase 3	136	16	1	10	42	11
Phase 2	47	3	1	1	1	8
Phase 1	127	43	2	3	4	2
Undated	4	1	—	—	—	—
Totals	314	63	4	14	47	21

Only 45 of the 149 quernstone fragments are not of Lower Greensand. This was quite clearly the most popular regional stone utilized for quernstones, for only occasionally were other stones used. Many of the utilised fragments to which no use is assigned, and also many of the completely angular fragments must originally have been derived from broken or re-used quernstones, certainly in the case of Greensand.

The above figures underline the accepted view that saddle-querns were largely replaced by rotary-querns during the course of the Iron Age. However, if the dating of the Gussage All Saints pits is accepted, then the currently accepted view that rotary-querns were first used late in the Iron Age must be revised. In more than one case saddle and rotary-querns are found side by side in both early and late Iron Age pits. This indicates that rotary-querns were first used at an early date in the Iron Age.

In two articles tracing the evolution of the rotary-quern in Britain from pre-Roman times to the end of the Roman occupation, Dr E Curwen recognised an evolution marked by diminishing thickness and grinding angle, changes in the method of securing the handle, and finally the introduction of an adjustable pivot in the lower stone (Curwen 1937 and 1941). Despite the large sample of rotary-querns from Gussage All Saints there are too few in the Phase 1 and Phase 2 groups of stone to compare with the large group in Phase 3; it is not possible, therefore, to comment on the above conclusions. The majority of Lower Greensand querns do fall into Curwen's Sussex-type, being flat topped with a handle projecting radially from a groove on the flat surface, and having a conical grinding surface. The late Iron Age group, however, varies greatly in stone thickness and, to a lesser extent, diameter.

Saddle-querns also show consistency in size. Two types may be distinguished: small oval examples and large heavy ones, both with deliberate surface pecking to the required form. Since these forms are standardised and since there is a marked absence of waste-stone from the site, it is reasonable to suggest that the saddle-querns were produced elsewhere and brought to the site as trade-goods. Their occurrence alongside rotary-querns may suggest that each type of quern was used for different purposes.

It is very likely that almost all of the querns, both saddle and rotary, were brought to the site ready made from established producing-areas. There is little evidence for working of stone on the site, though some of the stone was re-

worked. Feature 215 had a large number of flakes of Lower Greensand struck from a block with one weathered and one fresh surface, whose utilised surface was used as the striking-platform in re-working; it is quite probable that this represents re-use of a quernstone. The many small pieces of quern found also point to re-use since a quern normally breaks into a number of large pieces; in an area sparse in hard stone it is unlikely that such stone would be wasted if an alternative use could be found.

It is interesting to consider the source of the various stone types represented at Gussage All Saints since these represent one aspect of the range of the settlement's trading contacts. The site is on chalk downland with only the residual capping of clay and flint gravel to supply harder stone in the form of pebbles; since these had a limited usefulness, all stone on the site had to be carried a certain distance, and, since it is a heavy commodity this involved some degree of organisation.

The Lower Greensand was by far the most important stone imported to Gussage All Saints, yet there is only a very limited outcrop of it in the area. Eight miles west of the site, it is found as a narrow outcrop reaching three miles northwards from Child Okeford on the River Stour, while approximately the same distance north of the site it outcrops as an even narrower band along the side of the Vale of Wardour. It would seem very likely that one or both of these outcrops supplied the stone for the Gussage All Saints querns, both saddle and rotary, throughout the Iron Age, and very likely that the querns were produced at specific quarries. The stone was almost certainly not carried rough to be made into querns at each Iron Age site in the region, but as yet little work has been done since Curwen on this aspect of quern technology. Of the two above mentioned outcrops one can see an advantage in exploiting the Child Okeford outcrop, for the River Stour, situated close by, would have aided the southward transport of heavy materials; the Vale of Wardour, however, is separated from Gussage All Saints by a scarpland which could, nevertheless, have been overcome by the use of pack-animals. It is likely that a number of sites throughout Southern England produced querns to a fairly standard design and size, but possibly with individual specialization, and possible that each of them had its own established trading area. The Gussage All Saints stones, especially the Phase 3 rotary-querns, are mainly of the Sussex-type (although a few Wessex-type specimens are also present), and may therefore have been supplied from a single source for a long period.

The large quantity of Tertiary ferruginous sandstone, mostly without evidence of utilisation, comes from the Hampshire Basin and represents another aspect of movement of heavy material. The Eocene Reading Beds outcrop only three miles south of Gussage All Saints, but it is impossible to say where the nearest location for the quarrying of the stone may have been. Many of the pieces are smooth and nodular and may even have been gathered from the surface; the wide variety of grain size and colour suggests a widespread collecting area. The high iron content of the stone suggests that it may also have been imported for smelting.

Wider contacts are suggested by the two examples, one in Phase 1 and one in Phase 3, of coarse-grit rotary querns of probable Devonian stone. These may have been the product of more casual trading, and it is interesting that they both appear little used, possibly owing to the hardness of the stone but perhaps to a dislike of a different one. The lump of Dartmoor granite from feature 57 is also indicative of distant trading contacts.

The coarse Tertiary gritstone appears to have been rarely utilised and no use for its importation is suggested; it may have formed part of the same carrying trade as the ferruginous sandstones from the Hampshire Basin. Although it is now much decomposed, it was originally a fairly hard stone. Various examples of other Tertiary stones from the same source area, particularly micaceous sandstone suitable for use as whetstone, also occur, as do oddities like the fragment of Bembridge Limestone which can only have come from the Isle of Wight.

There are only a few whetstones from the site as a whole, which is unusual since these are often an important trade article on Iron Age sites. Most examples were made of pebbles derived from the local Clay-with-flints deposits, as also were the skin rubbers. The latter can only be distinguished from other pebbles on the site by the presence of surface shine or streaking. It is impossible, however, to distinguish sling-stones from the ordinary flint pebbles that occur naturally in local Clay-with-flint deposits.

Phase 1

Phase 1 features yielded 117.74kg of the three main stone types: 92.24kg of Greensand, 24.09kg of Tertiary sandstone and 1.41kg of Tertiary gritstone. There were 127 stone fragments with one or more utilised surfaces, of which 54 were recognisable quernstone fragments: 43 saddle-querns, two saddle-quern rubbers, three rotary-quern lower-stones,[8] four rotary-quern upper-stones and two rotary-quern upper or lower-stone fragments. Lower Greensand was the principal stone utilized with only four saddle-querns of Tertiary sandstone, two saddle-querns of Upper Greensand and one rotary-quern lower stone of a coarse quartz grit, probably Devonian, that were not of this rock. (Figures 68—9).

The above total for utilised stone does not include three whetstones, two pebble rubbers and an unidentified piece of worked sandstone.

Axe (Figure 68)

2002 A small Neolithic axe-head which is complete and heavily weathered. The implement was examined petrologically (Dorset 120, Serial No 1600) and found to be a greenstone from south-west England. (419 (4))

Querns

2150 Lower-stone fragment. –/5.5/– Lower Greensand. (75(6)).

2151 Upper-stone fragment. Lower Greensand. (201(5)).

2152 Upper-stone fragment. Lower Greensand. (212(5)).

8. The original dimensions where ascertainable, given for each rotary-quern fragment are as follows:
Upper-stones: diameter/maximum thickness at rim.
Lower-stones: diameter/thickness at rim/thickness at centre.
This follows the practice of A Clark and J F Nichols (as adopted in their study of querns from Romano-British farms south of the Hog's Back, Surrey (Clark and Nichols 1960), which accepts Curwen's suggestion that the proportion of thickness to diameter has a certain chronological significance; this may become more useful as our knowledge of querns increases. The *maximum* thickness at the rim is given, for this must be closest to the original thickness before wear, usually particularly heavy on one side, took place.
The dimensions, where ascertainable, given for saddle querns are length/width/height.

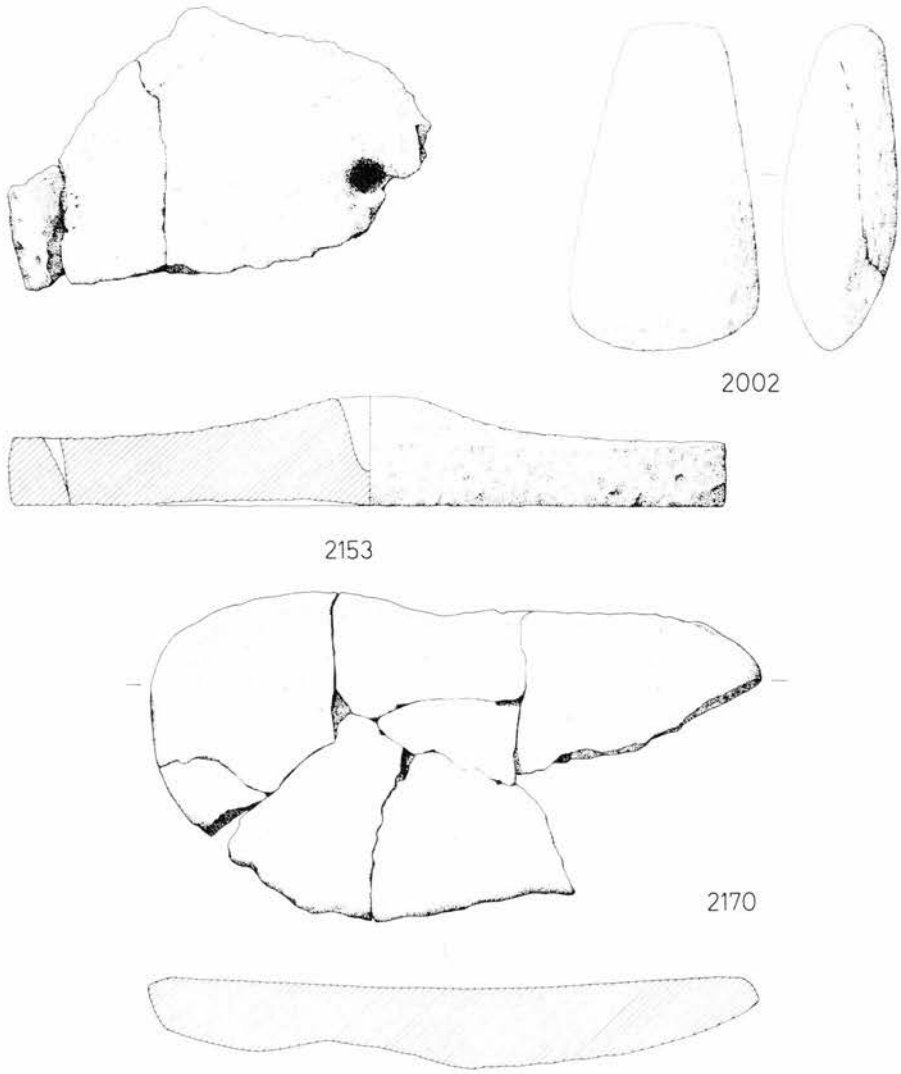


Figure 68 Stone artefacts: Phase 1 (Scale 2002: ½; 2153, 2170: ¼)

2153 Upper-stone fragment. Approximately 35.0/7.0cm. Flat topped. Fractured along a handle slot cut 1.5cm deep from the top of the stone. Lower Greensand (245(3)).
Lower-stone fragment. Approximately 38.0/3.5/6.0cm. Flat base, roughly finished, low-angle grinding-surface. The central pivot-hole has a depth of 3.5cm into the stone and diameter of 2.5cm. Weight 0.85kg. Lower Greensand (245(3)). (Figure 68)

2154 Rotary-quern upper or lower-stone fragment. Lower Greensand (296(9)).

2155 Upper-stone fragment. Lower Greensand (305(4)).

2156 Rotary-quern upper or lower-stone fragment. Lower Greensand (370(5)).

2157 (Figure 69) Lower-stone, complete but for a small piece broken off the side, 31.0/17.0/19.0cm. There is a low angle to the grinding surface, and there is a slight lip around the central pivot-hole. This has a depth of 5.5cm into the stone and a diameter of 4.5cm. Pecking covers the whole under-surface of the quern. The sides curve inwards to a small round slightly convex and consequently unstable base. When found, the bottom and sides of the quern were covered by the fragmented remains of a base of crudely mixed chalk mud, which must have served to stabilize it (604(6)). This quern is also unusual in that, although little used, it was quite deliberately discarded at the very bottom of pit 604. It is one of only two querns from the whole site of a coarse quartz grit of probable Devonian date, and, although more than 25kg in weight, must have been transported some considerable distance. 25.44kg in weight (604(6)).

2158 Saddle-quern fragment. Lower Greensand (30(7)).

2159 Saddle-quern fragment. 12.5 (incomplete)/16.0/4.5cm. The underside is rough and unworked. Lower Greensand (44(9)).

2160 Numerous saddle-quern fragments, all apparently from one quern, but too fragmented to reconstruct. Lower Greensand (48(4)).

2161 Saddle-quern fragment. 13.0 (incomplete)/12.5/4.0cm. Pecked under surface. Lower Greensand (85(8)).

2162 Saddle-quern fragment. Lower Greensand (90(6)).

2163 Saddle-quern fragment. Lower Greensand (100(5)).

2164 i. Saddle-quern fragment. 14.0 (incomplete)/15.5/4.7cm. Lower Greensand.

ii. Saddle-quern fragment. Lower Greensand (107(3)).

2165 Saddle-quern complete but for shattering at one end. 44.0/29.0/13.0cm. Both the upper and lower surface have been utilized. This is the largest saddle-quern from

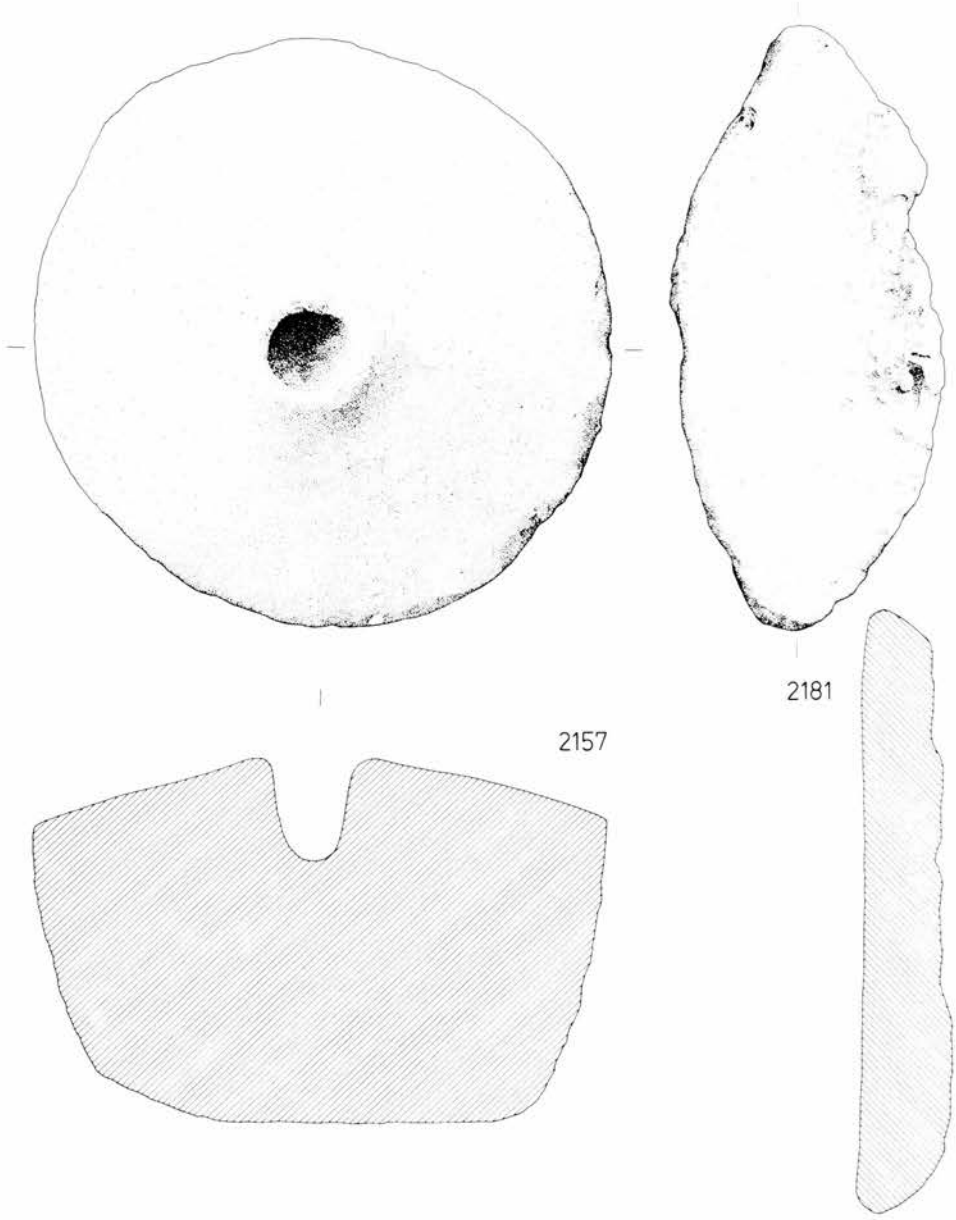


Figure 69 Stone artefacts: Phase 1 (Scale ¼)

the site. Weight 21.85kg. Lower Greensand (107(7)).

2166 i. Saddle-quern fragment. 19.0 (incomplete)/12.0/5.5cm. The underside is very rough. Lower Greensand.

ii. Saddle-quern fragment with remains of grinding surface. Lower Greensand. Weight 1.65kg. (176(3))

2167 Saddle-quern fragment. Tertiary ferruginous sandstone (198(8)).

2168 Saddle-quern fragment. Lower Greensand (201(7)).

2169 Saddle-quern fragment. Tertiary ferruginous sandstone with small quartz pebbles incorporated in the matrix (202(5)).

2170 (Figure 68) Saddle-quern, seven joining fragments with one fragment, approximately one fifth of the quern, missing. 32.0/16.5/5.0cm. A well shaped stone; part of the under surface is also intentionally smoothed. Weight 2.65kg. Lower Greensand (211(5)/(6)/(7)).

2171 Saddle-quern, seven joining fragments with one fragment, approximately one fifth of the quern, missing. 32.0/21/7.0cm. There is a marked upturn at the broken end of the grinding surface. The well-rounded under-surface is pecked all over, but there is a little smoothing on the very bottom of the quern. Weight 4.50kg. Tertiary ferruginous sandstone (211(7)).

2172 Two saddle-querns in numerous fragments too shattered to reconstruct completely. Lower Greensand (286(3)).

2173 Saddle-quern fragment. Lower Greensand (292(3)).

2174 Saddle-quern fragments; possibly more than one quern is represented. Lower Greensand (292(5)).

2175 Saddle-quern fragment. Flat base with pecking on the sides. Lower Greensand (294(3)).

2176 Saddle-quern. A large piece of ferruginous sandstone with naturally-opposed flat surfaces, one surface being utilised for grinding. Pecking on the sides. Tertiary ferruginous sandstone (296(6)).

2177 Saddle-quern fragment. 14.0 (incomplete)/11.0 (incomplete)/4.0cm. Rough unworked under-surface. Lower Greensand (296(9)).

2178 Saddle-quern fragment. 12.0 (incomplete)/15.0/4.6cm. Pecked under surface. Lower Greensand (296(11)).
2179 Two saddle-quern fragments. Lower Greensand (297(7)).
2180 Saddle-quern fragment. Lower Greensand (297(8)).
2181 (Figure 69) Saddle-quern. 31.5/14.0/4.5cm. Weight 2.33kg. Lower Greensand (308(7)).
2182 Saddle-quern fragment. Lower Greensand (361(4)).
2183 Saddle-quern, complete but for a fragment broken from one end. 30.0/19.0/5.0cm. The under-side of the stone is vesicular owing to exposure or water action, apparently prior to its use as a quern; with no additional working. Weight 3.65kg. Lower Greensand (377(5)).
2184 Saddle-quern fragment. Lower Greensand (382(4)).
2185 Saddle-quern fragment. Lower Greensand (383(4)).
2186 Saddle-quern fragment. 13.0 (incomplete)/13.5/4.0cm. Lower Greensand (414(3)).
2187 Two saddle-quern fragments. Lower Greensand (520(6)).
2188 Saddle-quern fragment. A rough-sided piece of stone but with the remains of a convex grinding surface and side pecking; it must originally have been part of a large quern. Weight 3.44kg. Lower Greensand (521(5)).
2189 Saddle-quern fragment. Lower Greensand (528(5)).
2190 Two saddle-quern fragments. Derived from separate querns each with a grinding-surface and a pecked under surface. Lower Greensand. Saddle-quern fragment. --/12.5/5.0cm. Rough under-surface and shallow grooves. along the grinding surface. Upper Greensand (638(3)).
2191 Saddle-quern fragment. 15.0 (incomplete)/18.0/5.0 (incomplete) cm. Lower Greensand (639(5)).
2192 Saddle-quern fragment. 13.5 (incomplete)/16.0/4.0 (incomplete) cm. Lower Greensand (639(6)).
2193 Saddle-quern fragment. Lower Greensand (655(8)).

Saddle-quern rubbers
2194 Saddle-quern rubber fragment. Length 15.0cm (incomplete), width 11.0cm, thickness 6.5cm. Flat longitudinally, slightly convex laterally, and with a rounded upper surface. Lower Greensand (75(6)).
2195 Saddle-quern rubber fragment. Has remains of flat rubbing-surface and rounded upper-surface. Lower Greensand. (75(7)).

Whetstones
2196 Whetstone of fine-grained sandstone. 9.3 (incomplete)/10.0/3.0cm. One sharpening surface; concave both length and width ways. (75(6)).
2197 Flat pebble of fine-grained micaceous sandstone utilised as a whetstone. 8.0/3.0/2.0cm. (655(5)).
2198 An irregular piece of sarsen, 21.00kg in weight, with one surface rendered smooth and concave by use as a whetstone. (937(6)).

Rubbing stones
2199 A smooth flat pebble of fine-grained sandstone, broken at one end, with dark surface staining. (48(4)).
2220 A flat quartzite pebble with high gloss on its narrow sides. (107(7)).

Miscellaneous
2221 A fragment of fine-grained sandstone with one utilised surface. Weight 0.35kg. (655(5)).

Phase 2

Phase 2 features yielded 42.74kg of the three main stone types: 23.02kg of Greensand, 14.52kg of Tertiary sandstone, and 5.20kg of Tertiary gritstone. There were 47 fragments with one or more utilised surfaces, of which 14 are recognisable quernstone fragments: three saddle-querns, one saddle-quern rubber, one rotary-quern lower-stone, and eight rotary-quern upper- or lower-stone fragments. Of these, two rotary-quern fragments and one saddle-quern are of Tertiary ferruginous sandstone; the rest are of Lower Greensand.

The above total for utilised stone does not include three whetstones, seven rubbing stones, and a piece of Dartmoor Granite.

Querns
2222 Rotary-quern upper- or lower-stone fragment. Lower Greensand (1L(3)).
2223 Rotary-quern upper- or lower-stone fragment. Lower Greensand (1N(3)).
2224 Rotary-quern upper- or lower-stone fragment. Lower Greensand (1S(3)).
2225 Rotary-quern upper- or lower-stone fragment. Lower Greensand. Rotary-quern upper- or lower-stone fragment. Tertiary ferruginous sandstone (1G(4)).
2226 Lower-stone fragment. Retains vestiges of the central pivot-hole. Tertiary coarse grit (519(7)).
2227 Rotary-quern upper- or lower-stone fragment. Tertiary sandstone with numerous small quartz pebbles and vesicules incorporated in the matrix (585(5)).
2228 Rotary-quern upper- or lower-stone fragment. Lower Greensand (734(4)).
2229 Two rotary-quern upper- or lower-stone fragments. Lower Greensand (735(3)).
2230 Saddle-quern fragment. The stone has two opposed naturally flat surfaces of which one was utilised for grinding. Tertiary ferruginous sandstone (187(5)).
2231 Nine saddle-quern fragments from a single incomplete quern. The fragments presented both grinding-surface and pecked surfaces from the underside of the stone. Lower Greensand (426(8)).
2232 Twenty saddle-quern fragments from a single incomplete quern, too badly fragmented to reassemble even though much of the stone survives. Lower Greensand (428(6)/(7).

Saddle-quern rubbers
2233 Saddle-quern rubber fragment. 14.5 (incomplete)/10.0/6.3cm. A very smooth rubbing surface, slightly convex at the sides, and rounded upper surface. Lower Greensand (432(5)).

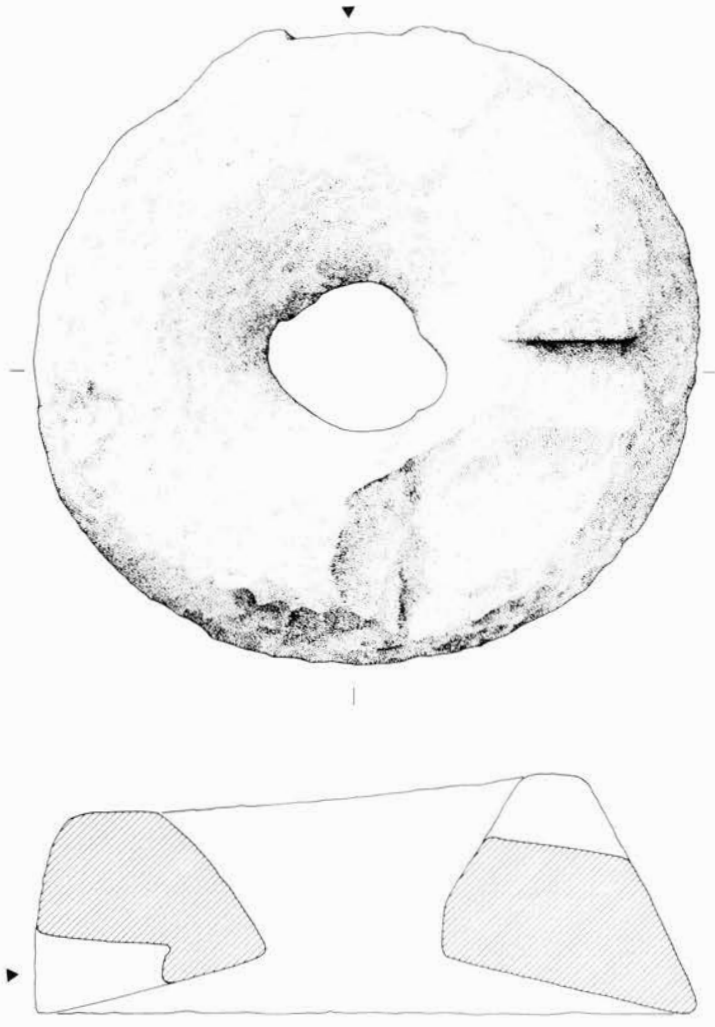
Whetstones
2234 Whetstone of fine-grained micaceous sandstone. A utilised piece of naturally flat stone. 10.0/3.0/1.0cm. (459(7)).
2235 A flat quartzite pebble suitable for use as a whetstone (701(7)).

Rubbing stones
2236 A round flint pebble, extremely smooth with overall high gloss (215(8)).
2237 A flat quartzite pebble, slightly hollowed on one surface (426(8)).
2238 Two rounded sandstone pebbles with dark surface streaking (427(7)/(8)).
2239 An oval sandstone pebble with brown surface staining (439(8)).
2240 A rounded sandstone pebble with dark staining on one face (531(5)).

2241 A rounded sandstone pebble with brown surface streaking (690(3)).
2242 A rounded quartzite pebble with dark surface streaking (763(4)).

Miscellaneous
2243 Numerous fragments of Dartmoor type granite, all badly decomposed and quite probably originally derived from one piece. A single flat surface on the largest fragment indicates utilisation, but no use can be suggested. Total weight 2.90kg. (57(9)/(11)).

Phase 3
Phase 3 features yielded 175.06kg of the three main stone types: 128.15kg of Greensand, 40.28kg of Tertiary sandstone, and 6.63kg of Tertiary gritstone. There were 136 fragments with one or more utilised surfaces of which 80 were recognisable quernstone fragments: 16 saddle-querns, one saddle-quern rubber, ten rotary-quern lower stones, 40 rotary-quern upper stones, and 11 rotary-quern upper- or lower-stone fragments. Lower Greensand was the principal stone utilised; only six rotary-quern fragments (four of Tertiary sandstone and one each of Purbeck Limestone and coarse quartz grit, probably Devonian) and one saddle-quern rubber of Tertiary sandstone were of other materials (Figures 70 – 1).



2251

Figure 70 Stone artefact: Phase 3 (Scale ¼)

The above total for utilised stone does not include eight whetstones, five rubbing stones, a pebble pounder and piece of worked sarsen.

Querns
2244 Upper-stone of which about one quarter survives. Approximately 40.0/5.0cm. Flat-topped, but with a large shallow hopper surrounding a large central hole; rounded sides; gentle grinding angle. Purbeck Limestone; it is the only quern of this stone from the site. Romano-British in date. Weight 2.62kg (2(2)).
2245 Upper-stone fragment. Approximately 35.0/6.0cm. Flat-topped, but roughly finished. Fractured along a handle-slot cut 2cm deep from the top of the stone. Lower Greensand. Upper-stone fragment. Lower Greensand (2(3)).
2246 Upper-stone fragment – 15.5cm. Fractured along a handle-slot cut 2cm deep from the top of the stone. Lower Greensand (2(5)).
2247 Upper-stone fragment. – /5.5cm. Lower Greensand (2(5A)).
2248 Upper-stone fragment. Approximately 35.0/5.0cm. Fractured along a handle-slot cut 2.5cm deep from the top of the stone. Lower Greensand (25F(3)).
2250 Upper-stone of which about half, in three joining pieces, survives. 33.0/4.0cm. Flat-topped, but with original working-grooves giving a rough finish; gentle grinding angle. Fractured along a handle-slot cut 2.0cm deep from the top of the stone. Weight 2.72kg. Lower Greensand (25C(4)).
2251 (Figure 70) Upper-stone, complete. 35.0/3.8cm. This stone is of Curwen's Wessex type. The top is rounded with a large central hole, made almost oval in shape owing to the presence of two slots cut through the stone on opposite sides of the main shaft. The whole of the upper surface of the stone is pecked. There are two handle-slots. One is cut to a depth of 3.0cm into the stone from the side, flush with the grinding surface for a distance of 7.0cm and has a rounded end and cross-section. The other is near the top of the stone, and extends through to the hopper which is only partially represented owing to fracture of the stone around the slot. Weight 17.25kg. Coarse quartz grit, probably Devonian (61(7)).
2252 Upper-stone fragment. Lower Greensand (111(7)).
2253 Upper-stone fragment. Approximately 33.0/4.0cm. Lower Greensand. Upper-stone fragment – /2.5cm. Fractured along a handle-slot cut into the top of the stone. Lower Greensand (111(8)).
2254 Upper-stone fragment. Approximately 36.0/4.0cm. Flat-topped, with a central hole 7.0cm in diameter. Gentle grinding angle. Pecking over the whole of the upper surface. Weight 2.50kg. Lower Greensand with fossil inclusions (121(6)).
2255 Upper-stone of which about half survives. 33.5/8.0cm. Flat-topped, with a central hole 6.0cm in diameter; made slightly rectangular by an additional slot on one side. Weight 4.56kg. Lower Greensand (121(6)).
2256 Upper-stone fragment – /4.0cm. Lower Greensand (139(5)).
2257 Lower-stone fragment. Lower Greensand (139(6)).
2258 Two rotary-quern upper- or lower-stone fragments. Lower Greensand (144(5)).
2259 Lower-stone fragment – / – /14.0cm. Broken all round its outer face. The base is flat but very rough; grooves caused by wear can be seen on the grinding

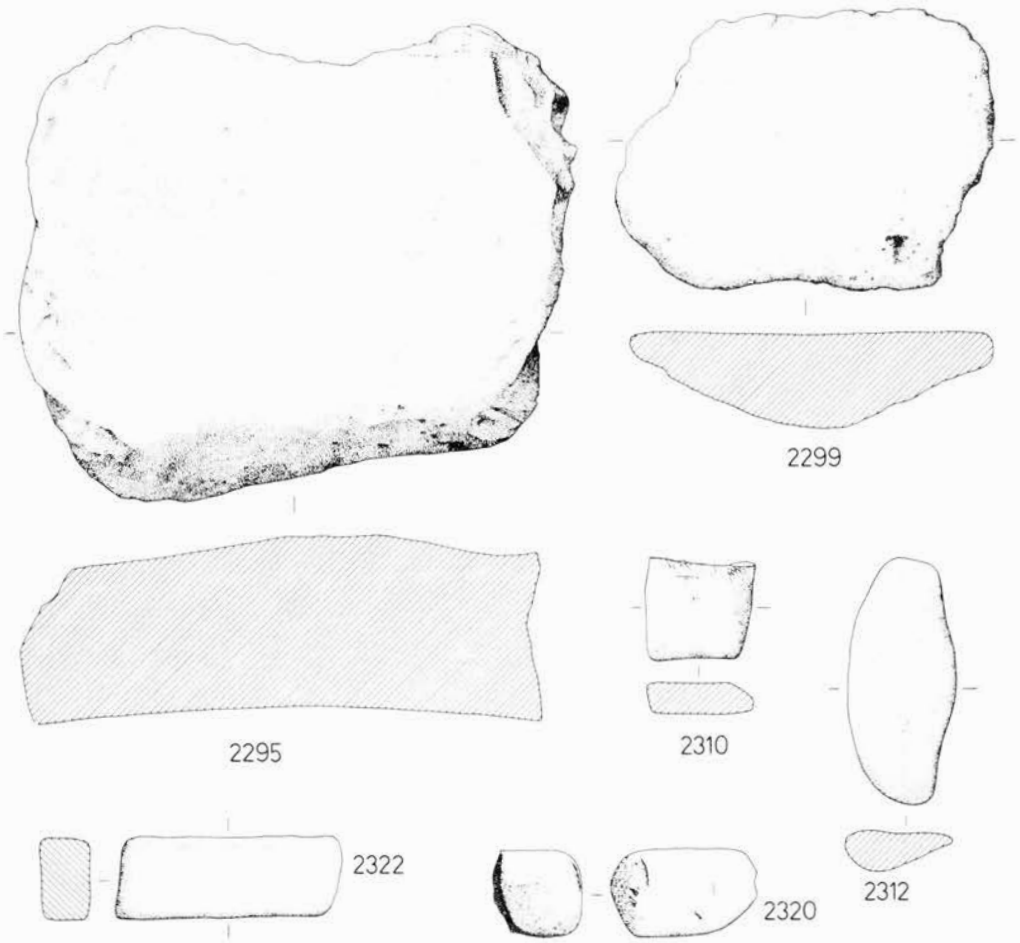


Figure 71 Stone artefacts: Phase 3 (Scale ¼)

surface. There are slight remains of a central pivot-hole 4.5cm deep. Lower Greensand (155(8)/(9)).

2260 Lower-stone fragment. The base and the sides are fractured, so no measurements are possible. Half of the central pivot-hole is present, cut 5.0cm into the stone, and having a diameter of 4.5cm. Lower Greensand (172(17)).

2261 Upper-stone, almost complete, comprising three joining pieces. 35.0/10.0cm. Flat-topped, with two handle-slots set into the surface at right angles to each other; each is rectangular in cross-section, and tapers towards the centre of the stone. One of them stops short of the central hole, and is 3.5cm deep at the rim and 4.5cm wide. The other passes through to the central hole, and is 3.5cm deep at the rim and 5.5cm wide. The central pivot-hole has a diameter of 6.5cm; the grinding angle is fairly steep. Weight 12.55kg. Lower Greensand (172(18)).

2262 Upper-stone of which about half survives. 34.0/10.0cm. Flat-topped, with a central pivot-hole 7.0cm in diameter. Pecked over the whole of the upper surface. Fractured along the handle-slot which is cut 2.5cm deep into the stone and which passes through to the central pivot-hole. Weight 4.62kg. Lower Greensand (205(6)).

2263 Upper-stone fragment. The stone is very worn and decomposed, thus rendering measurements impossible. Vestiges of the central pivot-hole and handle-slot on the upper surface remain. Lower Greensand (229(3)).

2264 Lower-stone fragment. Approximately 35.0/5.5/7.0cm. Flat base; very low-angled, almost flat grinding-surface rising slightly around the central pivot-hole which does not appear to have gone right through the stone. Weight 2.53kg. Lower Greensand (242(7)).

2265 Upper-stone fragment. –/5.0cm. Well-worn grinding-surface. Lower Greensand (289(6)).

2266 i. Upper-stone fragment. Approximately 33.0/3.5cm. Well-worn grinding-surface with marked lip at the edge. Lower Greensand.

ii.—v. Lower-stone fragment. –/2.5cm. Lower Greensand. Lower-stone fragment. Approximately 30.0/6.5cm. Very rough base. Lower Greensand. Two upper-stone fragments. Lower Greensand (290(4)).

2267 Upper-stone fragment. –/3.5cm. Flat-topped. Lower Greensand (290(5)).

2268 Two upper stone fragments. Lower Greensand (310G(5)).

2269 Upper-stone fragment. Lower Greensand (310W(7)).

2270 i. Upper-stone, comprising five joining fragments to give the complete diameter of a badly chipped stone. 32.0/11.0cm. Flat-topped, with central hole of 6.5cm diameter. Pecked over the whole of the upper surface. Fractured along the 5cm-wide handle-slot which is cut 4.0cm down into the upper surface of the stone, from the edge to the centre; the slot tapers inwards and is rounded in cross-section. Weight 10.63kg. Lower Greensand.

ii. Lower-stone fragment. Broken from the rim. Lower

Greensand (318(10)).

2271 Two upper-stone fragments. Lower Greensand (331(3)).

2272 Lower-stone fragment. Approximately 35.0/7.0/ – cm. Lower Greensand (338(3)).

2273 Upper-stone fragment. Vestiges of central hole present. Lower Greensand (347(4)).

2274 Upper-stone fragment. Lower Greensand (348(4)).

2275 i. Upper-stone, about one-third of which survives. Approximately 35.0/10cm. Flat-topped, but roughly finished. Weight 3.83kg. Lower Greensand.

ii. Upper-stone fragment. Lower Greensand (348(8)).

2276 Upper-stone; ten fragments, none of which join, appear to be from the same stone. Lower Greensand (358(5)).

2277 Upper-stone fragment. – /8.0cm. Lower Greensand (358(7)).

2278 Two rotary-quern upper- or lower-stone fragments. Lower Greensand (371(4)).

2279 Rotary-quern upper- or lower-stone fragment. Lower Greensand (371(6)).

2280 Two rotary-quern upper- or lower-stone fragments. Lower Greensand (387(6)).

2281 Upper-stone fragment. Lower Greensand (390(3)).

2282 Upper-stone fragment in two joining pieces. Approximately 35.0/40cm. Flat-topped. Cracked along a handle-slot cut 2.0cm deep from the top of the stone. A slight lip on the edge of the grinding surface from wear. Lower Greensand (393(7)).

2283 Upper-stone fragment. Tertiary ferruginous sandstone (394(8)).

2284 Rotary-quern upper- or lower-stone fragment. Tertiary ferruginous sandstone (447(6)).

2285 Lower-stone fragment. Approximately 36.0/8.0/8.5cm. The underside of the stone is shattered in the central area; the central pivot-hole now passes right through the stone, but it is unlikely it did so before the stone was broken. The grinding surface is almost flat, but rises to a slight ridge around the pivot-hole. Pivot-hole 4.0cm in diameter. Weight 6.00kg. Lower Greensand (448(4)).

2286 Two rotary-quern upper- or lower-stone fragments. Lower Greensand (448(4)).

2287 Upper-stone fragment. – /7.0cm. Tertiary Coarse Grit (479(6)).

2288 Lower-stone fragment. Grinding-surface rises to the remains of a pivot-hole cut 4.0cm deep into the stone. The maximum outer edge thickness was 4.5cm. No other measurements are possible. Lower Greensand (522(8)).

2289 Upper-stone fragment from the outer edge of the stone. – /4.0cm. Flat-topped. Lower Greensand (552(3)).

2290 Upper-stone fragment. – /6.0cm. Lower Greensand (554(3)).

2291 Rotary-quern upper-or lower-stone fragment. Tertiary ferruginous sandstone (580(8)).

2292 Two rotary-quern upper- or lower-stone fragments. Lower Greensand (658(15)).

2293 Saddle-quern fragment, utilised on its upper and lower surfaces. Lower Greensand (71(8)).

2294 Saddle-quern fragment. Lower Greensand (242(3)).

2295 (Figure 71) Saddle-quern, complete but for fragments missing at the ends and corners. 30.0/24.5/8.5cm. A large quernstone with flat base; intentionally shaped on its two undamaged sides. Weight 10.27kg. Lower Greensand (242(7)).

2296 Saddle-quern. 31.5/20.0/7.0cm. Smooth under-surface, and pecking on the sides. Weight 6.20kg. Lower Greensand (247(9)).

2297 Saddle-quern fragment. Lower Greensand (248A(3)).

2298 Saddle-quern fragment. 25.0 (incomplete)/18.0/4.0cm. Weight 2.68kg. Lower Greensand (293(5)).

2299 (Figure 71) Saddle-quern. 19.0/15.0/4.5cm. Under surface unworked. Weight 1.65kg. Lower Greensand (293(5)).

2300 Three saddle-quern fragments from different querns. Lower Greensand (310G(5)).

2301 Saddle-quern fragment. Lower Greensand (318(5)).

2302 Saddle-quern fragment. Lower Greensand (367J(4)).

2303 Saddle-quern fragment. Lower Greensand (371(15)).

2304 Saddle-quern fragment. 17.0 (incomplete)/14.0/4.3cm. Lower Greensand. (392(4)).

2305 Saddle-quern fragment. Lower Greensand. (446(4)).

2306 Saddle-quern fragment. 14.0 (incomplete)/18.5/4.0cm. Lower Greensand. (678(3)).

Saddle-quern rubbers

2307 Saddle-quern rubber fragment. Slightly concave rubbing-surface, rounded upper surface. Tertiary ferruginous sandstone. (229(4)).

Whetstones

2308 Whetted surface on a piece of naturally flat Tertiary ferruginous sandstone. (111(5)).

2309 Two flat pebbles of fine-grained sandstone, possibly used as whetstones (157(9)).

2310 (Figure 71) Whetstone fragment of fine-grained micaceous sandstone. 5.0 (incomplete)/5.7/1.3cm. On one flat surface is a rough pattern of oblique and horizontal lines, scratched on before the stone was broken but after it had ceased to be used as a whetstone. (229(4)).

2311 Flat pebble of fine-grained micaceous sandstone possibly used as a whetstone. (248A(3)).

2312 (Figure 71) Naturally shaped piece of a hard fine-grained sandstone utilised as a whetstone for which purpose its shape was well-suited. 13.0/5.7/2.0cm (339(6)).

2313 Fragment of fine-grained micaceous sandstone with a surface used for whetting. (688(4)).

Rubbing stones

2314 Two rounded sandstone pebbles with brown surface-streaking (120(11)/(14)).

2315 Rounded quartzite pebble with dark red surface-staining along one side (156(10)).

2316 Flat flint pebble of which one of the flat surfaces is highly polished (172(18)).

2317 Flat quartzite pebble with smooth, partially glossy surface (243(9)).

Miscellaneous

2318 A rough-sided piece of Lower Greensand, 1.08kg in weight, having a flattish base and top; there is a central hollow 6.0cm in diameter and 3.5cm deep in the upper surface. Although quite intentionally shaped, it is not a quern fragment; it may, however, have served as a mortar or possibly even as a door pivot stone (155(10)).

2319 Similar to 155(10) above. A roughly-sided piece of Lower Greensand, 0.74kg in weight, with a flattish base; in the upper surface there is a 8.0cm diameter and 3.0cm deep hollow. This piece may also have been used as a shallow mortar or as a door pivot stone (262(3)).

2320 (Figure 71) A quartzite pebble fractured along one side but with three pitted facetted faces on one end caused by use as a pounder or grinder (310(7)).

2321 A large burnt nodular piece of sarsen, 7.08kg in weight. The shape appears to be natural, apart from a hole, 4.5cm deep and 3.5cm in diameter, drilled into one end. Purpose unknown (348(8)).

The Romano-British stone

Whetstones

2322 (Figure 7) Whetstone, made of a fine-grained hard red sandstone, from a late third-century AD grave; almost certainly an import to the area. A well-shaped rectangular stone. 11.5/4.0/2.5cm. (814(3)).

Undated stone

3.96kg of stone (3.76kg of Greensand and 0.20kg of Tertiary sandstone) were found in seven undated features. Four fragments have one or more utilised surfaces, but only one was recognisable, being a saddle-quern fragment.

Querns

2323 Saddle-quern fragment. 7.0 (incomplete)/10.0/4.5cm.

Chapter VIII
The Other Finds
The Chalk Objects

Phase 1 (Figure 72)

2009 A roof or loom-weight with a simple cylindrical perforation. (180(9))

2010 A spindle-whorl with a simple cylindrical perforation. (212(3))

2018 A spindle-whorl with an hour-glass perforation. (520(5))

2020 Two fragments of a roof or loom-weight which was broken in antiquity and resembles 2009. (179(5))

2030 Part of a spindle-whorl with a simple cylindrical perforation. Not drawn. (44(9))

2031 Part of a spindle-whorl with a central hour-glass perforation. Not drawn. (44(9))

2033 A spindle-whorl with an hour-glass perforation. (245(3))

Phase 2

2008 An irregular roundel with an hour-glass perforation. Not drawn. (IM(5))

2023 An irregular roundel with an hour-glass perforation. Not drawn. (603(9))

2029 An irregular lump with incomplete perforations begun from the two flat surfaces. Not drawn. (603(9))

2041 (Figure 73) A roof or loom-weight with a simple cylindrical perforation similar in type to 2009 and 2020. (459(6))

Phase 3 (Figure 73)

2022 A spindle-whorl with a simple cylindrical perforation. (285(8))

2025 A large and complete spindle-whorl with a cylindrical perforation. (172(17))

2026 A spindle-whorl with a cylindrical perforation. Not drawn. (172(18))

2027 A spindle-whorl with a crude hour-glass perforation. Not drawn. (172(17))

2028 An imperforate roundel, possibly an incomplete spindle-whorl. Not drawn. (172(17))

2038 A complete roof or loom-weight with a simple cylindrical perforation. (242(7))

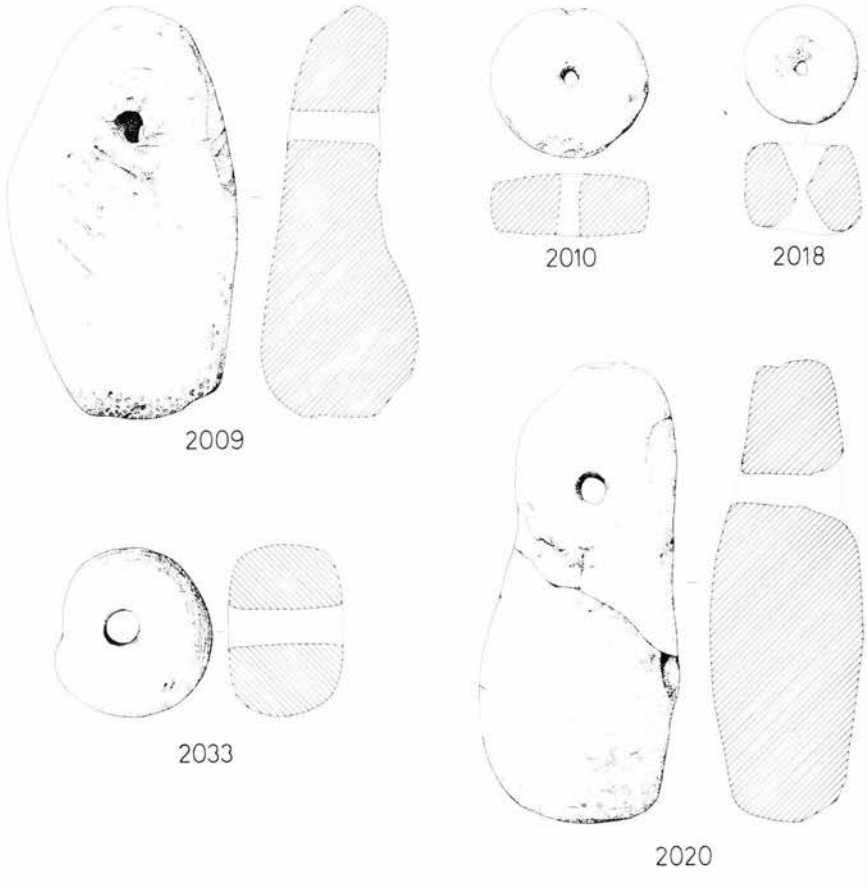


Figure 72 Chalk artefacts: Phase 1 (Scale 2010, 2018, 2033: ½, 2009, 2020: ¼)

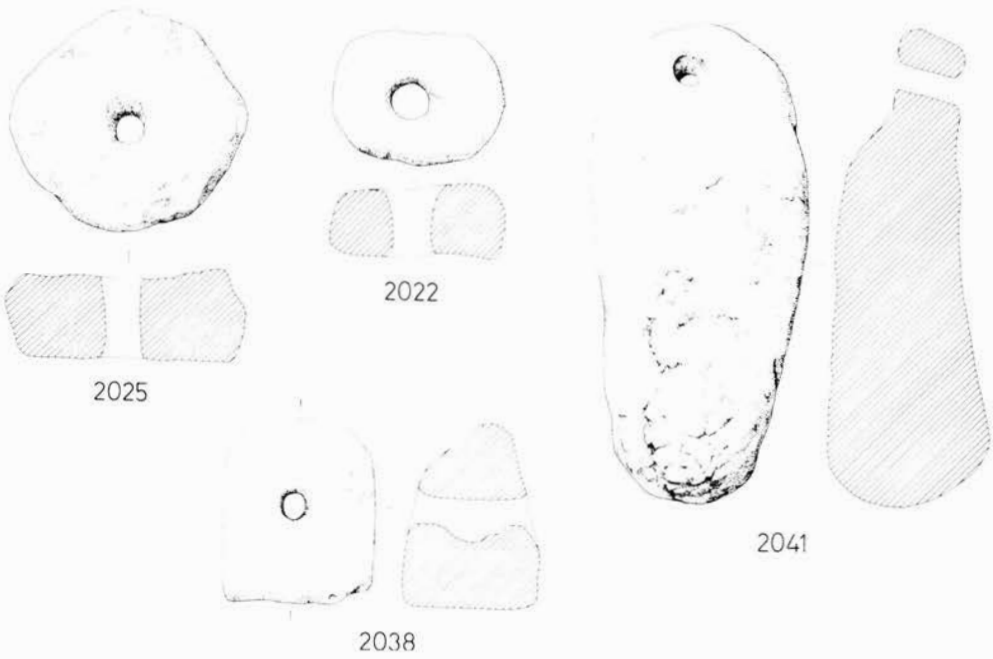


Figure 73 Chalk artefacts: Phase 3 (Scale 2022, 2025: ½, 2038, 2041: ¼)

The Flint Artefacts

Phase 3 (Figure 74)

2007 A waisted flint axe or core-tool patinated a matt white. (174(3))

2014 A large scraper, made from a flint nodule, which retains the cortex near its butt. Unstratified.

2015 A heavily patinated, chipped flint axe with a pointed butt. Unstratified.

In addition, a number of weathered flakes and cores were recorded but could well be residual.

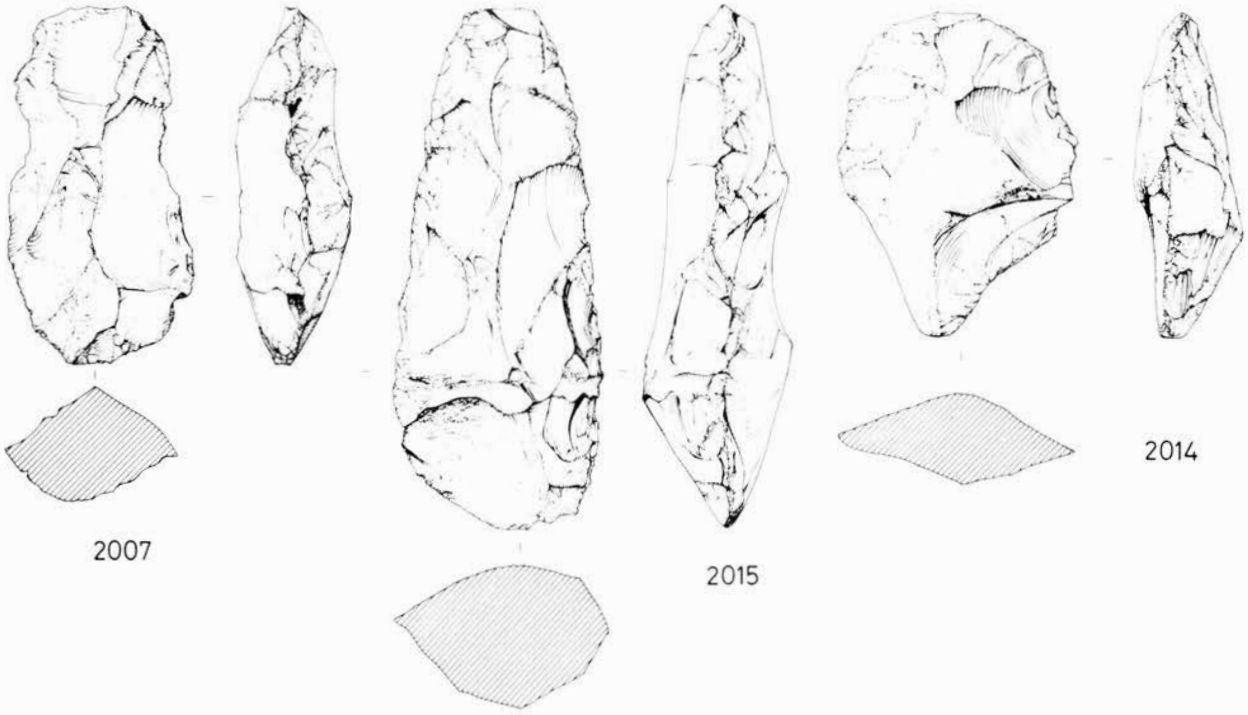


Figure 74 Flint artefacts (Scale ½)

The Shale Objects

Phase 1 (Figure 75)

2004 A bangle fragment with an oval section. (305(3))

2104 A flat fragment, one straightish edge of which may have been cut, but with no other signs of working. Not drawn. (185(3))

2105 A fragment of a large bangle of oval section which was broken in antiquity. (211(7))

2107 A bangle fragment, split longitudinally. Not drawn. (400(5))

2112 A bangle fragment with a flattened oval section. (75(6))

Phase 3 (Figure 75)

2011 Half a bangle with plano-convex section. (60(5))

2103 A fragmentary roundel with a central perforation. (310W(4))

2106 Part of a bangle of oval section. (130L(7))

2108 A complete spindle-whorl with a squared perforation. (466(6))

2109 An unworked shale fragment. Not drawn. (393(3))

2110 An unworked shale fragment. Not drawn. (310W(7))

2111 An unworked shale slab with overall dimensions of 90mm by 80mm. Not drawn. (16(3))

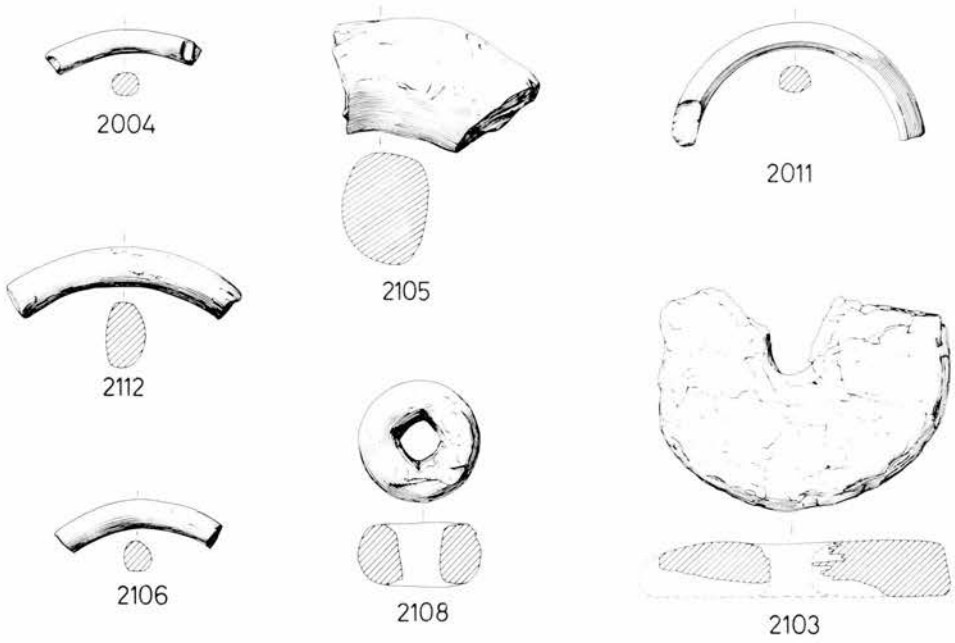


Figure 75 Shale artefacts (Scale ½)

Objects of Baked and Fired Clay

Phase 1 (Figure 76)

4010 A nearly complete sling missile, pointed at both ends. (376(7))

4014 A fragment of a triangular clay loom-weight with one complete perforation. Not drawn. (377(5))

4017 A fragment of a triangular clay loom-weight. Not drawn. (361(4))

4020 A nearly complete triangular clay loom-weight which has been burnt on one surface. (379(8))

4021 Fragments of a triangular clay loom-weight. (379(8))

4022 A fragment of a triangular clay loom-weight with the remains of one perforation. The clay is poorly fired and contains numerous large chalk lumps. Not drawn. (639[310J](5))

4023 A fragment of a triangular loom-weight with the remains of two of the perforations. It is of the same fabric as 4022 and is possibly the same artefact. Not drawn. (639[310J](6))

4033 A spherical spindle-whorl with a cylindrical perforation. (528(5))

4046 Fragments of a clay hearth with one smoothed surface in sandy grey-brown fabric. Not drawn. (379(8))

4048 A crudely fashioned cylindrical clay loom-weight with roughly squared faces. (600(9))

4073 Clay hearth or oven fragments. Not drawn. (593(3))

4080 Fragments of a triangular loom-weight. Not drawn. (639(5))

4081 Fragments of a clay hearth or oven. Not drawn. (639(6))

Of the 13 objects of baked and fired clay a maximum of

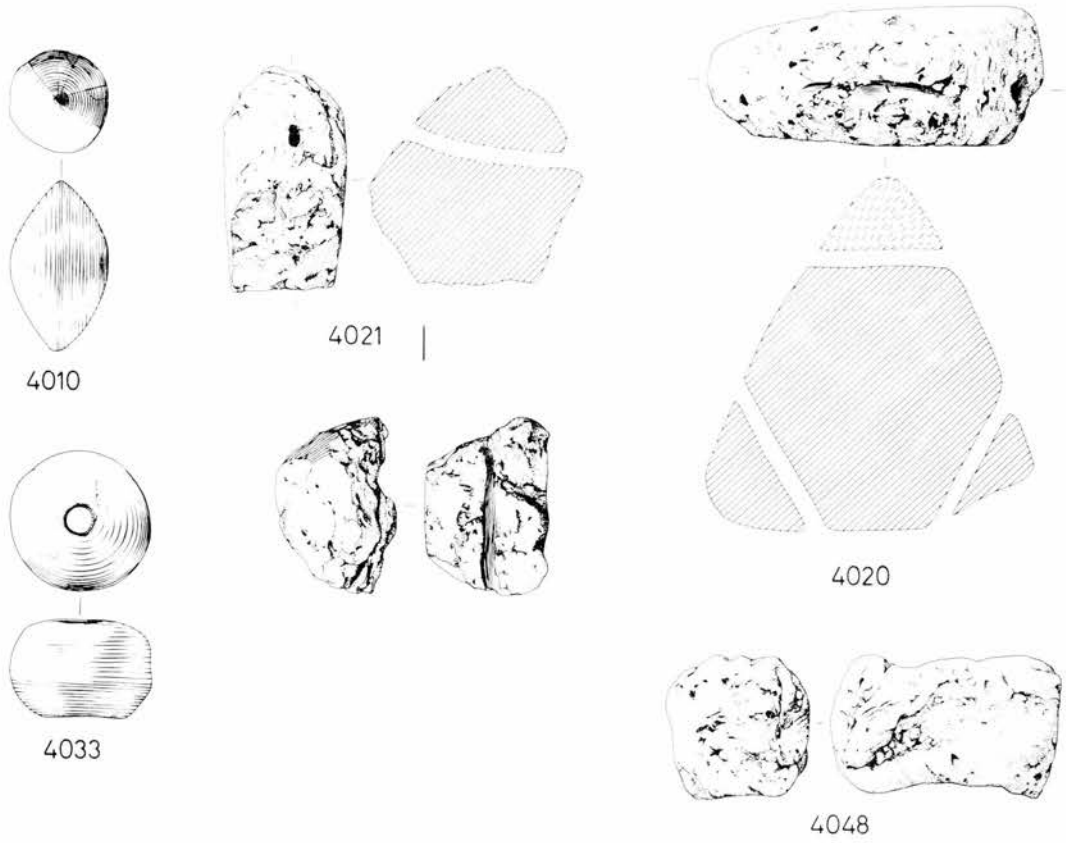


Figure 76 Objects of baked clay: Phase 1 (Scale 4010, 4033: ½ 4020–1, 4048: ¼)

seven triangular loom-weights were the most commonly recurring artefact (4014, 4017, 4020, 4021, 4022, 4023, 4080) followed by fragments of undecorated clay hearths or ovens (4046, 4073, 4087). Other objects include a sling missile (4010), a spindle-whorl (4033), and a cylindrical clay loom-weight (4048).

Phase 2 (Figure 77)

4000 A sling missile made of baked clay and 30mm long. Not drawn. (IC(3))

4003 A fragment of clay hearth or oven with one smooth surface which is decorated with stab marks. The stabs were produced by a pointed implement of polygonal outline. Not drawn. (425(7))

4005 A fragment of a cylindrical loom-weight. Not drawn. (IQ(3))

4007 A fragment of decorated clay hearth or oven as 4003. Not drawn. (425(5))

4011 A fragment of a triangular loom-weight with the remains of a single perforation. Not drawn. (424(3))

4012 A complete cylindrical clay loom-weight with slightly flattened surfaces. (620(6))

4013 A fragment of a spherical clay bead with the remains of a simple cylindrical perforation. (187(3))

4015 A crudely fashioned egg-shaped clay bead with a simple cylindrical perforation along the long axis. (437(5))

4024 Part of a decorated clay hearth or oven with two smoothed surfaces. One of these is decorated with random incisions forming a rough chevron pattern, the other has been roughly smoothed by finger wiping. (439(4))

4026 A complete triangular loom-weight in very fragile condition, also fragments of a second loom-weight. Not drawn. (427(7))

4039 A fragment of a triangular loom-weight. Not drawn. (52(7))

4042 A fragment of a decorated clay hearth. Not drawn. (IF(3))

4043 Fragments of a fired clay oven. (1N(3))

4050 Fragments of a clay hearth or oven decorated with deep incisions. Not drawn. (519(5))

4058 A perforated fragment of baked clay. Not drawn. (70(5))

4066 An egg-shaped sling missile. Not drawn. (425(6))

4067 A fragment of daub showing the remains of a single perforation. Not drawn. (531(6))

4071 Fragments of two triangular loom-weights. Not drawn. (770(5))

4072 Numerous fragments of daub with one smoothed flat surface. Not drawn. (215(6))

6032 An incomplete spindle-whorl with an hour-glass perforation. Not drawn. (424(4))

6041 A spindle-whorl made from a pottery disc without a central perforation. Not drawn. (1H(8))

Of the 21 objects or groups of objects the most common are decorated clay hearth or oven fragments (4003, 4007, 4024, 4042, 4043, 4050, 4058), followed by approximately six triangular loom-weights (4011, 4026, 4039, 4071). Other objects include daub fragments, two cylindrical loom-weights (4005, 4012), clay beads (4013, 4015), two sling

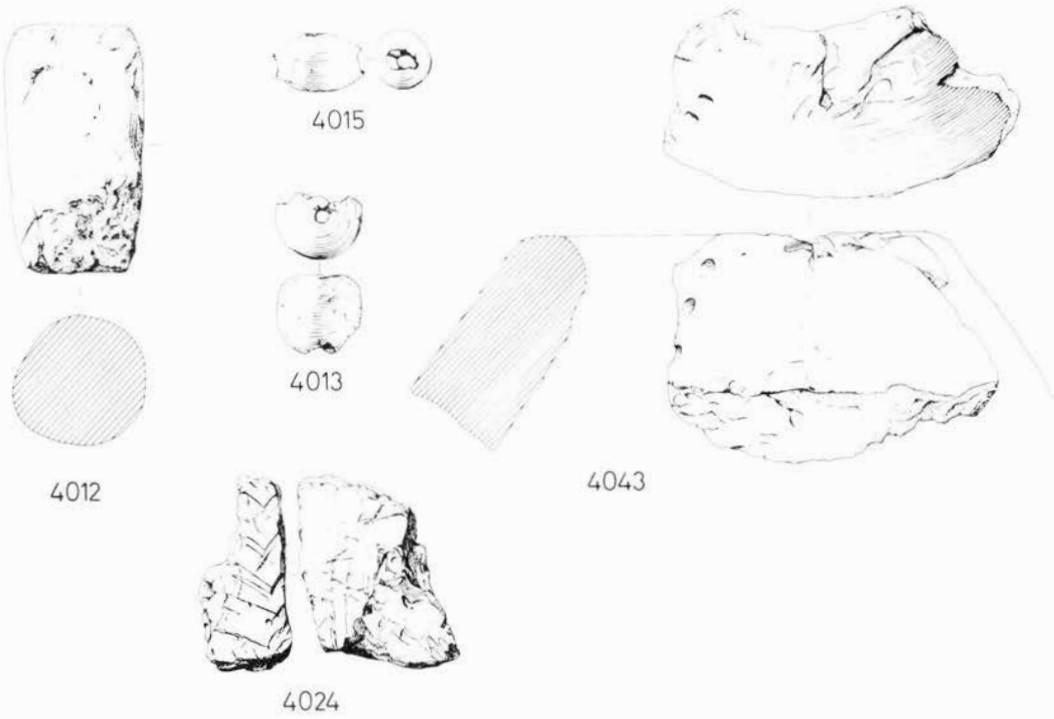


Figure 77 Objects of baked clay: Phase 2 (Scale 4013, 4015: ½, 4012, 4024, 4043: ¼)

missiles (4000, 4066) and pottery spindle-whorls (6032, 6041).

Phase 3 (Figure 78)

4001 A cylindrical spindle-whorl with one end broken in antiquity, with a cylindrical perforation. (358(3))

4004 A flat spindle-whorl made from a pottery disc. Not drawn. (U/L(2))

4006 Fragments of a ?cylindrical clay loom-weight. Not drawn. (328(9))

4008 A spherical spindle-whorl with a simple cylindrical perforation. (446(6))

4009 A fragment of a triangular clay loom-weight retaining the remains of the three perforations. (415(8))

4016 A crudely fashioned clay cylinder, approximately 9mm in diameter and 42mm long, roughly pointed at one end. Not drawn. (310Q(7))

4018 A loom-weight fragment of unclassifiable type. Not drawn. (328(9))

4025 Undecorated clay hearth or oven fragments. (678(4))

4027 An irregular clay lump with an incomplete perforation. Not drawn. (658(7))

4029 A spherical clay bead with a central perforation. The object was squashed either before or during firing, and is a waster. Not drawn. (29(10))

4030 A spindle-whorl of burnt clay with a cylindrical perforation. (396(4))

4031 A spindle-whorl made from a pottery disc. Not drawn. (111(4))

4032 A hard fired brick of rectangular section. Not drawn. (348(8))

4034 A spindle-whorl made from a pottery disc. Not drawn. (387(3))

4035 A small spherical clay bead with a cylindrical perforation. (410(10))

4036 An egg-shaped baked clay missile. Not drawn. (410(8))

4037 Half of a spherical clay bead with a central cylindrical perforation. (76(8))

4040 A fragment of undecorated clay hearth or oven. (522(10))

4044 A fragment of a ?cylindrical loom-weight. Not drawn. (120(3))

4045 Fragments of an undecorated clay hearth. Not drawn. (290(4))

4047 A fragment of hard fired clay hearth. Not drawn. (446(4))

4049 A fragment of a clay hearth or oven with a crudely rusticated surface. Not drawn. (310(4))

4051 An oven fragment with the remains of at least two perforations. Not drawn. (306(7))

4052 An oven fragment with the remains of a single perforation. Not drawn. (302(3))

4053 Fragments of a decorated clay hearth or oven with rectangular stamped impressions. Not drawn. (380(8))

4054 Fragments of hard fired brick with flattened surfaces and moulded corners. Not drawn. (446(4))

4055 A large fragment of hard fired brick similar to 4054. Not drawn. (288(5))

4056 A fragment of a decorated clay hearth. Not drawn. (380(5))

4057 A decorated clay hearth with a rusticated surface. (387(6))

4059 Fragments of a decorated clay hearth or oven. Not drawn. (86(3))

4060 Fragments of a clay hearth or oven with crude decoration on one surface. Not drawn. (522(8))

4061 A fragment of a triangular loom-weight. Not drawn. (465(4))

4062 Fragments of a decorated clay hearth or oven. Not

Plate I. The enclosure before excavation viewed from the south (Cambridge University Collection).

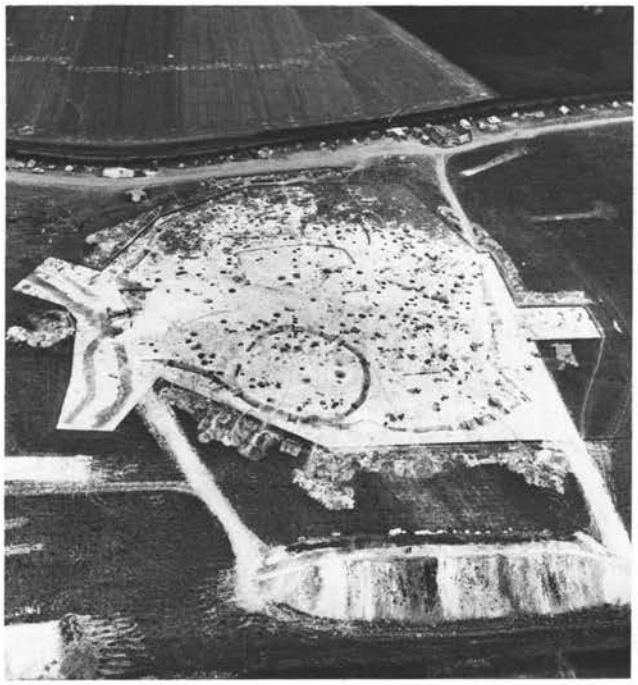


Plate II. Aerial view of the enclosure during excavation (RCHM).

Plate III. Aerial view of the enclosure during excavation with the village of Gussage All Saints in the background (RCHM).

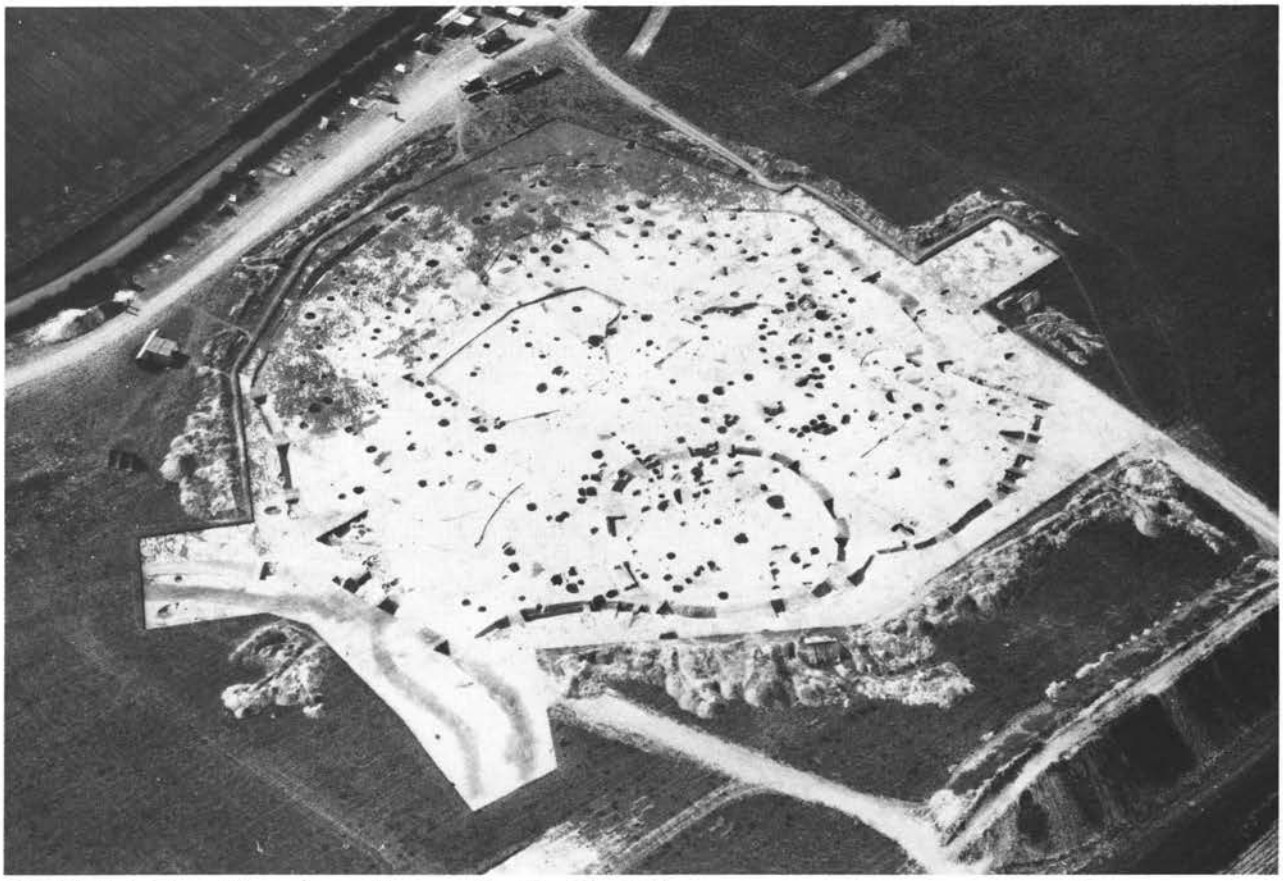


Plate IV. Aerial view of the enclosure after excavation (Aerofilms Ltd).

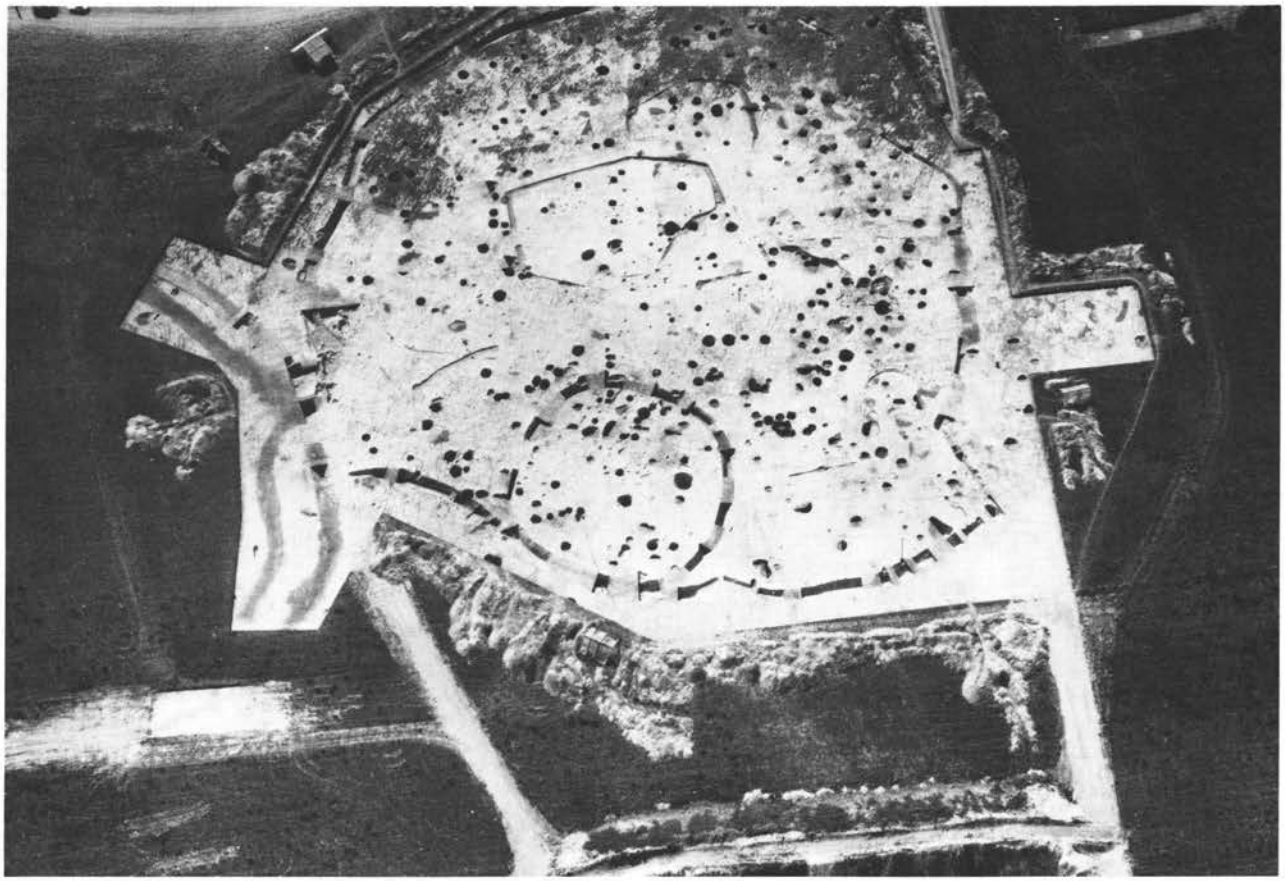


Plate V. Aerial view of the enclosure after excavation (Aerofilms Ltd).

Plate VI. General view of the enclosure from the west.

Plate VII. General view of the east entrance from the east.

Plate VIII. The east entrance viewed from the west.

Plate IX. The east entrance viewed from the north.

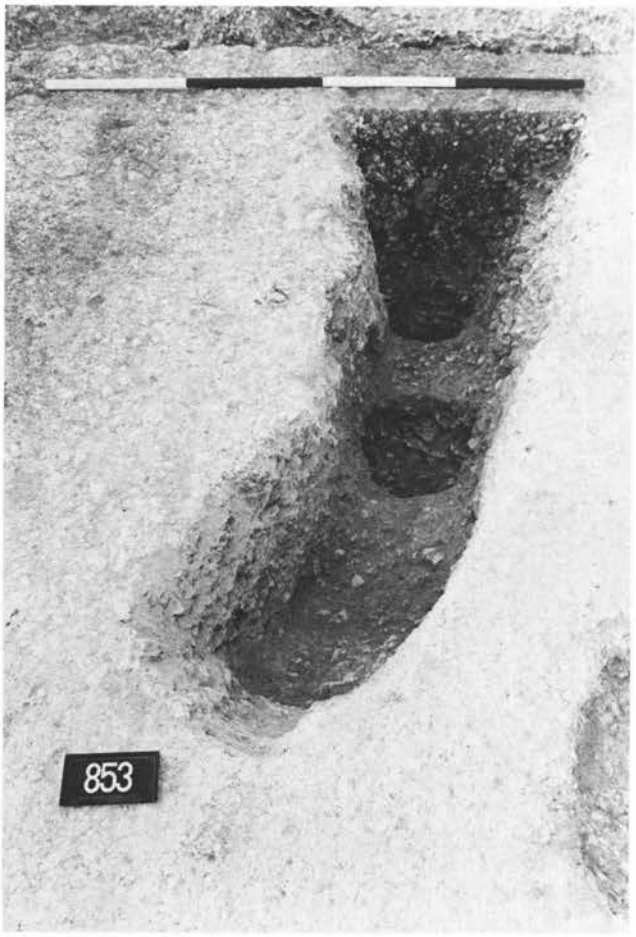


Plate X. A palisade trench of the east entrance in Phase 2.

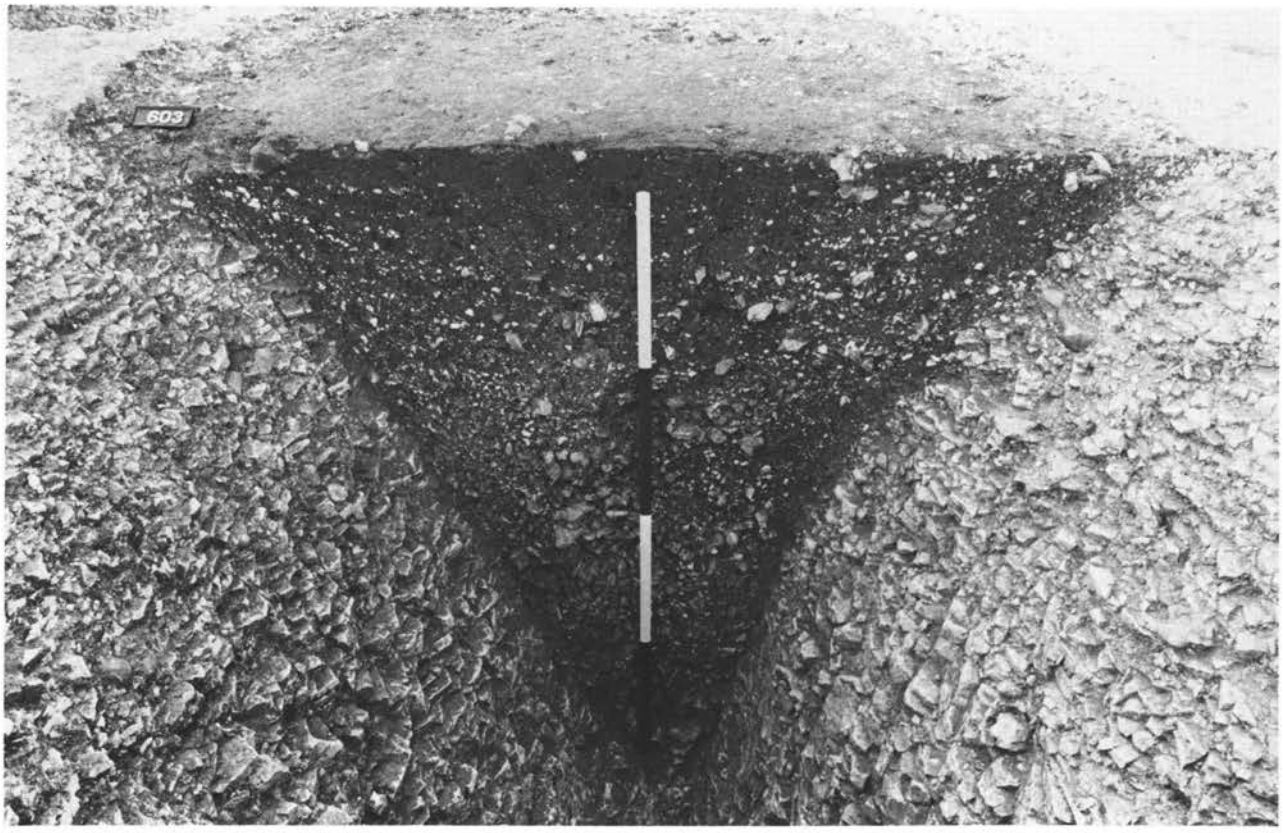


Plate XI. Section of antenna ditch 603.

Plate XII. Vertical view of the Phase 1 and Phase 2 enclosure ditches south of the east entrance.

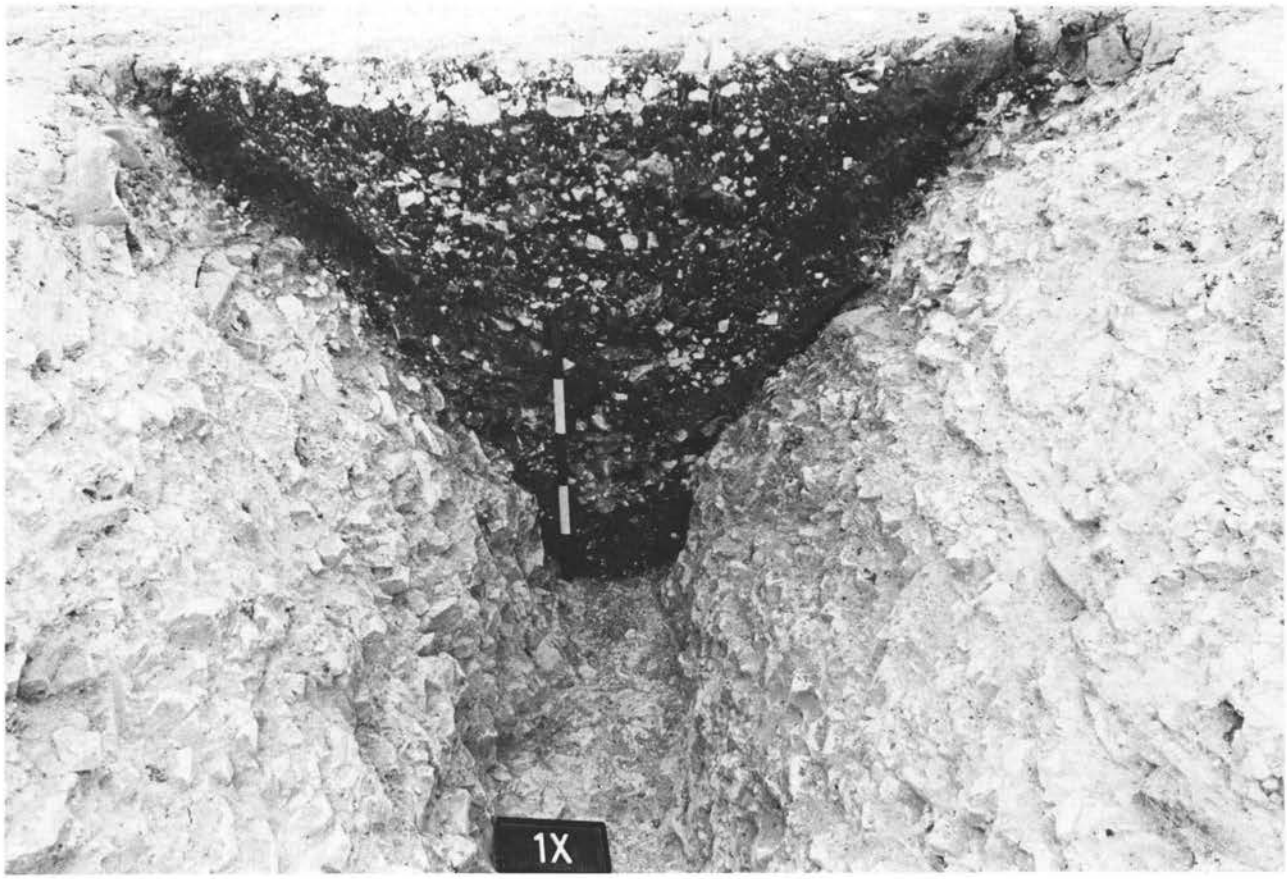


Plate XIII. Section of enclosure ditch IX.

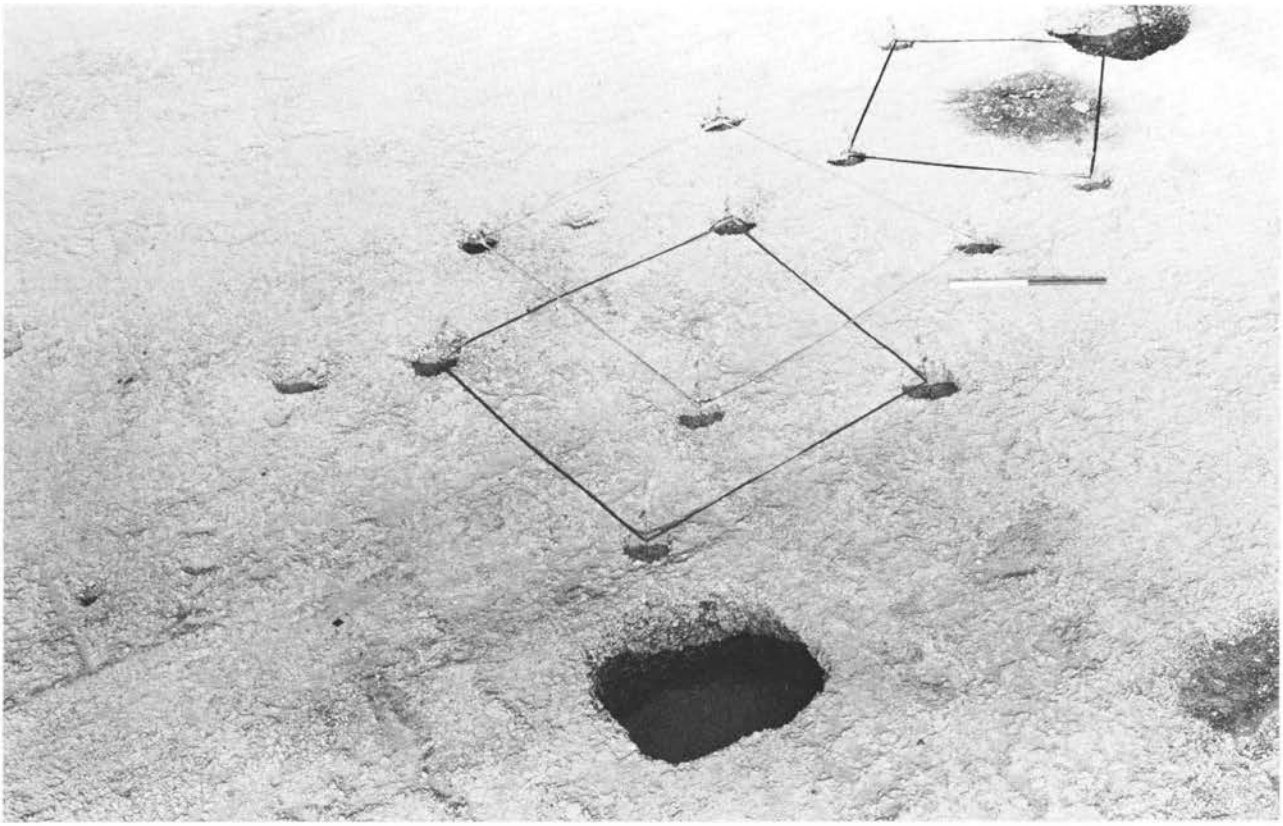


Plate XIV. Successive four-post structures.

Plate XV. Alignment of four-post structures.

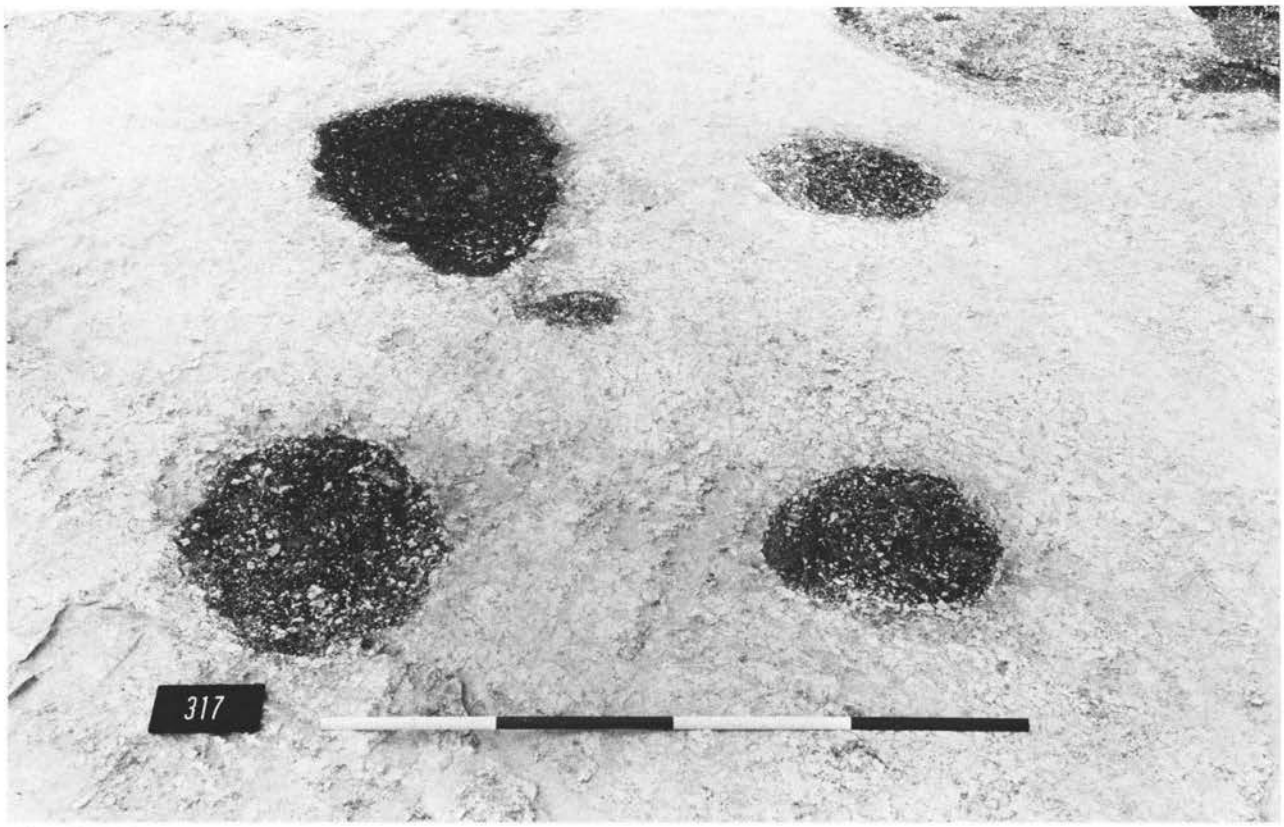


Plate XVI. Four-post structure.

Plate XVII. Circular hut.

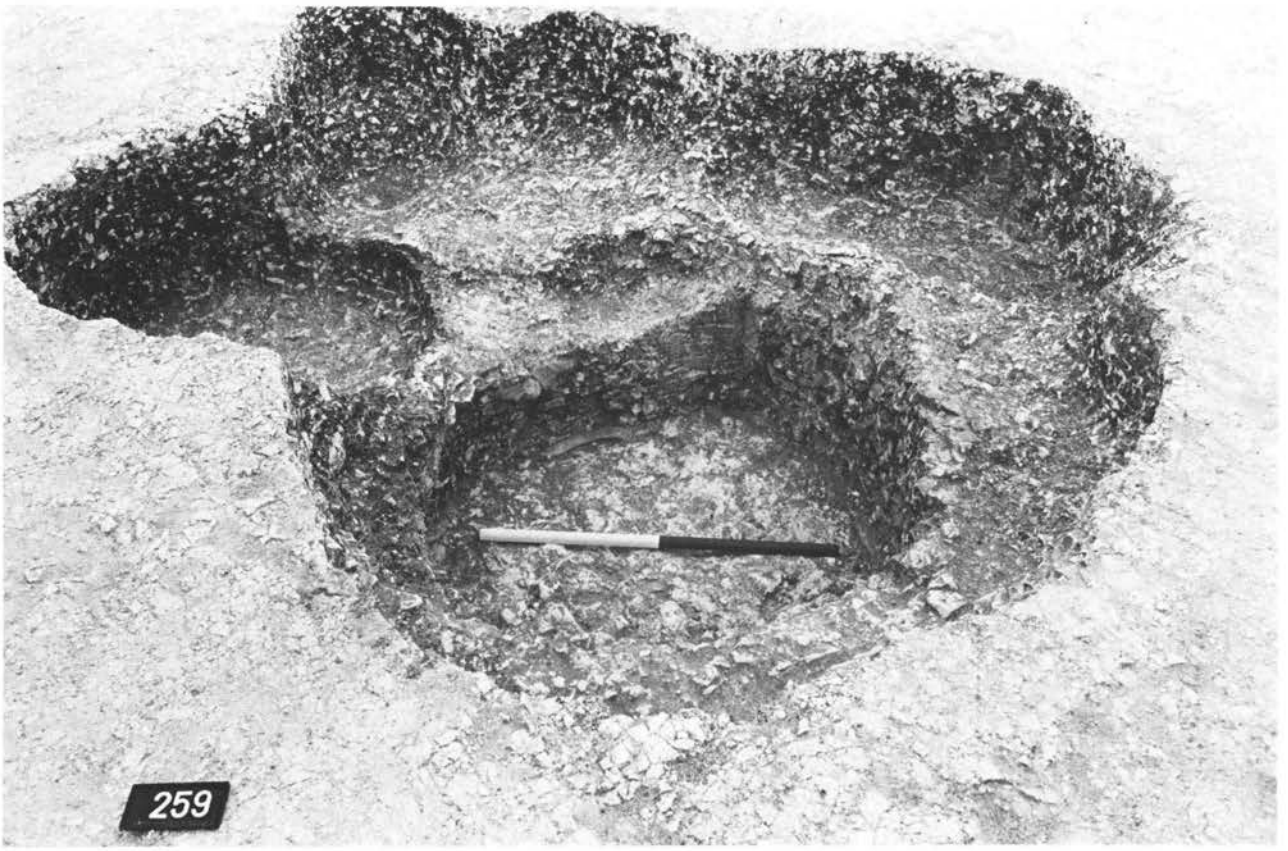


Plate XVIII. Working hollow 259.

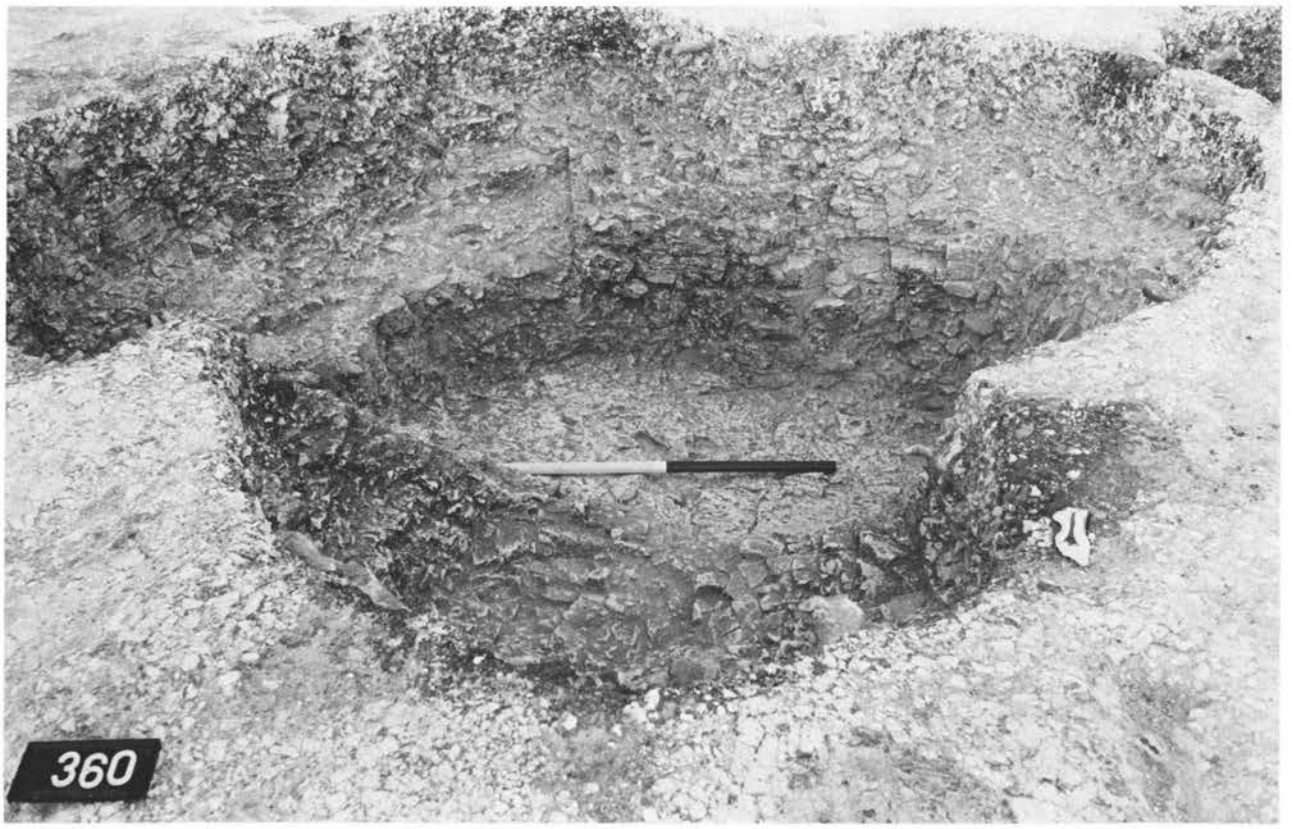


Plate XIX. Working hollow 360.

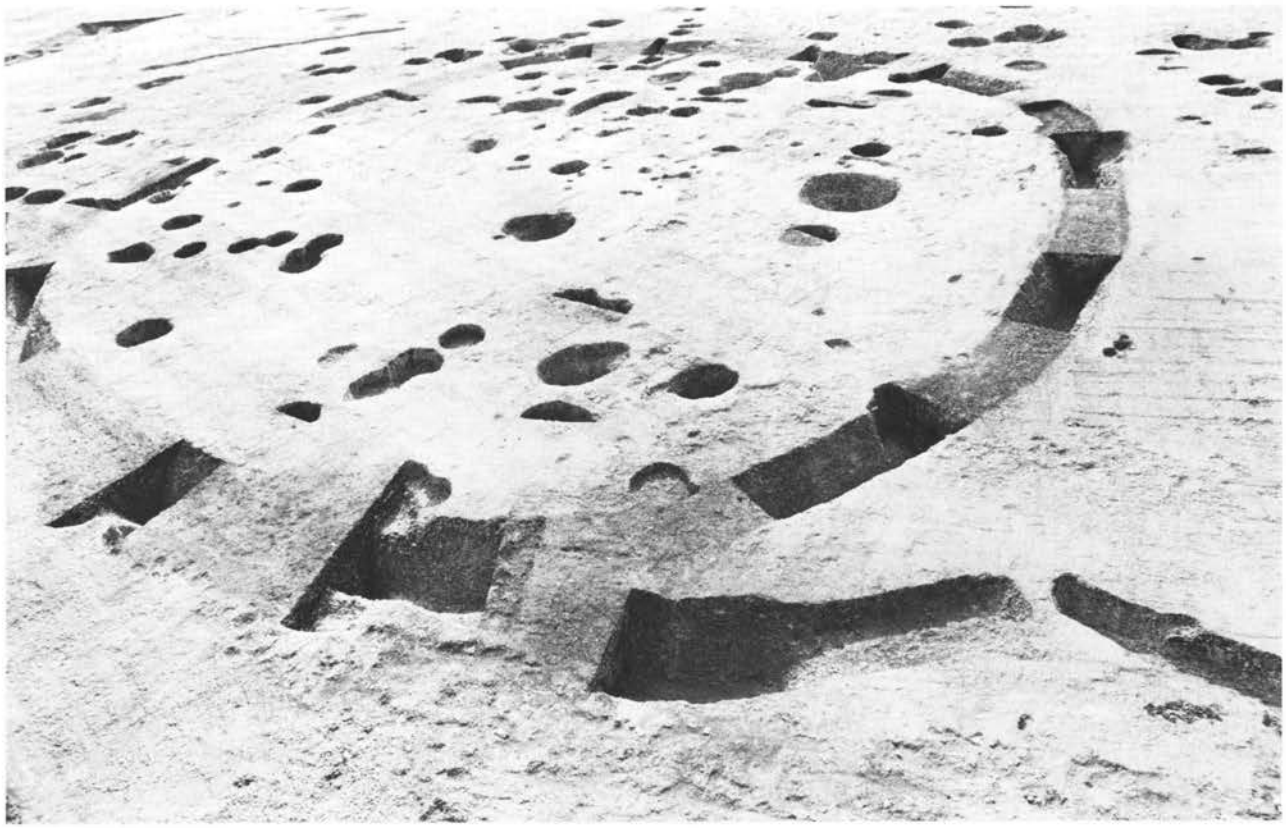


Plate XX. Enclosure 310.

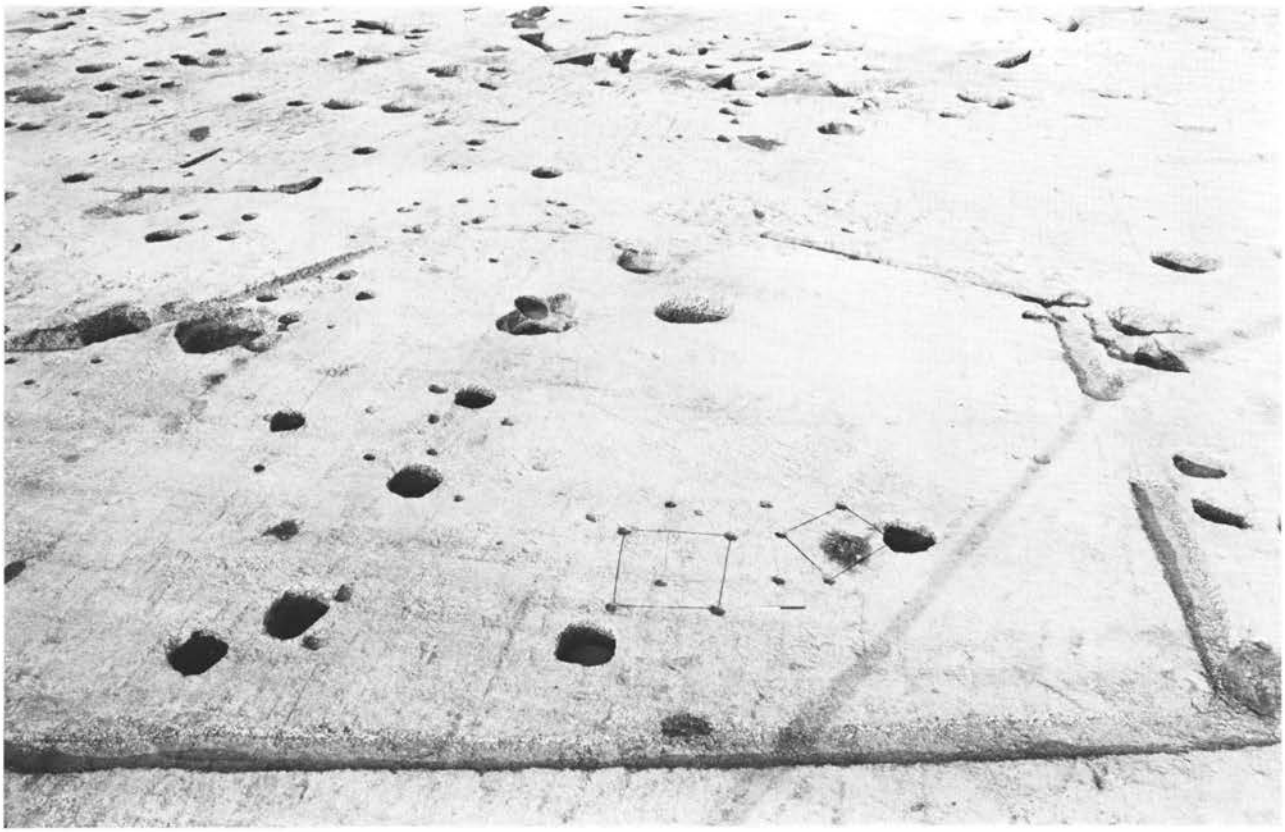


Plate XXI. View of the trapezoid enclosure from the south.

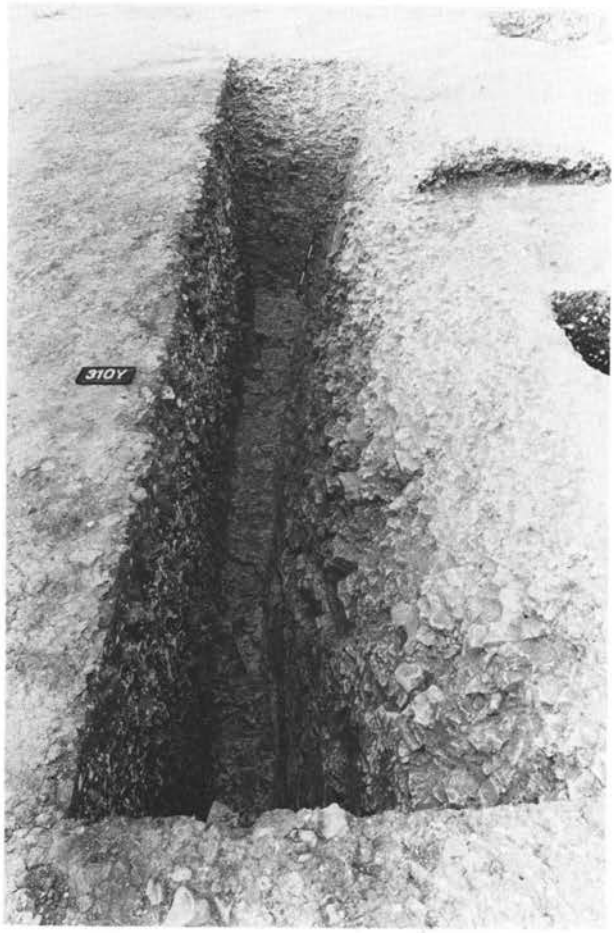


Plate XXII. Longitudinal section of enclosure ditch 310 at the southern terminal.

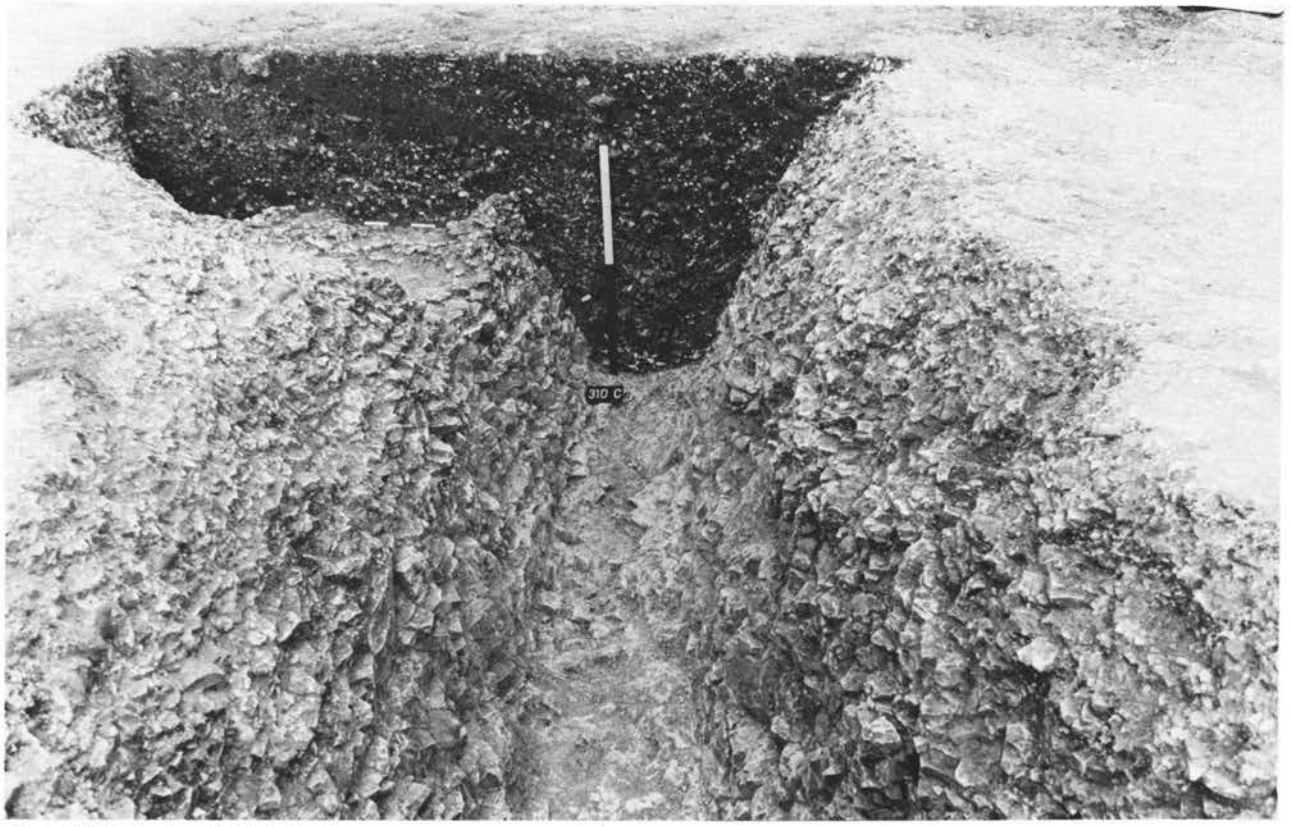


Plate XXIII. Section of ditch 310C.

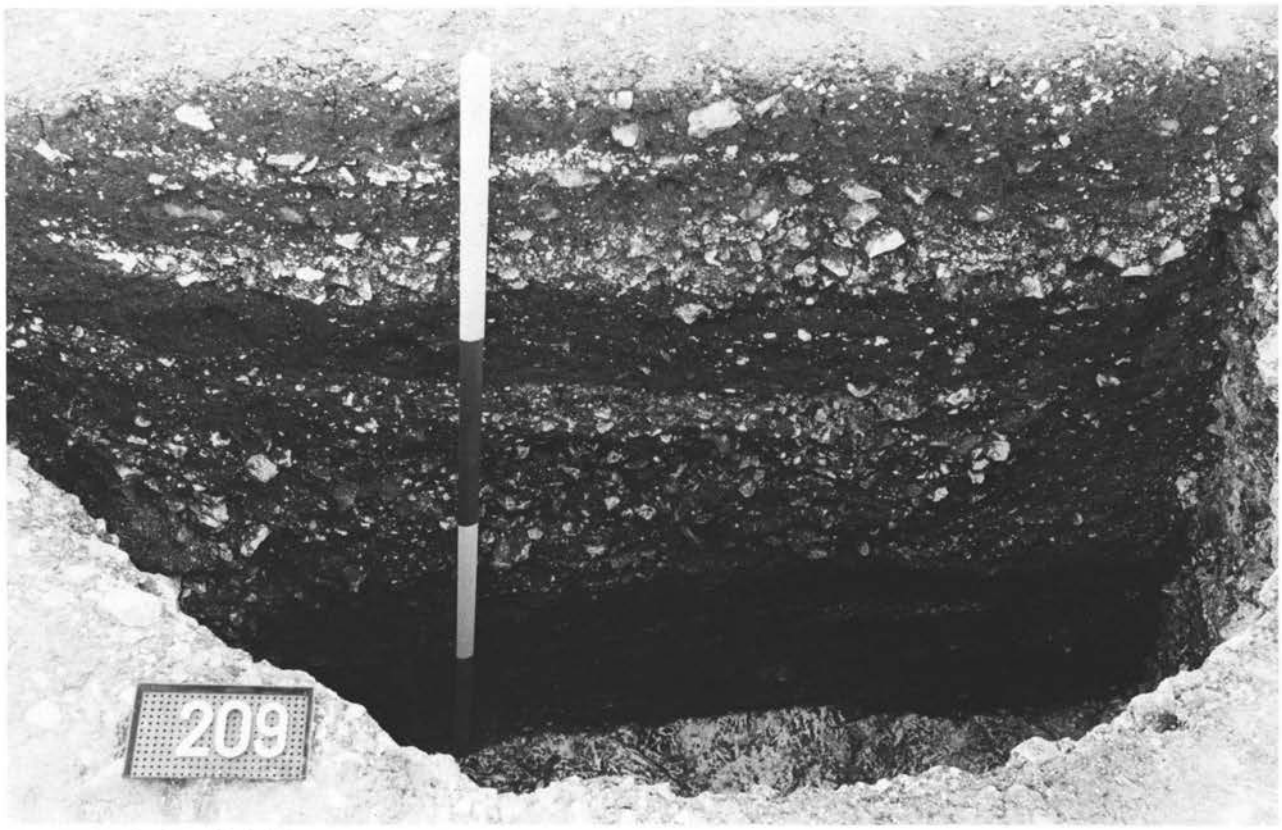


Plate XXIV. Section of pit 209.

Plate XXV. Human skeleton in pit 387.

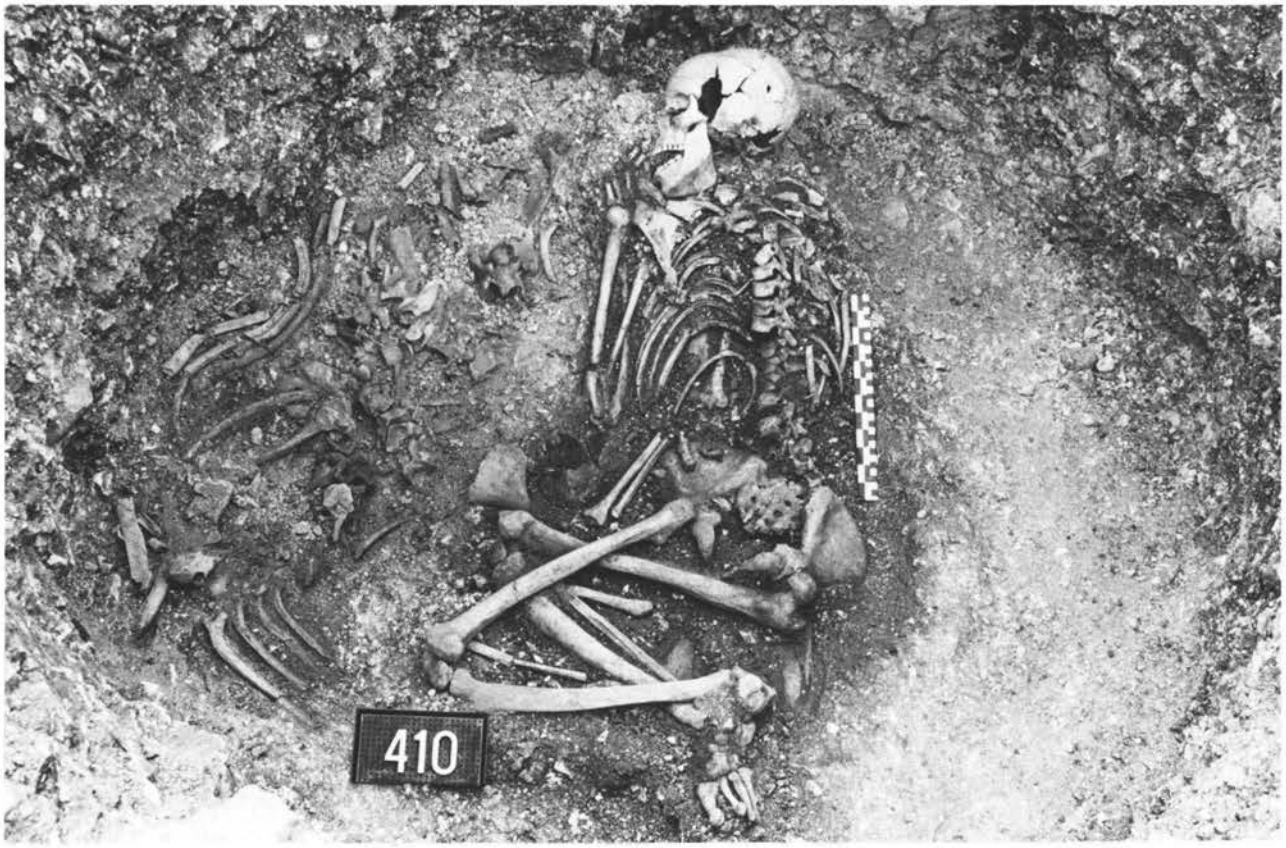


Plate XXVI. Human skeleton in pit 410.

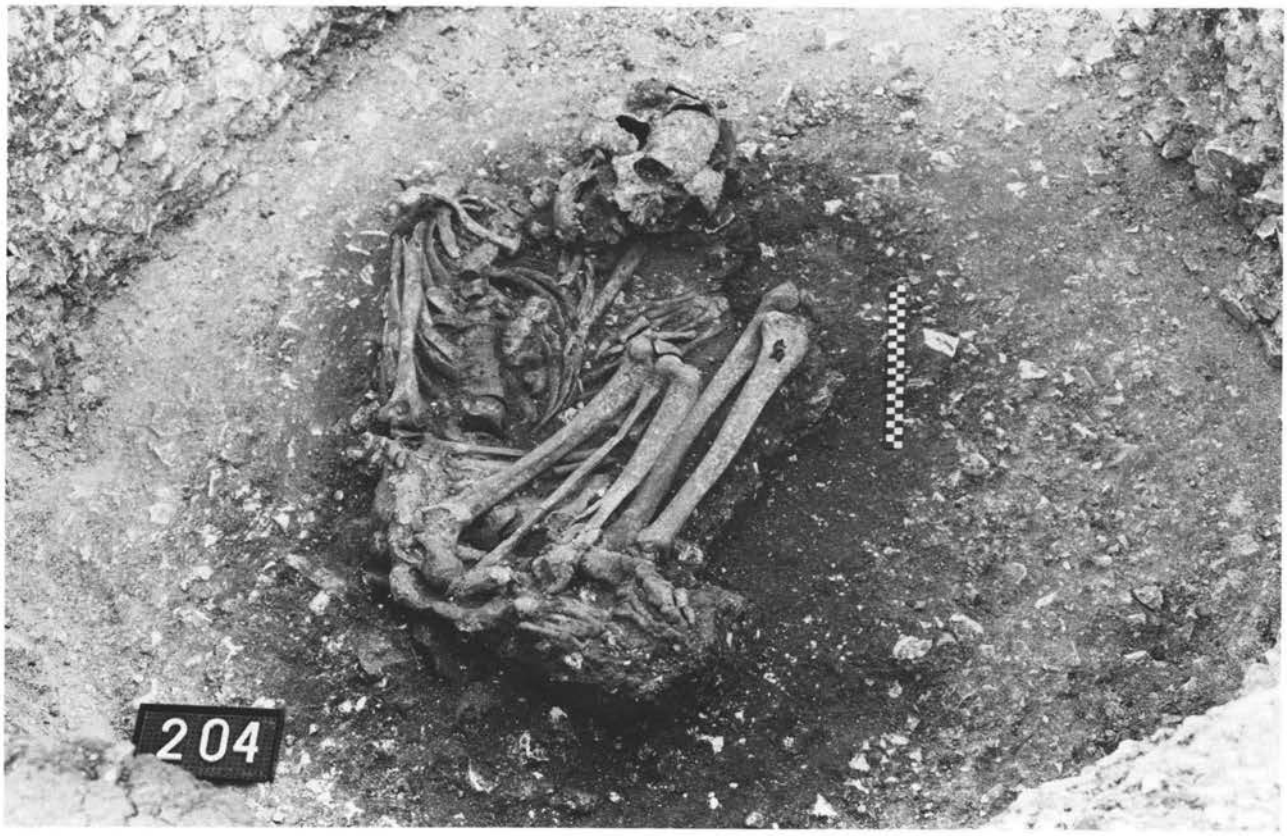


Plate XXVII. Human skeleton in pit 204.

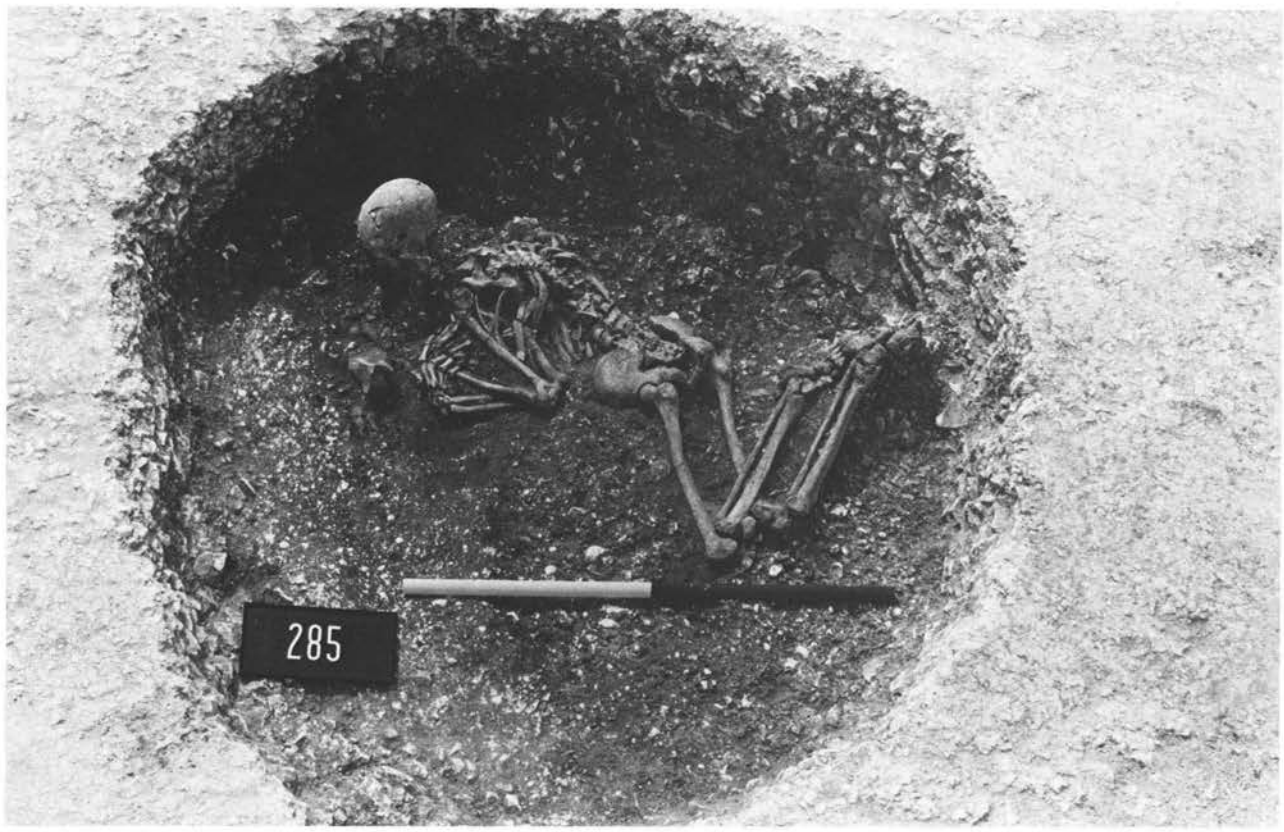


Plate XXVIII. Human skeleton in pit 285.

Plate XXIX. Animal bones in pit 293.

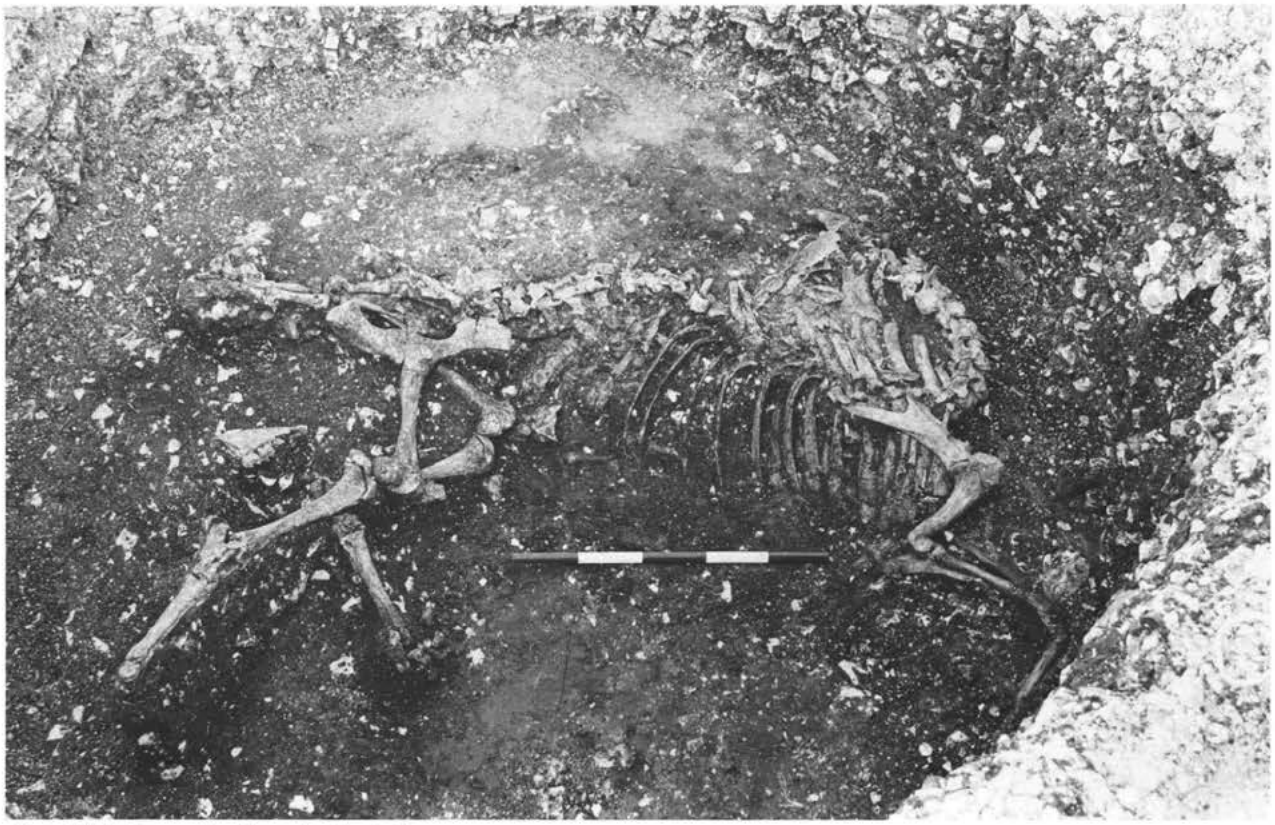


Plate XXX. Cow and calf remains in pit 61.

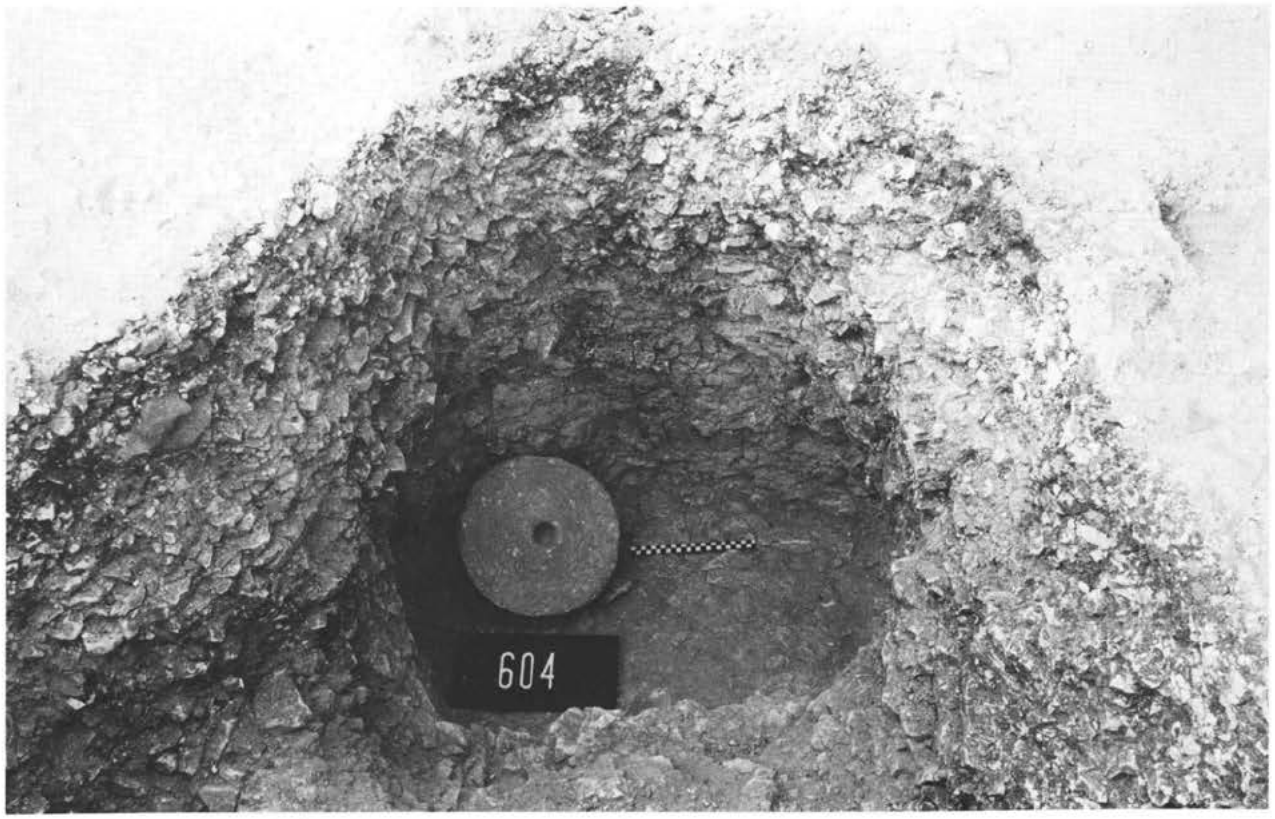


Plate XXXI. Rotary quern in pit 604.

Plate XXXII. Clay support for rotary quern in pit 604.

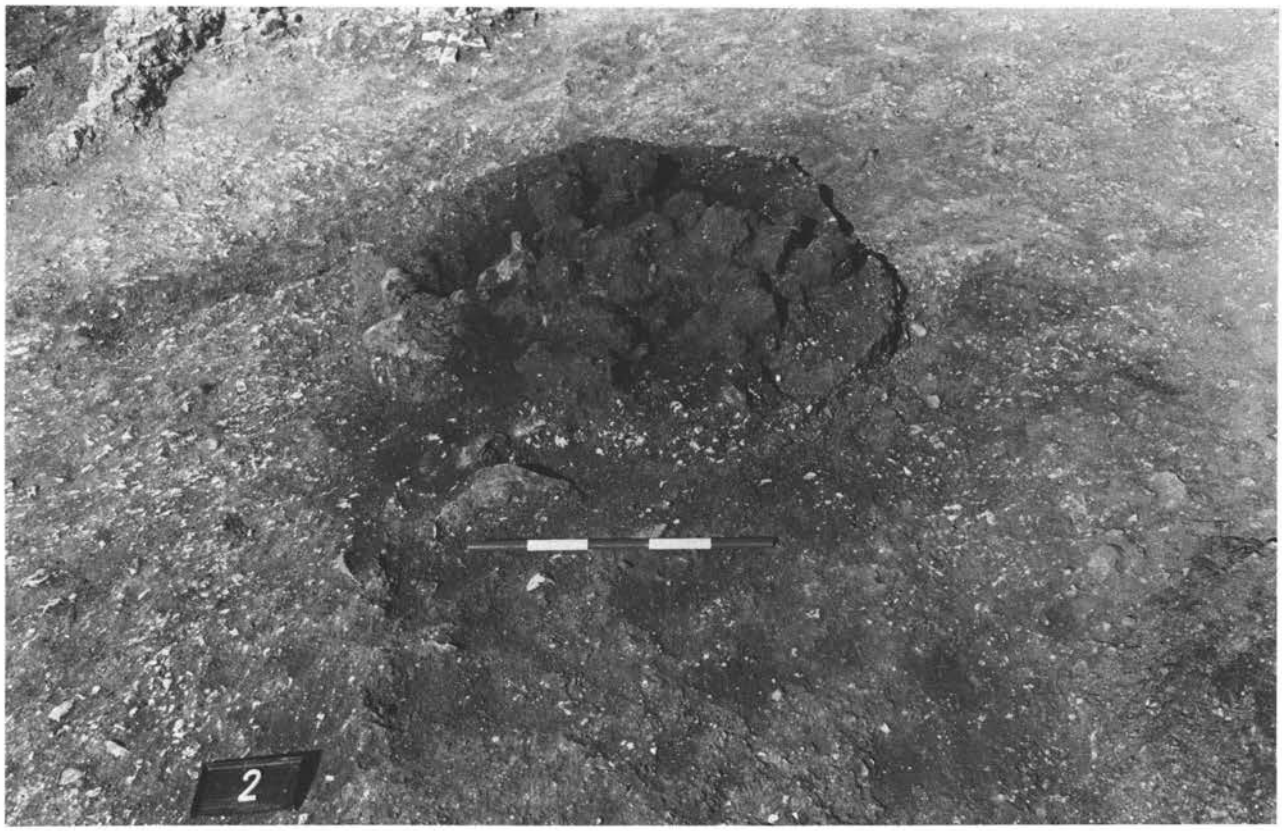


Plate XXXIII. Iron-working hearth in the top of working-hollow 2.

Plate XXXIV. Porous pits: (*left, upper and lower*) Navicular bones of 205(5); (*upper right*) Cuneiform bone of 205(5); (*lower right*) Right femur of 205(5); (*centre*) Right hallux of 31(6).

Plate XXXV. Healed fracture on the right humerus of 285(3) and cuts on the left humerus.

Plate XXXVI. Detail of injuries on the left humerus of 285(3).

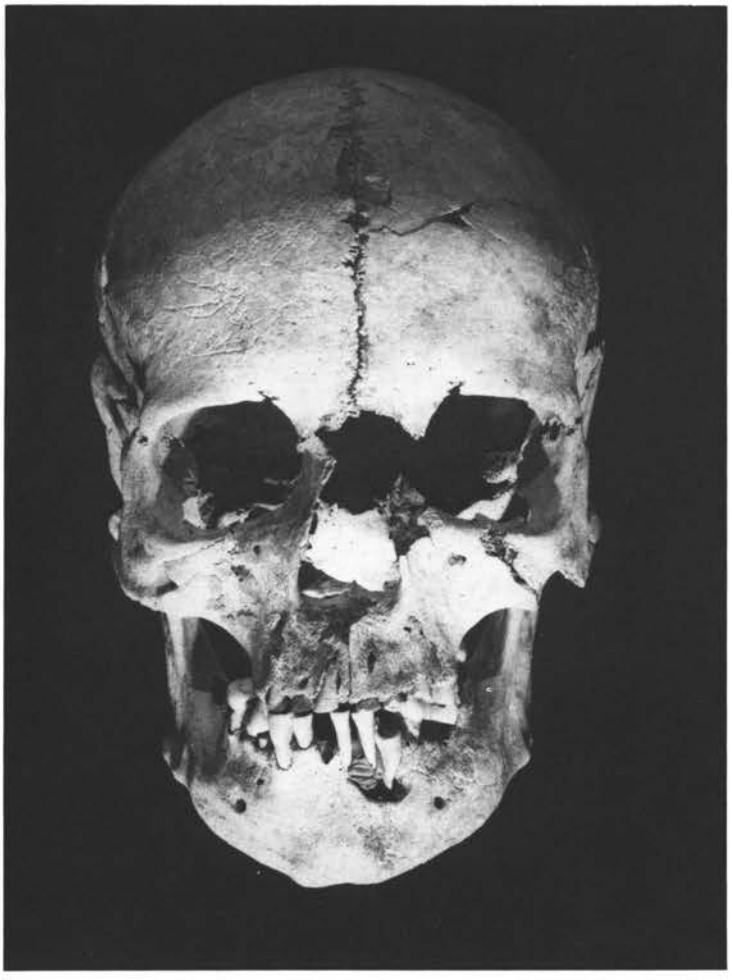


Plate XXXVII. Skull of 204(8) with anomalous tooth wear, abscessing, and resulting periostitis.

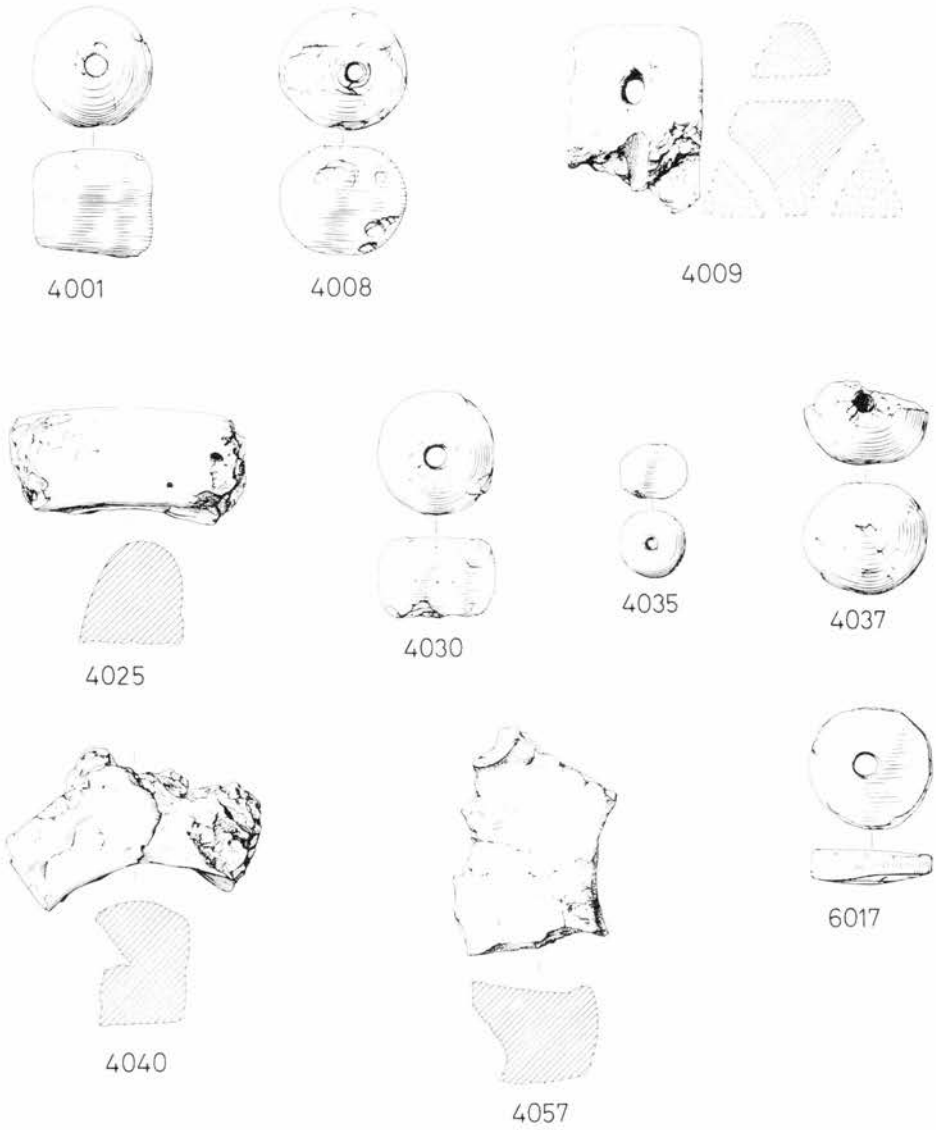


Figure 78 Objects of baked clay: Phase 3 (Scale 4001, 4008, 4030, 4035, 4037, 6017:½, 4009, 4025, 4040, 4057:¼)

drawn. (467)5))

4063 A small fragment of decorated clay hearth or oven. Not drawn. (699(3))

4065 Fragments of a clay hearth or oven with rectangular stamped impressions on one surface. Not drawn. (310W(6))

4068 Fragments of four triangular loom-weights of poorly fired clay. Not drawn. (191(6))

4069 A fragment of a decorated clay hearth, one surface of which is smoothed, and the other crudely rusticated. Not drawn. (191(6))

4070 Numerous fragments of an undecorated clay hearth. Not drawn. (171(6))

4074 A decorated clay hearth or oven fragment. (587(4))

4075 A complete triangular loom-weight. Not drawn. (539(6))

4077 A decorated clay hearth or oven fragment. Not drawn. (371(5))

4078 A decorated clay hearth or oven fragment. Not drawn. (371(6))

4079 A clay hearth or oven fragment decorated on one smoothed surface with rectangular stamped impressions. Not drawn. (34(8))

4082 A fragment of hard fired brick. Not drawn. (299(5))

4083 A fragment of hard fired brick. Not drawn. (446M(3))

4084 Tile fragments. Not drawn. (2(2))

4085 Fragments of a decorated clay hearth or oven. Not drawn. (389(4))

4086 Clay hearth or oven fragments. Not drawn. (289(7))

4087 Clay hearth or oven fragments. Not drawn. (196(16))

6004 A body sherd of hard pale-grey fabric (ware A) with graffiti on the external surface, incised after firing. Not drawn. (120(4))

6017 A spindle-whorl made from a pottery disc. (318(4))

6018 A spindle-whorl made from a pottery disc. Not drawn. (318(6))

6025 A spindle-whorl made from a pottery disc. Not drawn. (381(4))

6045 A spindle-whorl made from a pottery disc. Not

drawn. (25(4))
6052 A spindle-whorl made from a pottery disc. Not drawn. (539(6))
6053 Two spindle-whorls made from pottery discs. Not drawn. (34(8))

Undated
4064 A clay hearth or oven fragment. Not drawn. (433(5))
4076 A triangular loom-weight. Not drawn. (63(6))

Objects of baked or fired clay are most numerous in Phase 3, in particular there are numerous fragments which may represent as many as 24 clay hearths or ovens. Spindle-whorls (13) and loom-weights (9), both of the triangular (4009, 4061, 4068, 4075) and cylindrical varieties (4006, 4044) are common and may indicate an increase in weaving industries. Other objects include a sling missile (4036), beads (4029, 4035, 4037), fired bricks (4032, 4054, 4055, 4082, 4083) and tile fragments from a superficial deposit (4084).

The Glass Objects

Phase 1 (Figure 79)
6001 Two halves of a circular blue glass bead, broken in antiquity. (305(3)/(6))
6008 A complete circular bead of blue glass. (292(3))
6010 A fragment of light blue glass pendant or bangle. (639[310J](5))

Figure 79 Objects of glass: Phase 1 (Scale 6001, 6008: ½, 6010: ¼)

The Iron Objects

Phase 1 (Figure 80)
1016 An iron ring. (305(6))
1017 An iron strip semicircular in outline, 65mm in diameter. Not drawn. (190(4))
1018 An iron nail. Not drawn. (361(3))
1019 An iron steelyard weight pyramidal in shape, of rectangular section, with a hook at the end. (190(4))
1021 An iron flat-bow brooch with the foot recurved and clasped to the end of the bow. The foot has an expanded disc which may arguably have held a stud. The brooch has a two-coil spring with an external chord. The sides of the bow have four grooves towards its head. (361(3))
1029 A plain iron strip of rectangular section. (419(5))
1035 An iron nail. Not drawn. (290(3))
1064 An iron ring. (212(3))
1080 A large iron knife with the tip missing and a slightly convex cutting edge. The hafting plate is rectangular in outline, and was attached to its handle by three rivets set in a triangle. Traces of wood are apparent on the blade and hafting plate. (639[310J](6))
1081 Large iron ring-headed pin. (292(7))
1084 A short plough share tip with an open socket. (211(6))
1086 An iron nail. Not drawn. (201(4))
1097 A nail. Not drawn. (411(3))
1100 The bow, spring, and beginning of the catch plate of an iron brooch. The spring has an internal chord and five moving coils. (386(3))
1103 A large ring-headed pin with a fragment of the shank. (175(8))
1104 An iron knife or sickle complete with a curved blade and a long thin tang. (296(6))
1108 A complete iron knife with a triangular blade and an upcurved tip. The short rectangular hafting plate was attached to its wooden handle (of which traces remained) by means of three rivets set at the corners of a triangle. The three rivets survive in position, two pass through and appear on both sides of the hafting plate and have hammered heads. (400(5))
1111 A penannular iron ring with expanded terminals. Possibly a penannular brooch. (44(8))
1112 Six fragments of nails. Not drawn. (521(4))
1126 Iron chape and base of chape frame with a swelling tip. The arms of the chape swing inwards to expanded terminals on one face of which are faint traces of settings for decorative studs. Alternatively, the terminals may support wired circles. Both motifs are found on chapes of this type. The inner faces of the expanded terminals are grooved to allow for the seating of the sides of the scabbard plates. This grooving reappears at the tip of the

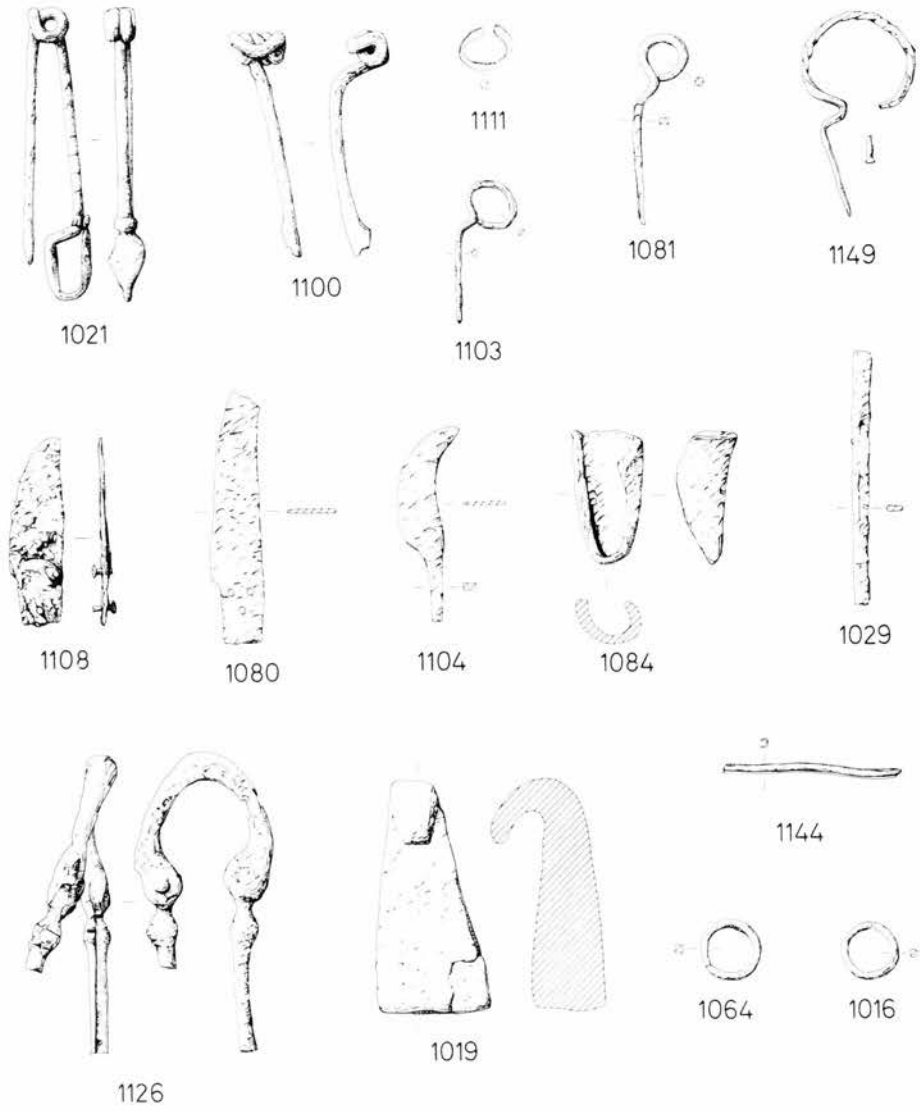


Figure 80 Iron artefacts: Phase 1 (Scale 1100, 1021, 1126:½; rem: ¼)

chape, on the inner faces of the mouldings at the base of the chape frame from where it runs continuously with the channelled arms of the chape frame. (681(3))

1130 An iron nail. Not drawn. (104(3))

1144 A fragment of scabbard edging of semi-circular section from chape 1126. (382(6))

1147 An iron strip. Not drawn. (75(6))

1149 A large, incomplete ring-headed pin. Of square section, the shaft is twisted in the ring. The lower part of the shank is missing. (370(5))

Of the 23 objects recorded from Phase 1 contexts the majority are nails (6), suspension rings (2), and plain strips (3). However, the remainder are more varied and include brooches of flat-bow (1021) and penannular type (1111), whilst large ring-headed pins are also a feature of the assemblage (1080, 1103, 1149). Agricultural implements are represented by a plough-share or ard-tip and possibly a steel-yard weight (1019) whilst chape and scabbard fragments (1126, 1144), unless they are scrap, may indicate some status for one inhabitant of the settlement.

Phase 2 (Figure 81)

1001 A bucket-hasp with an oval plate attached to the wood by two rivets. The hook from which the handle was suspended was attached to the plate by means of rivets. (1C(4))

1007 A nail. Not drawn. (1F(3))

1008 A nail. Not drawn. (1G(4))

1011 An iron object. Not drawn. (1H(4))

1013 A possible iron brooch pin 50mm long. Not drawn. (439(4))

1014 An iron nail. Not drawn. (426(5))

1015 An iron strip 55mm long. Not drawn. (425(6))

1022 An iron plough-share tip with an open socket. (426(9))

1025 An indeterminate iron object. Not drawn. (442(3))

1030 A conical spear-butt, hollow for two-thirds of its length. (427(3))

1032 An indeterminate iron object. Not drawn. (1M(3))

1036 Part of a handle of circular section, bent into a shallow curve. The terminal is bent at right angles and

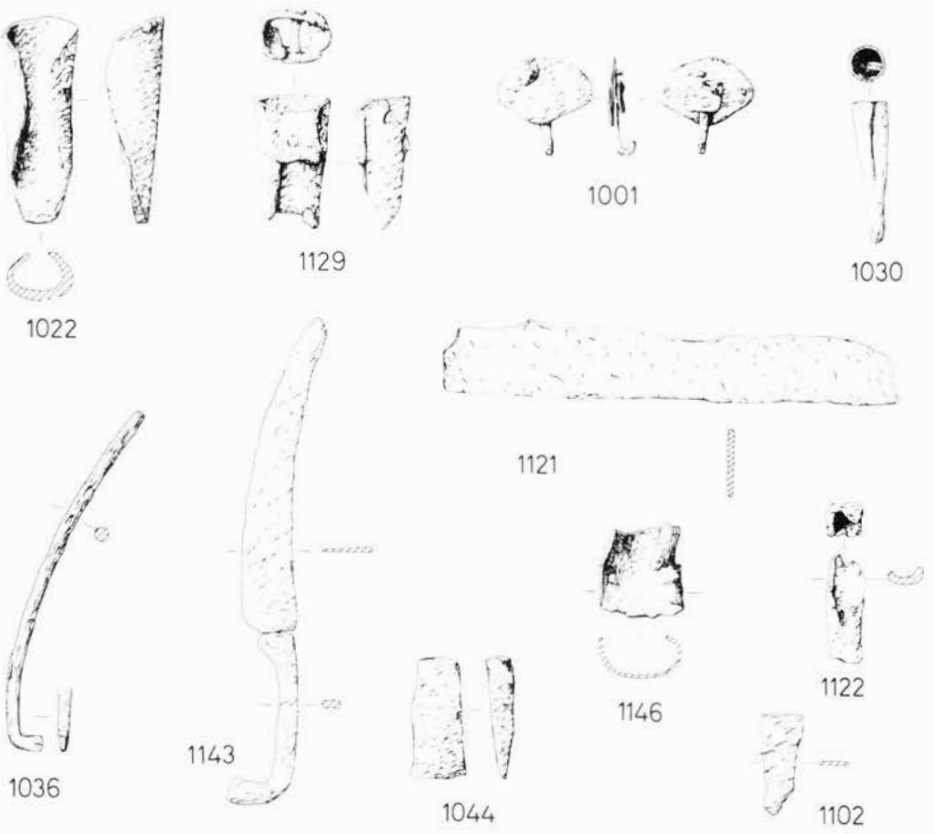


Figure 81 Iron artefacts: Phase 2 (Scale ¼)

flattened. (428(3))

1040 An iron nail. Not drawn. (428(3))

1043 An iron nail. Not drawn. (425(6))

1044 A heavy cutting implement, either a wedge or a chisel. (437(3))

1045 A possible punch, 80mm long, tapering at both ends, and square in section. Not drawn. (437(3))

1046 A possible punch, 90mm long, with a round sectioned shank and a flat hammered head. Not drawn. (437(3))

1052 An indeterminate iron object. Not drawn. (429(4))

1053 A fragmentary iron strip of circular section, bent into a shallow curve. Not drawn. (438(6))

1054 An iron nail. Not drawn. (429(3))

1057 A fragmentary iron strip. Not drawn. (438(5))

1059 An iron nail. Not drawn. (1M(3))

1060 An indeterminate iron object. Not drawn. (1M(3))

1071 An iron nail. Not drawn. (437(5))

1082 An iron nail. Not drawn. (441(4))

1090 An iron clamp. Not drawn. (424(3))

1102 A possible iron scabbard tip with no indications of rivet holes, which may have slotted into the chape. The object is symmetrical around a central line which is improbable had it been a knife-tip. (53(6))

1109 An indeterminate iron object. Not drawn. (55(6))

1115 An indeterminate iron object. Not drawn. (531(3))

1119 An iron nail. Not drawn. (1V(3))

1121 A heavy iron strip, possibly the central portion of a currency bar. (734(4))

1122 The open socket from an unidentifiable object. (706(4))

1129 A plough-share tip with the tip missing and with an open socket. At some point the implement was strengthened by the addition of a rectangular iron plate across the upper part of the flanges, the rivet penetrating the wooden haft and the underside of the ploughshare tip. (776(3))

1143 A fine iron knife with a curving blade and the cutting edge on the convex side. The extreme tip is missing. The handle is of rectangular section, swelling to an oval section at its terminal. (459(5))

1146 The open socket for an unidentified implement with two opposed rivet holes. The object tapers towards its tip but is probably too flimsy for a ploughshare tip. (52(7))

1153 An iron rod fragment of rounded squarish section. Not drawn. (437(5))

1154 Seven small iron fragments. Not drawn. (437(5))

1155 Two iron sheet fragments. Not drawn. (437(5))

1156 An iron lump. Not drawn. (437(4))

1157 A small rectangular iron lump. Not drawn. (437(4))

1158 An iron lump. Not drawn. (437(4))

1159 A bent nail of rounded section with burred-over ends threaded through a hole at the end of a strip fragment. Not drawn. (437(5))

1160 An incomplete rod of square section in four pieces which tapers towards one end. Not drawn. (437(5))

1161 An iron strip fragment tapering towards one end and bent back on itself. In two pieces. Not drawn. (437(5))

1162 An iron strip fragment. Not drawn. (437(5))

1163 An iron strip fragment. Not drawn. (437(5))

1164 A bent bar fragment of rounded square section. Not drawn. (437(5))

1165 Two small lumps of iron. Not drawn. (437(5))

1166 A fragment of an iron strip. Not drawn. (437(5))

1167 A fragment of an iron strip. Not drawn. (437(5))

1168 A fragment of an iron strip. Not drawn. (437(5))

1169 An iron lump. Not drawn. (437(5))
1170 Two iron lumps. Not drawn. (437(5))
1171 A fragment of an iron strip. Not drawn. (437(5))
1172 A fragment of an iron strip. Not drawn. (437(5))
1173 A fragment of an iron strip. Not drawn. (437(5))
1174 A triangular fragment of an iron sheet. Not drawn. (437(5))
1175 A small rectangular lump of iron. Not drawn. (437(5))
1176 A small iron lump. Not drawn. (437(5))
1177 A fragment of an iron bar. Not drawn. (437(5))
1178 A fragment of an iron bar. Not drawn. (437(5))
1179 Two fragments of an iron strip. Not drawn. (437(5))
1180 Several small fragments of iron. Not drawn. (437(5))
1181 Three small lumps of iron. Not drawn. (437(5))
1182 Two lumps of iron. Not drawn. (437(5))
1183 A fragment of sheet iron with a circular rivet hole. Not drawn. (437(5))
1184 Six small fragments of sheet iron. Not drawn. (437(5))
1185 Two rod fragments of rectangular section. Not drawn. (437(5))
1186 Two small lumps of iron. Not drawn. (437(5))
1187 Two small lumps of iron. Not drawn. (437(5))

Of the 90 or so objects, the great proportion are unidentifiable. Most are clearly scrap (44), plain strips (15), rods (7) and nails (11) obtained from Pit 437 which also produced evidence for the manufacture of bronze artefacts. It seems likely that some pieces listed in the corpus are implements used in the manufacturing process—for example there are two possible punches (1045, 1046). No brooches were recorded and only one brooch-pin (1013), domestic and agricultural implements include a bucket hasp and handle (1001, 1036), two ploughshare tips (1022, 1129), a knife (1143) and a wedge or chisel (1044). Objects hinting at status include a conical spear-butt (1030) and a possible scabbard tip (1102).

Phase 3 (Figures 82 – 3)
1000 Indeterminate iron object. Not drawn. (2(2))
1002 An iron nail. Not drawn. (159)
1004 An iron nail. Not drawn. (157(3))
1005 A nail. Not drawn. (157(5))

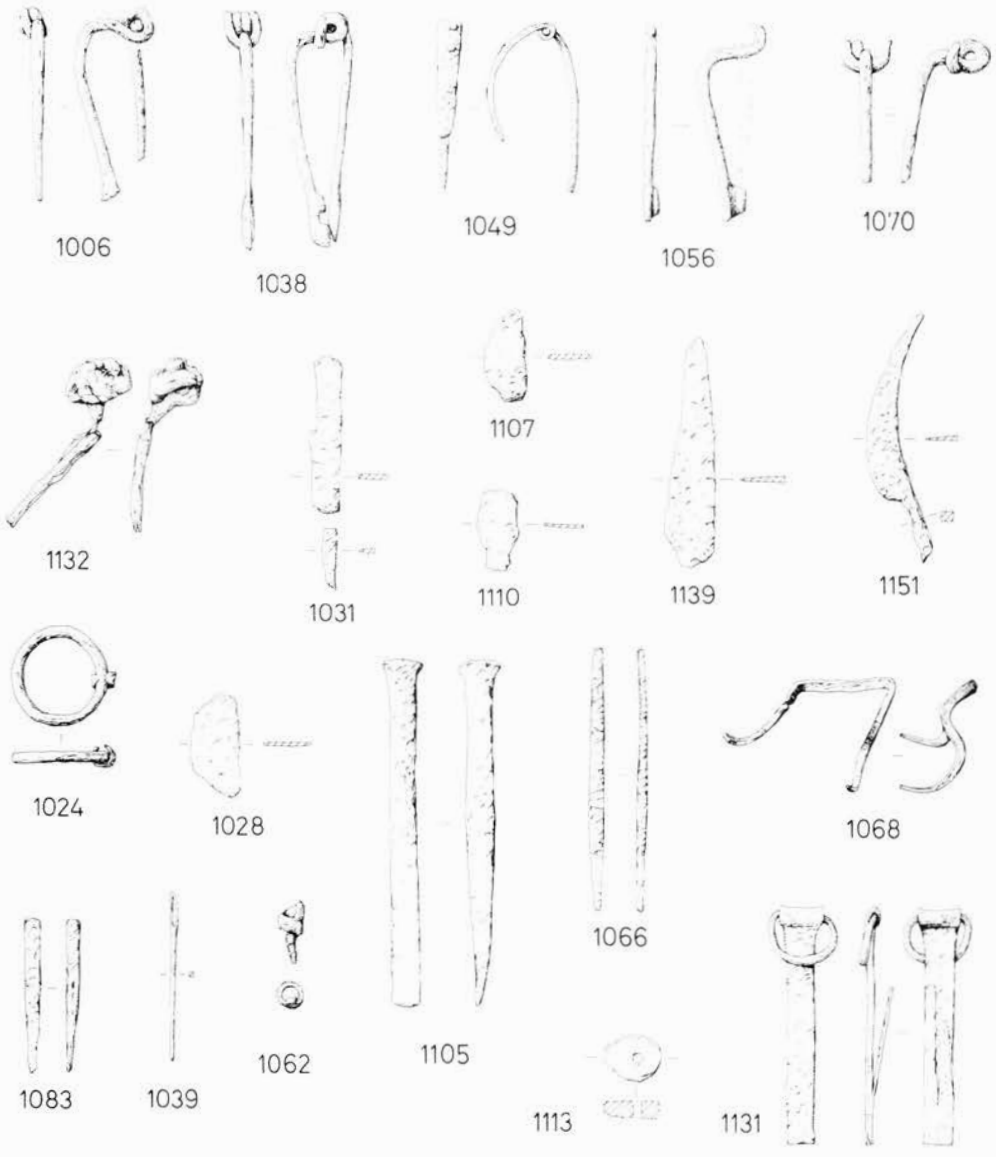


Figure 82 Iron artefacts: Phase 3 (Scale 1006, 1038, 1049, 1056, 1070, 1132: ½, rem ¼)

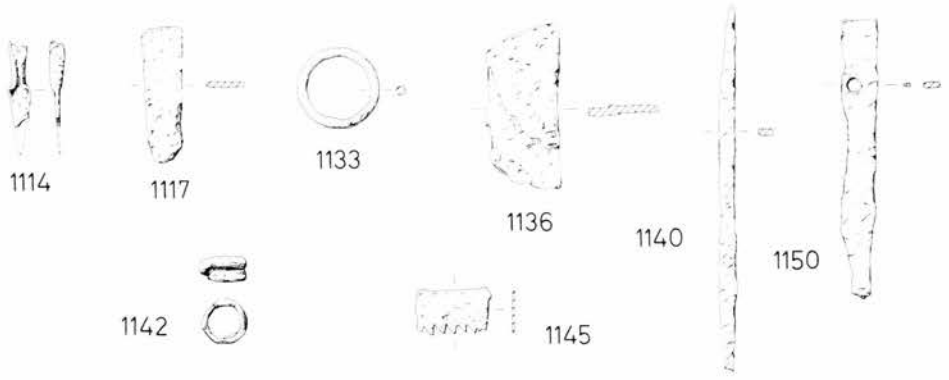


Figure 83 Iron artefacts: Phase 3 (Scale ¼)

1006 Fragments of the bow, coil, catch plate and pin of an iron La Tène III brooch. (310(3))
1009 A nail. Not drawn. (155(5))
1010 A nail. Not drawn. (342(3))
1012 An iron strip 36mm long. Not drawn. (448(4))
1020 An iron nail. Not drawn. (446(3))
1023 A curved iron strip, oval in section. Not drawn. (155(3))
1024 An iron ring with the head of a staple attached to its circumference. (157(3))
1026 An iron nail. Not drawn. (2(5))
1027 An iron nail. Not drawn. (302(14))
1028 A fragment of a trapezoidal blade. (130C(2))
1031 A fragment of the blade and haft of a knife. The haft shows no signs of riveting. Also a fragment which may not belong with the knife. (229(3))
1033 An iron sheet fragment of no formal shape. Not drawn. (285(3))
1034 An indeterminate iron object. Not drawn. (2(5))
1038 A La Tène III brooch with four coils and an internal chord. The foot, which was open, has now largely corroded away. The bow tapers slightly throughout its length. (157(8))
1039 A complete iron needle, the eye of which was broken in antiquity. (2(5))
1042 An indeterminate iron object. Not drawn. (155(9))
1047 An iron nail. Not drawn. (112(4))
1048 An iron nail. Not drawn. (156(5))
1049 A hinged iron brooch, the fragmentary arched bow of which lacks its catch plate. There are two studs on the bow near the hinge. (290(4))
1050 An indeterminate iron object. Not drawn. (290(4))
1051 An iron nail. Not drawn. (380(3))
1055 An iron nail. Not drawn. (310E(5))
1056 The fragmentary bow of a brooch with an incomplete catch plate and the beginnings of a spring. (381(3))
1058 A fragmentary iron strip. Not drawn. (393(4))
1062 An iron ox-goad composed of one and a half coils. (156(11))
1063 An iron nail. Not drawn. (380(5))
1065 A fragmentary iron strip. Not drawn. (2(5A))
1066 An iron artefact of rectangular section with one end tapered as if for insertion into a wooden handle. (410(6))
1067 An iron nail. Not drawn. (288(3))
1068 An iron object of indeterminate function. It possesses two tapering arms which spring at right angles from a short square-sectioned bar. Both arms are curved through a semi-circle, and some distortion of the object is apparent. (318(3))
1069 An iron nail. Not drawn. (310G(5))
1070 The spring and bow of a simple brooch which lacks its pin and catch plate. (204(4))
1072 A fragmentary iron strip. Not drawn. (155(10))
1073 A fragmentary iron strip. Not drawn. (157(6))
1074 A fragmentary iron strip. Not drawn. (156(10))
1075 A fragmentary iron strip. Not drawn. (130H(4))
1076 An iron nail. Not drawn. (2(4))
1077 An iron nail. Not drawn. (381(12))
1078 An iron nail. Not drawn. (2C(4))
1079 An iron nail. Not drawn. (2(5))
1083 A tapering iron bar of rectangular section. (191(3))
1085 An iron clamp. Not drawn. (205(3))
1087 An iron clamp. Not drawn. (318(9))
1088 A possible brooch pin. Not drawn. (293(6))
1089 A nail. Not drawn. (402(5))
1092 A nail. Not drawn. (292)
1093 A nail. Not drawn. (288(6))
1094 An iron clamp. Not drawn. (172(13))
1095 An iron clamp. Not drawn. (262(8))
1096 An iron nail. Not drawn. (262(6))
1099 A fragmentary iron strip. Not drawn. (45(6))
1105 A heavy iron chisel, the upper half of which is circular in section, and the lower part is rectangular, with an expanded circular head and a square cutting edge. (359(5))
1107 A very corroded knife blade tip. (661(6))
1110 A possible fragment of a knife, including the shoulder and part of the haft and blade. (46(3))
1113 A thick oval iron disc with a central perforation. The object is probably fragmentary at its more pointed end. (571(4))
1114 An incomplete arrowhead with a thin triangular blade and an open socket. (571(6))
1116 An iron strip. Not drawn. (683(7))
1117 An indeterminate iron strip. (310W(3))
1118 An iron nail. Not drawn. (46(6))
1120 An iron nail. Not drawn. (380(10))
1127 An indeterminate iron strip. Not drawn. (464(6))
1131 An iron strip folded over at one end to clasp a D-shaped ring. The object is complete, but its function is unknown. No rivet holes can be seen in the strip. (571(6))
1132 A fragment of the bow and spring of a La Tène III brooch. The catch-plate, part of the spring, and the pin are missing. The object is much corroded. (580(3))
1133 An iron ring of circular section. (522(8))
1134 Two iron nails. Not drawn. (390(3))
1135 An iron nail. Not drawn. (76(7))
1136 A fragment of a heavy iron strip. (478(4))

1137 An iron nail. Not drawn. (310W(6))
1138 An iron nail. Not drawn. (390(3))
1139 A triangular knife blade with a slightly convex back and with a strip of the hafting plate surviving. (310K(3))
1140 An iron bar, tapering at both ends and of rectangular section. (481(3))
1141 An iron nail. Not drawn. (697(3))
1142 A ring with one and a half coils. Either a finger or a toe ring, or an incomplete ox goad. (25B(4))
1148 An iron nail. Not drawn. (310A(3))
1150 An iron strip, narrowing at one end, with one probable rivet hole. (20(6))
1151 An iron knife with a curved blade with the cutting edge on the convex side. The incomplete tang is of oval section. (20(6))
1152 An iron nail. Not drawn. (310U(3))

Of the approximately 83 objects from Durotrigean contexts the majority are nails (34), strips (15), and unidentifiable objects (11). Brooches are more numerous than in the preceding phases (1006, 1038, 1049, 1056, 1070, 1132), but in general the implements are again few in number and include four knives (1031, 1107, 1139, 1151), a chisel (1105), an ox goad (1062), a single arrowhead (1114), and a needle (1039).

Romano-British

1123 The hobnails from a Roman burial, 56 from the right foot, 73 from the left foot. Not drawn. (815(3))
1124 17 coffin nails from the Roman burial. Not drawn. (815(3))

Undated

1091 A nail. Not drawn. (788(4))
1098 A nail. Not drawn. (815(3))
1101 A nail. Not drawn. (169(5))
1106 A nail. Not drawn. (356(3))
1125 An unidentifiable iron object. Not drawn. (857(2))
1128 An iron nail. Not drawn. (928(3))
1145 A fragment of the blade of a draw saw tapering slightly towards its tip. (450(4))
1188 Several small lumps of iron. Not drawn. (857(6))

The Bronze Objects

Phase 1 (Figure 84)

3002 A bronze penannular brooch, 21mm in diameter, with a thick, circular sectioned bow and expanded circular terminals, one of which is defined by three and the other by two grooves. The arched, broken pin is attached to the bow by a beaten strip in one piece with the pin which is decorated with two lateral grooves within which are two cruciform designs. (289(4))
3011 A decorated needle 61mm long, complete except for the extreme tip. The perforation is asymetric and the butt above this is decorated with a pair of transverse incisions between which three incisions wind upwards around the stem. (305(6))
3021 A fragmentary bronze strip. Not drawn. (296(5))
3028 A fragment of waste cast metal. Not drawn. (292(3))
3029 A fragment of waste cast metal. Not drawn. (751(3))
3030 A fragment of waste cast metal. Not drawn. (751(3))
3031 A nearly complete brooch of early La Tène type with a high curving bow, four coiled spring and external chord. The pin and catch-plate are nearly complete, but the re-curved foot is missing. The bow is decorated with a lozenge defined by a pair of incised grooves. At either end of the lozenge occur a pair of transverse grooves, and within the lozenge are traces of dot and line incised patterns which are obscured by corrosion products as well as polishing through use. The type is a Marzabotto fibula, probably an import (Hodson 1964B, 132) classified according to Viollier's sequence for north Switzerland as La Tène 1a 400±50 BC (Viollier 1916). (379(7))
3035 A wire fragment carefully twisted into a double loop. There are no abrasion marks to indicate its function. (360(3))
3052 A bronze strip folded upon itself and curved in its longitudinal plane. Probably a binding strip. Not drawn. (400(5))
3054 A bronze strip 16mm long, folded upon itself, probably a binding strip. Not drawn. (296(11))
3059 One half of a simple, badly corroded penannular ring or bangle 54mm in diameter, of oval section. The diameter of the section expands towards its terminal. (528(5))
3074 A strip 36mm long and 3mm thick, broken at one end. This is conceivably a small billet or a partially worked object. Not drawn. (65(8))
3077 A fragment of waste cast metal. Not drawn. (107(3))

Of the 13 bronze objects assigned to the phase, most interest attaches to the La Tène 1a brooch (3031), which in the Viollier sequence for north Switzerland would be dated to 400±50 BC. A calibrated radiocarbon date from the same deposit in Pit 379 gave an age of 730–420 BC (Q1203). Other identifiable objects include a penannular brooch (3002) a bangle (3059) and a decorated needle (3002).

Phase 2 (Figure 85)

3005 A bronze ring-headed pin 50mm long which is incomplete at the tip. (215(3))
3006 A bronze brooch with the spring almost complete but with the pin missing. There are triple transverse ribs around the bow above which it is flat, slightly tapering, with lateral grooves. Below the ridges, the bow section is lozenge shaped, and the beginnings of the catch-plate can be seen which appears to have been of open form. (1M(3))

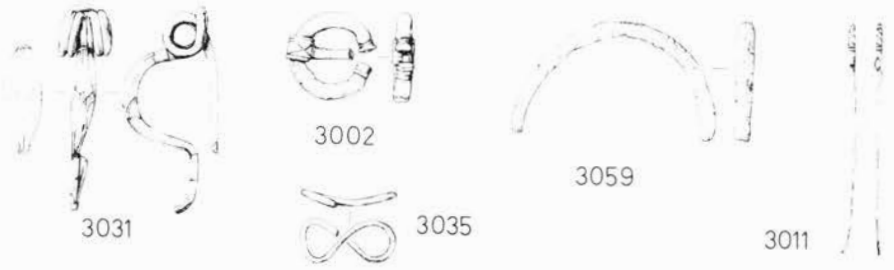


Figure 84 Bronze artefacts: Phase 1 (Scale ½)

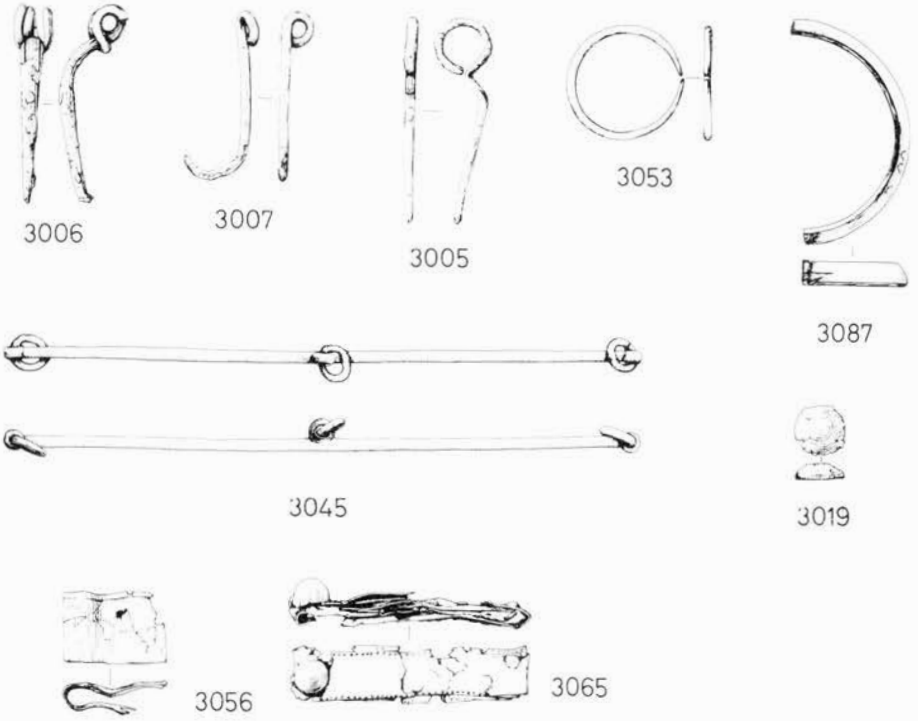


Figure 85 Bronze artefacts: Phase 2 (Scale ½)

3007 A bronze brooch pin with one coil of the spring and a recurved point. (1M(3))

3008 A bronze brooch pin 35mm long. Not drawn. (1M(4))

3017 A fragment of waste cast metal. Not drawn. (427(3))

3019 A shallow domed circular stud 17.5mm in diameter, with the rivet missing. On x-ray, a corroded hole is clearly visible in the centre of the stud. (416(5))

3020 Three fragments of bronze strip. Not drawn. (442(5))

3023 A flat bronze strip. Not drawn. (442(5))

3024 A flat bronze strip, 38mm long, slightly tapering. Not drawn. (620(5))

3045 An equal armed balance of bronze 166mm long, with loops at each end and in the centre, through each of which depends a simple bronze wire ring. (439(10))

3053 A bronze penannular ring 30mm in diameter of circular section, tapering evenly towards its pointed terminals. Possibly an ear-ring. (431(3))

3056 A fragment of thin bronze strip 44mm long, bent back upon itself, probably secured by means of a rivet of which traces survive on both parts of the sheet. One terminal is squared. (55(6))

3065 A thin sheet of bronze strip, 12mm wide, with lateral lines of raised dots. The strip is scrap, and has been coiled up on itself several times. One circular domed bronze rivet head is attached to it. The reverse side of the strip has a black deposit adhering to the surface, which may be the remains of an adhesive or the remains of the material around which the strip was bound. An inner fold of the strip has a small bronze rivet which holds two parts of the main strip together. This rivet is visible only on the x-ray analysis. (508(6))

3068 Two unidentifiable fragments of sheet bronze. Not drawn. (771(4))

3070 An unidentifiable fragment of sheet bronze. Not drawn. (771(4))

3083 Four small fragments of sheet metal, the two largest with part of a rivet hole along one edge. Not drawn. (437(5))

3087 Half of a bangle of high-tin bronze of plano-convex section. The fragment is well preserved and shows signs of cutting at one terminal. 1F(3)

Of the 20 objects assigned to this phase, six are personal

trinkets—a brooch with an open catch-plate (3006), two brooch pins (3007, 3008), a ring-headed pin (3005), a possible ear-ring (3053) and a bangle (3087). Of particular interest in view of the attribution of the bronze-working industry to this phase is the presence of an equal-armed balance (3045) and fragments of scrap bronze.

Phase 3 (Figures 86 – 7)

3000 A bronze chape fragment 55m long with two dot and ring motifs on one face. At the upper end are two pierced lugs for attachment. Both ends of the chape have fractured in antiquity and rather more than half of it is missing. (1C(3))

3003 A bronze needle 58mm long. (112(3))

3004 A toilet instrument 63mm long, with a tapering open socket with a rivet hole and two pairs of transverse grooves around the socket base above and below the rivet hole. (156(4))

3009 A bronze binding strip, 14mm wide and 112mm long, from a scabbard, of which the two ends overlap and were originally secured by a rivet which is missing. It is decorated on the front face with five raised ring and dot motifs (329(9))

3010 A thin strip 25mm long, which is rolled over upon itself. It possibly acted as a binding strip. Not drawn. (155(8))

3012 A fragment of waste cast metal. Not drawn. (2(3))

3014 A bronze brooch bow approximately 50mm long, with the remains of a solid catch-plate and one half of a coil. The flat bow has a broad groove down most of its length down which a graver has been rocked to give a tremolo line. (220(3))

3015 Two joining fragments of bronze strip of semi-circular section, 85mm long. At a point nearly midway along its length is a strip of differential corrosion 6.5mm wide, probably marking the former position of a clamp. The strip is probably the lateral binding of a scabbard. (155(5))

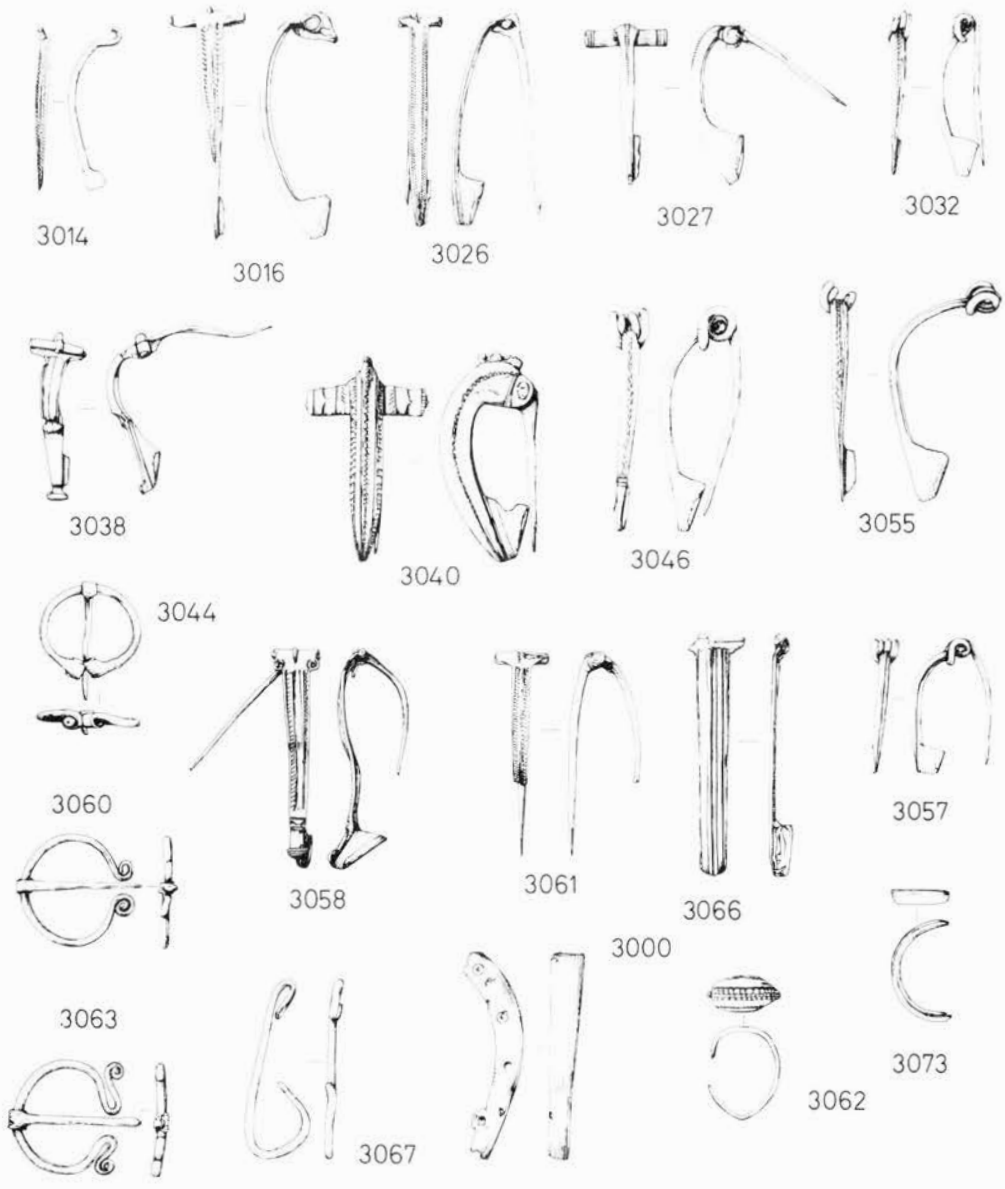


Figure 86 Bronze artefacts: Phase 3 (Scale ½)

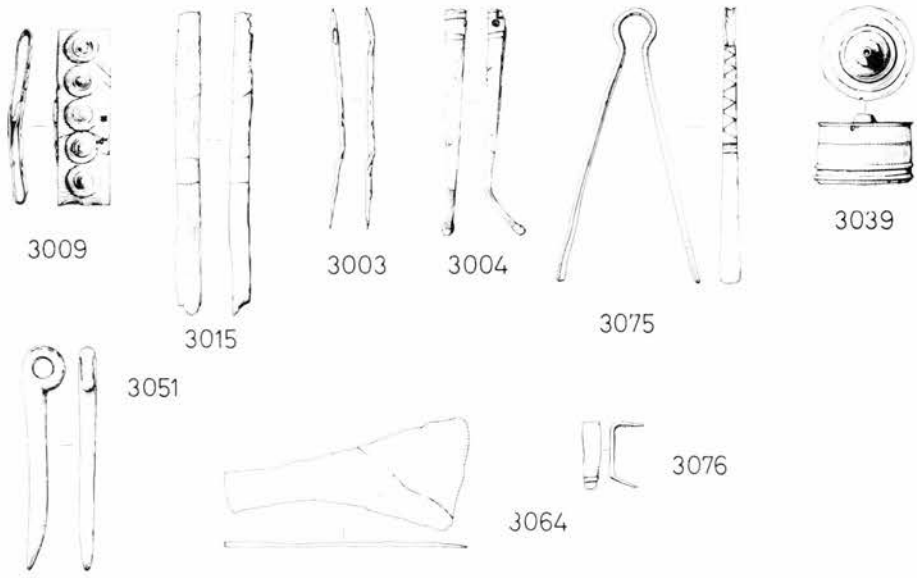


Figure 87 Bronze artefacts: Phase 3 (Scale ½)

3016 A fibula 70mm long represented by a bow and solid catch-plate and an iron hinge. On the front of the bow are three parallel grooves, the outer two decorated with engraved tremolo lines. (2(3))

3018 A twisted bronze wire, 190mm long, of flat section, and pointed at one end. Not drawn. (120(4))

3022 A piece of wire. Not drawn. (155(9))

3025 A fragment of waste cast metal. Not drawn. (2(6))

3026 A complete bronze brooch with solid catch plate and hinged pin. The flat bow is decorated with two lateral grooves, each with an engraved tremolo line. (2(3))

3027 A complete bronze brooch of 'Dolphin' type with a solid catch-plate and a hinged pin. The cylinder head has three grooves around each terminal and a transversely inscribed ridge runs for a short length down the bow from the head. (156(10)

3032 A complete bronze brooch with a solid catch-plate, and four-coil spring with an internal chord. The flat bow tapers to a point and is decorated for two-thirds of its length with a very shallow groove along which runs an engraved tremolo line. (310C(4))

3033 A fragment of waste cast metal. Not drawn. (2A(5))

3034 Wire scrap. Not drawn. (318(4))

3036 A fragment of waste cast metal. Not drawn. (2D(6))

3037 A bronze rivet of circular section with an expanded head. Not drawn. (171(3))

3038 A complete bronze brooch which is coated on the face of the lower bow and on the outer faces of the lateral flanges of the upper bow with a white metal which is probably tin. The solid catch-plate is complete, and the pin is hinged on an iron rod. (144(3))

3039 A cylindrical lathe-turned terminal of cast bronze. Four casting flaws are visible on the external surface. (125(5))

3040 A complete bronze brooch with a solid catch-plate and a pin hinged on an iron rod running through the cylinder. The brooch is cast and possesses moulded decoration supplemented by incised dotted motifs. (2A(5))

3043 A fragment of bronze wire. Not drawn. (318(5))

3044 A simple penannular brooch with a bow of circular section. The terminals have been hammered out flat and coiled back upon themselves. The simple pin is attached to the bow by a similar process. (282(3))

3046 A complete bronze brooch with a solid catch-plate, four coiled spring, and an internal chord. The low arched bow is rectangular in section, tapering to a point where three transverse grooves occur. An additional three grooves occur at the base of a large decorated panel which terminates at the catch-plate. The upper face of the bow is decorated with a reserved wavy ridge crimped by alternate punching on either side of the ridge. (310(6))

3047 Three fragments of the coil and pin of a bronze brooch. Not drawn. (192(7))

3048 A flat tapering bronze strip 40mm long, slightly curved. Possibly a brooch bow. Not drawn. (402(5))

3049 A fragment of waste cast metal. Not drawn. (818(3))

3050 A bronze rivet 8mm long, expanded at both ends. Not drawn. (262(4))

3051 A cast bronze pin 59mm long, with a single eye, of unknown function. It is unlikely to be from a buckle on account of its size. (348(3))

3055 A bronze brooch lacking its pin and one of its coils. It possesses a solid catch-plate and a spring which probably possessed four coils and an internal chord. The bow is of rectangular section, tapering evenly to a point; it is decorated for its upper two-thirds by a shallow groove, along one side of which there are fine oblique nicks. (571(3))

3057 A complete bronze brooch with a solid catch-plate. The spring had four coils and an internal chord. The bow is of lozenge section and tapers to a point. The patination suggests that it may have been a tinned brooch. (709(6))

3058 A complete but distorted bronze brooch with the pin hinged on an iron rod, and with a solid catch-plate. The flat bow is tapering and is decorated with three grooves running down much of its length. The two narrower lateral grooves have engraved tremolo lines running down them. There are two ring and dot motifs on its head and a single incised motif at the foot. (310W(5))

3060 A complete penannular brooch of bronze wire of circular section. The terminals are coiled back in the same plane as the ring and the pin is arched and attached to its bow by a simple coil. The maximum diameter is 31mm. (117(3))

3061 An incomplete bronze brooch of which the catch-plate and the lower part of the bow are missing. The pin is hinged on an iron rod and the flat bow has two broad grooves running along its length within each of which is an engraved tremolo line. (571(4))

3062 An almost complete light ear-ring (?) of bronze wire, part of which is hammered out flat into a leaf-shaped expansion along which there are five grooves highlighted at regular intervals by dot facets. (773(4))

3063 A complete penannular brooch, 30mm in diameter, made of circular bronze wire, the terminals being looped and coiled in the same plane as the ring. The pin has a shallow arch and a simply decorated head, which recurves over the bow. (76(3))

3064 A fragment of sheet bronze, with a maximum length of 65mm, with hammer facets visible on both faces. The wavy outline is probably due to hammering, and the object has not been trimmed or filed. It is possibly a blank for an unknown object. (711(4))

3066 A brooch bow of thin sheet bronze 62mm long with a crushed catch-plate and damaged head. The missing pin was hinged on an iron rod. The bow is ornamented with shallow grooves and ridges; and the two lateral grooves each have an engraved tremolo line. (522(5))

3067 The distorted bow of a penannular brooch. One terminal is complete, the other lacks only the extreme recurved tip, and the brooch has been scrapped. The black patina of the object was subjected to x-ray fluorescence analysis but no results were obtained to show that the patina was anything other than cupric carbonate. (293(7))

3069 Two tiny fragments of bronze. Not drawn. (2(9))

3071 Two tiny fragments of bronze. Not drawn. (2(10))

3072 A tiny fragment of bronze. Not drawn. (2(13))

3073 Half a penannular bronze ring of rounded triangular section. The surviving terminal is tapered, and the maximum diameter is 27mm. (711(8))

3075 A pair of bronze tweezers, 72.5mm long, with squared terminals, a grooved loop, and a simple incised ornament on the upper part of each arm. (1M/N(3))

3076 A simple sheet bronze clamp. (2(18))

3079 A tiny fragment of bronze. Not drawn. (2(5))

3082 Three small bronze fragments. Not drawn. (2D(6))

The Durotrigean bronze artefacts are more numerous than those of the preceding periods combined. Personal trinkets are numerous and include 12 safety pin brooches (3014, 3016, 3026, 3027, 3032, 3038, 3040, 3046, 3055, 3057, 3058, 3061), two brooch bows (3048, 3066) and a pin (3047). Four penannular brooches were recorded (3044, 3060, 3063, 3067) an ear-ring (3062) and ring (3073) and toilet articles (3004, 3075). A decorated bronze chape fragment and scabbard binding strips hint at some individual status.

Undated

3080 A fragment of casting waste. Not drawn. (857(8))

3084 A fragment of bronze casting waste. Not drawn. (857(1))

3085 Seven tiny fragments of bronze. Not drawn. (857B(2))

3086 A fragment of bronze casting waste. Not drawn. (857B(1))

The Bone Objects

Phase 1 (Figures 88—91)

5001 A knife, 80mm long, manufactured from a sheep's tibia by angular splitting of the bone in a longitudinal plane and polishing to a sharp pointed tip. The socket and tip are missing and the implement is weathered. Not drawn. (297(3))

5004 Fragment of roe deer metatarsal 40mm long; burnt, polished, and worked at one extremity. Not drawn. (286(3))

5005 A socketed knife 98mm long made from the left metatarsal of a sheep. It is a normal type except that no rivet holes are present round the socket. (305(5))

5006 A socketed knife 123mm long of normal type made from the humerus of a goose. The greater part of the socket and tip are missing and the implement is polished overall. (286(3))

5008 Part of the shaft and socket of a socketed bone knife of normal type. The fragment is 67mm long, highly polished with a perforated socket. It was made from the right tibia of a roe deer. (361(4))

5011 A socketed knife 175mm long of normal type, made from the right tibia of a fallow deer. The perforated socket is complete but the extreme tip of the implement is missing. (419(5))

5012 A socketed knife of normal type 120mm long. The implement is highly polished overall and was made from the left tibia of a sheep. The socket possesses two sets of opposed rivet holes. A fifth rivet hole occurs below these and an attempt was made to drill a sixth hole to oppose this (305(5))

5017 The tip, 88mm long, of a socketed bone knife probably made from a red deer rib. The fragment is highly polished overall. Not drawn. (378(6))

5018 A fragment of sheep rib 86mm long with three oblique incisions. Not drawn (377(7))

5019 A toggle or belt slider 81mm long, probably manufactured from a sheep metacarpal. The artefact is highly polished over all its external surface and is perforated down its length by an elongated slot which is continued as grooving to its extremities on both faces. (297(7))

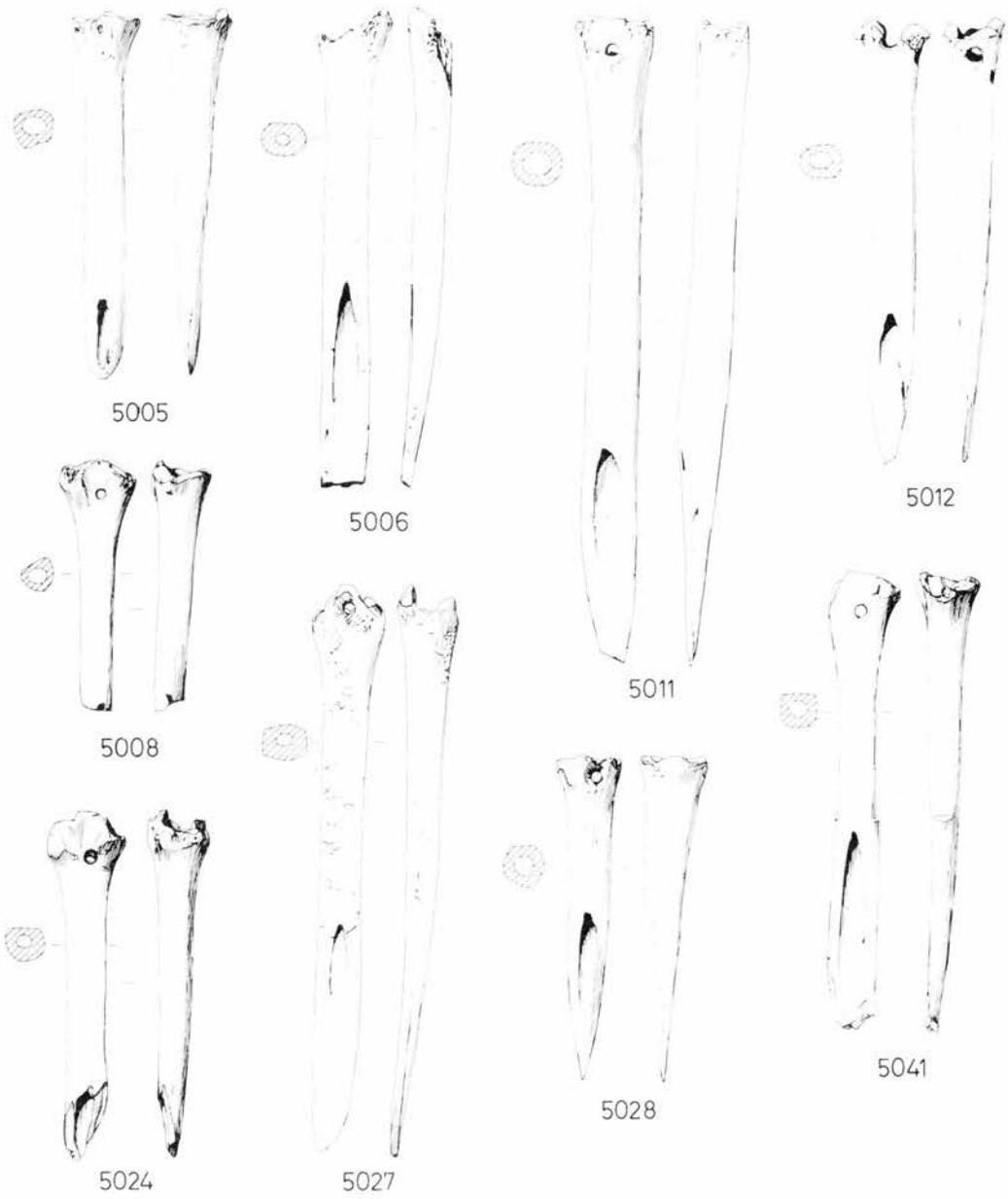


Figure 88 Bone artefacts: Phase 1 (Scale ½)

5020 A fragment of ox calcaneum which exhibits cuts on one surface. Not drawn. (378(3))

5024 A knife manufactured from the left tibia of a sheep. The butt of the implement has been hollowed and was attached to its shaft by means of two opposed rivet holes. The shaft of the implement is polished but the tip is missing. (116(6))

5027 A socketed knife 153mm long made from the right tibia of a sheep. The implement is complete, with one drilled rivet hole in its socket and the tip is much worn and blunted. (378(6))

5028 A knife, 86mm long, manufactured from the left metatarsal of a sheep. The sharp pointed tip has been obtained in the usual fashion by splitting the bone obliquely in a longitudinal plane and polishing to a sharp point. The implement has a hollow socket and two rivet holes by which the shaft was attached. The implement is polished overall. (116(6))

5030 A socketed knife 110mm made from the left tibia of a sheep. The tip and part of the socket are missing and a single rivet hole survives in the latter. (361(4))

5033 The complete left metatarsal of an ox (circa 3½ years) 200mm long. The shaft of the bone possesses a glossy polish such as can only have resulted from frequent contact with a resilient substance. Not drawn. (377(7))

5035 A knife handle of red deer antler 90mm long, the narrower end of which was abraded and broken in antiquity. The handle is entirely hollow and very worn from prolonged use. Numerous scratches and punch marks are visible on its surface but the only formal decoration is a single drilled dot and circle motif. (379(6))

5037 The left horn core of a goat on which an attempt has been made to saw the horn near its butt. Not drawn. (180(9))

5040 The fragmentary tip of a socketed knife of normal type, 45mm long, probably from the rib of a sheep. Not

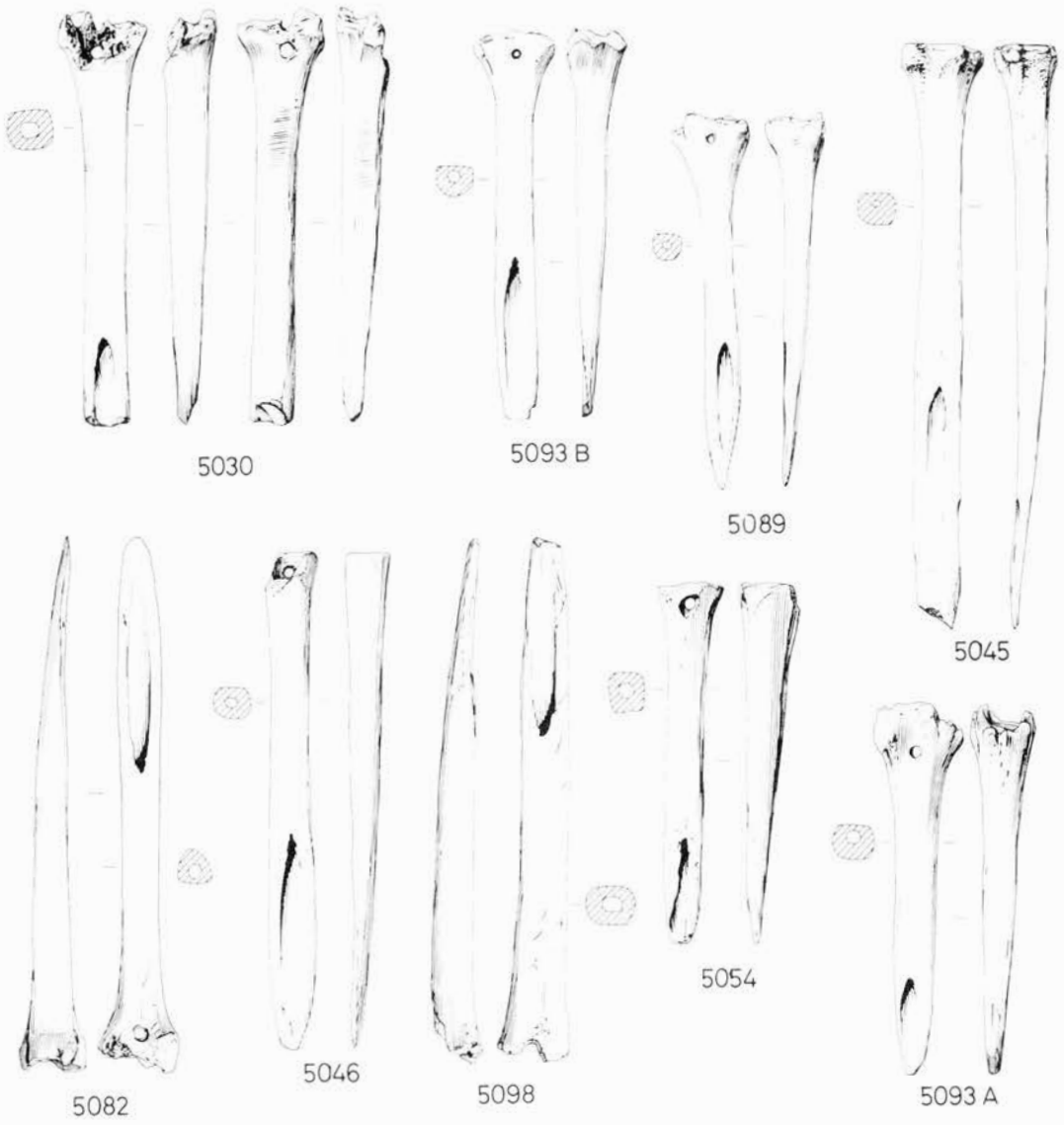


Figure 89 Bone artefacts: Phase 1 (Scale ½)

drawn. (639[310J](6))

5041 A socketed knife 122mm long made from the left tibia of a sheep. The tip of the implement is much worn and abraded and part of the socket is missing but two rivet holes survive in the latter. The upper half of the shank is squared and terminates in two slight shoulders midway along its length. The implement is unweathered and highly polished. (639[310J](7))

5045 A knife 154mm long of normal type save that the butt is not socketed. It was made from the right tibia of a sheep and is highly polished overall with a squared shank. The extreme tip of the implement is missing. (297(8))

5046 A socketed knife of normal type 131mm long made from the tibia of a sheep. Part of the socket is missing but one rivet hole survives. The cutting tip is much worn and polished. (48(14))

5047 A fragment of red deer antler beam which has been sawn off across its shaft and from which two tines have also been sawn. Not drawn. (48(14))

5049 A polished bone awl 80mm long made from a dog's fibula. The tip of the awl is missing. (297(8))

5051 The fragmentary tip, 90mm long, of a socketed bone knife of normal type. The upper half of the shank and socket are missing. Not drawn. (411(3))

5054 A socketed bone knife 95mm long of normal type made from the right metatarsal of a sheep. The socket is fragmentary but one rivet hole survives. The implement is polished overall. (185(8))

5059 The base of a shed red deer antler which has been sawn off close to the burr. The stumps of the beam and two tines have been hollowed out and a single elongated slot has been carved into the beam. Some attempt has been made to remove the burr. The artefact is of unknown use but it possesses three sockets and the slot in the beam is highly worn. (186(4))

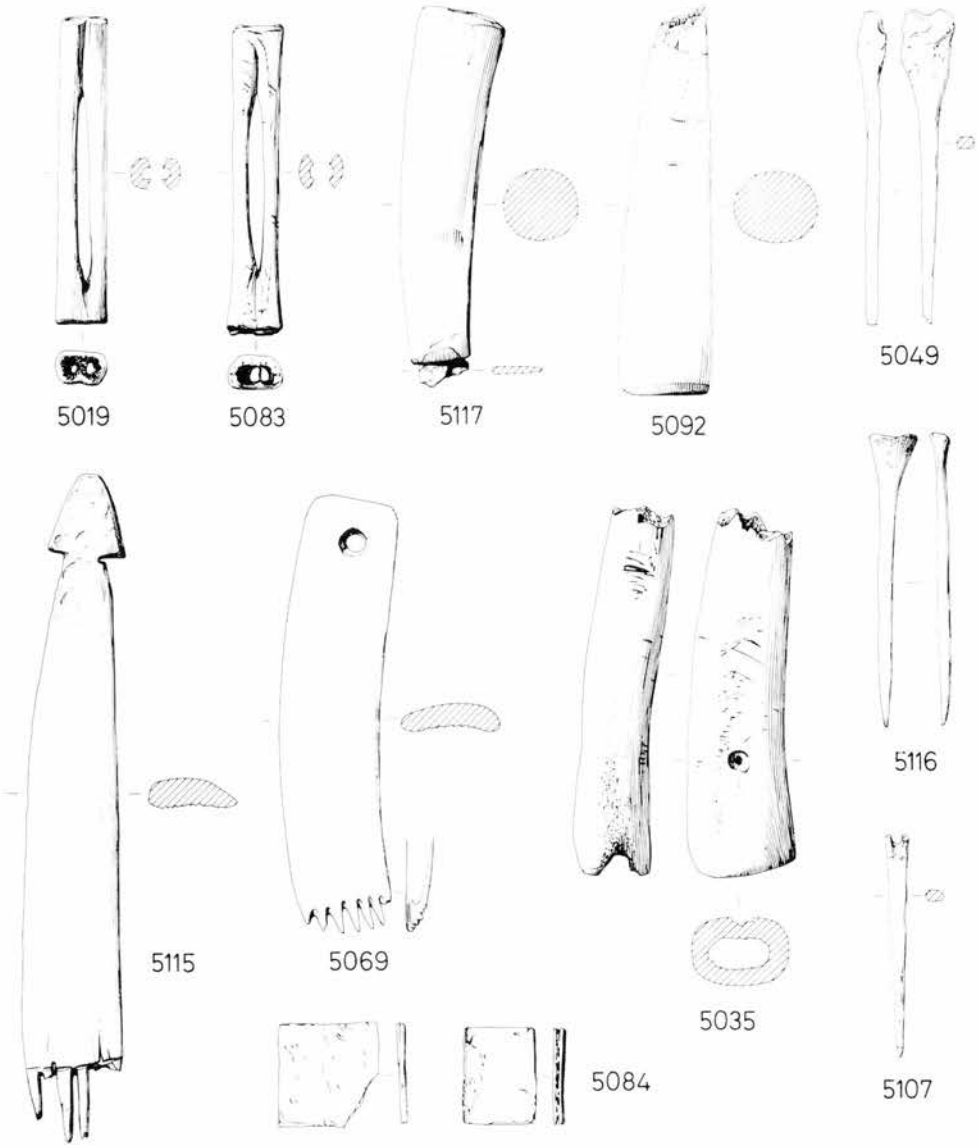


Figure 90 Bone artefacts: Phase 1 (Scale ½)

5063 The right jaw bone of an ox which exhibits a number of incisions on both surfaces. Not drawn. (179(4))

5069 A plain comb made from an ox rib. The butt is squared and has a single perforation whilst the six teeth are much worn and survive only as stumps. The artefact is 114mm long and polished overall. (308(7))

5070 A socketed knife of normal type 85mm long made from the right tibia probably of a roe deer. The tip and part of the socket are missing but the two rivet holes are still visible. The implement is highly polished overall. Not drawn. (201(7))

5078 A sternal rib fragment of an ox which exhibits incisions along one edge. Not drawn. (44(9))

5082 A socketed knife of normal type 143mm long made from the left tibia of a sheep. The implement is highly polished and complete with two opposed rivet holes in the socket. (296(6))

5083 A toggle or belt slider 80mm long made from the metacarpal of a sheep or goat. The centre part of the bone has been removed to produce an elongated slot 47mm long. The line of this slot is continued to the terminals by means of shallow grooves. The artefact is polished overall and shows signs of shaping at both ends. (296(6))

5084 Three oblong bone plaques, one of which has a corner missing. (638(3))

5087 The socket and part of the shaft of a socketed knife of normal type made from the right tibia of a roe deer. The object is 50mm long, the socket is perforated and is weathered overall. Not drawn. (521(4))

5089 A complete socketed knife 100mm long of normal type made from the left tibia of a roe deer. The implement is rather weathered and has a perforated socket. (521(4))

5091 The tip of a socketed knife of normal type. The burnt fragment is 100mm long and lacks its extreme tip as well as its shaft and socket. Not drawn. (383(6))

5092 A handle made of a red deer antler tine, 100mm long. The butt has been neatly trimmed and the point of the tine has been hollowed to allow for the insertion of an implement. The exterior of the handle is very polished and worn. (528(5))

5093A A socketed knife 98mm long of normal type made of the tibia of a sheep. The implement is highly polished overall and has a perforated socket. (528(5))

5093B A socketed knife, 105mm long of normal type made from a sheep's tibia. The implement is very fresh, polished overall, and the socket is perforated. (528(5))

5098 A socketed knife of normal type, 140mm long, made of the left humerus of a goose/swan/crane. Part of the socket and the extreme tip of the implement are missing but one rivet hole is visible in the socket. The implement is highly polished overall. (382(4))

5105 The extreme tip of a socketed knife, 50mm long, of normal type. Not drawn. (71(8))

5106 A socketed knife 70mm long of normal type made from the metatarsal of a roe deer. The tip is missing and the socket is perforated. Not drawn. (69(3))

5107 A needle 59mm long with a highly polished shaft and a fragmentary eye. (397(8))

5115 An undecorated comb of red deer antler 176mm long. The butt is triangular but unperforated, and the polished handle terminated in six teeth of which three survive. (457(4))

5116 A pin or awl 77mm long made from the fibula of a pig. The shaft and point are highly polished but the end retains its articulated surface. (65(15))

5117 A simple handle of red deer antler tine 90mm long. The butt is simply squared whilst the hollow tip still retains the tang of the original iron knife. (65(15))

5118 An ox rib fragment with transverse incisions on one face. Not drawn. (48(12))

5125 A fragment of red deer antler with one tine sawn off and the second tine worn and polished from use. Not drawn. (377)

5128 A fragment of antler tine 110mm long which has been sawn at both ends but otherwise unworked. Not drawn. (378)

5130 The polished tip of a socketed bone knife 50mm long. Not drawn. (201(7))

Of the 49 bone artefacts related to Phase 1, over half (28), are socketed knives made from the long bones of dog, sheep, roe deer, fallow deer or goose. A socket was normally bored into one articular end to hold a handle which was occasionally pinned by rivets. The other end was split longitudinally and polished to a sharp cutting point. Such knives are not uncommon in Iron Age contexts; functionally they are probably best viewed as skinning knives. Other artefacts include two undecorated bone combs (5069, 5115), two toggles or belt sliders (5019, 5083), two knife handles (5035, 5117), two awls (5049, 5116) and a needle (5107).

Phase 2 (Figures 92—3)

5000 Decorated comb manufactured from a horse or ox long bone fragment, 153mm long with an average width of 30mm. The butt is rounded with one drilled perforation and the upper surface is decorated overall with inscribed dot and double circle motif. The comb is in fragmentary condition, but appears to have possessed six teeth which were on average 34mm long. (416(3))

5002 Polished tip of a knife similar to 5001 made from a sheep-sized tibia 50mm long. Not drawn. (1E(4))

5003 Fragment of ox rib 80mm long which exhibits four oblique incisions. Not drawn. (1C(5))

5007 A socketed knife 116mm long of normal type. The implement has a perforated socket and was made from the right tibia of a sheep. (426(5))

5016 The point of a polished pin 40mm long made from a Labrador-sized carnivore rib fragment. Not drawn. (435(3))

5022 Horn core of sheep 75mm long sawn off at both ends. Not drawn. (442(5))

5023 Horn core of ox, 65mm long, sawn off at one end and hollowed to receive a socket. The tip has been sharpened obliquely and is much worn. (442(5))

5026 A spatulate implement 162mm long made from a red deer-sized tibia. The butt of the implement is squared and polished and the polishing extends down the convex face of the implement becoming more pronounced near its spatulate end. This working edge has been thinned from both flat surfaces to form a chisel edge. (438(5))

5031 The complete left metatarsal of a sheep 127mm long. The shaft of the bone is polished and possesses a single drilled perforation. (620(5))

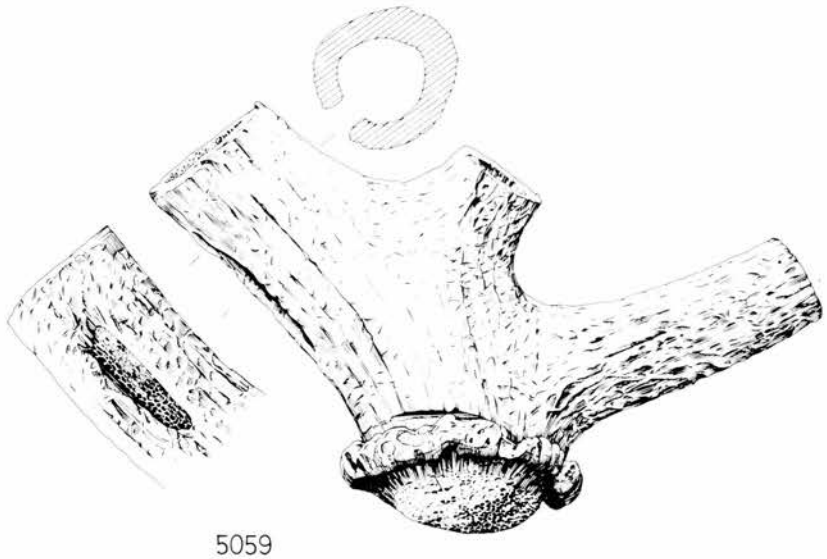


Figure 91 Antler artefacts: Phase 1 (Scale ½)

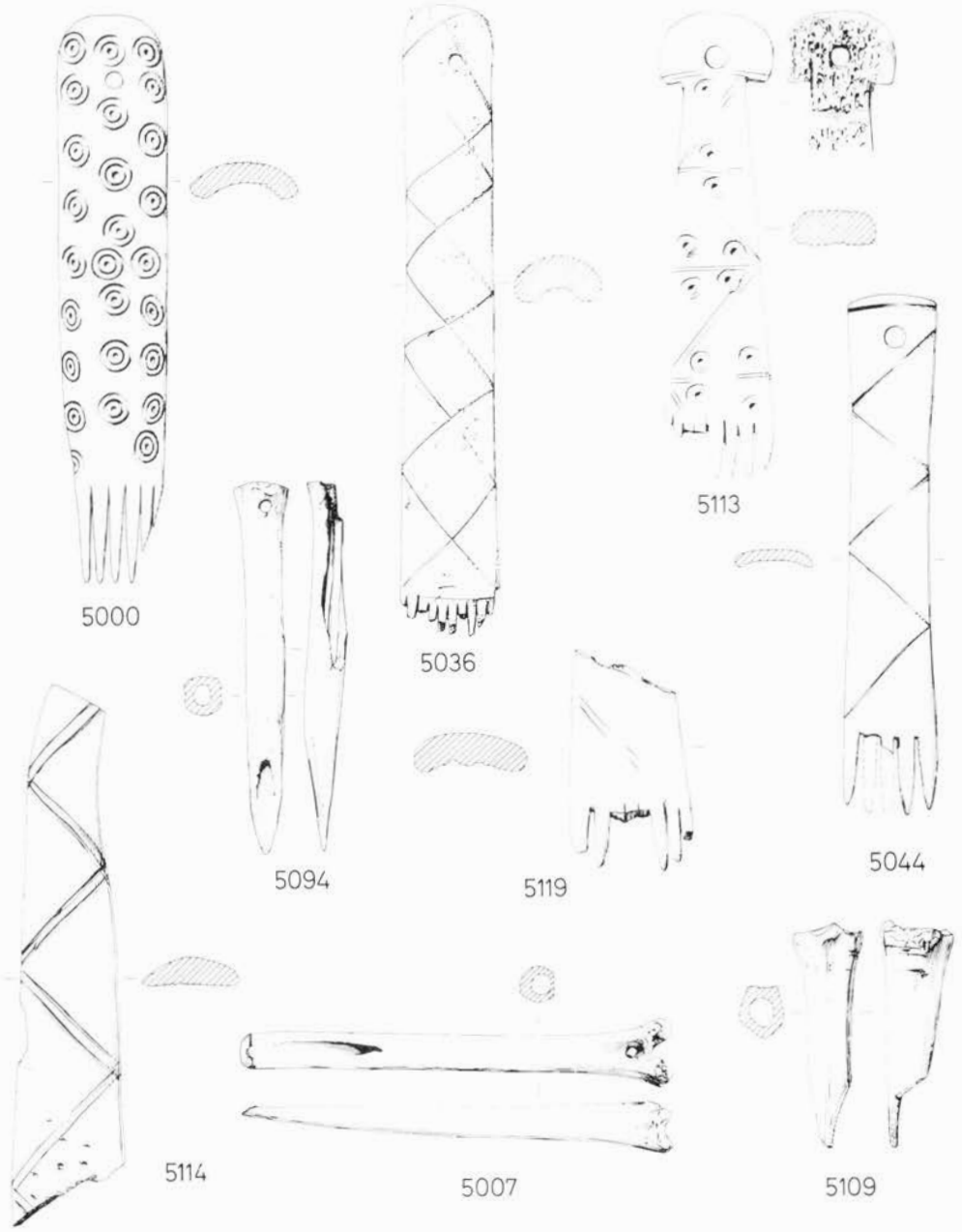


Figure 92 Bone artefacts: Phase 2 (Scale ½)

5036 A decorated comb 170mm long made from a long bone of a large ungulate. The surface of the implement is polished overall whilst its elongated handle is decorated on its convex surface with a crudely incised lattice pattern. A single perforation occurs at the butt and only the stumps remain of the ten teeth. (1M(3))

5042 The incomplete left metatarsal of a roe deer 105mm long. The bone has been split longitudinally and is much worn and polished. Not drawn. (428(8))

5043 Burnt and polished fragment of antler tine 46mm long. Not drawn. (187(4))

5044 Decorated comb 140mm long made from a fragment of ox rib. The artefact was fragmentary when found and is very thin due to the polishing and straightening of the bone in antiquity. The butt is slightly rounded and perforated. The convex surface of the handle is decorated with an incised zig-zag line and three teeth survive from the original five. (429(4))

5048 A socketed knife of normal type 140mm long made from the left tibia of a sheep. The socket and upper part of the shaft are missing. Not drawn. (439(3))

5053 A fragment of roe deer antler 95mm long, sawn off at the broader end and rather worn. Not drawn. (439(4))

5064 A sliver of bone 60mm long worn on both flat surfaces and ground to a point at one end. Not drawn. (602(5))

5071 Eight fragments of sawn red deer antler. Not drawn. (519(8))

5075 The socket and part of the shaft of a socketed knife of normal type. The fragment is 68mm long made from the left tibia of a large sheep or goat. Two rivet holes are visible in the socket. Not drawn. (431(5))

5080 The left metatarsal of an ox which has been split longitudinally. Not drawn. (664(3))

5094 A socketed knife 100mm long of normal type made of the metatarsal of a roe deer. Part of the socket and shaft

are missing but a single perforation survives in the former. (734(4))

5099 The base of a red deer antler spread from which the beam and tine have been sawn. The artefact has been used on both flat faces as an anvil. Not drawn. (508(6))

5101 Fragments of large red deer antler which exhibit saw and cut marks. The antler is also partly burnt. Not drawn. (701(7))

5102 A complete sheep's metacarpal 83mm long which is perforated midway along its length. (1L(3))

5109 An awl made from the left metatarsal of a sheep, 58mm long. The shaft is polished and longitudinal scoring occurs on one surface. (701(8))

5113 A decorated comb made of a red deer antler 122mm long. The flat mushroom head of the comb possesses a single perforation whilst the shaft is decorated by a series of double diagonal incised lines in four panels. Subsequently, randomly placed dot and circle motifs were added. Of the original eight teeth, four now survive complete, though much worn and polished. (459(5))

5114 The handle of a decorated comb 145mm long made of red deer antler. The butt is simply cut away with no perforation, whilst the handle is decorated by a double incised zig zag motif. The teeth of the comb are missing (459(5))

5119 A decorated comb of red deer antler 60mm long. Only the lower part of the handle and five teeth out of the original eight have survived. The exterior of the comb is decorated by a pair of incised diagonal lines. (459(5))

5123 A fragment of red deer antler sawn at both ends with a dot and circle motif inscribed on one face. Not drawn. (209(10))

5126 A fragment of red deer skull from which the antlers have been sawn. Not drawn. (1R)

5129 The centre portion of the shaft of the left tibia of an ox, 130mm long, which has been sawn off at both ends and hollowed. Not drawn. (672(4))

5132 The horn core of a goat which an attempt was made to saw from its parent skull. Not drawn. (1N(4))

5133 The horn core of a goat which an attempt was made to saw from its parent skull. Not drawn (209(11)).

No less than 19 of the 32 bone artefacts related to this phase are of indeterminate purpose or simply fragments of worked bone. Of the remaining artefacts, five are identical to the socketed bone knives described above (5002, 5007, 5048, 5075, 5094) and decorated bone combs make their first appearance (5000, 5063, 5044, 5113, 5114, 5119). Other artefacts include a single pin and awl (5016, 5109).

Phase 3 (Figures 94—5)

5010 A fragment of ox horn core 80mm long which is sawn off and perforated at one end. Presumably a hafting device. (123(11))

5013 A small piercer or awl 51mm long with a polished tip made from a fragment of a sheep-sized long bone. (458(4))

5014 A fragment of red deer antler 120mm long. Both ends exhibit saw marks and attempts have been made to hollow out the interior. Two saw marks are also present on the external surface and the artefact presumably represents an abortive attempt to manufacture a handle. (310L(6))

5015 A fragmentary ox tibia 178mm long which has been hollowed and worked to an oblique and polished point at one end. The tip of the implement is worn very smooth and polished on its under surface. (157(6))

5021 A fragment of sheep metacarpal 70mm long with a highly polished surface. Not drawn. (96(10))

5029 A fragment of a decorated bone comb 83mm long from which the teeth and a greater part of the handle are missing. (172(10))

5032 A fragment 75mm long representing the tip of a socketed bone knife. The fragment is much weathered. Not drawn. (242(5))

5034 The second fore phalanx of an ox which exhibits a series of cuts on two faces. Not drawn. (155(15))

5038/9 A fragment of the right humerus of a wildboar or

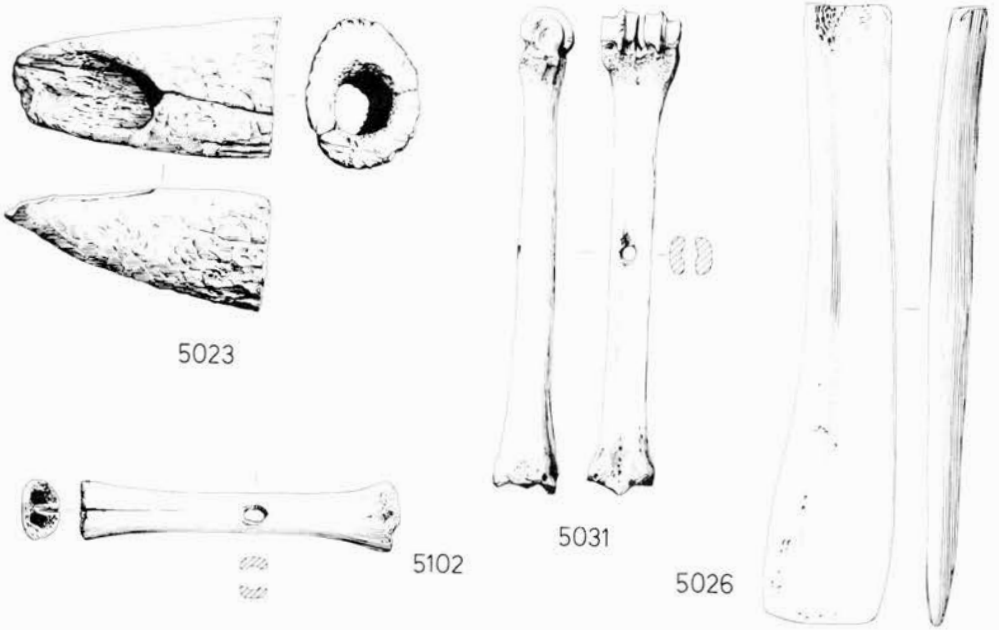


Figure 93 Bone artefacts: Phase 2 (Scale ½)

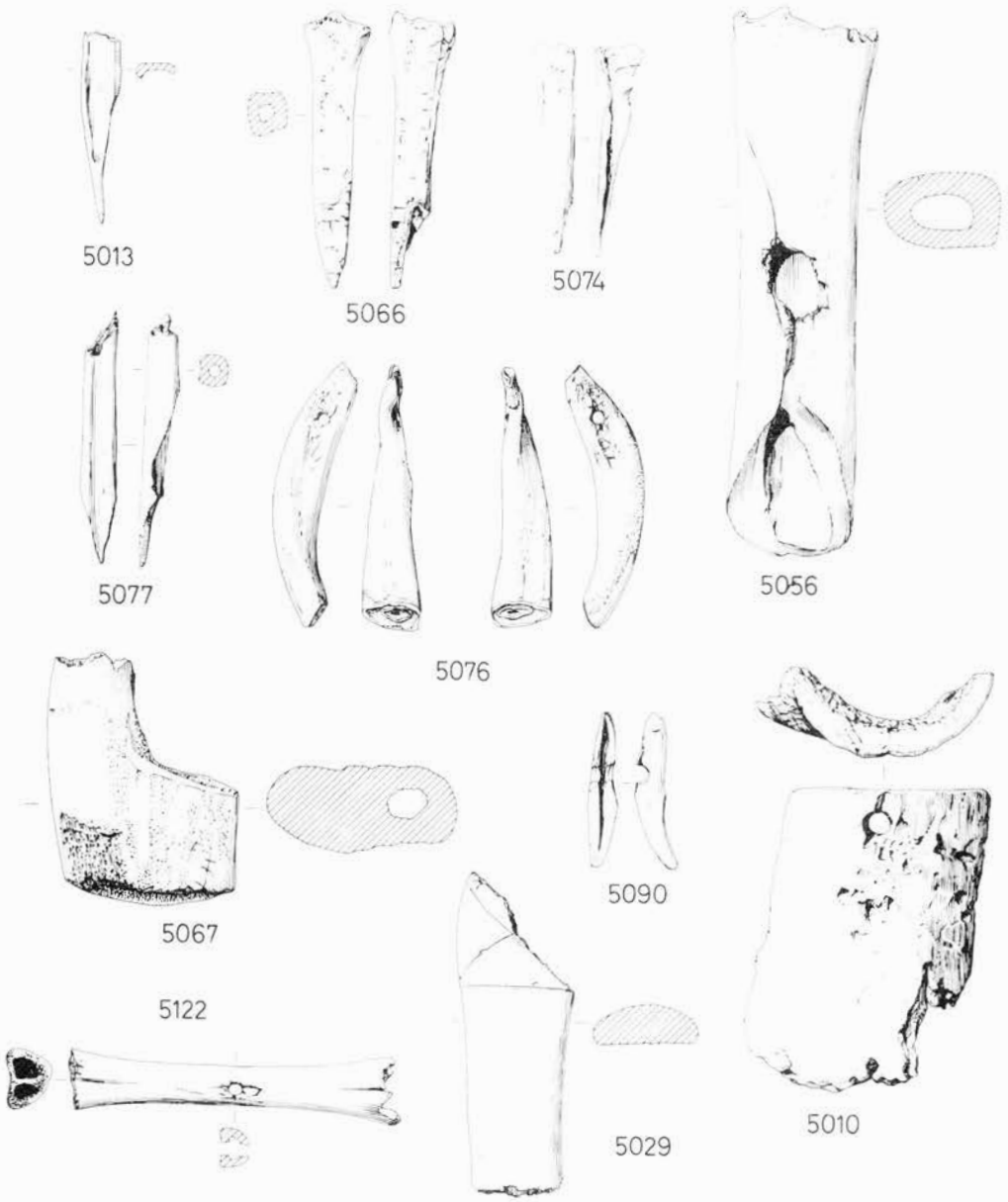


Figure 94 Bone artefacts: Phase 3 (Scale ½)

pig the external surface of which is scratched and polished from use. Not drawn. (310J(9))

5050 A fragment of a roe deer metatarsal 66mm long which has been roughly whittled into a point at one end. Not drawn. (318(5))

5055 A segment of red deer antler beam 70mm long sawn at both ends. A longitudinal segment has been removed and the resultant surface is worn and smoothed from use. (381(13))

5056 A chisel or gouge 145mm long made from the tibia of an ox. The implement is hollow throughout its length to provide for a haft and has been split obliquely at one end to provide a convex cutting edge. (342(5))

5061 The fragmentary tip, 120mm long, of a socketed knife of normal type which was made from the right tibia of a sheep and is much weathered and abraded. Not drawn. (367(5))

5062 A fragment of humerus of a juvenile red deer 70mm long. The surface of the bone is worn smooth and polished. Not drawn. (668(6))

5065 The tip of an awl 45mm long, ground and polished to a sharp point. Not drawn. (688(4))

5066 An awl 73mm long made from the right metatarsal of a sheep. One articular end has been perforated to allow for the introduction of a handle whilst the other end has been crudely fashioned into a point. (310G(5))

5067 A fragmentary socketed implement of red deer antler. The function of this artefact is unknown but it is smoothed and worn over its entire surface. (171(9))

5072 An awl 70mm long made from a fish bone. The implement is worn at its tip. Not drawn. (171(10))

5073 The extreme tip of a socketed bone knife of normal type 36mm long made from a sheep-sized long bone fragment. Not drawn. (402(8))

5074 An awl 55mm long made of a fragment of a small ungulate tibia. The tip is worn and polished. (402(8))

5076 Two pendants made by drilling perforations through the roots of two horse incisiors. (172(13))

5077 The tip of an awl 67mm long made of a fragment of a roe deer metatarsal. (172(13))

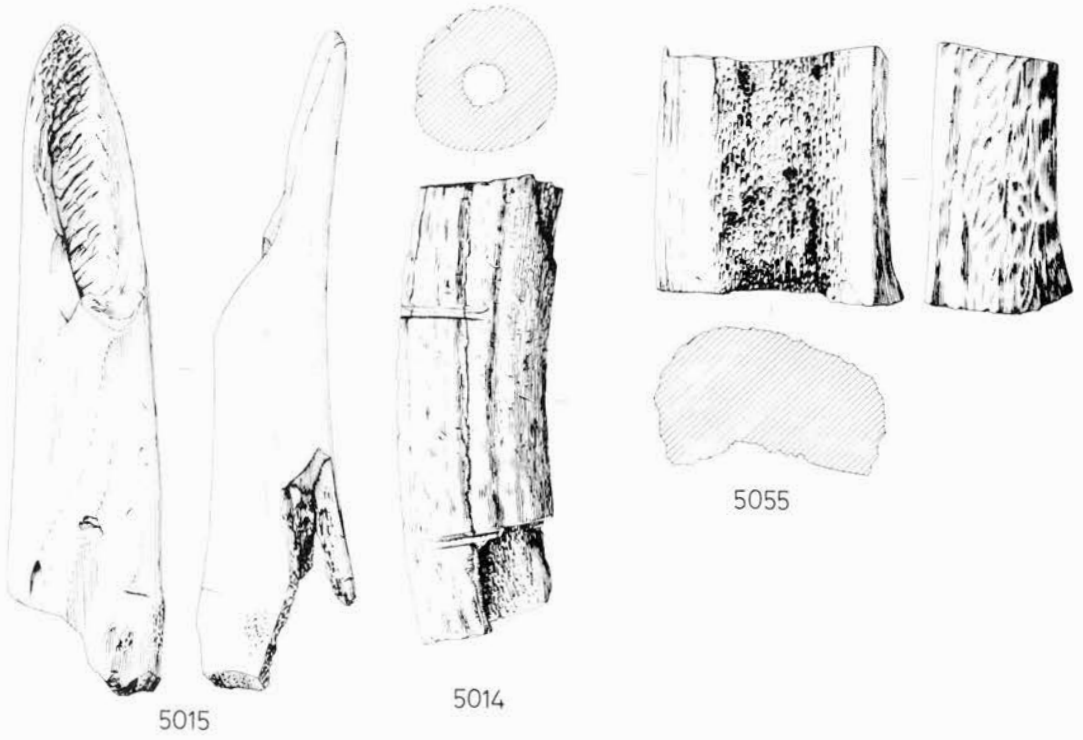


Figure 95 Bone artefacts: Phase 3 (Scale ½)

5079 A fragment of the right radius of a sheep which is highly polished over its entire surface. Not drawn. (172(14))

5081 The tip of a red deer antler tine 85mm long which has been sharpened to a blunt point and is very worn. The other end shows signs of having been sawn off the parent material. Not drawn. (661(6))

5086 An awl fragment 60mm long made from part of a sheep's tibia. Not drawn. (111(6))

5088 The tip and lower shaft of a socketed bone knife of normal type made of a roe deer metatarsal. The piece is 65mm long and polished overall. Not drawn. (111(7))

5090 A pendant made by perforating the root of a lower right canine of a dog. The tooth has split longitudinally. (410(6))

5095 A fragment of a bone awl 90mm long with a worn tip. Not drawn. (389(5))

5096 The base of a red deer antler spread from which the beam and tines have been sawn. Not drawn. (711(4))

5100 A segment of red deer antler 85mm long sawn at both ends and hollowed out for most of its length from the broader end. It is possibly an incomplete haft. Not drawn. (465(4))

5103 A fragment of ox humerus 90mm long with a polished surface. Not drawn. (243(9))

5104 A fragment of red deer metatarsal 160mm long which is worn at one end and split longitudinally. Not drawn. (310W(5))

5110 Part of a socketed bone knife 105mm long of normal type from a sheep's tibia. The tip and socket of the knife are missing. Not drawn. (674(7))

5112 A fragmentary horse metatarsal 175mm long, the surface of which possesses a high glossy polish (cf 5033). Not drawn. (580(8))

5120 A segment of red deer antler 37mm long, sawn off at both ends and hollowed down its centre. Not drawn. (86(12))

5121 A handle 93mm long of red deer antler, hollowed throughout its length. The implement is much worn and smoothed, and undecorated save for random punch marks around its mid-exterior. Not drawn. (371(10))

5122 The metacarpal of a sheep 88mm long with a single perforation midway along its length. (539(6))

5124 A fragment of red deer antler sawn across the beam and tines, with random incisions on both surfaces. Not drawn. (781(6))

5127 A fragment of red deer antler which has been sawn from its beam and used in part an an anvil. Not drawn. (415(8))

5131 A fragment of sheep's tibia 130mm long, pointed at one end, with the surface polished from use. Not drawn. (310A)

Of the 42 bone artefacts, 23 are of indeterminate purpose or fragments of worked bone. The socketed bone knives continue in use (5032, 5061, 5073, 5088, 5110), although several fragments are weathered and might be residual. In addition, a single weathered decorated bone comb was recorded (5029), together with eight awls, a socketed chisel or gouge (5056), pendants (5076, 5090) and a handle (5121).

PART III

Economy, Environment and Population

Chapter IX
The Debris of Metal Working
by Mansel G Spratling

This chapter sets out to provide an up-to-date statement (March 1977) on the results so far achieved in the analysis of the uniquely large amount of metalworking debris recovered from pit 209 and other features in the excavation of Gussage All Saints. The account replaces that given in the first interim report of the excavation (Wainwright and Spratling 1973, 117—27.) Reconstruction and analysis of the material recovered continue and are likely to last a few years yet; they will eventually be fully reported on elsewhere. Since the writing of the first report, only shortly after completion of the excavation, the picture has significantly changed in many details—particularly with regard to the place of metalworking in the life of the Iron Age settlement. While restraint will be placed on speculation at this stage—since it would be inappropriate to base too much reliance on work that is still incomplete—some of the implications of the changed picture will be explored here, as they have an important bearing on our assessment of the settlement as a whole, and on the organisation and scale of metalworking in southern Britain in the later phases of the pre-Roman Iron Age.

The nature of the debris: Contexts, excavation

The debris of metalworking from the site comprises one major find and a number of minor ones. The debris came to light in the following features: segment M of the Phase 2 enclosure ditch, layer (8) of the antenna ditch 601, and the following internal pits and hollows: 2, 65, 107, 209, 292, 427, 437, 438, 442, 711, 751, 818, and 857. The principal find was in pit 209 and is described in some detail below; the other finds are listed in Table XIV. Feature 2, the large hollow close to the east entrance, contained an iron furnace; a fragment of early Roman Samian ware was sealed beneath it. Features 107, 292, 601, and 751 are assigned on ceramic and stratigraphic grounds to the first phase of the settlement, 1Ka and M, 209, 427, 437, 438, 442 to the second, and 2, 65, 711, 818, 857 to the third.

Three radiocarbon determinations have been made of associated materials in pits 209 and 437, while a further sample relates to material in the same layer as, and in the layer below, the debris from segment M of ditch 1 (Wainwright and Switsur 1976). This fourth sample gave an age of 230±75 bc (Q1201). The sample from pit 437 gave an age of 210±75 bc (Q1205), but, whereas an association between the charcoal and the metallurgical debris is likely, there can be no certainty of it. The two samples from pit 209 can, however, with reasonable certainty be directly associated with the debris of metalworking, since they were taken from the large mass of charcoal and wood ash in which the debris was mixed and with which the latter is undoubtedly connected. The samples were large pieces of oak charcoal; since there is a real possibility that the trees from which they came were quite old organisms at the moment of felling, it is envisaged that further samples will be counted at a later date from the mass of twigs that were also incorporated in this deposit. The two samples selected from pit 209 gave ages of 150±65 (Q1207) and 70±70 bc (Q1206) respectively. The calibrated spreads for these two samples have been respectively calculated as being 355—20 BC and 165 BC—80 AD. On ceramic grounds, the debris from pit 209 falls late within the second phase of the settlement's history. On wider archaeological grounds, the debris from this feature can be assigned with reasonable certainty to the first century BC; it should be stressed that the debris is most unlikely to have been created and deposited before or after that century (Wainwright and Spratling 1973, 122—3).

The nature of the debris from the site indicates clearly that both bronze and iron were worked at the settlement during its two earlier phases; iron was certainly being forged, and bronze cast, but there is no clear evidence that iron was smelted from the ore, although many pieces of ferruginous sandstone were found in excavation. However, iron was smelted on the site during the final phase, as is indicated by the furnace in feature 2.

The evidence for bronze-working in this third phase is not clear-cut, for it could be argued that the scraps of debris were derived from earlier deposits. The few fragments of moulds for casting bronzes from Phase 3 deposits are not only, in contrast to those from Phase 2 deposits, quite abraded but also, where identifiable, for types of objects characteristic of the metalworking carried out in Phase 2. (The crucible-fragments from features 2 and 857 are also quite abraded.) The sheet bronze offcuts from features 65 and 711, and the droplets of cast bronze from features 2, 818 and 857 cannot really be regarded as firm evidence in themselves for Phase 3 bronze-working, as they too may have been derived from the earlier, very intensive activity of Phase 2. On the other hand, the location of features 65 and 711 in the western part of the settlement (cf Table XV) where there is little evidence for bronze-working in previous phases (two droplets of waste cast bronze from the respectively Phase 1 and Phase 2 features 107 and 427), coupled with the fact that these two features have yielded evidence, in the form of off-cuts, for sheet bronze-working (in contrast to bronze-founding in the earlier deposits) do strongly suggest that bronze, as well as iron-working, took place in Phase 3. While the evidence is not conclusive, there seem to be reasonable grounds for postulating a bronze industry at the site in this phase. Analytical work at a later stage may shed some light on the matter.

Pit 209

Pit 209 contained an extremely large quantity of metallurgical debris—about 3m³ in all—a body of material that is unrivalled in pre- and protohistoric Europe for its quantity, varied nature and excellent state of preservation. The pit was of the standard 'bell' profile; its upper fill,

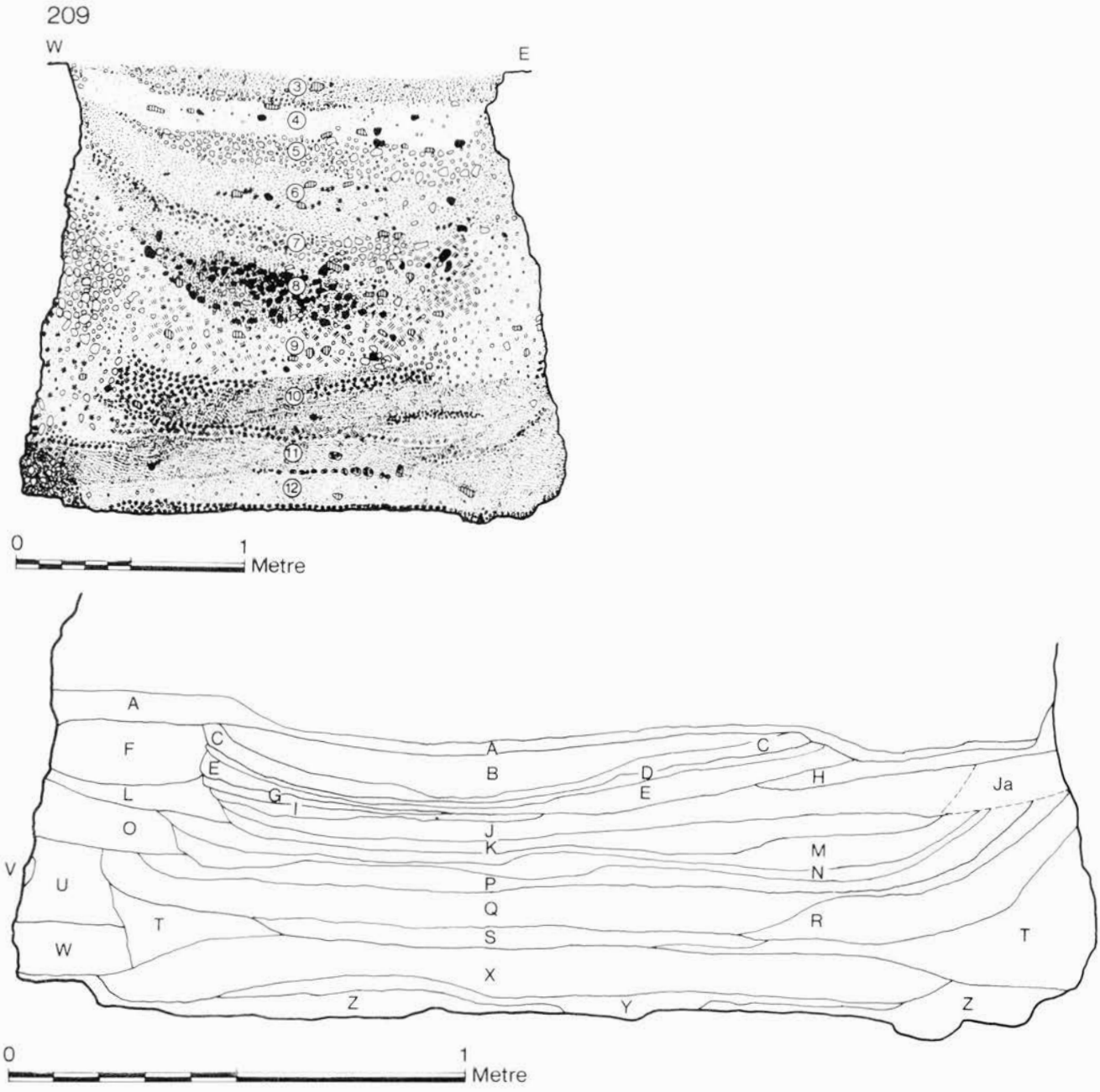


Figure 96 Section of Pit 209

layers (3) to (9), differed little from that of most of the pits excavated within the settlement. However, its lower fill, layers (10) to (12), was almost completely comprised of the debris of bronze and iron working, although some domestic refuse (potsherds, animal bones, etc) and some debris from bone working were incorporated within it. Excavation of these metallurgical deposits took about a month and was carried out with consummate skill by Karen Stanley; all of the deposits were dry-sieved through a fine mesh, and, in addition to the artefactual material, numerous large samples were taken of the charcoal and ash for examination in the laboratory.

Following the standard practice adopted for the excavation of pits within the settlement, the contents of pit 209 were emptied in two halves; the section was oriented on an east-west axis, and the southern half removed first. In excavating the southern half, five fairly arbitrary divisions were made within the whole deposit; they had to be more or less arbitrary owing to the homogeneity of the deposit. About half of it was dug out as one layer, (10); the remainder was excavated in four approximately 5cm thick spits—called respectively layers (11) 0—5cm, (11) 5—10cm, (11) 10—15cm, and (12).

As a result of the initial sorting of the metallurgical debris from the southern half of the pit as it was taken out of the ground, and of observations of the section left after the excavation of the southern half, it was realised that different kinds of materials were being recovered from the several parts of the deposit, and that more or less distinct tips could be distinguished within it. Twenty-six tips were identified and individually excavated in the northern half of the deposit (which for ease of reference is called 209/2); further sub-divisions were observed within some of these layers, but they were too indistinct for the separate bagging

of the artefactual material. The twenty-six layers were lettered from A to Z, starting from the top (Figure 96). In general terms, A to M and O correspond to layer (10) of the southern half, N and P to W to layer (11), and X to Z to layer (12). However, the picture is actually more complicated than this, and is summarised in Table XVI. Layers A to Z were described as follows in the excavation-notebook:

A Not an actual lens: top of (10).
B Charcoal and ash occurring in indefinite bands; probably represents tips although these could not be defined exactly; includes small sterile lens to left of section.
C Charcoal.
D Grey ash with small clay lumps.
E Charcoal.
F Rubble with brown soil and some charcoal; extends approximately 80cm from section decreasing to a thickness of 5cm.
G Light grey ash.
H Light grey ash.
I Ash and charcoal; separated from G by a lens of charcoal 0.5cm thick.
J Ash and charcoal. This lens was not clearly defined at the right side of the section and probably does not cut the underlying lenses as shown in the diagram. The finds from this were kept separate from the other finds from J and probably belong to M, P and Q. (The descriptor JA has since been given to this uncertainly bounded area of the deposit, and the finds correspondingly marked).
K Light grey ash with small chalk lumps.
L Brown soil with some chalk rubble; separated from F by thin band of grey soil; extends half-way around edge of northern half of pit.
M Charcoal with some ash; includes lens of light, sandy ash containing several pieces of slag at the right side of the section.
N Clay and ash.
O Clay mixed with small chalk lumps and chalk rubble; extends half-way around edge of northern half of pit.
P Dark grey ash and charcoal; divided into alternate lenses of charcoal and ash each approximately 1cm thick to right of section; probably represents four or five tips.
Q Light grey ash and charcoal; includes small lens of brown soil and small chalk lumps to left of section which contained several pieces of slag; above clay lens of R, charcoal and ash lenses were present as in P.
R Lens of chalk and clay below Q, containing several pieces of slag and one large lump of bronze (the billet); underlying this are two lenses of black ash separated by a thin lens of lighter ash—this deposit was distinctly separate from Q.
S Dark ash with some clay.
T Alternate lenses of very fine light and dark ash; four lenses were present at the left side of the section (light—dark—light—dark) and at least three at the right—and contained much burnt flint.
U Grey soil and medium chalk rubble; extends 70cm from section. Hearth blocks from southern half of pit in this lens.
V Clay and small chalk lumps; not present in section; extends from U for 80cm, 30 to 35cm in width; partially overlies T.
W Rubble with ash and charcoal; extends 90cm from section.
X Grey brown soil with ash, clay and some small chalk lumps; includes fairly continuous lens of light ash 1cm or less in thickness approximately in middle of X—two bone tools were found in this ash.
Y Charcoal with some soil and clay.
Z Small dome of chalk rubble, small chalk lumps and brown soil left of centre of section, in which there were no finds; chalk rubble and grey soil around edge of pit.

Some metallurgical debris was also discovered in layer (9), above layer (10); this layer was described as 'small chalk rubble/brown clayey soil', and also included bone and ceramic domestic refuse.

The bulk of the deposit from layers (10) to (12) and A to Z was charcoal and wood ash—with some ash-fluxed, vitrified clay—and in it were many fragments of tuyeres and other parts of fired hearth material (referred to in our research as IHM, or Industrial Hearth Matrix), some unused, unfired lumps of specially prepared clay, iron-working slag, bronze and iron scrap, hammer scale, a billet of tin bronze, nearly 600 fragments of crucibles, thousands of fragments of fired clay investment moulds made in one piece by the *cire perdue* (lost wax) technique for casting bronzes, and four fine bone tools for modelling the patterns around which the moulds would have been invested, as well as much waste material not yet precisely identified and numerous burnt, heat-fractured flint nodules and flakes. Over 7,000 mould-fragments have been counted, but this figure excludes a category of fragments which have been over-fired (referred to in our research as S-H (super heated) moulds) and are very difficult to identify since the fabric has softened and moved into shapes that have lost much of their original form: the total tally of mould-fragments is likely to run well into five figures.

The importance of this material lies not simply in its quantity and variety, but also in the fact that none of it is weathered, even in fracture, and that all of it is in an extremely fine state of preservation—a fact which has enabled a long-term programme of reconstruction to be launched. The freshness indicates quite clearly that the debris was thrown into the pit immediately (or shortly) after it was created, and further that the workshop from which it came lay in the immediate vicinity of the pit; no trace of the workshop itself was found in excavation and it is likely to have been destroyed some time ago by the action of the plough on the site. In this connection, it is apposite to observe that the later, mid-first century AD iron-smelting furnace should have been located only a short distance away from pit 209 in feature 2 (p. 32), the large hollow close to the main entrance into the settlement. This strongly suggests that this part of the settlement was reserved for metalworking over a long period. In terms of the arrangement of activities within the settlement, the location of the workshop in this area rather than elsewhere makes good sense: the potential fire-hazard to other structures (houses, barns, etc.) would have been minimised by its location close to the perimeter; moreover, any unpleasant fumes would have been blown away from the main area of domestic activity by the prevailing south-westerly winds which come from beyond the other side of the settlement. The concentration of unweathered, freshly broken debris from features in the area to the north of the entrance-thoroughfare (1M, 292, 437—8, 442, 601, 751) indicates that at certain times metalworking was carried out there rather than (or as well as) to the south of the thoroughfare where features 1Ka, 2, 209 and 857 are located (Table XV). The presence of bone-working debris in pit 209 indicates that this activity was also carried out in the same vicinity. The occurrence of bronze-working debris in deposits of all

three phases in the western part of the settlement (in features 65, 107, 427, 711) indicates that from time to time bronze-working took place there as well; however, the very small amount of debris from these last four features would seem to indicate that here metalworking was never carried out on the same scale as in the areas close to the main entrance. In conclusion, we may therefore in a real sense visualise an industrial quarter within the settlement.

Analysis and description of the metallurgical debris from pit 209

The work being undertaken on the metallurgical debris has so far primarily consisted of the laboriously slow reconstruction of the fragments of moulds and crucibles. Some preliminary technological investigations have been carried out under the direction of Mr L Biek of the Ancient Monuments Laboratory by a number of specialists in that laboratory and in other Government and academic institutions; an account of this technological research is being published elsewhere (Spratling *et al* 1977), so it will not be fully documented here. A comprehensive programme of scientific examination and analysis will not be initiated until a halt is called to the work of reconstruction and until after the purely archaeological analysis of the material has been completed. The archaeological analysis will not, however, end there, for it is envisaged that a finer, multi-disciplinary analysis will become possible once the scientific research and consequent experimental work on the debris from Gussage All Saints and on contemporary debris and finished artefacts from other sites have been completed. It is not intended that an attempt should be made to fit together all the fragments of the various categories of debris; such a project would occupy at least a couple of decades' full-time work and would not be undertaken by any sane individual. It is likely that after a while (a point that has by no means yet been reached) the returns from reconstruction will begin to diminish significantly, and at that stage the work will be brought to a close.

The programme of reconstruction has a number of principal aims:

i. to attempt to discover the full range of artefacts cast in bronze at the site, and the range of their stylistic variability;
ii. to determine whether or not master moulds were used in the manufacture of the wax patterns around which the surviving moulds were invested;
iii. to gain an indication of the volume of production;
iv. to gain information upon the design of the various other items used in the industrial process (crucibles, tuyeres, etc.); and
v. to determine whether the stratification in the debris from pit 209 reflects the order of production at the workshop, and, if so, whether any information can be gleaned from the association of the various materials in the several layers distinguished in the excavation of the deposit.

The work so far undertaken has already provided a full answer to the first, and a partial answer to the second half of the last of these questions, and partial answers to some of the others.

The stratification of the layers in the northern half of pit 209 (209/2) indicates the following order of deposition: Z, Y, X, W, U, T, V, S, R, Q, P, O, N, M, L, K, J, then I, G, F, either before, during or after H, and finally E, D, C, B, A in that order. The operational hypothesis before, during and since the excavation of 209/2 has been that the waste material from the workshop was thrown directly into the pit, or onto the ground close to the workshop and from there shortly afterwards, after each session of founding, shovelled into the pit. The work of reconstruction on the crucibles, now nearly complete, would appear to support either of these two possibilities—which differ only slightly in the impact that they would have had on the stratification of the debris within the pit. Analysis of the pattern of joins (*vide* Tables XVII – XVIII) between fragments of crucibles provides no support for such an alternative hypothesis as that all the debris from the workshop was first piled up high in one dump, and then shovelled into the pit in one operation; in the latter event there would have been a large measure of jumbling of the fragments. Tables XVII and XVIII indicate almost no such jumbling. Most of the joins so far made of fragments from 209/2 (133 out of 148; Table XVII) occur either in the same or in the immediately adjoining layer; of the other fifteen, six (4 × 1:JA; 1 × J:N; 1 × J:Q) come from that part of the deposit where the stratification was unclear (JA), and only two (1 × B:G; 1 × J:U) from layers separated from each other by more than one other layer. The same general picture is painted by the analysis of joins from the southern half of the deposit (Table XVIII); it is less distinct here since the 'layers' in that half were more of the nature of spits than true layers (see above and Table XVI). We may therefore conclude with reasonable certainty that the stratification within the deposit in pit 209 represents the order of production within the workshop, and that the pattern of the occurrence of different mould-types within the various layers (Table XVII) is significant.

In the following sections of this chapter, some of the industrial and other materials recovered from pit 209 are described and discussed in outline.

Charcoals and wood ash

About 7.5kg of charcoal and wood ash were collected from the metallurgical deposits in pit 209. All of the larger pieces submitted for indentification from each of the layers in 209/2 (and throughout 209) have been identified as being of oak (*Quercus* sp). Samples from four widely-spaced layers in 209/2 (C, J, P, T) have been examined in detail by Mrs Carole Keepax of the Ancient Monuments Laboratory, to determine the nature of the wood (twigs, branches, heartwood) and the full range of species of trees represented. Since a large proportion of the charcoal has disintegrated into minute fragments, less than half of each sample is readily identifiable; of the latter material, a couple of handfuls was arbitrarily selected from each of the four samples submitted for identification. The results of the identifications are given in Table XX. Mrs Keepax has commented on the results in the following terms:

> 'The content of each of these samples is basically similar. They all consist largely of oak charcoal. This is all 'large' material, i.e. from branches of trunks more than about 10cm in diameter. There are much smaller amounts of hawthorn-type and hazel charcoal. These consist mainly of 'twiggy' material, i.e. less than about 5cm in diameter. There are single fragments of ash and yew charcoal.'

Since these four samples, derived from various levels within the deposit, have yielded essentially identical results, it seems unlikely that the correlations are due to chance, and, further, likely not only that additional identifications would simply yield redundant data but also that the timbers used in the industrial hearths were deliberately selected for their pyrotechnic qualities. This is hardly surprising—

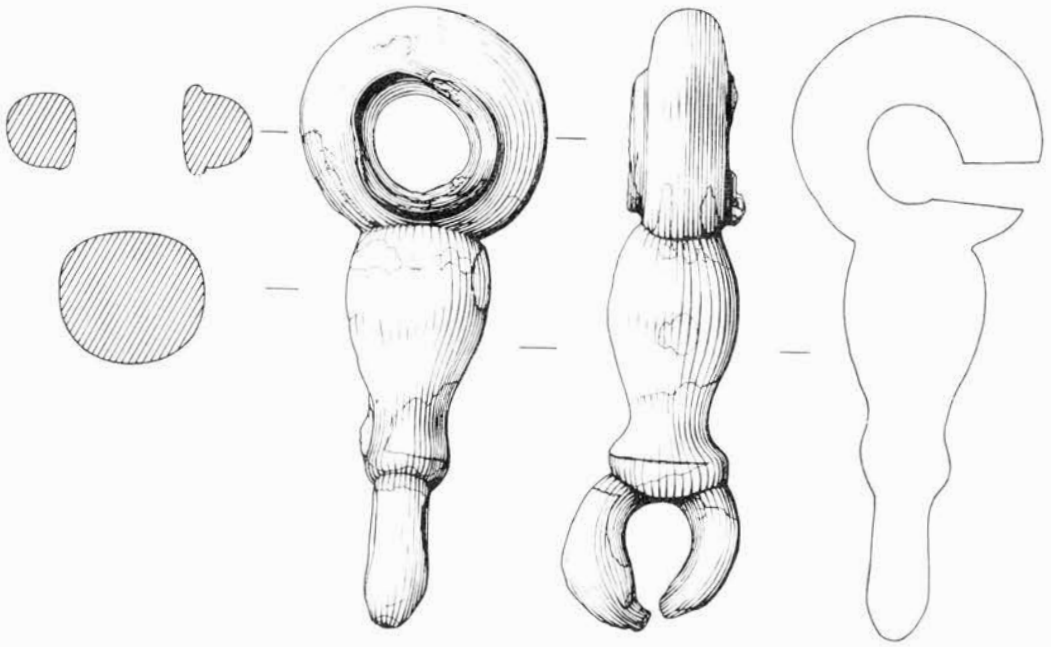


Figure 97 Bronze-plated steel link from the mouth-piece of a bridle-bit, with outline indicating position of slice taken for metallographic examination (Scale 1:1)

particularly in a period when different woods were used in accordance with their respective qualities for the construction of the several parts of spoked wheels, (Bulleid and Gray 1911, 1917, 310ff, Musty and MacCormick 1973), but it provides a nice corroboration of the careful manner in which pre-Roman Iron Age craftsmen selected their raw materials. It seems likely that the Gussage All Saints smiths used small twigs of hawthorn and the like to kindle their fires, and oak-charcoal to sustain the heat required to melt the bronze and forge the iron; oak-charcoal rather than fresh timber is likely to have been used.

Tuyeres and industrial hearth matrix

A large quantity of fragments of lightly fired clay tuyeres and other industrial hearth-matrix was recovered from the metallurgical deposits in pit 209. Although no work of reconstruction has yet been attempted on this category of material, it is already clear that the tuyeres were made as rectangular blocks with perforations about 3cm in diameter. Similarly designed tuyeres have been recovered from contemporary sites in Europe, notably the industrial quarter within the oppidum at Manching in Bavaria (Jacobi 1974, 246, 255, 347—8, Nos 1805—8, pl 99). On the high temperature microscope, a sample of black vitrified material from the active surface of a tuyere-opening from Gussage All Saints has been found to soften at 1200°C (Spratling *et al* 1977).

Bronze and iron scrap

Several pieces of bronze and iron scrap, and a number of heavily corroded iron or steel rods that might once have been used as chasing or engraving tools, were recovered from pit 209. Metallographic examinations have been made of several of these objects, and are reported on elsewhere (Sprating *et al* 1977). This work has shown that copper was regularly alloyed with tin, but no lead was added, which modifies the picture painted by the results of eight qualitative analyses made by emission spectroscopy by P T Craddock in 1972 (Wainwright and Spratling 1973, 127).

The most interesting piece of scrap is the discarded link from the mouthpiece of a three-link bridle-bit (Figure 97). This link, which measures 84mm long, is an old and heavily worn specimen, and is of some technological importance in that metallography has shown it to be made of forged carbon steel bronze-plated by dipping into a crucible of molten metal. A tin-rich interface has been demonstrated between the bronze and steel, and it is suggested that the piece was first tin-dipped to avoid direct exposure of the steel surface to high preheating temperatures, before being dipped in bronze (Spratling *et al* 1977).

The link is of 'Llyn Cerrig Bach' type after the eponymous find in Anglesey, in which different varieties of the type came to light (Fox 1947, 22–33, 80–83, Nos. 47-50, Plates XXI–XXIII). The type is clearly a western British one, for specimens have only been found in Wales (at Llyn Cerrig Bach), Dorset (Gussage All Saints), Gloucestershire (Bredon Hill) (Hencken 1939, 71–2, Figure 5) and Somerset (Glastonbury (Bulleid and Gray 1917, 389, Nos I. 12A–B, Plate LXII) Ham Hill (Hoare 1827, 42 Plate 5) Meare (Gray and Bulleid 1953, 243, No I44)). With one exception which is of cast bronze (Llyn Cerrig Bach, No 50), these bridle-bit links are of forged iron or steel; several were apparently plated with bronze (Glastonbury, Llyn Cerrig Bach, Nos 47–9, Meare, as well as Gussage All Saints) or tin (Bredon Hill, No 2 and, possibly, No 1). None of these (apart from Gussage All Saints) has yet been subjected to metallographic examination, though it is hoped that some of them will be in the near future (the Bredon Hill specimens are, however, unfortunately now missing). The Bredon Hill and Gussage All Saints links provide the earliest unequivocal evidence for the practice of tin-plating in Britain; all other closely datable examples of the technique are of first-century AD or later date. The early, third-century BC dates claimed for the tin-plated

shield-ornaments from Tal-y-Llyn, Meirionydd, (Savory 1976) are not universally accepted (Spratling 1966, Spratling 1972 and Frey with Megaw 1976, 63). A date in the first century AD is most likely for these pieces.

Billet of tin bronze

An elongated, deformed bar of tin-bronze, 112mm long and weighing 63.45g (Figure 98.1), erroneously described as an 'ingot' in the first interim report (Wainwright and Spratling 1973, 119–20, Figure 2.5) was discovered in layer 209/2 R. Only one other complete copper-alloy billet of pre-Roman Iron Age date appears to have been recorded from Britain: a rounded piece of metal, weighing 309.04g, from the smith's deposit at Ringstead, Norfolk (Clarke 1951, 223, Plate XIXb); a similar rounded billet occurs in a hoard of probably the first century AD from Somerset, Co Galway, a find which also produced a trimmed bar-ingot likewise of copper (-alloy) (Raftery 1960, 4, Nos 1958: 163–4, Plate 1). Fragments of other billets have been noted, for example, from the Herefordshire hillfort of Croft Ambrey (Stanford 1974, 162, Figure 74, 17). Other complete copper-alloy billets come from two native smiths' deposits of the mid-first century AD found at Santon, Norfolk[9] and Seven Sisters, West Glamorgan (Davies and Spratling 1976, 135, 138, Nos 31–32, Figure 10). Narrow elongated hammer-facets are visible on all these billets, which suggests that they were worked with small light-weight cross-pene hammers. Similar facets occur on the unpolished surfaces of a wide variety of beaten bronze-work (sword-scabbard plates, cauldrons, etc) of the British and Irish pre-Roman and Roman Iron Ages, which indicates a wide communality in metalworking practice. A small double-ended hammerhead of bronze with circular and cross-pene working edges (the latter not certainly intact) comes from the mid-first century AD deposit of metal found on the Polden Hills in Somerset (Spratling 1970, Figure 4 and Brailsford 1975, 232, No 5, Figure 7j) while larger, iron hammerheads with cross-pene edges come from the hillforts of Bredon Hill, Gloucestershire (Hencken 1939, 74, Nos 3–4, Figure 6 3–4) and Hod Hill, Dorset (Brailsford 1962, 14, No G43, Figure 13, described as a pickaxe).

The billets from Croft Ambrey and Gussage All Saints have been subjected to metallographic examination by R F Tylecote, and shown to have almost identical micro-structures and respective hardnesses of 107, HV1 and 116, HV5; the latter billet contains about 11% tin (Spratling *et al* 1977).

The weights of the Gussage All Saints and Ringstead billets are of particular interest, as is that of a copper (-alloy) ingot from the Seven Sisters smith's deposit (Davies and Spratling 1976, 133, No 26, Figure 10) for they conform to the system of weights used throughout later prehistoric Europe (Spratling forthcoming A) and, with other finds, provide clear evidence that pre-Roman Iron Age smiths weighed out their metals in the course of their work (Davies and Spratling 1976, 138). It is thus of more than passing interest that an iron balance-weight (weighing 1144.66g) has been found in a Phase 1 deposit (feature 109; S F 1019) and an equal-armed balance in a Phase 2 deposit (feature 439; S F 3045), within the Gussage All Saints settlement; the balance-weight conforms to the same system.

9. Smith 1908—09, 157–8 — described as a "spatula-like bronze object". Spratling 1975 for the dating of the deposit.

Crucibles (Figure 99)

Nearly 600 fragments of crucibles have been recognised amongst the debris from pit 209. Reconstruction of them is all but complete, and it is clear that a large number of specimens (at least thirty) is represented. All are of the standard British pre-Roman Iron Age design, that is, triangular in plan, with sometimes flat, sometimes rounded bases, and no provision for covers. Like others from southern Britain, the Gussage All Saints crucibles were never deeper than they were wide, in contrast to those from pre-Roman and Roman Iron Age sites in Scotland which are generally more deep than they are wide (Mackie 1974, Figure 19, 495, Plate XIIF). Two of the Gussage All Saints crucibles are illustrated here (Figure 99); their respective capacities (measured with sand) are 20 and 47ml, which is much more than is needed to melt the metal required for the casting of any of the items represented by the mould-fragments. For example, the 'Arras' terret from Hod Hill (Figure 100.1) has a volume of about 8ml, the 'Barbury' terret from Hod Hill (Figure 101.1) about 3ml, the 'Mill Plain' terret from ?Suffolk (Figure 100.5) about 12ml, and the mouthpiece (all of the three separately cast links together) of an unused bridle-bit from Hagbourne Hill, Vale of the White Horse (Figure 106), about 26ml. The weights of these four pieces are respectively 60.4, 29.6, 89.3, and 191.8g. Experiment with sand has shown that the Gussage All Saints crucibles are well designed for pouring, the arched sides preventing flooding beyond the spouts themselves (S Dove and PHT Shorer, pers. comm.).

In common with crucibles from other pre-Roman sites in Britain and from other early sites in Europe (Lamm 1973) the main body of the fabric consists of a partially vitrified clay filled with fine angular quartz grains in which there is a fair amount of void space. Technological examination of the Gussage All Saints specimens indicates firing temperatures of not more than 1250°C and not less than 1100°C. Micro-tests have shown that major movement of the body occurs at 1300°C and that it softens at 1350°C (Spratling *et al* 1977). One of the reconstructed crucibles from the deposit was evidently subjected to a temperature of this order, for it has collapsed into an almost flat, plate-like piece of vesicular vitrified matter. A high temperature in the hearth would have been necessary to compensate for the high order of heat-loss that would have immediately occurred on removing such wide open-mouthed crucibles from the hearth. (It is interesting, therefore, that the temperatures indicated by measurement of crucible samples in the high temperature microscope nicely corroborate the reading obtained from the orifice of a tuyere from the deposit; see above p.129). The ash-fluxed vitrified surfaces on the Gussage All Saints crucibles are absent from their bases, which indicates that they were merely covered by charcoal and were heated from above.

Moulds

Well over 7,000 fragments of fired clay investment moulds made in one piece by the *cire perdue* technique have been recognised amongst the debris recovered from pit 209. It is not yet possible to give an accurate figure of the number of moulds that they represent but it must be several hundred. On the basis of their appearance they may be divided into three groups: those with a large admixture of fine angular quartz grains, very similar to the fabric of the crucibles; those of red brown colour, containing only a small amount of quartz in the clay matrix; and those that now have a vesicular fabric. The last of these groups represents moulds

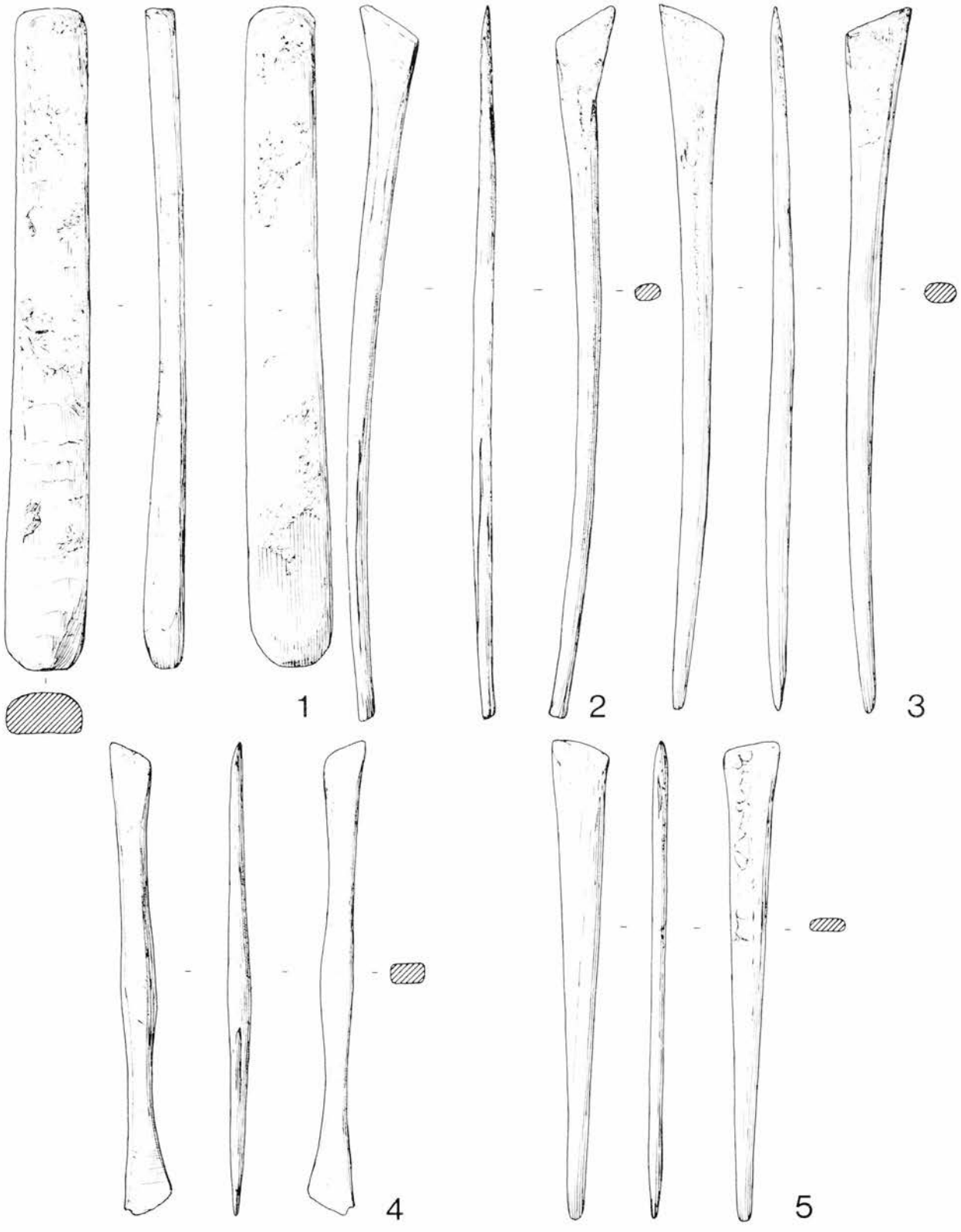


Figure 98 Bronze billet and modelling tools of bone (Scale 1:1)

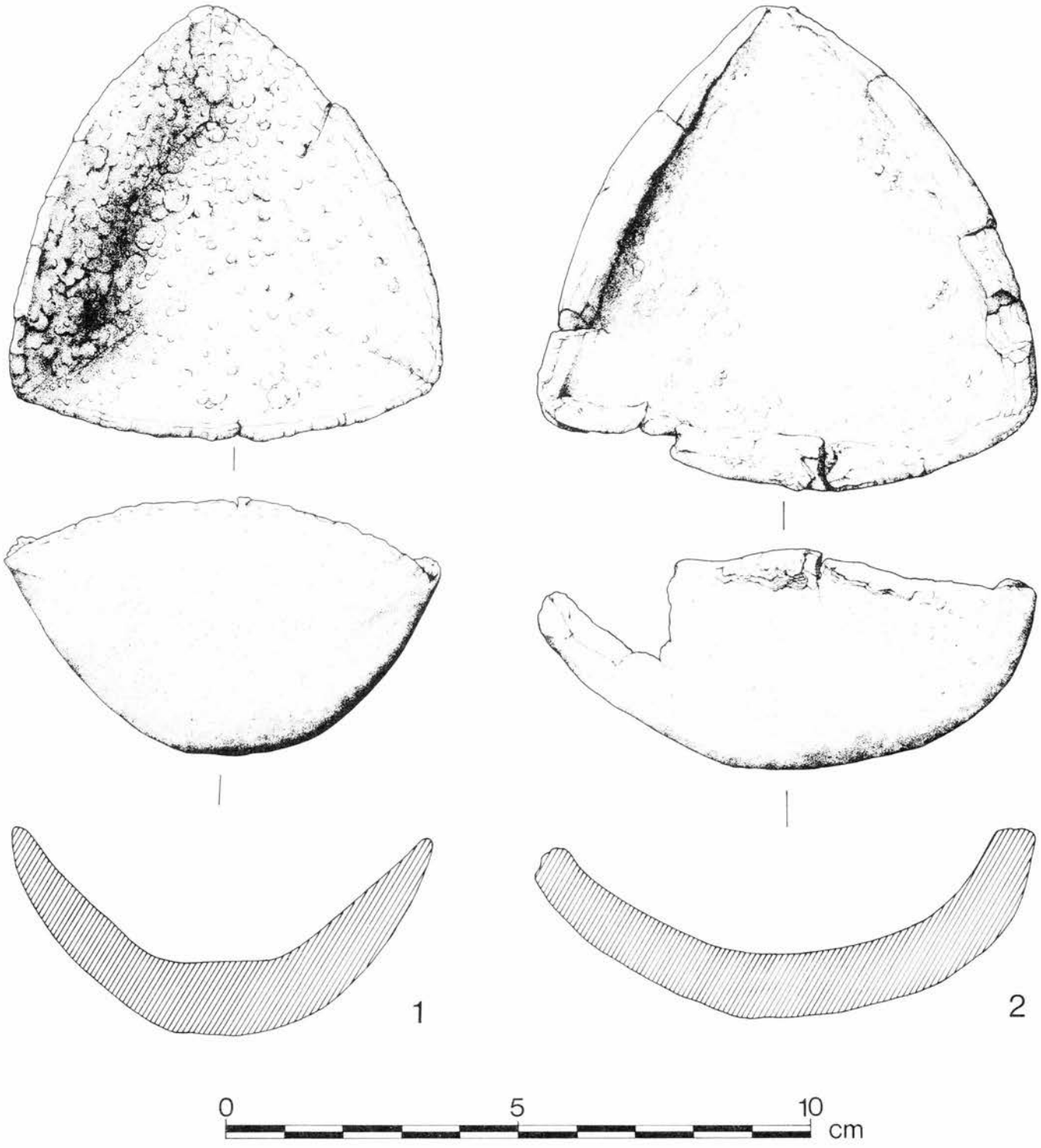


Figure 99 Two crucibles for melting bronze (reconstructed from fragments), from pit 209 at Gussage All Saints, Dorset (Scale 1:1)

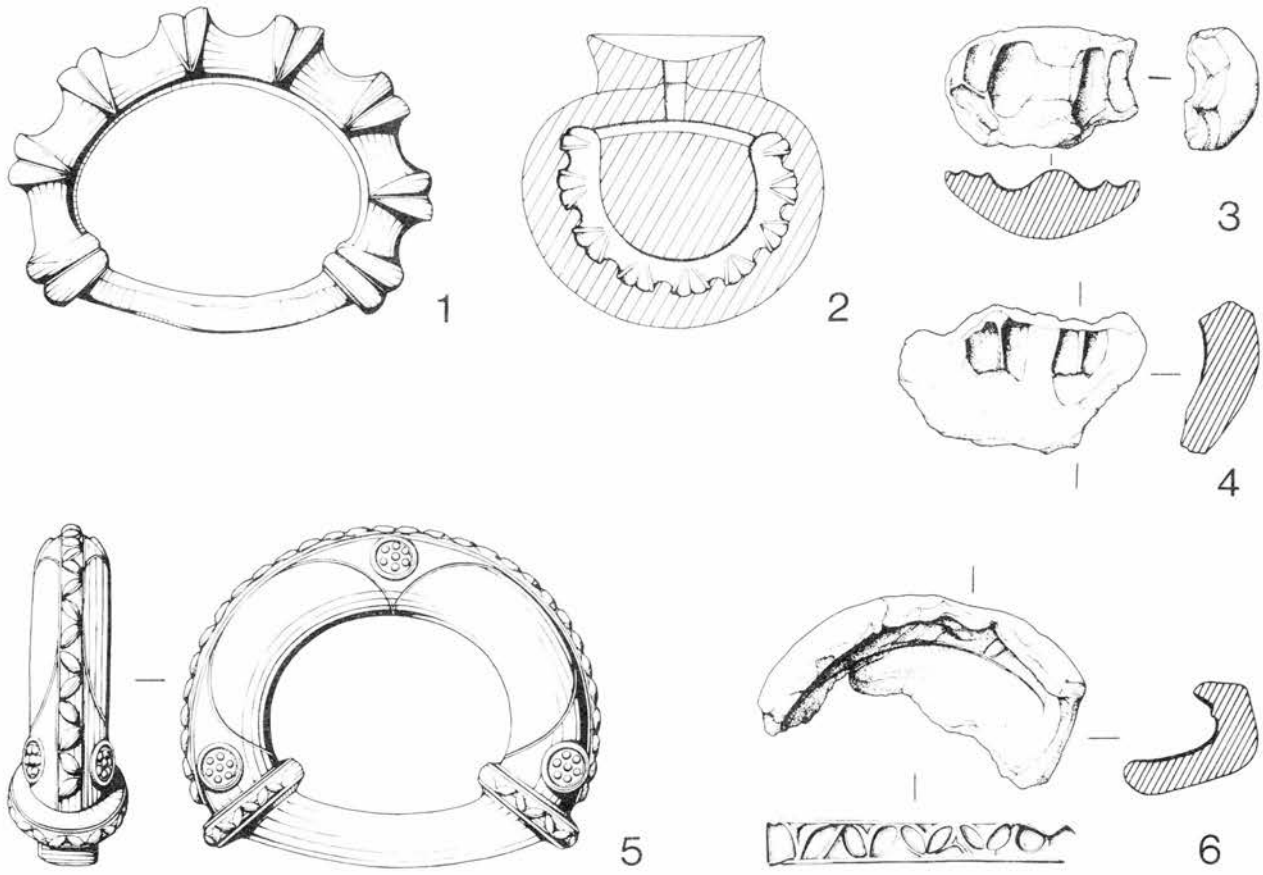


Figure 100 1: terret of 'Arras' type from Hod Hill, Dorset; 2: schematic reconstruction of a mould for casting such a terret; 3,4: fragments of such moulds from Gussage All Saints; 5: terret of 'Mill Plain' type from ? Suffolk; 6: fragments of a mould for casting such a terret from Gussage All Saints (Scale 1:1)

that were over-heated, probably in the main after they had been broken open, as odd debris caught in the fire, and that became vesicular and lost shape as it softened. These 'super-heated' (SH) mould-fragments are present in large numbers, as yet uncounted, and may well push the total number of mould-fragments into five figures. The majority of the other fragments belong to the second category, there being only a few of crucible-fabric; the latter are concentrated in the lowest part of the deposit (particularly in 209/2 T). The second-category moulds are of even fine fabric throughout, and show no evidence of ever having had a coarser outer sheath of the kind frequently present on ceramic moulds of the Late Bronze Age in Britain and Ireland (Hodges 1955, 62–63, Figures 1–2 and Hodges 1959, 132–3, plate D).

The Gussage All Saints moulds were provided with shallow-mouthed, waisted sprue-cups (or runner-bushes) (Figure 101.4). On the moulds for casting the links of bridle-bits they were made in one piece with the rest of the mould, but on those for terrets they appear to have been made separately and only weakly joined on before firing. No information is yet available concerning the design of the sprue-cups on the moulds for other kinds of objects. All the moulds appear to have had a single cup.

None of the moulds was provided with vents. It is generally claimed that vents are necessary to allow the gases given off in the casting operation to escape from the mould, and to prevent blistering of the surface of the metal, but recent experimental work and the practice of some modern founders suggest that this factor has been exaggerated by many founders and technologists (R D A Savage, pers. comm.). Nevertheless, the frequent presence on cast bronzes of the British later pre-Roman Iron Age of flaws in the surface of the metal—often repaired with run-in metal—does indicate that difficulties were often encountered in this sphere, and seems to suggest that vents were rarely used in the design of moulds. An incompletely broken-up mould from the deposit contained a fragment of a failed casting for a terret (Figure 103, 4.5) and shows that failures did occur at Gussage All Saints as elsewhere; however technological examination has yet to establish the precise cause of this particular failure.

The Gussage All Saints moulds were designed for the production of bronze castings for chariots and for the harness of the pairs of ponies that drew them. A suggested reconstruction of a chariot and of its system of harness as it is likely to have looked in the first century BC differs significantly in many details from previous attempts at reconstruction (Fox 1958, Figure 40, plate 6, Lynch 1970, Figure 86 and Coles 1973, plate 1). The wheel is of a multi-piece-felloe construction, and is based upon the design of the only complete pre-Roman Iron Age wheel yet found in Britain, that from Holme Pierrepoint, Nottinghamshire (Musty and MacCormick 1973). Single-piece felloes are a feature of continental La Tène Iron Age practice (Kossack 1971, Figure 28) and of Roman wheels in Britain (cf those

from Bar Hill (Robertson, Scott, and Keppie 1975, 48–50, Figures 14–15), Newstead (Curle 1911, 292–4, plate LXIX, 2.) and Ryton (Piggott 1949, 191); the characteristic U-shaped clamps from single-piece felloes found in continental vehicle-burials (Stead 1965A, 31, Figure 14. 11–2 and Stead 1965B, 261, Figure 2) appear to be absent from pre-Roman Iron Age contexts in Britain which suggests that multi-piece felloes were used. Since multi-piece felloes seem to be characteristic of Hallstatt wheels on the Continent (Kossack 1971), and since there is no evidence for the use of the single-piece felloe in Britain before the Roman period, it seems reasonable to conclude that the British tradition of making spoked wheels was established before the fifth century BC, and that it remained unchanged until after the Roman Conquest. Other features of the design of the chariot are considered below.

Moulds for bridle-bit components, terrets, terminals of linchpins, strap-unions, and button-and-loop fasteners have been recognised in the debris from pit 209. Weathered fragments of moulds for casting bridle-bit components and terrets have been recognised from neighbouring features (1Ka, 2, 2D, 2A/857, 857), and freshly-broken moulds for bridle-bit links from feature 437 which suggest that these objects, at least, were also made to the northern side of the entrance thoroughfare; three mould-fragments from feature 438 cannot (yet) be identified. A number of mould-fragments from pit 209 were used for casting objects of types hitherto unrepresented in the archaeological record; it is too early yet to give any useful information about the design of these objects. It should be noted that there are no moulds for the so-called 'horn-caps' which are generally considered to have been attached to chariots at the time that the foundry was in operation[10]; however, their absence is not surprising, for there is no evidence at all that they were ever attach to chariots (Spratling 1972, 75–9).

The various kinds of objects made in the workshop may be considered in turn, commencing with the terrets.

Terrets, or rein-rings, generally appear to have been made in sets of five in the later pre-Roman Iron Age of Britain, and at least occasionally on the Continent as well.[11] Four were of like size, the fifth somewhat larger. The four were placed on the yoke to guide the reins (Figure 100); close study of old specimens of the smaller size always indicates a pronounced wear-facet on the inside of the ring to one side, which suggests that the reins turned through an angle as they passed through them. Study of the larger specimen in each set invariably shows a different pattern of wear: towards the bottom of the inner edge, and on the upper part of the stops at either end of the attachment bar (which on terrets made at the time of the Gussage All Saints foundry was often made of iron in contrast to the bronze of the rest of the ring). The only logical place for the fifth terret, that takes account of this pattern of wear, is on the central shaft of the chariot, which may have been bent rather than straight as previous reconstructions have suggested (Fox 1958, Figures 40 and 46 and Lynch 1970, Figure 86). A bent shaft is suggested by the longitudinal profiles of certain chariot-burial chambers of about 400 BC in Champagne (Stead 1965A, Figures 5–6).

Four types of terrets were made in the Gussage All Saints foundry: what may be termed the 'Arras', 'Barbury', 'Mill Plain', and 'simple' types—the first three named after sites in England at which they have been found, the last in accordance with its relatively straightforward design. Actual specimens of these types from sites other than Gussage All Saints ae illustrated in Figures 100.1, 101.1, 100.5 and 102.1 respectively; in common with all the other kinds of objects made in the foundry, none of the terrets themselves came to light in the course of the excavations at Gussage All Saints. This should occasion no surprise, since it is likely that most of the objects made there were distributed to other settlements in the area, and that when no longer needed they were re-used as scrap-metal rather than thrown away. The chances of finding an actual specimen produced at the foundry is extremely slight, for this would only be possible if any of the objects had been placed in a hoard or votive deposit of some kind, or had been accidentally lost; in comparison with the number of such objects that must have been in use at any one time such finds are only very rarely made. Fragments of moulds used to cast 'Arras', 'Mill Plain' and 'simple' terrets are illustrated in Figures 100.3–4; 100.6 and 102.2–8 respectively. At least eleven varieties of the simple type were cast in the foundry; they differ in the character of the ridging and grooving around the outer edge of the ring.

The terrets were cast upside down in their moulds. Two large mould-fragments are illustrated (Figure 103.2, 4). One (Figure 103.4) is of particular interest as it was only partially broken open in antiquity, and as a fragment of cast bronze (Figure 103.5) was lodged within it upon discovery; there is no doubt that this piece of metal represents a failed casting, and that the founder did not bother to smash open the mould completely once he had discovered that the casting had not succeeded.

Bridle-bits, whether of bronze or iron or both metals, always appear to have been made and used in pairs during the pre-Roman Iron Age in Britain and Ireland and during the Roman period outside the Roman province in Scotland and Ireland. Even when found singly, such bridle-bits frequently exhibit asymmetric ornament, one end of the mouthpiece being either differently or more elaborately ornamented than the other—a common feature too of those found together in pairs. This is generally taken to imply that they were designed for use on the pairs of ponies that drew the chariots. The earlier forms of bridle-bits used in Britain had mouthpieces made of three links, as did those used throughout the pre-Roman and Roman Iron Age in Ireland. Whether these bridle-bits can be derived from the French series of the late fifth century or were independent innovations has been the subject of some controversy owing to the large chronological hiatus between the latest datable French and the earliest datable British three-link bits and to the apparent divergence in forms between them.[12]

It is important to stress this hiatus, for it does bear importantly on the problem. Fox (Fox 1947, 33) was the first to point out that the perforations at both ends of the side-links of Irish three-link bits are in the same plane, like

10. *Vide* Piggott 1969, for the most recent statement on the function of these objects.
11. Leeds, 1933, 121–2, Stead 1965A, Stead 1965B, 260, Brewster 1971, Filov 1937, 111, Nos 20–30, Fig. 69.
12. Ward Perkins 1939, Jope 1956, Stead, 1965A, Haworth 1971, 33–4, Wainwright and Spratling, 1973, 123 and Raftery 1974. (The writer is unconvinced by Raftery's argument that an unprovenanced Irish bit in the National Museum of Ireland shows direct continental influence in its design).

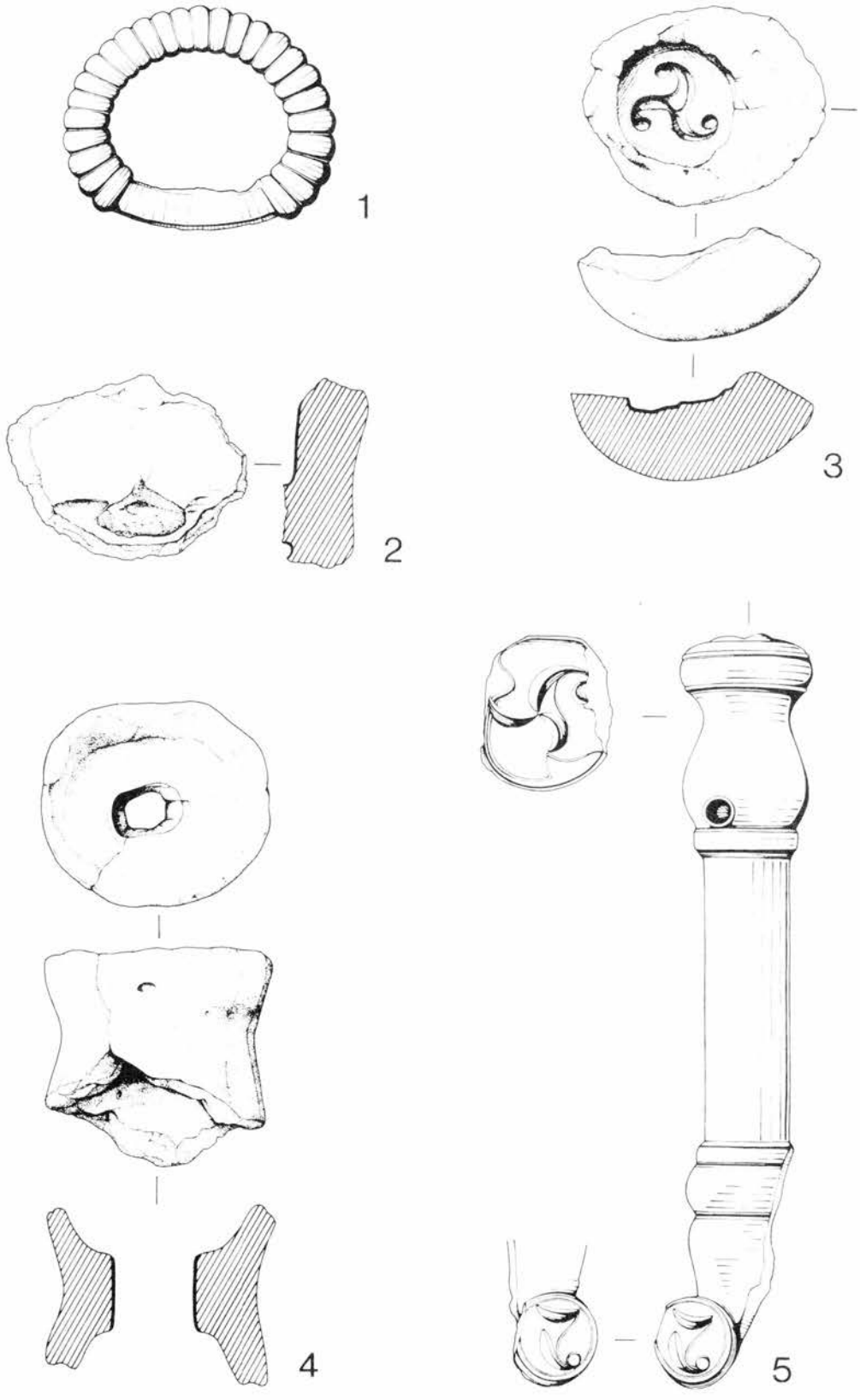


Figure 101 1: Bronze and iron terret of 'Barbury' type from Hod Hill, Dorset; 2: fragment of a mould for casting a strap-union from Gussage All Saints; 3: fragment of a mould for casting the upper terminal of a linchpin; 4: sprue-cup of a (? bridle-bit-link) mould for casting the upper terminal of a linchpin; 5: iron linchpin with bronze terminals from Owslebury Hampshire (Scale 1:1)

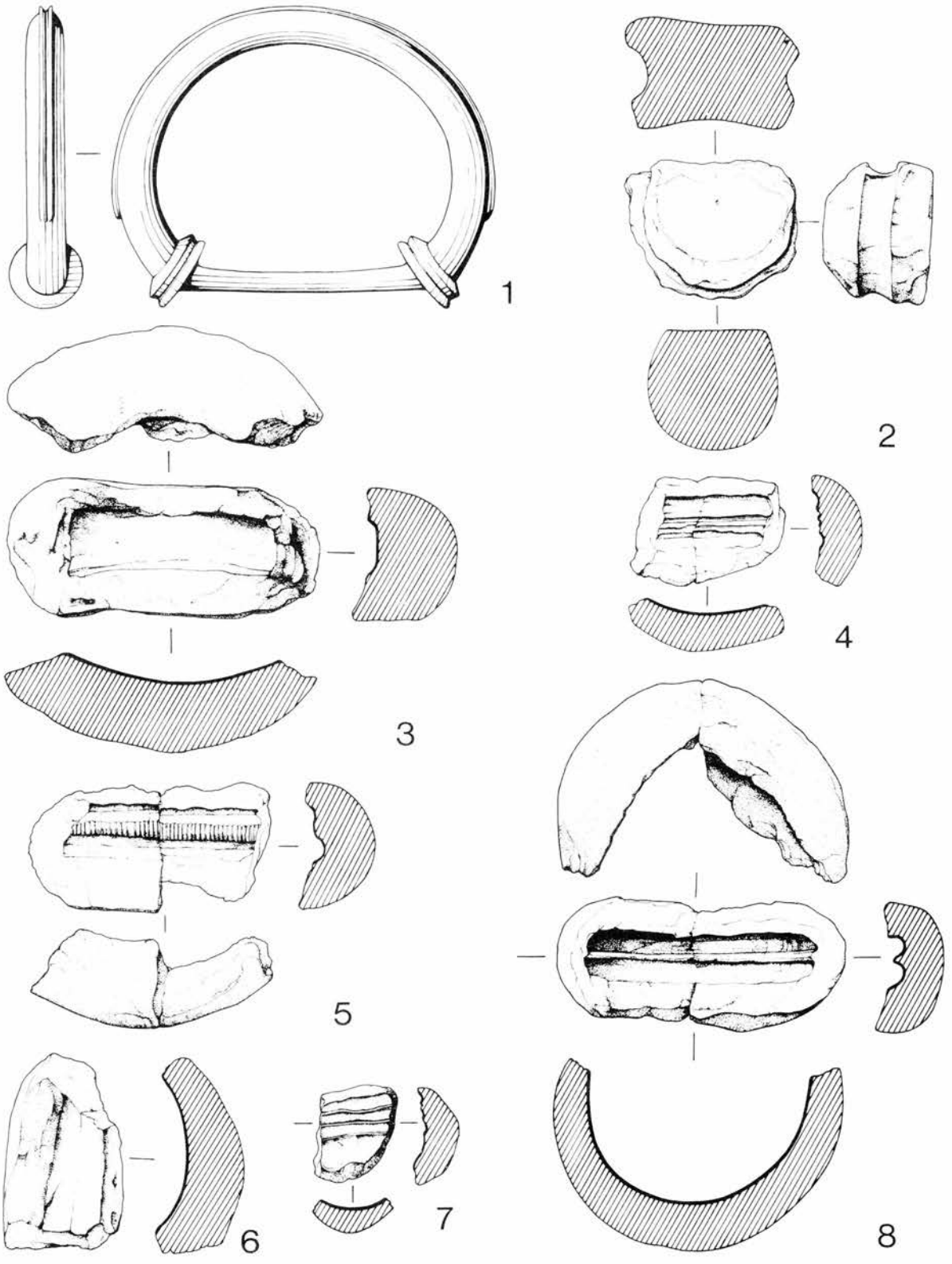


Figure 102 1: 'Simple' terret from Glastonbury, Somerset; 2–8: fragments of moulds for casting 'simple' terrets from Gussage All Saints (Scale 1:1)

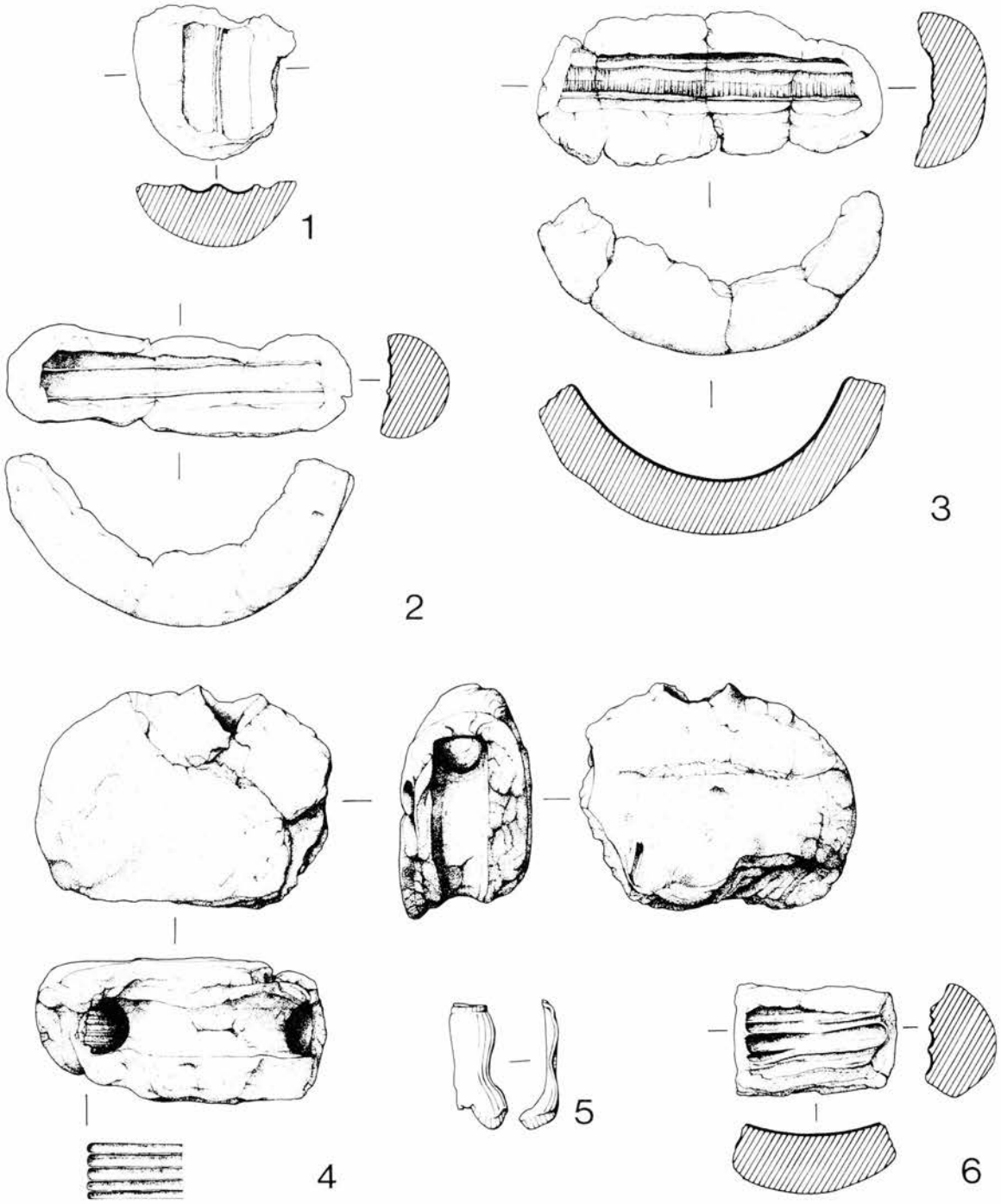


Figure 103 Fragments of moulds for casting 'simple' terrets from Gussage All Saints; 5; failed bronze casting from inside 4 (Scale 1:1)

those from France, and that the planes of the perforations through each end of the side-links of the British bits are perpendicular to one another. Now, it is of some interest that the form which has reasonably been placed at the head of the Irish series (Haworth Type A) occurs not only in Ireland but also in Britain at Llyn Cerrig Bach (Fox 1947, 33–34, 81, No 55, Plate XXV), and that in terms of absolute numbers it is doubtful whether the type is any more common in Ireland than in Britain (Haworth 1971, 28, 45, 46, Figure 2); since the outline of the side-links of this type stands very close to that of the standard British form, the 'Arras' type, apart from the matter of the planes of the perforations, it might be possible to regard it as the 'progenitor' of both the Arras and the Irish series. The similarity of the side-links of the presumptively earlier varieties of the western British 'Llyn Cerrig Bach' type (Fox 1947, 30–31, Figure 15)—except for 'Bredon 2' which is not certainly a side-link—to that of the side-links on the three-link bit from La Gorge-Meillet, Somme Tourbe has already been noted by Stead (Stead 1965A, 41, Figure 23). Until now there has been no clear evidence for items of chariot-pony-harness in Britain before about the second century BC, but a recent study by the writer (Spratling forthcoming B) shows that such pieces were made in the Lower Thames basin at an early, fifth-century date; since these pieces show a close affinity to the schools of metalworking on the Continent that produced such pieces as the La Gorge Meillet bridle-bit, it does not seem unreasonable to suggest that the idea of the three-link bit was introduced into Britain at this date, and that the absence of pieces dating from c 400 to c 100 BC merely reflects the pattern of archaeological discoveries.

The kinds of bits that were made in the Gussage All Saints foundry belong to the Arras type, with nicely rounded, near figure-of-eight-shaped centre- and side-links (Figures 104–5). The moulds show that the side-links were cast separately first, with the sprue-cup invariably located at the inner end (Figure 104, 2–4), and that the centre-links were cast in afterwards (Figure 105, 4–5); in the first report on the foundry debris, a fragment of a mould for casting in the centre-link was incorrectly attributed to that of the upper terminal of a linchpin (Wainwright and Spratling 1973, Plate XXII. 5). Most of the side-links are relatively simply ornamented at their outer ends with triangular panels, which often enclose raised blobs (Figure 104, 2–3), like the pair of unused bridle-bits from Hagbourne Hill (Figure 106), but some were embellished instead with profuse relief patterns (Figure 105, 2–3) as on the pairs of bits from Ringstead, Norfolk (Figures 107–8) and Ulceby-on-Humber, S Humberside (Wainwright and Spratling 1973, 121, Figure 3.6, and May 1976, 161–2, Figures 76.1, 78). (May persists in viewing the finds from Ulceby as representing three bits, even though the drawings of the fractures of the lost and surviving pieces of one of the bits (Cuming 1859, Plate 22) suggest that they were originally joined.) The centre-links made in the Gussage All Saints foundry all appear to have had quite shallow double-roll mouldings around the middle (Figure 105.5) not unlike those on the pair of bits from Hagbourne Hill (Figure 106). Three-link bridle-bits with pronounced roll-mouldings (whether single or double) seem on present evidence to occur only in eastern England, and thus to represent a distinctive regional form.

The snaffle-rings of Arras three-link bridle-bits were either fixed to the side-links or moveable through them. In the latter case, the rings were made of bars of forged iron or steel, circular in section, bent round until their ends met, and generally sheathed in a strip of sheet bronze whose sides were butted up against each other on the inner face of the ring. The outer face of the sheath was decorated with false or repoussé relief ridges, often paired (cf Figure 106) and sometimes crimped by alternate punching (with a centre-punch) on either side (Figure 107; May 1976, 162, Figure 78; May erroneously calls this feature the 'seam'; however, the real seam on this piece, as his Figure 78 in fact indicates, is located, as on all other bits, on the interior of the ring); on the rings of bridle-bits with profusely ornamented side-links, these ridges terminate in small decorated panels worked by chasing or engraving (cf Figures 107–8). To prevent the ring being swivelled round and pulled open by the rein, a pair of 'stop-knobs' was added to it close to the ends of the bar on either side of the end of the side-link, so that the join of the ends of the bar was concealed from view inside the side-link. These stop-knobs had short shanks that passed right through the bar and were hammered down at the back of the ring, and were either plainly (Figure 106) or very elaborately designed (Figures 107–8); part of a mould for casting a set of four such knobs, of plain design, is illustrated in Figure 105.1. The tips of their shanks were located at the opening to the mould—the same technique was used throughout pre and protohistoric Europe to make pins (cf. Urbon 1959 and Lamm 1973) and is still employed by modern jewellers (P H T Shorer, pers comm.).

It is clear from the design of the moulds for side-links at Gussage All Saints that the Arras bridle-bits made there had moveable snaffle-rings, like those on the pairs from Hagbourne Hill and Ringstead. However, other surviving three-link bits of this type have rings that are fixed to the side-links in an immoveable joint; specimens have been found at Hunmanby, N Humberside, Old Windsor, Berkshire, and in the Lady's Barrow at Arras.[13] Bridle-bits of this type are the functional forerunners of the 'derivative three-link'[14] series. On the Lady's Barrow pair, the brone side-links have been cast onto the rings (which were made to the same design as those on the Hagbourne Hill and Ringstead pairs, that is, of bronze-sheathed iron with stop-knobs) so that the links and rings subtend a fixed angle of 145°. However, the Hunmanby and Old Windsor specimens are of cast bronze throughout, although it is not clear whether the side-links and rings were cast in one piece or whether the links were cast onto the rings. A fragment of a mould for making an Arras bridle-bit with fixed rings (Figure 104.1) has been found in the metalworking quarter within the hillfort at South Cadbury, Somerset (Spratling 1970 and Alcock 1972, 154–6).

Now, if we consider the way in which such bridle-bits were used, it becomes clear that there is no particular advantage in having a free joint between the rings and the side-links—the fixed angles of the reins subtended by the terrets on the yoke and shaft of the chariot would have effectively obviated the subtle play made on the mouth by a three-link bit in riding (Haworth 1971, 41). The wear-facets inside the outer ends of all used bridle-bits (be they one-, two- or three-link) of the British pre-Roman Iron Age occur at more or less the same place, and indicate that the rings

13. Stead 1965A, 42, Fig. 18, 2, Haworth 1971, 41, Barber and Megaw 1963 and Greenwell 1906, Fig. 29.
14. Leeds 1933, 114–6, Ward Perkins 1939, 181–3 and MacGregor 1976, 25–30.

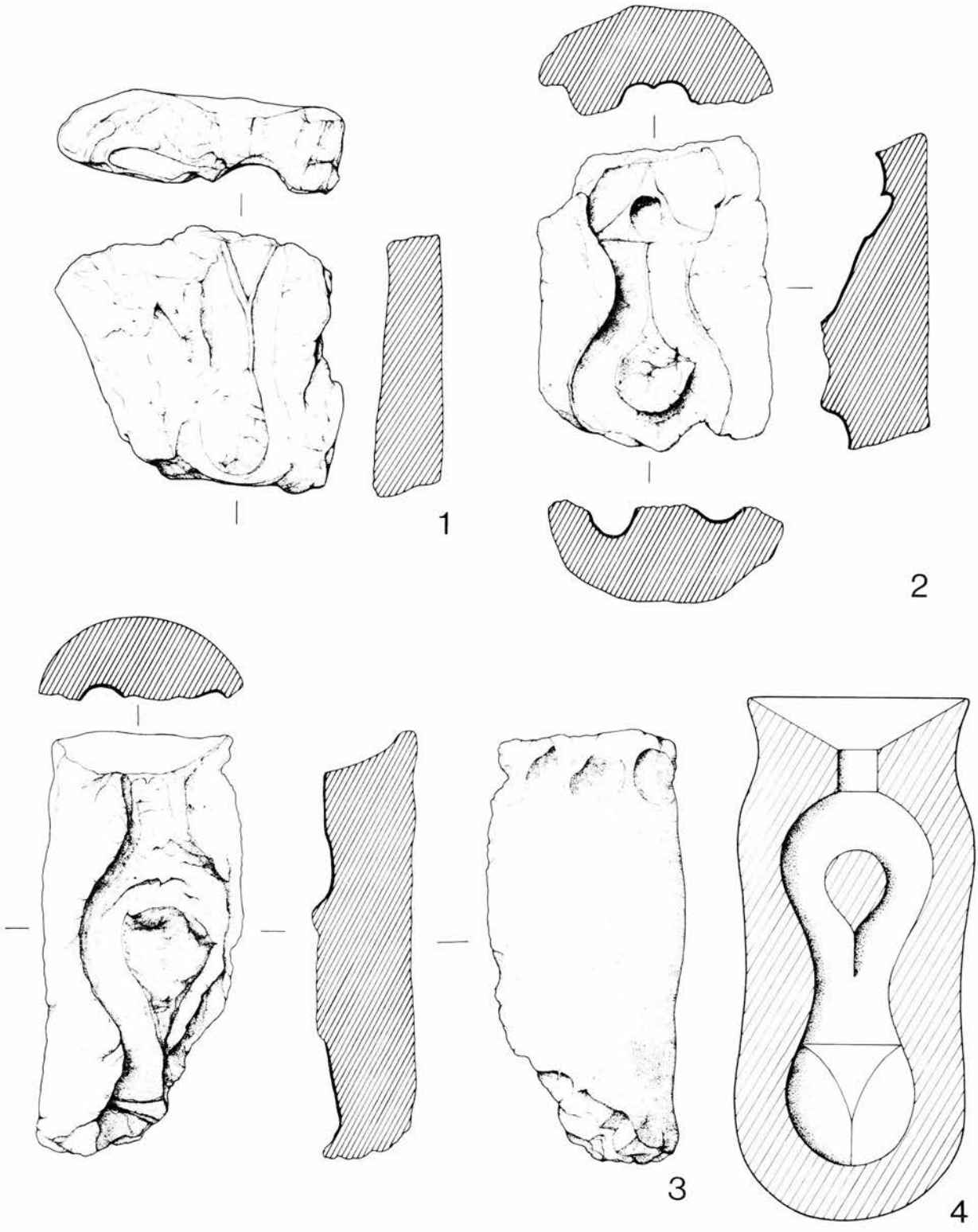


Figure 104 1: fragment of a mould for casting a side-link of a bridle-bit, (either onto an existing snaffle-ring or in one piece with the ring), from South Cadbury, Somerset; 2,3: fragments of moulds for casting the side-links of three-link bridle bits from Gussage All Saints; 4: schematic reconstruction of such a mould (Scale 1:1)

were held at an angle to the side-links similar to that of the fixed joints on the Lady's Barrow specimens; wear-facets at the joints with the centre-link show that both of the Lady's Barrow bits had been extensively used before burial.

Also present amongst the debris from pit 209 are fragments of moulds for casting linchpin-terminals, strap-unions and button-and-loop fasteners. There are, in addition, fragments of moulds for objects that cannot be identified from the archaeological record.

The linchpin-terminals would appear to have been of the 'Yorkshire' type (Ward Perkins 1940 and 1941), and may be exemplified by the worn specimen from Owslebury, Hampshire (Collis 1968, Plate XIIb) (Figure 101.5). Figure 101.3 illustrates a fragment of a mould for casting the upper terminal of a linchpin with a relief triskele-motif in the same style as those that decorate the end-faces of the Owslebury and Wiggington Common linchpins (Ward Perkins 1941, Plate XI). The design on the face of the lower terminal of the Owslebury linchpin also occurs amongst the Gussage All Saints moulds.

The Gussage All Saints strap-unions appear to have been made according to the design represented by the specimen from Bury Hill, Andover, Hampshire (Hawkes 1940) (Figure 101.2) and button-and-loop fasteners to that of the Ringstead specimen (Clarke 1951, Plate XIXC).

It is impossible as yet to give an accurate assessment of the number of moulds which is represented by the thousands of fragments that were found, but it seems likely that about fifty sets of pony-harness and chariot-fittings would not be an unduly wild estimate. (The implications of such a figure on our models of life in the later pre-Roman Iron Age both in the immediate vicinity of Gussage All Saints and in southern Britain at large are explored below.) Now it has become clear from the sorting of the mould-fragments that both simple and elaborate sets of pony-harness and chariot-fittings can be discerned. The former consist of a pair of bridle-bits with bronze mouthpieces only decorated with triangular panels of ornament, and five bronze terrets of 'simple' form; all the other pieces necessary to construct sets of metal fittings must have been made of wrought iron

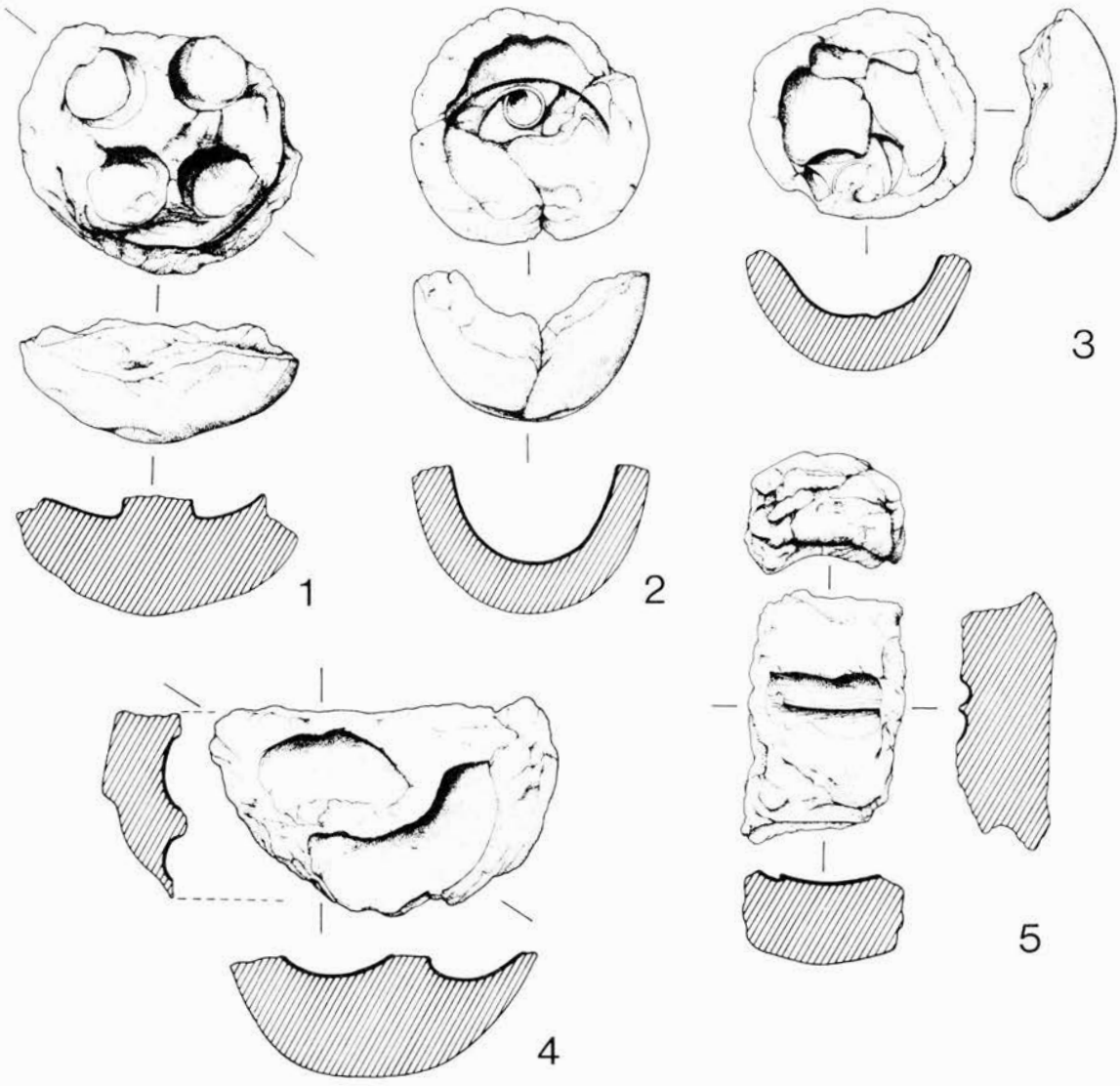


Figure 105 Fragments of moulds for casting three-link bridle-bit components; 2,3: terminal bulbs of side-links with relief ornament; 1: set of four stop-knobs; 4: junction of loops of centre-and-side-links; 5: central moulding of a centre-link. All from Gussage All Saints (Scale 1:1)

or steel and/or bronze. The more elaborate sets, however, consisted of a pair of bridle-bits with side-links bearing profuse relief ornament, five bronze terrets of 'Arras', 'Barbury' or 'Mill Plain' type, a pair of bronze strap-unions, bronze linchpin-terminals, and bronze button-and-loop fasteners, in addition to other fittings (tyres, nave-hoops, etc.) of wrought iron, steel or bronze. The proportion of simple to elaborate sets would appear to be in the order of 20:1. This stands in marked contrast to the picture that has been built up over the years from specimens found singly by chance, in the excavation of burials and settlements, and in hoards, and that is dominated by the more elaborate forms of objects of these types. It is a salutary warning against placing too much weight on theories which are based on evidence that does not come from the production-centres themselves. It is important to recognise that the more elaborate kinds of objects would have been more prone to loss in antiquity or deposited in graves or hoards more frequently than those of simpler design.

Modelling tools

Four finely worked implements of bone were recovered from the metallurgical deposits (Figure 98.2–5). Two were found together at a high level in the southern half of pit 209 in layer 10, and the other two were also found together, in 209/2 X. The first two (Figure 98.2–3) were cut from deer ulnae or pig tibiae, the others (Figure 98.4–5) from the long bones of an ungulate. The first two measure 119.7 and 122.6mm long respectively, and differ in design only in the shaping of the narrower end, being rounded and squared off respectively. The third implement is similar in design to the first two, but shorter (81.7mm long), and has a rounded, instead of a straight, working edge at the broader end; the narrower end is rounded. The fourth implement, 80.8mm long, has obliquely cut triangular working edges at both ends and a slight expansion for easier handling in the middle.

In view of their context and of their striking resemblance to modern modelling tools, it seems reasonable to conclude that these four implements were used in the fashioning of the wax patterns around which the clay moulds were invested. Similar implements have been found on a number of early sites in Europe. The first three implements are matched by bone and antler specimens from Glastonbury (Bulleid and Gray 1917, 412–3, Nos B148, B205, H3, Plates LXIII, LXIV) and the fourth by bronze ones from Santon, Norfolk (Wainwright and Spratling 1973, 119, Figure 2.4), and Stradonice near Beroun in Bohemia (Pič 1906, Plate XXII. 9 and Wainwright and Spratling 1973, Figure 2.3).

(It should be noted that the 'fifth implement' published in the first interim report (Wainwright and Spratling 1973, 119, Figure 1.3) is actually an offcut from the working of the rib of a medium-sized ungulate (e.g. deer, sheep, goat). The worked bone from pit 209 was identified by Mr R Jones of the Ancient Monuments Laboratory.)

Discussion: General implications

In the first interim report on the excavations at Gussage All Saints, the writer argued that the foundry represented the activity of a peripatetic smith working at the settlement for only a brief period in the first century BC and that metalworking was not a regular feature of life there (Wainwright and Spratling 1973, 124–6). However, consideration of the nature, quantity and contexts of metallurgical debris from this and other pre- and protohistoric sites in Europe (Lamm 1973, Holmqvist 1976, 127–77), now leads him to conclude that metalworking was very much a normal feature of life at the settlement, and that it seems likely that it was carried on there (more or less) continuously for several centuries. It is now clear that there is evidence for both bronze and iron working at the settlement in all three phases (see above p. 125 and Tables XIV and XV); if for a moment pit 209 is excluded from consideration, then the quantity of debris from the site precisely matches that recovered from most other early sites in Europe. On many sites only a few fragments of crucibles, moulds, etc. are recovered in excavation, even at sites (as at Gussage All Saints itself) where it is quite clear that a specific area was set aside for metalworking over a long period (cf the industrial quarter at Manching: Jacobi 1974). Now, when the extremely fragile nature of the debris of metalworking is taken into account (it would take only a few minutes to destroy all the crucibles from Gussage All Saints by treading on them on a hard surface), it is scarcely surprising that only exiguous traces of metalworking normally come to light on sites since damaged by agricultural or other activities; other factors, for example, the possible re-use of such fine ceramic material as that of moulds for grog in other ceramic products, would further reduce the survival-potential of metalworking debris. Moreover, if we take at face value the fragments of metalworking-debris that do survive on most sites, then we can only conclude that it was a regular practice to set up a complex foundry (with the attendant complications of laying on all the necessary raw materials—charcoal, beeswax, levigated clay, quartz for the crucibles, the metals themselves) simply to cast a single bronze spearhead or bridle-bit component (as the evidence of the excavations at the Breiddin and South Cadbury hillforts would imply) before moving on to another site to repeat the same process... It hardly seems likely that the metalworking industries of later prehistoric Europe were organised on such a casual basis! One can only therefore reasonably conclude that the bulk of the debris of these industries does not normally survive the vicissitudes of time. Finds such as that made in pit 209 in Gussage All Saints are likely to remain exceptional; nevertheless, the practice of disposing rubbish in empty pits in later prehistoric settlements in Britain and elsewhere ought to lead sooner or later to the discovery of other deposits of such an informative kind as this one.

The question of raw materials is an important one in considering the demands that the production of at least 50 sets of chariot-fittings and pony-harness would have made on the economy of the settlement at Gussage All Saints and on that of other settlements in the area. For such an enterprise to have functioned effectively, a wide variety of raw materials would have been needed. The following are the principal ones:

i. beeswax: for the manufacture of patterns;
ii. clay, probably specially selected and washed: for the manufacture of moulds, crucibles, tuyeres, hearth-lining, containers for the wax etc.;
iii. sand: as temper for the moulds and crucibles;
iv. oak-timber: for the preparation of charcoal for the hearths;
v. hawthorn, etc.: for kindling the hearth-fires;
vi. bone: for the manufacture of wax-modelling tools;
vii. copper: to make bronze;
viii. tin: to make bronze;
ix. iron: to make the smiths' tools, and to make iron/steel fittings.

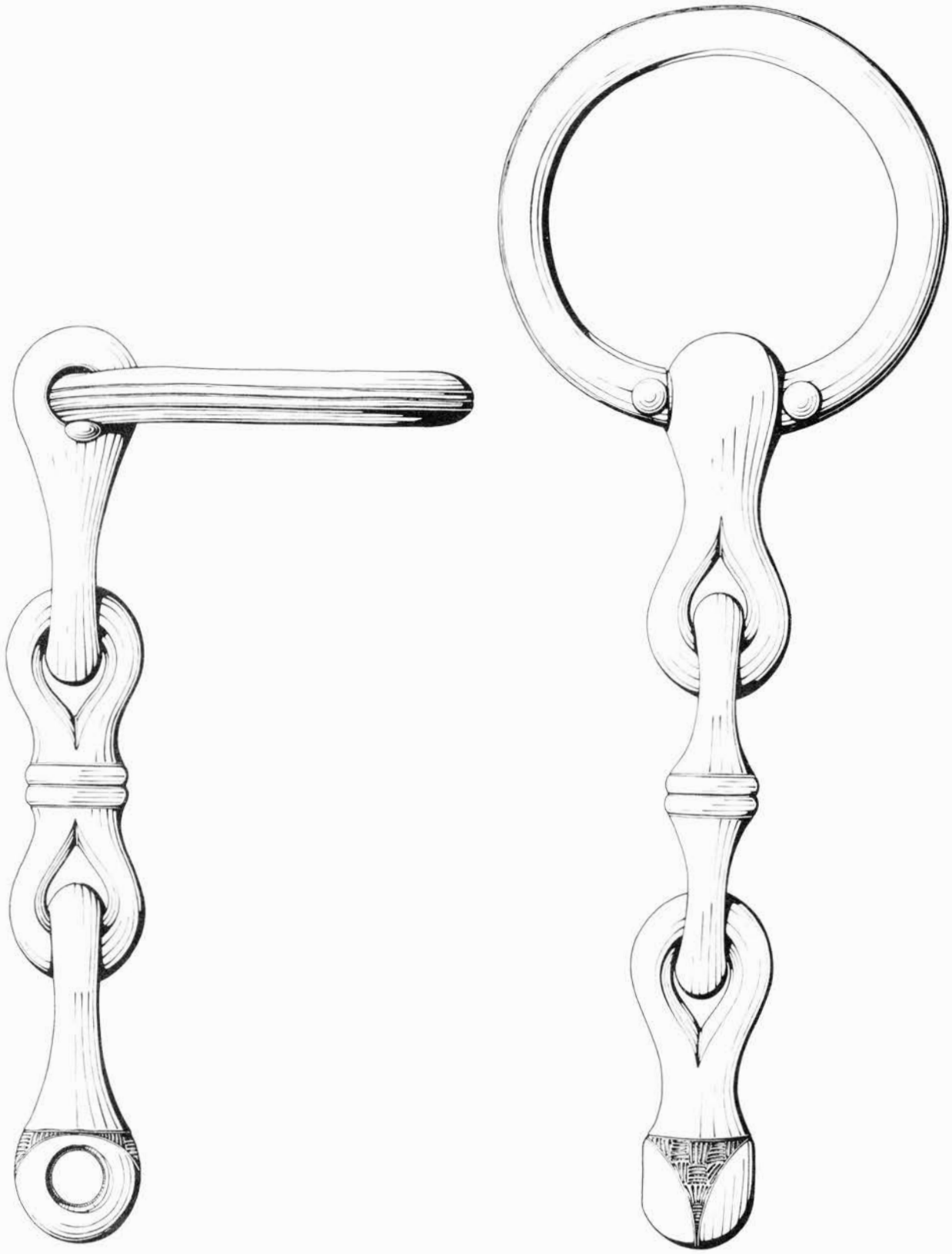


Figure 106 Unused three-link bridle-bit, with one snaffle ring missing, from Hagbourne Hill, Vale of the White Horse; links of cast-bronze, one with matted ornament chased with a fine centre-punch; ring of iron sheathed in sheet bronze with a pair of casting stop-knobs (Scale 1:1)

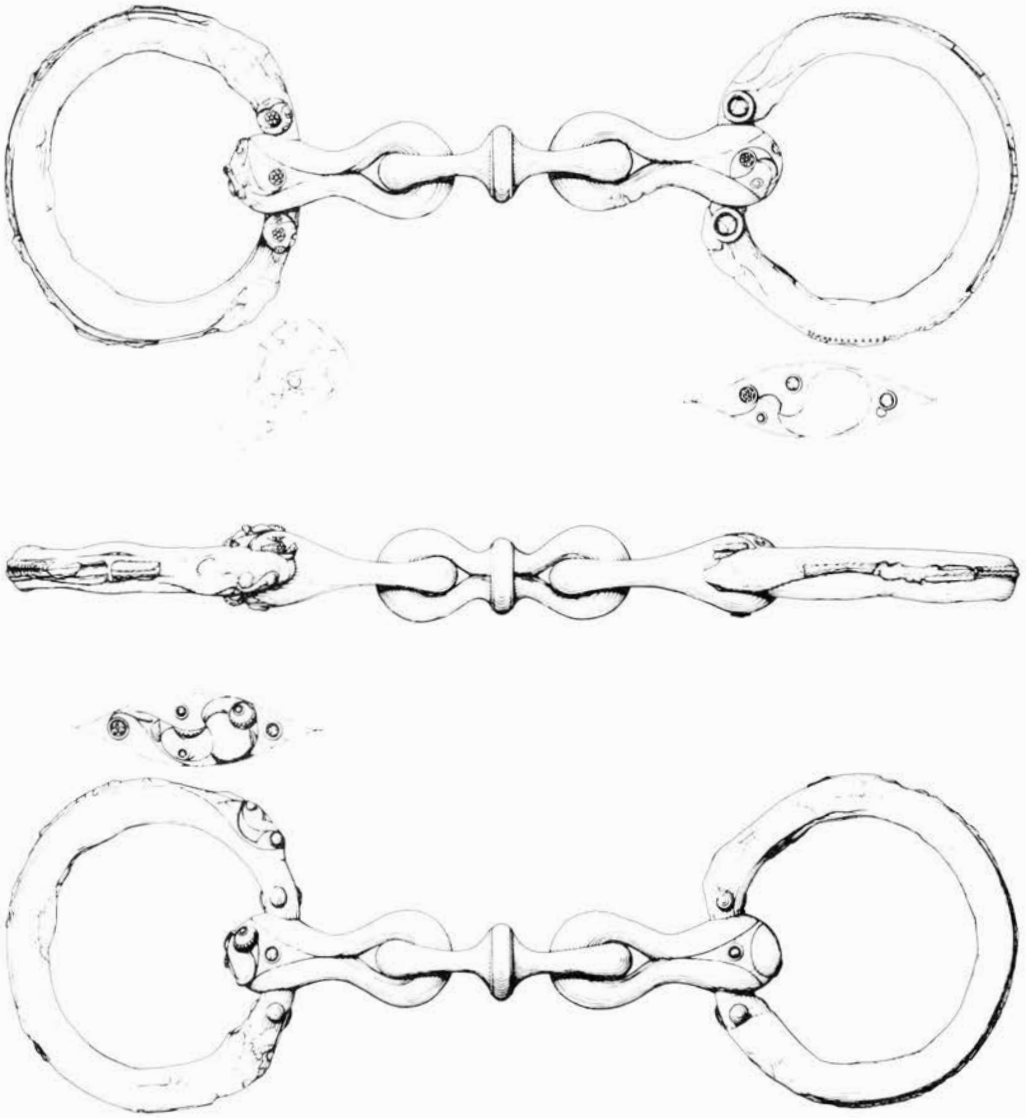


Figure 107 Three-link bridle-bit from Ringstead (Scale 1:2)

Now, if the chariots themselves, as well as their fittings, were manufactured on site—which is possible (and even if not, such a process would have been carried out at a nearby settlement, in all likelihood)—then a great deal of seasoned timber would also have been required. From our knowledge of ancient wheels, where different woods were used for the naves (hubs), spokes and felloes (Musty and MacCormick 1973 and Bulleid and Gray 1917, 310 ff.), this must have meant stores of at least three kinds of wood laid down at least a decade, and probably as much as a generation in advance in more or less open sheds and barns. Moreover, the wood is likely to have been specially selected and pre-worked for wheel-components at the time that it was laid down. We are all too apt to forget, in our age of speed and fast turn-overs of raw materials, that until very recently in most parts of Europe large stocks of timber were laid down for decades for the preparation of wooden artefacts; it is not without interest in the present context that long-term stores of this kind have been documented from lakeside settlements of the neolithic period in Switzerland.[15]

15. The writer is grateful to Dr I A Kinnes for drawing his attention to this.

The finds from the contemporary settlement of Glastonbury show that the naves and spokes of wheels were turned on lathes (Bulleid and Gray 1917, 310 ff.). A large lathe capable of turning logs up to at least 20cm in diameter (the diameter of naves) and up to 35–40cm long (the length of naves and spokes) would therefore have been needed as well. Estimates may also be made of the quantity of metal and of beeswax needed to make the moulds and the fittings cast in them for 50 sets of chariot-fittings. It has been noted above (p. 130) that the mouthpiece of one of the Hagbourne Hill bridle-bits has a volume of about 26ml, and that it weighs 191.8g, and that the various forms of terrets represented by the moulds would have had volumes ranging from about 3 to 12ml and weights from 29.6 to 89.3g; now since the smallest of these latter pieces is a rare type amongst the moulds, we may for the sake of argument estimate that an average terret would have had a volume of about 10ml and a weight of about 75g. $50 \times 2 \times 192$g (i.e. fifty pairs of mouthpieces) = 19.2kg; $50 \times 5 \times 75$g (i.e. fifty sets of five terrets) = 18.75kg. Therefore, well over 38kg of bronze would have been needed; this is equivalent to more than five to six of the largest bun-ingots yet found in prehistoric contexts in Britain (Tylecote 1962, 29–31).

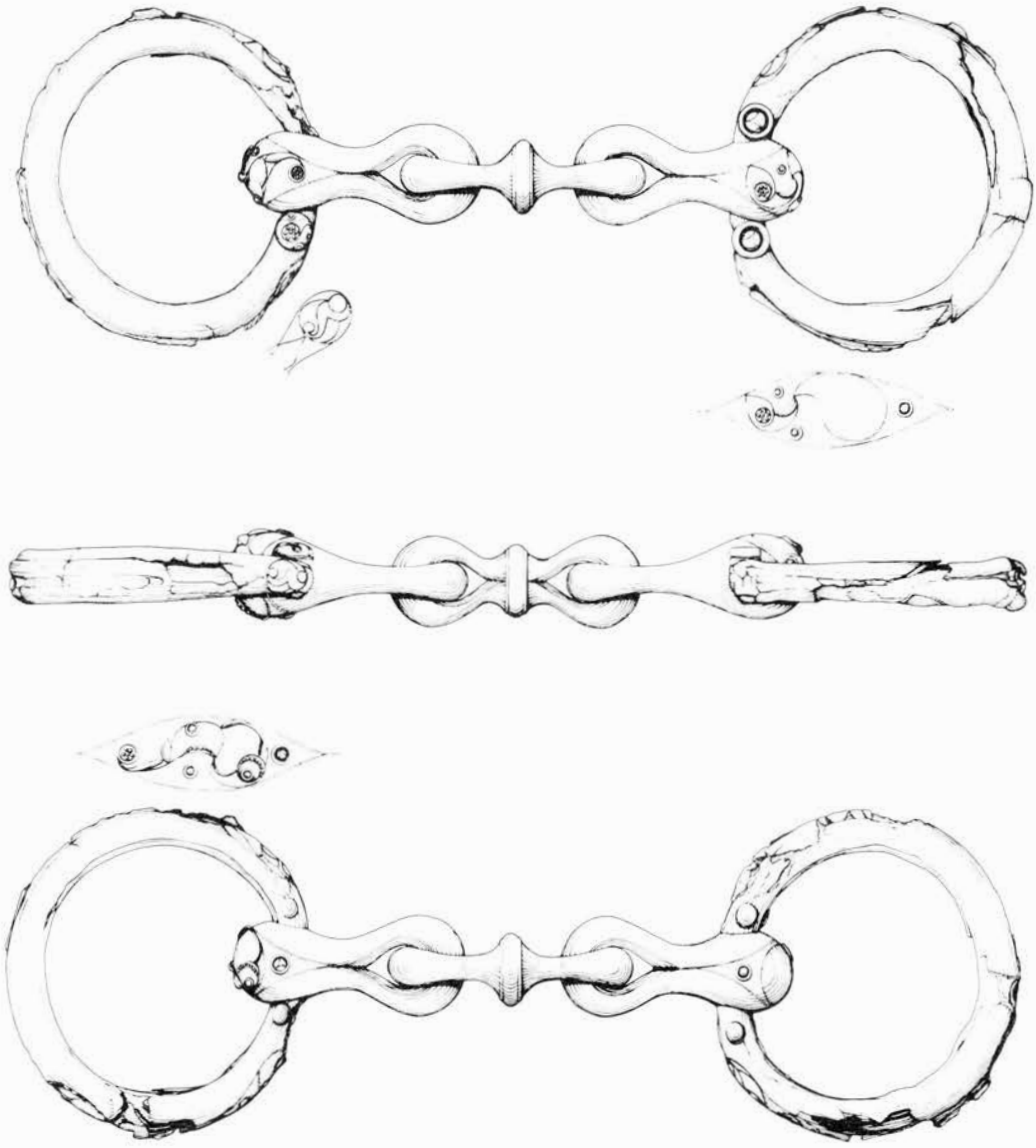


Figure 108 Three-link bridle-bit from Ringstead (Scale 1:2)

50 × 2 × 26ml = 2.6 litres; 50 × 5 × 10ml = 2.5 litres. Therefore, well over 5 litres of beeswax would have been needed; since it is likely that much of the wax would have been burnt off every time it was melted (P H T Shorer pers comm), at least 10 litres would have been required. This is equivalent to the total wax-yield of a dead skep or two of bees (K Shorer pers comm). Many further calculations of this nature could be made to indicate the demands that the manufacture of fifty chariots would have made on the resources of the society in the area of the settlement at Gussage All Saints, and to indicate that the presence of a workshop devoted to the production of chariot fittings and pony-harness there can scarcely have been a haphazard affair. When we take cognizance of the evidence that is now apparent for the longevity of metalworking at the Gussage All Saints settlement; the fact that in most societies up until, and indeed until after, industrialisation, metalworking and other specialised craft-industries were organised according to kinship, with generation after generation in the same family being concerned with smithing, etc.; and that in many small-scale societies most of these people formed but another part of the agricultural community, playing as important a role in food-production as everyone else (Burford 1972 and Rowlands 1972), then it seems only reasonable to conclude that the Gussage All Saints family were not only farmers like everyone else in the neighbourhood but also specialists in the production of metalwork.

Until the settlements in the immediate neighbourhood of that at Gussage All Saints are excavated in their entirety, it is perhaps dangerous to take speculation much further, but it seems likely that the settlement formed part of a local network in which each settlement specialised in different products. In this connection, it may well be no coincidence that the settlement lies near the centre of a large tract of countryside (Cranborne Chase), about 25km across, that is ringed, but not really dominated, by a number of large multivallate hillforts (reading clockwise from the north: Castle Ditches (Tisbury), Castle Ditches (Whitsbury), Badbury Rings, Buzbury Rings, Hod Hill and Hambledon Hill), where, on the evidence of other such sites, e.g. South Cadbury, we would also expect specialist metalworking and a number of other industries to have been carried on. It also seems hardly coincidental that the foundry for chariot-

Table XIV. Metallurgical debris from features other than 209

Feature No	*Layer No*	Moulds	Crucibles	Tuyeres (T) Industrial hearth matrix	Misc debris (slags, etc.)	Copper-alloy pieces	
						Cast lumps	Offcuts
1Ka	*4*	X					
1M	*3*			T			
1M	*4*		X				
2	*3*	?	X			X	
2	*4*			X	X		
2	*5*	X		X	X		
2	*5A*				X		
2	*6*	X	X	X	X	X	
2	*8*				X		
2	*9*	X		XT	X		
2	*10*	X					
2A	*5*					X	
2A/857	*1*				X		
2A/857	*3*			XT	X		
857	*1*	X	X	XT	X	X	
857	*2*	X			X		
857	*2B*	X		XT	X	X	
857	*3*	X	X		X		
857	*6*	X	X		X		
857	*8*					X	
857B	*2*					X	
2C	*4*			X			
2D	*5*		X		X		
2D	*6*	X	X	X	X	X	
65	*8*						X
107	*3*					X	
292	*3*					X	
427	*3*					X	
437	*3*	X		XT	X		
437	*4*	X		XT	X		
437	*5*	X		XT	X		
437	*6*	X		XT	X		
438	*4*				X		
438	*6*	X					
442	*4*		X				
601	*8*					X	
711	*4*						X
751	*3*					X	
818	*3*					X	

fittings at Gussage All Saints was operating in a period which coincided with the development of multivallation in these and other hillforts; that there is strong evidence (from settlement-finds, etc) for a large increase in industrial production throughout southern Britain at this date; that the settlement at Gussage All Saints itself should have seen the construction of an enclosing bank, ditch and elaborate timber entrance structure (in which the gateway itself was just a little wider than a chariot), and that other settlements in the immediate vicinity should have adopted a similarly aggressive posture. It is difficult to relate the likely relative social status of the Gussage All Saints family to that of others in the area, until the latter are excavated. The need for their comprehensive excavation cannot be too greatly stressed, for it would be far more informative than that of single sites in other areas.

To conclude this discussion, we must consider the implications for the scale of industrial production in the first century BC of a workshop turning out fittings for fifty chariots, and of the manufacture of the chariots themselves in what is likely to have been at most only a year or two. If we were to assume that the chariots were distributed at a density of about one per km^2, then none of them need have been distributed further than about 4km from the settlement. If, however, there were a chariot every 5km^2 (a more likely estimate), then the radius of distribution would have been about 9km. Now, in fact our settlement lies at the apex of an isosceles triangle whose basal points lie about 8km away at the hillforts of Badbury Rings and Buzbury Rings; Hod Hill is about 12km distant, and Castle Ditches (Whitsbury) about 15km. All of these hillforts are, as we have noted, likely to have had production-centres of

Table XV. Distribution of metallurgical debris

Phase	Feature No	Location
Early (One)	107	In south-west corner of settlement, cut into west side of horse-shoe enclosure.
	292	Just north of entrance thoroughfare c 35m in from the gate.
	601	Inner antenna-ditch to north of entrance.
	751	Close to 292.
Middle (Two)	1KA & 1M	Main enclosure ditch respectively to south and to north of entrance thoroughfare.
	209	Just inside enclosure ditch 1 to south of entrance thoroughfare.
	427	Just inside enclosure ditch on far side of settlement immediately opposite entrance.
	437	In angle between inner antenna ditch and main enclosure ditch to north of entrance thoroughfare.
	438	Close to 437.
	442	Just inside segment M of main enclosure ditch to north-west of entrance.
Late (Three)	2	Cut into the inner side of the main enclosure ditch immediately to south of entrance.
	65	In south-west corner of settlement between horse-shoe enclosure and segment Z of main enclosure ditch.
	711	In north-west corner of the settlement.
	818	A superficial deposit overlying several features at the entrance.
	857	Cut into 2.

Table XVI. Relationships of layers in the southern half of 209 to those in the northern half (209/2)

209	209/2
10	A – B – C – D – E – F – G – I – J – JA K – L – M – O parts of N – P – Q – R – T
11: 0—5	parts of N – P – Q – R – T U
11: 5—10	parts of Q – R – T – U
11: 10—15	S – parts of T – U – W
12	X – Y – Z – part of W

Table XVIII. Chart indicating numbers of joins of crucible-fragments from southern half of 209

9	1					
10	6	23				
11: 0—5		7	7			
11: 5—10		6	10	1		
11: 10—15		4	4	10	3	
12		1			1	4
Layer	9	10	11: 0—5	11: 5—10	11:10—15	12

Table XX. Charcoal-identifications from 209/2

Source of sample	*Total weight of sample*	*Approximate weight of charcoal identified*	*Description*
209/2 10 C	160g	30g	Almost all oak (large branches and timbers). One fragment of hazel twig.
209/2 10 J	870g	45g	Mostly 'large' oak wood. One fragment of ash timber. A few fragments of hazel twig. Several fragments of hawthorn type (Rosaceae, subfamily Pomoideae) charcoal (twiggy).
209/2 11 P	220g	45g	Mostly 'large' oak wood. A few fragments of hazel twig. One fragment of hawthorn-type twig.
209/2 11 T	2,740g	90g	Mostly 'large' oak wood. Several fragments of hawthorn type twig. One fragment of hazel twig. One fragment of yew twig.

Table XVII. Chart indicating joins of crucible-fragments from 209/2 (contiguous layers marked X)

	A	B	C	D	E	F	G	H	I	J	JA	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
A	2	X	X	X	X	X		X																			
B	2	12	X																								
C			1	X		X																					
D					X	X																					
E						X	X	X	X	X																	
F													X														
G		1							X				X														
H	1	1						1		X	X																
I								1	3	X			X														
J								2	4	7	X	X	X														
JA									4	4	1			X			X	X									
K					1				1	4	1	3	X	X													
L									2	1		3	1	X		X											
M												7	1	1	X	X											
N										1						X	X										
O																	X	X				X					
P																	1	X									
Q										1							2	6	X	X	X	X	X				
R																		1		X	X						
S																				3	X				X		
T																	1	2		8	17	X	X	X	X		X
U										1							1	6			4	1	X	X			
V																											
W																				1	2				X		X
X																									16	X	X
Y																											X
Z																											
	A	B	C	D	E	F	G	H	I	J	JA	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

Table XIX. Chart indicating the occurrence of moulds for different kinds of objects in 209/2

LAYER	MOULDS FOR TERRETS																MOULDS FOR OTHER OBJECTS							
																				BRIDLE BITS				
	'Mill Plain' type	Simple type: variety VI	'Arras' type	Simple type: variety VIIA	VIII	VIIB	IIIB	I	IV/V	X	XI	IX	II	'Barbury' type	Strap-unions	Button-and-loop fasteners	Linchpin-terminals (U=Upper L=Lower)	Stop-knobs for snaffle-rings	Side-links with relief ornament	Side-links with simple ornament	Centre-links	Moulds for unidentified objects
Z													X	X										
Y													?											
X													X								X			
W													X						X		X	X		X
V																						X		
U									X			X	X						X		X			
T									X	X	X	X	X	X	X	?	U	?	X	X	X	X		
S					?				X	X		X	?		X	X			X		X	X		
R																	L	L						
Q												X	?		X			L					X	
P																						X	X	X
O						X	X					X										X	X	
N												X										X	X	
M						X		X												X	X	X		
L			X	X	X			X	X			X								X	X	X		
K			X		X	X						X								X	X	X	X	X
JA			X	X	X			X												X	X	X		X
J		X	X	X	X	X	X	X				X								X	X	X		X
I					X	X						X	X							X	X	X		
H			X						X			X						X		X	X	X		
G													X							X	X			
F			X						X			X	X							X	X	X		
E			X																	X	X	X		
D	X																			X	X	X		
C		X	X															?		X	X	X		
B	X	X	X						X			X						X	X	X	X	X		X
A	X	X	X						X									X		X	X	X		X

their own for the manufacture of such items as chariots and their fittings. A further figure may now be brought into consideration. In 54 BC, the year of his second expedition to Britain, Caesar claims that Cassivellaunus at one time had a force of 4,000 charioteers (*De Bello Gallico*, V, 19.1), a figure which is often thought to be of the kind made by generals to impress their audience of the odds against which the extent of their success may be measured. But what if Caesar were accurate? The implications of such a density of chariots at any given moment for the scale of metal production in southern Britain in the first century BC and early first century AD are enormous ($4{,}000 \times 5 = 20{,}000$ terrets which $\times 75\text{g} = 1.5$ tonnes of bronze, etc.), yet they compare well with the estimated figures for the scale of production of gold for the staters of Cunobelin's successive coinages (Allen 1975) (5 tonnes in all): and of 300 tonnes of iron nails for the *murus gallicus* defences at Manching in the first century BC (Piggott 1965). This is considerably greater than the total weight of bronze artefacts of the later pre-Roman Iron Age that have been found to date in southern Britain, and should provide a nice caveat against the speculation of those writers who (unconsciously) assume that the surviving artefacts provide a kind of significant random sample of the original range of design. As far as the study of movable artefacts is concerned, it is clear that we are still only just beginning to push open the door.

Chapter X
The Animal Bones

by R Harcourt MSc BVMS MRCVS

Introduction

All the animal bone was of Iron Age date but of three different phases. Phase 1 yielded the least bone and Phase 2 the most. The total number of specimens identified was 15,500. Notable features are the presence of what is almost certainly domestic cat of earlier date than previously found and the earliest house mouse (*Mus musculus*) of which both the identification and the stratification are beyond dispute. The most remarkable specimen of all was the complete skeleton of a heifer which had died because of a difficult calving. Thanks to careful excavation and recording it was possible to determine the exact nature of the dystokia, certainly an unusual and perhaps a unique exercise in mammalian palaeo-pathology.

Materials and methods

All bones and parts of bones were collected during excavation and presented for examination. Only identified specimens were counted and to avoid misleading inflation, associated groups of bones such as a limb or a complete skeleton were counted as one bone and for the same reason the very numerous rodent and amphibian specimens were not counted at all.

Rodents were identified by direct comparison with known reference material and by the use of a standard handbook (Corbet 1964).

Measurements were made with sliding or spreading callipers or with an osteometric board and expressed in millimetres. Proximal and distal widths of long bones were measured across articular surfaces only.

No attempt was made to age specimens in years because to do so gives a quite false impression of precision. The preferred approach was to establish age groups and thus a relative and not an absolute age structure. Epiphyses fall into three groups, early, intermediate and late fusing. The age at which these events occur in modern stock has been set out by Silver (Silver 1969). The early fusing group can be further subdivided into earlier and later fusing moieties. Unfused epiphyses in the two earliest groups must be from young or juvenile animals while a fused one from the late fusing group must originate from a fully adult or aged animal. The only intermediate fusing specimen, the distal metatarsal fuses so late that its fusion time straddles that of the other two groups and is thus best ignored.

The number of unfused epiphyses in the two early groups and of the fused specimens in the late group are then each expressed as a percentage of all the epiphyses. This method can account only for the animals at the bottom and the top of the age scale leaving those in the middle to be derived by subtraction.

The very earliest group consists of the distal humerus, the proximal radius and the distal extremities of the phalanges. The later fusing moiety of the early fusing group consists of the distal metacarpal and the distal tibia. The late fusing group is made up of the proximal humerus, the distal radius, the proximal and distal femur, the proximal tibia, the olecranon of the ulna and the tuber calcis of the calcaneum.

On the basis of these calculations the animal population is then divided into four groups; the youngest becomes Group I, the next youngest, Group II, the intermediate, which is derived by subtraction, is Group III and the oldest, those represented by full fused late fusing epiphyses, are Group IV.

As with the long bones so with the dentition: direct ageing in years has been avoided. It is reasonable to assume that the sequence in which the various teeth erupt has remained the same but the actual age at which this occurred in ancient stock is not known. There is considerable variation even in modern animals. To surmount this problem all mandibles at the same stage of development were grouped. The number of stages was deliberately kept low to avoid the risk of over-classification. Because of factors such as individual variability, different planes of nutrition and so forth not all individuals at the same stage of dental development are necessarily the same age. The greater the number of stages the more likely does this discrepancy become.

For sheep and cattle therefore eight stages were used and for the pig, only four. For the relative ageing of horses in this collection by means of the long bones the same method was used as for the other species but for the absolute ageing by means of the lower incisors however, the criteria of Miller and Robertson were employed (Miller and Robertson 1952). This is because selective breeding in the horse has been directed towards desired changes in physique and stamina, not to faster growth and therefore there has probably been little change in the ages at which teeth erupt and the speed at which they wear.

For the estimation of the shoulder height of cattle the method of Fock (Fock 1966) was used, for sheep that of Tsalkin (Tsalkin 1961), for horse that of Kiesewalter (Kiesewalter 1888) and for the dog that devised by the writer (Harcourt 1974). The meat contribution of each species has been estimated on a comparative basis and not in terms of the actual weight. The sheep was taken as unity and the other species expressed as a ratio of this. The physique of the sheep of the period closely resembled that of the Soay which in peak condition weighs no more than about 65lb (29kg) (Jewell, pers comm). A similar figure is given by Epstein (Epstein 1969) for comparable animals. The value for cattle is derived from the known weight of modern animals, based on the writer's personal experience, of a size similar to those from this site and data provided by Epstein concerning the weight of small breeds of cattle in China. No information concerning the pig is available so an estimate was made from comparative bone sizes. The horses on this site were bigger than the cattle and the value for the ratio is based on this together with weights, again

known from personal observations, of modern animals of similar size. Information about the weight of modern red deer was obtained by enquiry and an average figure selected which made allowance for the marked sexual dimorphism in this species.

Description of material

The range of variation in measurements both within and between the different periods was so small that all measurements have been amalgamated. Other topics such as the age structure, the minimum number of individuals and the meat contribution have been treated separately for each period.

Cattle

The measurements followed the pattern found on so many Iron Age sites and indicate small lightly built animals with a range of shoulder height from 100—113cm (39—44in). The highest value for the coefficient of variation was 5.2% which points to the cattle being of a single population in terms of size. All measurements are shown in Table XXI. For the purposes of shoulder height estimation no attempt was made to establish the sex of the animals whence the bones came because the difference between the factors for each sex is so small that the total range in shoulder heights would not have been appreciably altered and there seemed to be no merit in introducing an extra complication. The intermediate value, for the steer, was used in every case (Fock 1966).

Table XXI. Measurements of Cattle Bones

	O.R.	N	M	S.D.	C.v.	Ht
Humerus dw	57—72	61	65	3.4	5.2	—
tl	216—235	7	221	—	—	—
Radius pw	54—72	77	70	—	—	—
tl	233—275	14	251	12.1	4.8	—
M'carpal tl	164—185	21	174	6.5	—	100–113*
M'tarsal tl	189—206	18	198	5.4	—	103–112†
Phalanx 1 pw	20—29	83	24	—	—	—
Tibia dw	45—54	50	49	—	—	—
tl	278—310	3	—	—	—	—
Astragalus tl	54—62	54	57	—	—	—
M_3 tl	29—39	98	34	—	—	—

tl = total length; pw = proximal width; dw = distal width; O.R. = observed range of measurements; N = Number of specimens; M = mean; S.D. = standard deviation; C.v. = coefficient of variation; Ht = shoulder height in centimetres

*Multiplication factor: 6.12 †Mf: 5.45.

The horn cores found indicated several different shapes and sizes of horn among the cattle but the number of these was no more or less than is usual among horned cattle. One feature of note however was the presence of a skull from a polled animal. This dated from Phase 2 (Pit 459). At the site of each horn core there was a low annular excrescence with a roughened margin and a central pitted concavity which in life would have been filled with soft tissue. There was no connection with the frontal sinus.

The minimum number of individuals (MNI) represented in each period was respectively 28, 27 and 56. These figures represent values of 28%, 20% and 27% of all the 'farm' species.

The age structure is shown in Table XXII as derived from long bones.

Table XXII. The Age at Death of the Cattle in Each Period

Group	Phase 1	Phase 2	Phase 3
1	6%	3%	2
2	5	7	7
3	62	76	75
4	27	14	16

Group 1 are young juveniles, Group 2 are slightly older, Group 3 are sub-adult to young adult and Group 4 are the fully mature and the aged animals. For full description of the calculations see Materials and Methods.

The age pattern derived from mandibles presents a rather different picture. The developmental stages shown by the mandibles have been placed in five groups for each period.

Table XXIII. Age at Death of Cattle as shown by Mandibles

	Phase 1	Phase 2	Phase 3
All stages up to M_1 in wear	36%	21%	12%
M_2 in wear	19	3	17
M_3, one cusp in wear	—	16	2
M_3, 2 or 3 cusps in wear	36	54	60
M_3, 3 cusps well worn	9	6	9
Total number of mandibles	311	33	53

M_1 = First lower molar; M_2 = second lower molar; M_3 = third lower molar

Sheep

The measurements show that these were small slender animals with a shoulder height ranging from 53—64cm (21—25in).

Throughout the archaeological record sheep appear to have changed but little in size although there is evidence of larger animals in the Roman period. Those from Gussage,

Table XXIV. Measurements of Sheep Long Bones

M'carpal tl	104—122	33	114	4.6	4.1	53—59*
M'tarsal tl	115—137	29	123	5.5	4.5	54—64†
Humerus dw	21—29	78	24	1.3	5.6	—
tl	109—114	3	—	—	—	—
Radius tl	126—149	12	137	—	—	—
Tibia tl	177—210	7	190	—	—	—
Femur tl	154—155	2	—	—	—	—

Abbreviation code as in Table XXI.

*Multiplication factor: 4.86 †MF: 4.68 (Tsalkin 1961).

however, seem to have been unusually small and slender. A comparison was made between the metacarpals and metatarsals of the sheep of all periods that have been examined and recorded by the writer and those from this site. The parameters compared were the total length and the mid-shaft diameter index; the diameter expressed as a percentage of the total length. The results are shown in Table XXV.

Table XXV. Comparison of Gussage metapodials with those from other sites

	Metacarpals				Metatarsals			
	Total	108—116 mm	>116mm	msdI>10	Total	118—126 mm	>126mm	msdI>8
Gussage	33	67%	26%	6%	29	72%	21%	41%
All sites	140	27	70	58	104	36	62	68

msdI = mid-shaft diameter index.

From these figures it can be seen that this site has yielded a high proportion of short slender bones.

Some of the skulls had heavy horn cores, on others they were lighter, suggesting that both ewes and rams bore horns but no polled skulls were found. Many horn cores were present which had been carefully cut or sawn, in some cases both, to detach them from the skull.

The age structure is shown in Table XXVI as derived from long bones.

Table XXVI. The Age at Death of the Sheep in each Period

Group	Phase 1	Phase 2	Phase 3
1	5%	5%	5%
2	19	26	16
3	64	55	67
4	12	14	12

See Table XXII for the Group definitions.

Table XXVII. Age at Death of Sheep as shown by Mandibles

	Phase 1	Phase 2	Phase 3
All stages up to M_1 in wear	52%	31%	28%
M_2 in wear	14	8	21
M_3, one cusp in wear	3	5	5
M_3, 2 or 3 cusps in wear	30	47	42
M_3, 3 cusps well worn	1	9	4
Total number of mandibles	88	114	192

Abbreviations as in Table XXIII.

The minimum number of individuals represented in each period was respectively 46 (46%), 79 (60%) and 112 (54%).

Pig

As is so frequently the case with this species the number of bones sufficiently complete to yield measurements was noticeably less than that from other species. The coefficient of variation for one specimen, the distal humerus, is rather high but this result is most likely brought about by the presence of two humeri of 40mm distal width, probably from large adult boars, together with the fact that the smallest ones may be from immature animals. In spite of this high variability therefore, there is little doubt that only domesticated animals are represented.

Table XXVIII. Measurements of Pig Long Bones

	O.R.	N.	M.	S.D.	C.v.
Humerus dw	25—40	18	31	4.3	13.7
Astragalus tl	35—42	17	38	2.1	5.5
M_3 tl	30—35	18	33	—	—

M_3 = lower third molar.

The complete absence of entire long bones precludes any attempt to gauge the shoulder height of the pigs but the dimensions quoted can be matched by identical ones from any era suggesting that the pig did not change very much in height or physique over a very long time.

Table XXIX. The Age at Death of the Pigs in each Period

Group	Phase 1	Phase 2	Phase 3
1 and 2	34%	45%	35%
3	62	53	62
4	4	2	3

See Table XXII for the Group definitions

For the determination of the age structure of the pig from the mandibles only three groups were used as will be seen in Table XXX.

Table XXX. Age at Death of the Pigs as shown by the Mandibles

All stages up to M_1 wear	26%	13%	33%
M_2 in wear	41	40	32
M_3 in wear	33	47	35
Total number of mandibles	27	15*	37

*Sample size probably too small for results to be valid.

The minimum number of individuals represented was 13 (13%), 18 (14%) and 17 (8%).

Goat

This species was represented in all periods but much the most common evidence of its presence was horn cores many if not most of which had been cut or sawn at the base to detach them from the skull. The total number of specimens however was no more than 25. The minimum number of individuals was tentatively estimated at 4, ?2 and ?3 respectively.

Table XXXI. Measurements of Goat Bones

	tl	pw	msd	dw	msdI
Humerus	135	—	14	27	—
Radius	159	27	15	22	—
Femur	167	—	13	—	—
Tibia	201	35	13	20	—
M'carpal	101	21	13	24	12.9%
	105	21	14	25	13.3%
M'tarsal	106	15	11	21	10.4%
	108	16	12	22	11.1
	109	17	11	22	10.1

Tl = total length; pw = proximal width; msd = mid-shaft diameter; dw = distal width; msdI = msd.100/tl (i.e. msd index)

Horse

The remains of this species were numerous and of particular note is the high proportion of entire long bones, a total of 66 was present not including the first phalanges. The minimum number of individuals represented was 9 (9%), 7 (5%) and 17 (8%).

The measurements show that most of the animals fit into the usual Iron Age size range, that is from about 110—135cm. The smallest and largest however extend this in each direction so that it becomes 102—145cm, that is 10—14 hands. The lower end of the range is provided by a tibia, the smallest yet recorded from the period, of only 236mm. This indicates an animal with a shoulder height of 102mm (10 hands). Another specimen, a humerus of distal width of 56mm must have come from a horse of similar size. Both these two bones were small enough to arouse the suspicion that they may have come from a donkey, the bones of which can be difficult to distinguish from those of a horse.

The cheek teeth and the third phalanx of the donkey, however, are fairly characteristic but while these specimens were both well represented, all unquestionably originated from horses. It was concluded, in the absence of such supporting evidence, that the tibia and humerus referred to were those of a very small horse, as small as a modern Shetland pony.

Table XXXII. Measurements of Horse Bones

	O.R	N	M	S.D.	C.v	Ht.
Radius tl	285—334	22	304	12.6	4.2	123—145cm
M'carpal tl	183—223	18	199	9.3	4.7	117—143
M'tarsal tl	225—271	14	256	19.8	7.7	120—144
Tibia tl	236—296	12	280	17.5	6.3	102—129
1st Phalanx tl	63—86	23	72	5.3	7.3	—
Humerus dw	56—76	34	62	—	—	—

The age structure of the horse population showed a feature which set it apart from that of all the other species, the cattle, sheep and pigs. The bones from all these included not only many from young animals but also from the newborn and from foetuses. Such specimens were totally and conspicuously absent from the horse material. The possible, indeed probable, meaning of this finding is discussed later.

Table XXXIII. The Age at Death of the Horses in each Period

Group	Phase 1	Phase 2	Phase 3
1 and 2	0%	0%	0%
3	0—39*	31	43
4	61—100*	69	57

*Early fusing fused bones were present and these could have belonged either to the intermediate or the late age group; there were no unfused late fusing bones from this period.

Table XXXIV. Age at Death of the Horse as shown by the Mandibles

	O.R	N.	M.
Early	3—18 yo	8	8 yo
Middle	3—17	8	9
Late	4—17	25	8

From all periods combined there was a total of 41 mandibles with the incisors, or enough of them, still present so that it was possible to age the animals direct.

Dog

The whole collection included the remains of some thirty animals. Several entire skeletons were present and, generally, the number of complete long bones contributed by this species was higher than from others, as is very often

the case. The skulls and long bones totalled 160 and the mandibles 57.

The size and physique of the dogs on this site were typical of those from the Iron Age as a whole (Harcourt 1974). They ranged in shoulder height from 36—58cm. The bones of very young puppies, some probably new-born, were quite numerous. This may have reflected a policy of deliberate control of numbers or simple neonatal mortality.

Table XXXV. Measurements of Dog Bones

	O.R	N	M	S.D.	C.v	Ht.
Humerus	120—176	39	150	14.7	9.8	35—58cm
Radius	116—176	37	153	14.8	9.7	39—58
Ulna	152—201	8	178	—	—	43—56
Femur	120—190	32	168	15.7	9.4	36—58
Tibia	130—194	37	176	19.2	10.9	39—57
Skull I	145—200	7	—	—	—	—
Mandible tl.	56—81	57	66	—	—	—
M_1 tl.	16.4—25.6	72	22	—	—	—

Abbreviations as in Table XXI. Skull I = length of skull from occipital protuberance to anterior margin of alveoli between central incisors. Mandible tl = length from condyle to anterior margins of incisors. M_1 = lower first molar.

Several bones bore cut marks. They were most marked in a radius round the distal extremity of which there were several, all at right angles to the long axis of the bone.

Cat

Remains of this species were obtained from Phase 2 (1,424) and Phase 3 (77,157,381). There is always difficulty in distinguishing wild from domestic cats and the usual criterion, rightly or wrongly, is size. In addition to this problem is the fact that the introduction of the domestic cat is conventionally attributed to the Romans. Before claiming that the arrival of a particular species was earlier than previously thought the evidence on which such a claim is based should be strong.

All the material from the cat with the exception of one specimen was from immature animals and from one feature there came not less than five new-born kittens. Because of the immaturity of the animals represented the size of the bones is no help in coming to a decision but the very fact that all the specimens, with the one exception referred to, were from such young animals makes it highly probable, it is suggested, that only domesticated animals are represented.

Even if, as could be claimed, the kittens were the litter of a wild cat there would seem to be little point in bringing them back to the settlement and indeed not much point in killing them at all. It is hard to imagine also why Iron Age people should have wished or needed to kill wild cats except for their fur and for this purpose adults are clearly the most useful.

The evidence therefore that these cats were domestic is based on inference and cannot be said to be conclusive but it is felt that the balance of probability favours the suggested conclusion.

Wild species

Table XXXVI. Showing periods in which various species found*

	Red Deer	Roe	Hare	Badger	Marten	Pole-cat	Fox
Early	●	●	●	—	—	●	—
Middle	●	●	—	●	—	—	●
Late	●	●	●	●	●	—	●

*Rodents are described separately

Red deer (*Cervus elaphus*)

The remains of this species were found in 79 features and the dimensions of the measurable bones are shown in Table XXXVII. The question of the relative numbers of the different bones of the body that were present is discussed under 'The contribution of Hunting to the Economy'.

Table XXXVII. Measurements of Red Deer Bones

	tl.	pw.	msd	dw.
Humerus dw	—	—	—	46—47(2)
Radius	295	53	35	44
		46—47(2)	—	51
M'carpal	262	23	37	41
	265	36	22	38
	268	38	24	43
	290	46	27	49
	—	37—42(2)	—	40—44(3)
Tibia	—	—	—	42—43(3)
Astragalus	47	—	—	—
M'tarsal	291	33	23	41
	292	34	24	—
	307	37	28	45
	—	32—39(3)	—	40—45(3)

Abbreviations as in Table XXXI.

Roe deer (*Capreolus capreolus*)

Roe deer were represented in 27 features and the most common specimen was the mandible which constituted 44% of the total for the species. The only measurable bones were a complete metacarpal of dimensions: 159, tl: 20, pw: 12, msd: 21, dw. and a distal humerus of 25mm.

Hare (*Lepus capensis* [*europaeus*])

The hare was present in six features, being represented by one specimen from Phase 1 and by five from Phase 3.

Badger (*Meles meles*)

Six features yielded remains.

Marten (*Martes martes*)

This species was found only in Phase 3 (Pit 329) and the specimen was a very well preserved skull. Its maximum length was 89.5mm, the post-orbital constriction was 19.1mm, the palatal length 42.1mm, the palatal breadth 25mm, the rostral width, 18.9mm and the maxillary cheek tooth row 25.2mm.

Polecat (*Mustela putorius*)
The remains of this species comprised a humerus, radius, femur and an innominate bone all from one feature and probably from one animal.

Fox (*Vulpes vulpes*)
The fox was represented in nine features.

Rodents, insectivores and amphibians
These were present in 88 layers from 61 features. The species were the common shrew (*Sorex araneus*), the wood-mouse (*Apodemus sylvaticus*), the bank vole, (*Clethrionomys glareolus*), the water-vole (*Arvicola terrestris*) the field-vole (*Microtus agrestis*) and the house mouse (*Mus musculus*).

Among these the only species of note is the house mouse. This was found in two features; a part of the skull with teeth and one ramus of a mandible without teeth from Phase 2 (Pit 584) and from Phase 3 (Pit 123) the frontal region of a skull with all the teeth present. Both these contexts were sealed and the possibility of intrusion is completely ruled out. This would seem to be the earliest record of the house mouse in Britain of which both the identification and the stratification are beyond dispute (Corbet pers comm.).

The bones of amphibians, either frog or toad, were numerous but not otherwise noteworthy.

Fish
The remains of fish were found in Phase 1 only. (Pit 116). They are those of the dace (*Leuciscus leuciscus*) and a minimum of two fish are present, both about 23cm (9in) in length.

Birds
Birds were well represented in all periods and the species present in each is shown in Table XXXVIII.

Table XXXVIII. List of Bird Species in each period

Species	Phase 1	Phase 2	Phase 3	Undated
Domestic Birds				
Goose (*Anser sp*)	●	—	—	—
Duck (*Anas sp*)	—	●	●	—
Fowl (*Gallus sp*)	—	●	●	—
Wild Birds—? Food				
Heron (*Andea cinerea*)	—	—	—	●
Mallard (*Anas platyrhynchos*)	●	●	—	—
Wigeon (*Anas penelope*)	—	●	—	—
Common Scoter (*Melanitta nigra*)	—	●	—	—
Crane (*Grus grus*)	—	●	●	—
Kittiwake (*Rissa dactyla*)	—	—	—	●
Wood pigeon (*Columba palumbus*)	—	—	●	—
Hedge sparrow (*Prunella modularis*)	—	●	—	—
? Goldfinch (*Carduelis carduelis*)	—	●	—	—
Jay (*Garrulus glandarius*)	●	—	—	—
Jackdaw (*Corvus monedula*)	—	—	●	—
Rook/crow (*Corvus sp*)	—	●	●	●
Predators/Scavengers				
Common buzzard (*Buteo buteo*)	●	●	●	—
Hen harrier (*Circus cyaneus*)	—	—	●	—
Raven (*Corvus corax*)	—	●	●	—

These identifications suggest that the keeping of domestic poultry figured fairly prominently in the economy of the settlement. The domestic fowl first appeared in the Iron Age but did not become widespread till Roman times.

The list of other species indicates that wildfowling may have provided a useful contribution to the food supply and at least three hunting areas are suggested by the list; marsh and freshwater as evidenced by heron, crane and ducks; woodland providing pigeon, jay, crows and possibly raven and finally open bushy country as a source of the hedge sparrow and finch.

It is possible that the buzzard and hen harrier were killed because they were raiding poultry. The raven is a scavenger but might have attacked poultry chicks.

The record of the hen harrier, as far as it has been possible to ascertain, is the first from the prehistoric period in Britain.

Species meat contributions
The ratios used for calculating the contribution of each species (see Materials and Methods) are as follows:
Cattle 10; Horse 12; Pig 1.5; Sheep/Goat each 1; Red deer 5; Roe deer 1.
The ratio for a particular species is multiplied by the minimum number of individuals for each period to give the number of 'meat units' (mu) contributed by that species. This value is then expressed as a percentage of the total meat units provided by all species combined (MU). Then the percentage meat contribution $= \frac{mu}{MU} 100$.

There is reason to believe that the dog may have been used as a food animal in the prehistoric period (Harcourt, 1974) but it, the small wild mammals and the birds have all been excluded from the calculation which is intended to compare only the relative contributions of the major domestic species, the deer and the horse.

The bone debris found sealed in features such as pits and ditches is more likely to be a true reflection of what was originally present than is the debris from open floors or even middens. Since these, no matter how squalid the

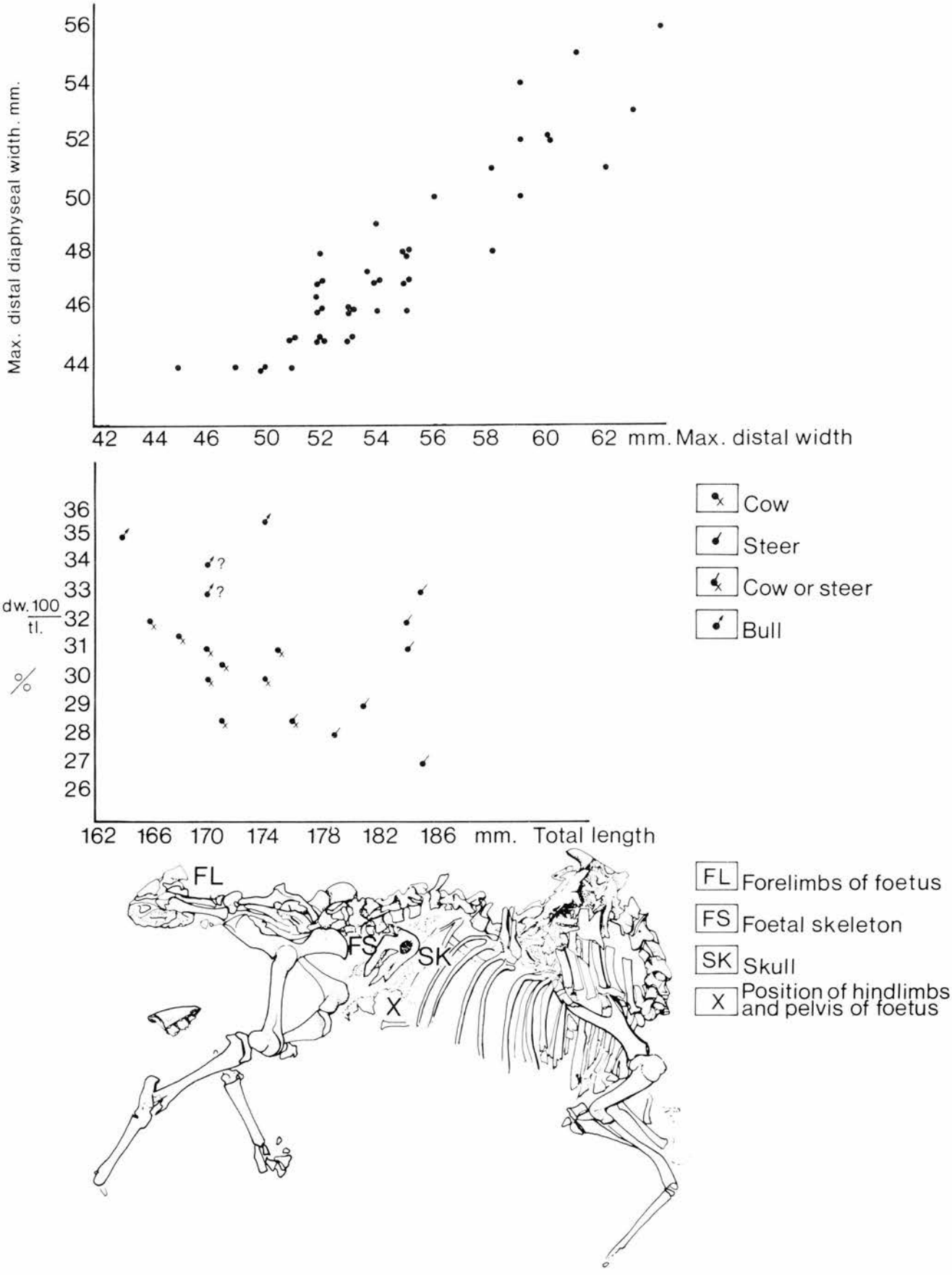


Figure 109 *Upper:* scatter diagram of cattle metacarpals. *Lower:* diagramatic illustration of a cow skeleton from pit 61

Table XXXIX. Species Meat Contributions

	Cattle	Sheep	Pig	Horse	Goat	Red deer	Roe deer
Phase 1							
MNI	28	46	13	9	4	1	1
% MC	61	10	4	23	<1	1	<1
Phase 2							
MNI	27	79	18	7	?2	3	4
% MC	57	16	6	17	<1	3	<1
Phase 3							
MNI	56	112	22	17	?3	4	3
% MC	60	12	3	22	<1	2	<1

MNI = Minimum number of individuals. % MC = % Meat contribution. <1 = less than 1.

physical conditions of a settlement, must have been cleaned out from time to time, the bones would give only a terminal picture. For this reason it is probably a mistake to endeavour to derive the actual weight of meat represented at any particular site except that of a single kill or single killing site. The ratio method, although not without fault, is probably the best available.

There is no way of knowing how large a part meat formed of the diet of prehistoric man. Thus any argument based on assumptions that a certain weight of meat was eaten per day or per week would almost certainly be circular. There is plenty of evidence from ethnography that pastoral people, at any rate, do not eat much meat (Cranstone 1969). The writer holds firmly to the opinion that this could well have been true in prehistoric times and there is certainly no evidence to justify assuming the opposite.

Meat, it must be remembered, is a terminal product whereas a subsistence economy demands a sustained yield.

The contribution of hunting to the economy

It is possible that hunted animals may be under-represented on this and similar sites. When an animal is killed some distance from the settlement the transport of the entire carcase involves considerable labour. This can be avoided by skinning the body, leaving the lower limb bones on the skin to act as handles and removing the meat from the bones which are then discarded on the spot. To test this hypothesis an analysis was made of the relative numbers of the various bones of the body for both red and roe deer.

These were classified as either meat or waste bones. The waste bones are defined as those removed with the skin, namely the head, lower limb bones and the feet. The meat bones are all the rest.

Each of these categories was expressed as a percentage of all bones for each species. The results for the red deer were that the meat bones comprised 19% and the waste bones, 81%. For the roe deer the values were very similar, respectively 22% and 78%. Even after due allowance is made for the fact that many of the waste bones survive better than do the meat bones these values lend support to the above suggestion.

It is evident from the number of red deer bones and antlers found that these deer were still common and widespread well into the Roman period if not later and it would be surprising if they had not been exploited. It seems probable therefore that the true contribution of hunting was greater than that suggested from the values shown in Table XXXIX and that generally speaking, there was more hunting in the Iron Age than the small number of deer bones found on sites of the period indicate at first glance.

Economic interpretations

Many bone collections are not truly representative of the stock keeping practices of the site whence they originate. This is so of ritual, town or village and monastic sites at which there would have been some pre-selection before meat products, on or off the bone, came on to the site. All the evidence suggests that Gussage is a true subsistence site and that the bones mirror what actually happened in the animal population from birth to death. All parts of the body of all the domestic farm species are more or less equally represented and all the age groups from the foetal and newborn right through to those of advanced age are present in proportions suggesting a dynamic 'natural' population.

It is almost certainly a mistake to assume that all bones are necessarily those of deliberately killed animals and good evidence of the falsity of such a belief is supplied by the skeleton of the heifer that died because of a difficult calving.

The interpretation of the true age structure is complicated by the fact that for cattle, sheep and pigs the epiphyses show one picture and the mandibles another for the different age groups. The mandibles indicate a markedly higher proportion of old animals. This may be because of differential survival, the mandibles of old animals are thicker and heavier than those of the young.

The mortality among the youngest age group of cattle as shown by the long bones and even more so by the mandibles (Tables XXII, XXIII) seems to have been higher in Phase 1 than in the later periods. It is known that Roman cattle were slow maturing (White 1970) and there is no reason to suppose that those of the Iron Age differed in this respect so that to kill young calves would have been a thoroughly bad practice. There can be little doubt therefore that the mortality in the youngest groups reflects natural deaths.

For all periods the general pattern of peak mortality, although differing slightly in degree, was similar and occurred in Group 3 (Table XXII) and in the M_3, two or three cusps in wear category (Table XXIII). A tentative estimate for the range of these groups is from four to six years.

Slow growing cattle take from four to five years to reach their maximum weight so that this group may include steers not required for draught purposes and killed at this time for meat. It is quite likely cows did not produce their first calves till three or even four years of age so the only females included would have been those culled for one reason or another; because of infertility, poor milking performance and hence inability to raise a calf or because of mastitis.

Cattle become suitable for draught purposes from about three years old but some animals prove to be untrainable and any falling into this category would perhaps have been fattened and slaughtered.

The metacarpals were plotted on a scatter diagram (Figure 109) by the method of Higham and Message (Higham and Message 1969) but no clear-cut groupings emerged nor was any evidence recognised that might have

been interpreted as indicating selective slaughter either by age or by sex.

When the distal widths were plotted against total lengths however the pattern suggested that castration was practised. In general the metacarpals of bulls and cows are about the same length but those of bulls are thicker whereas those of steers are longer than either but of similar thickness to those of cows (Clason 1967).

The age pattern of the sheep derived from long bones is very similar to that of the cattle with peak mortality in all periods in Group 3 (Table XXVI). There is a similar disparity between the picture presented by the bones and that shown by the teeth; in Phase I there are no less than 52% of all mandibles in the first development stage group, (Table XXVII) that is up to and including M_1 in wear. This stage is less well represented in the other two periods but the proportion is still very high, 31% and 28%. No regime of sheep husbandry known to the writer provides a reasonable explanation for such a pattern. The sheep being of the size that they were, the lambs at such a stage of dental development would have been still so small that to kill them for meat would seem almost incredible but failing any other explanation this is perhaps what happened. It is hard to credit natural mortality alone as the cause. The Group 1 mortality of 5% must reflect natural deaths in the very young, a particularly vulnerable time in sheep. Group 2 figures of 16—26% are too high to be so explained and may well indicate a selective kill of the best grown male lambs not required for flock replacement. By this age in a good year they could be an adequate size even in a small breed. The proportion of sheep in which the lower third molar was erupted ranged from 34%—61%. This is a late erupting tooth which, if the figure for semi-wild hill sheep quoted by Silver (Silver 1969) is accepted for the Iron Age, erupted at three to four years. In all three periods those lower third molars which had two or three cusps in wear or three cusps well worn were by far the most numerous suggesting that the upper end of the age range was in fact rather higher. An age pattern such as this is to be expected if the sheep were kept mainly for wool or milk with meat as a secondary product.

For the pig there was again a discrepancy between the age pattern as derived from long bones and mandibles but less so than in the other two species. According to the mandibles all age groups were about equally represented but the long bones show that Group 4, the oldest, in no period contributed more than 4%. The pig is of use only as a provider of meat and because of its prolificacy is the source of a high sustained yield, higher than that produced by any other species. For the same number of younger animals fewer breeding females are required.

Even with modern living horses accurate ageing is very difficult because of individual variation. With material such as is available from this site clearly no claims can be made for the precision of the estimated ages but because it is the age structure of the population not of the individual that is important this fact does not matter. It is likely that estimates that are too high will be compensated by those that are too low.

The evidence provided by Tables XXXIII and XXXIV is unanimous; only adults and mature adults are represented. There is only one interpretation, it is suggested, that fits such a picture and that is that no breeding of horses was practised; they were rounded up periodically and selected animals caught and trained. Some would have died of disease, some of injuries, some would no doubt have been killed for one reason or another and these would probably have been eaten.

An identical picture was found at the Iron Age site of Longbridge Deverill in Wiltshire, the bones from which were examined by the writer.

A horse is not suitable even for light work until at least three years of age thus, if the round-up technique were used, the disadvantages in terms of care, attention and non-productivity during this long period of time would be avoided. Furthermore the weaker animals would be weeded out by the usual biological processes of disease, starvation and the activities of predators so that the horsemasters of the time would, even if unconsciously, reap the benefits of natural selection.

In the light of the evidence from these two major Iron Age sites it is proposed that the practice described, of the periodical round-up, capture and training of mature horses was widespread if not general, at least in Wessex. It is a moot point therefore, if this suggestion is correct, whether the Iron Age horse should be regarded as domestic, feral or wild.

Anatomical anomalies and pathological alterations

Dental anomalies were a feature of the material from this site especially in the cattle remains. There were 16 mandibles with only five cheek teeth, a quite common finding in prehistoric and early cattle in the writer's experience. In most of these the first premolar was absent. In ten mandibles the third cusp of the lower third molar was either reduced or absent. The same change was noted in the mandible of one sheep. Two bovine mandibles were present in which the third lower molar was well in wear on one or two cusps before the third premolar had erupted at all.

Among the cattle remains only two bones showing pathological lesions were found. These were a metatarsus the proximal extremity of which showed the changes of early osteoarthrosis with slight eburnation and 'lipping', a condition often incorrectly referred to as 'osteoarthritis' and a calcaneum which had sustained a fracture. This was on the lateral aspect and had not united. There was very little callus formation and the fractured surfaces were rough and pitted. Its appearance suggested the fracture had become infected.

The foot of a sheep showed syndactyly in that the two third phalanges were firmly fused together; one was of abnormal shape. There was a mandible exhibiting periodontal disease, a condition in which there is a swelling of the jaw bone and a loosening of the teeth. The cause is not known for certain but it is more likely, according to the available evidence, that it is associated with nutritional imbalance or deficiency than with infectious disease.

One pig mandible from Phase 1 and one from Phase 2 each had an abscess cavity. In the first the cavity was 8 by 11mm, between the fourth premolar and the first molar and there was a swelling extending a short way beyond it on either side. In the other and more severe case the abscess extended from the first to the third molar and the cavity was 43 by 20mm. This must have been a very painful lesion which would seriously have interfered with feeding and may, for that reason, have been the ultimate if indirect cause of death. Another pig specimen was a tibia in which there was an oblique healed fracture of the distal end of the shaft.

The most common lesion in the horse material was osteoarthrosis of the proximal metatarsus which was seen in five specimens. This condition is fairly common in modern

horses but its high frequency on this site may be explicable by the fact that Iron Age horses were used for draught purposes. Such a use and the strains that follow from it are thought to be associated with this lesion and it is seen quite often in cattle metatarsi. Osteoarthrosis was also found on a first phalanx. The distal articular surface was affected there being exostoses above and around it and extending on to the shaft.

Osteoarthrosis was seen on both shoulder joints of a dog from Feature 229 (Phase 3). There was a rim of exostosis of 'beaded' appearance round the head of the humerus and a similar but flattened rim round the glenoid cavity. Both humerus and scapula showed eburnation of the bone surface.

A radius was markedly distorted, the distal extremity being bent outwards although it was still in the correct latero-medial plane. There were eight fractures, one of the humerus, two of the radius and ulna, one of a metacarpal and four of the tibia. The metacarpus had healed in perfect alignment as is to be expected because of the natural splinting effect provided by the adjacent bones. In all other cases there was some distortion. The humerus exhibited a diagonal distal shaft fracture which was firmly united and the callus smooth suggesting it must have occurred not less than one year previously. The distal fragment had been displaced upwards and sideways. One radio-ulnar fracture had united satisfactorily, the other had not. In the first the break had occurred in the proximal third and had healed with marked antero-posterior bending and outward rotation of the upper half of the radius and inward rotation of the ulna. The callus was smooth and symmetrical. In the other radius complications had set in; there was no union. In the same layer of the same feature there was also a tibia and fibula, both fractured. From the sizes of these three bones and the fact that they were from the same layer it is thought highly likely that they came from the same animal. The two latter bones were also unhealed and showed a bony proliferation and swelling. There are two possibilities: either both injuries were incurred at the same time to be followed by infection of the bone marrow, osteomyelitis, or one alone which was followed by osteomyelitis which then spread via the bloodstream to another bone so weakening it that it broke, a so-called pathological fracture.

There were two mid-shaft fractures of the tibia; one had healed completely but the distal portion had become bent forwards and outwards. In the other union had started but was not complete. The callus was rough and there was a gully between the opposing edges. A diagonal fracture of the crest in another tibia presented an identical appearance suggesting that the two injuries had occurred several months earlier.

The most remarkable pathological specimen of all was the almost complete skeleton of a cow which had died because of a difficult calving (Figure 109, Plate XXX). This was found in Pit 61 (Phase 3). The bones of the fore-legs of the calf can clearly be seen protruding beyond the maternal pelvis and just visible are several other unidentifiable bones in front of the left femur of the dam. Further excavation showed that these were the skull and hind limbs. Their positions are demonstrated in the drawing (Figure 109). From this it can be seen that the head of the calf is turned back towards its flank.

This particular malpresentation can be very difficult and sometimes impossible to correct. In the latter event embryotomy or caesarean section is necessary. The reasons for this in the case of a trained person are two; firstly if the dam is small there may not be room to insert a hand and arm to carry out the necessary manipulation and secondly the head of the calf may be so far back that it is physically imposible to reach it. If untrained individuals are involved they may either do nothing through ignorance or merely pull on the fore-legs without making any attempt to reposition the calf, a course of action which achieves nothing except to exhaust both operator and the cow. In such a situation slaughter is the only possible solution.

Butchery

There was no evidence of butchery in the sense of cutting up carcasses into small pieces. Saw marks were found only on horn cores and antlers, not on bones. Several dog bones bore cut marks suggesting that the carcasses had been defleshed and there were a few limbs, the components of which were in the correct anatomical relationship. This indicates that the meat had been cut from them and the limb then thrown into a pit still held together by tendons.

A bovine skull was found in Feature 379 which had a circular depression in the mid-line a short distance below the intercornuate ridge. The disc of bone measured 39 by 34mm. This injury looks as if it was caused by a rounded blunt instrument, undoubtedly performing the function but not necessarily having the shape of a pole-axe.

Discussion

Minimum numbers of individuals were estimated by counting the most frequently occurring skeletal specimen. More elaborate methods have been outlined (Chaplin 1971) but these entail much extra labour without commensurate extra information. By their use it can be shown that there is evidence for more individuals of each species than by the simple method but the ratio of any one species to the others is not necessarily altered so that the overall picture remains the same.

The ageing method used for this collection demanded that the unfused epiphyses in the early fusing group and the fused epiphyses in the late fusing one be expressed as a percentage of all the epiphyses. This is in distinction to the method described for Durrington Walls (Harcourt 1971) and by Chaplin (Chaplin 1971) whereby each of these categories is expressed as a percentage of its own group, not of the total. This latter method is in error and cannot be used to derive the age structure of a whole population because it refers to differences within groups rather than to those between them. By this modified technique the proportion of fully mature cattle represented at Durrington Walls (Harcourt 1971) is reduced from 75% to 33% and the number of sheep of the same age group at the Treasury site (Chaplin 1971) from 68% to 12%. It will be noted how much more closely these figures match those at Gussage (Tables XXII and XXVI) than do the originals. They represent, in the writer's opinion, a far more realistic picture of the probable stock keeping practice and mortality pattern at the two sites.

The difficulties and uncertainties of the ageing of prehistoric farm stock from their bones and mandibles is neatly shown by the cow which died of a difficult calving. The age in years represented by the stage of fusion of each long bone according to Silver (Silver 1969) has been put in brackets after it. The following bones were fused; right metacarpal (>2.5y), proximal first phalanges (>1.5y), distal tibia (>2.5y), and the distal humerus (>1.5y). The following were unfused; left metacarpal (<2.5y), the metatarsals (<3y), the proximal humerus, distal radius,

proximal and distal femur, proximal tibia and calcaneum (all <3.5y). The conclusion to be drawn from the foregoing is that the animal was a little less than three years of age. However the third lower molar had emerged from the alveolus although it probably would not have been visible through the gum, suggesting a possible age of four years. If a compromise is accepted between the age suggested by the bones and that by the teeth then the animal would have been three to four years old at death.

While it is tempting to assume that this calf was the dam's first there is no evidence that would either support or refute this belief. If it was her first this fact would at least be consistent with the practice followed by Varro, in Roman times, whose 'heifers were not allowed to conceive before they were two years old and it will be all the better if they are four years old before they are allowed to bear a calf.' (White 1970).

Polled skulls have been found at only four other sites in Wessex; All Cannings Cross (Cunnington 1974), Swallowcliffe Down (Jackson 1925—1927), Longbridge Deverill (Hawkes in preparation) and Mount Pleasant (in press). In Southern Britain this trait has not been found outside Wessex or before the Iron Age and it exists at the present day nowhere else in Europe except Scandinavia. It arose among horned cattle as a mutation and it is most unlikely that such a mutation would occur more than once in such a restricted area as Wessex during a time as short as the span of the Iron Age. For these reasons there is a high probability that the mutation occurred in Britain among the cattle of Iron Age immigrants. The gene for the character is dominant and the offspring of polled cattle would therefore exhibit the feature. It is suggested that the finding of the skulls of polled cattle over a wide area of Wiltshire and Dorset—and there must be many more as yet undiscovered—is strong evidence for the exchange of cattle among Iron Age people. Such exchange may have been legitimate by means of cattle markets or have occurred by stock theft, an activity that has long been highly regarded by the young men of cattle owning tribes.

In modern agricultural practice the production of meat is of prime importance but, as has already been remarked, the amount of meat eaten by prehistoric man may well not have been great, certainly not so great as is so readily assumed with very little supporting evidence. If this suggestion is correct then meat would have come low on the list of primary products although, no doubt, very welcome when it became available. Economic interpretations of bone collections from the prehistoric period are largely coloured by if not based on the assumption that the reasons for keeping stock and the management techniques used were respectively rational and efficient by twentieth century Western European standards. Such an assumption may well be wrong. Tacitus (cited in Piggott 1969) says of the Germani that 'their cattle were poor but it was number that was chiefly valued; they are the most highly prized, indeed the only riches of the people.' They have been similarly regarded for a long time in parts of Africa where they constitute visible wealth and hence prestige, a walking bank balance but one drawn only for very special occasions such as ritual of one sort or another or for the payment of bride price.

Different species may be exploited in the same or different ways, one being slaughtered and eaten at the end of a lifetime of production or service, another not. At one time both horses and cattle were used for draught purposes in Britain but only cattle were killed and eaten. Such a distinction is quite irrational and probably based on religious prohibitions. In this report it has been assumed that the horse was a food animal but it is noteworthy that the number of complete long bones from all periods yielded by cattle was 63 and by horses 66, but the number of cattle (111) was more than three times as great as that of the horses (33). This discrepancy could mean that horses were not eaten or were eaten but that the carcasses were prepared differently or it could be due to chance. The last explanation is probably the least likely.

Whatever the reasons for which stock were kept and no matter how strange they may seem in a modern context there are no grounds for assuming that the stockmen of the time were not both skilful and knowledgeable, even if only empirically. Numerous individuals of all species survived many winters. It is highly probable that the stock of the time possessed a natural hardiness and ability to thrive when conditions were poor that is largely lost to most breeds of modern farm animals. Invaluable as such an attribute would obviously be it would still need to be supplemented by good stockmanship. It has been said that ancient domestication might be defined as a combination of malnutrition and overcrowding (Perkins 1968). Such sweeping and unsupported assertions about prehistoric animal husbandry are quite unjustified. The evidence simply does not exist either for this or for the endlessly perpetuated myth of so-called 'autumn killing'. Cattle and sheep that were getting old or were unsuitable for some other reason may well have been fattened and killed but that is a very different proposition from the wholesale slaughter of a large proportion of the stock. Because of slow maturity and, by modern standards, the low fertility of all unimproved animals such a regime, allied with losses from disease, would quickly have reduced the flocks and herds to vanishing point.

Acknowledgements

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Chapter XI
The Human Bones
by Carole A Keepax

Introduction

The skeletons received from Gussage All Saints represent a minimum of fifty-three individuals (fifteen adults and thirty-eight infants). Of these, one infant was recorded from a Phase 1 context; one adult and six infants from Phase 2 deposits and the remainder from Phase 3.

The preservation of the bones is generally good, although there is slight surface erosion and destruction of the articular ends of the long bones in some cases. Most of the skeletons are also virtually complete. As relatively few well preserved skeletons of this date are available for study, this group is obviously of some importance.

A brief description of each skeleton is given below. This is followed by tables of measurements and further discussion of abnormalities, injuries, pathology, etc., which occurred in the series.

The assessments of age are based mainly on dental development and attrition, but other factors (such as epiphyseal closure, the degree of degenerative joint disease (osteoarthritis), and the appearance of the pubic symphysis) were taken into account where applicable. A numerical classification of the amount of wear on the molars (Brothwell 1972) is given at the side of the dental formula. The key for dental formulae is as follows:

X = ante-mortem loss
/ = post-mortem loss
NP = not developed
A = abscess
E = pulp exposure
V = unerupted
O = erupting
— = area missing
C = caries:
OC = occlusal
labC = labial
LC = lingual
MC = mesial
DC = distal
SC = severe (only roots remain)

Infants

The approximate age of the infants was assessed by the state of development of the deciduous dentition and the size and general development of the bones. In some cases, the fusion of the tympanic ring with the squamous part of the temporal, and the fusion of the pre- and postsphenoid parts of the body of the sphenoid were also taken into consideration. The infant skeletons may be tentatively divided into three developmental stages, as below. These are only rough divisions within a continuous range of development.

1. Premature infants (4 individuals)

7—8 months *in utero:* 285(6).

8—9 months *in utero:* 132(5), 130L(7), 290(5).

In these cases, death may have been associated with premature birth.

2. New-borns (22 individuals)

Death probably occurred at about the time of full-term birth. This group may include some individuals belonging to divisions 1 or 3 which cannot be aged accurately.

418(8), 121(5), 132(10) 1st, 131A(4), 34(8) 2nd, 3rd and 4th, 139(4) (2 individuals), 293(5), 293(4)/(6), 293(7), 347(6), 470(7), 709(5), 1G, 942(3), 172(4), 769(6), 310W(7) (2 individuals), 709(4).

3. 0—2 months (12 individuals)

These infants may have survived for a short time after birth.

531(4), 130L(4), 285(6) (1st), 439(9), 96(12), 34(8) (1st), 132(9), 132(10) 2nd, 661(6), 1R(4), 199, 781(4).

The following infants deserve special mention:

531(4)

There is a double entry for the nutrient foramen on the left tibia.

439(9)

The bone of the anterior (medial) surface of the left tibia seems to be slightly more porous than normal. This is associated with a very small nutrient foramen on the same bone, which suggests that bone formation may have been poor, perhaps due to a restricted blood supply. However, the radiological appearance of the tibia is within the normal limits. Growth lines are visible on the X-rays which are presumably due to a previous interruption in normal development.

132(9)

There is a grass green stain on the left frontal bone, presumably due to contact with a copper object. There is a depression about 0.25cm in diameter, on the inner surface of the basi-occipital, which is more marked than is usually observed.

661(6)

There are grass green stains on the left frontal and occipital bones, presumably due to contact with a copper object.

Table XL. Gussage infant measurements

		Femur[1]	Tibia[1]	Fibula[1]	Humerus[1]	Ulna[1]	Radius[1]	Mandible[2]	Ilium[3] (b)	Ilium[4] (ht)	Clavicle[1]	Exoccipital[5]
418(8)	l	75.0	65.5	—	63.25	58.85	—	48.95	33.5	29.35	45.1	26.0
	r	75.0	65.1	—	62.8	—	—	49.45	33.95	29.45	—	—
132(5)	l	74.2	65.1	—	65.2	60.85	52.2?	—	—	—	44.15	28.3
	r	74.35	65.0	—	64.4	—	—	51.55	30.7	34.4	44.4	28.85
121(5)	l	75.35	65.5	—	65.55	59.95	52.4	—	—	—	42.6	25.5?
	r	—	65.75	62.35	—	60.25	52.4	—	33.1	30.6?	—	26.4
531(4)	l	78.85	68.7	65.7	—	62.95	—	—	35.8	32.55	—	—
	r	—	68.2	65.5	69.4	63.55	—	52.0	36.1	33.0	—	—
130L(7)	l	73.8?	59.5	—	64.55	57.45	49.85	50.5	—	29.6	42.1	24.9?
	r	—	—	—	64.2	58.1	50.2	50.7	—	—	43.4	24.95
139(4)	l	—	—	—	—	—	—	—	—	—	—	—
	r	68.95?	—	—	—	—	—	—	—	—	—	—
130L(4)	l	—	—	—	67.65	—	55.1	—	—	—	44.5	27.8
	r	—	68.6	—	67.75	62.45	55.2	—	—	—	—	27.8?
131A(4)	l	—	—	—	—	—	—	—	—	—	—	30.2
	r	—	—	—	—	—	—	48.15?	36.2	31.3	—	—
285(6)	l	—	—	—	70.75	64.1	56.0	—	—	—	—	—
1st	r	79.05	—	—	70.8	65.6	—	55.1	—	—	—	28.95
285(6)	l	67.2	58.95	57.3	59.7	—	47.1	—	—	—	37.5	24.55
2nd	r	66.8	59.35	57.15	59.9	53.99	47.4	—	27.1	26.1	37.75	24.0?
439(9)	l	80.85	68.5	—	66.35	61.45	53.0	52.7	—	—	46.45	26.3
	r	80.4	69.9	65.6	66.7	61.8	53.4	53.0	36.15	30.95	45.75	28.55
96(12)	l	78.4	68.0	64.55	67.05	62.0	54.2	—	38.6	32.35	47.35	28.3
	r	78.4	68.2	64.7	67.5	61.95?	53.95	53.5	38.4	32.95	46.95	28.65
34(8)	l	76.3	67.0	62.9	66.05	61.4	53.3	52.95	36.5	32.0	47.5	28.4
1st	r	75.8	66.65	62.45	65.8	61.8	53.35	54.85	36.45	31.45	47.9	28.7
34(8)	l	74.25	66.5	—	67.45	62.35	53.5	50.6	35.3	30.25	46.9	26.9
2nd	r	74.5	67.0	—	66.5	61.9	53.25	49.7?	34.8	31.6	46.8	26.6
34(8)	l	—	64.2	—	64.45	—	51.2	48.0?	31.45	27.9	44.35	26.3
3rd	r	74.2	62.9	—	64.35	—	—	48.2?	—	—	—	26.15
34(8)	l	73.5?	—	—	64.3?	59.7	50.95	—	—	—	45.1	—
4th	r	73.6	—	62.45	64.15?	59.8	51.65?	—	—	—	45.2	—
132(9)	l	77.4	67.15	64.15	67.65	61.5	53.5	52.2	35.6	31.5	45.2	—
	r	77.1	67.15	64.45	67.4	61.7	—	—	35.95	31.55	45.5	28.6
132(10)	l	74.75?	—	—	—	60.95	53.1	—	33.8	28.35	—	—
1st	r	—	64.1	—	67.45	61.05	—	—	—	—	—	—
132(10)	l	79.1	70.6	66.35	68.7	61.95	54.2	—	34.55	30.75	—	27.5
2nd	r	—	70.6	65.7	68.7	62.8	54.5	—	—	—	43.2	28.1
293(5)	l	74.5	64.85	61.1	65.85	59.95	52.1	—	—	—	43.75	28.9
	r	74.5	64.45	60.9	66.0	60.5	52.15	49.25?	—	—	41.9	28.0
293(4)/	l	—	—	—	—	—	—	—	—	—	45.35	—
(6)	r	—	—	—	—	—	—	—	—	—	—	—
661(6)	l	—	—	—	72.2	64.6	57.5	51.15?	—	—	45.75	27.2
	r	—	—	—	—	—	—	51.6	—	—	46.85	28.55
293(7)	l	77.5	—	—	—	—	—	—	—	—	—	—
	r	—	—	—	—	—	—	—	—	—	—	—
347(6)	l	75.4?	—	—	—	—	—	—	—	—	—	—
	r	—	—	—	—	—	—	—	—	—	—	—
347(9)	l	—	—	—	63.6	—	—	—	—	—	—	—
	r	—	65.7	—	—	—	—	—	—	—	—	—
330(7)	l	—	71.1	—	—	—	—	—	—	—	—	—
	r	—	71.0	—	—	—	—	—	—	—	—	—
290(5)	l	65.2?	—	—	—	—	—	—	—	—	—	—
	r	—	—	—	—	—	—	—	—	—	—	—
139(4)	l	—	—	—	—	—	—	—	—	—	—	—
	r	—	69.8?	—	62.6?	—	—	—	—	—	—	—
470(7)	l	76.4	68.1	—	67.1	62.0	53.5	—	—	—	45.1	—
	r	76.2	67.4	—	66.7	62.1	—	—	34.4	29.9	—	—

Table XL. (continued)

		Femur[1]	Tibia[1]	Fibula[1]	Humerus[1]	Ulna[1]	Radius[1]	Mandible[2]	Ilium[3] (b)	Ilium[4] (ht)	Clavicle[1]	Ex-occipital[5]
709(5)	l	73.4?	65.3	—	—	—	—	—	—	—	—	—
	r	—	63.7	—	—	—	—	—	—	—	—	—
IR(4)	l	—	—	—	68.7?	64.9	—	52.2	—	—	46.4	—
	r	78.7	67.8	—	68.3?	—	56.6	—	—	—	—	—
199	l	80.9	69.9	—	—	—	—	—	—	—	—	—
	r	81.6	70.2	—	—	—	—	—	—	—	—	—
418(8)	l	—	—	—	—	—	—	—	—	—	—	—
	r	—	—	—	—	—	—	—	—	—	—	26.5
172(4)	l	—	—	—	—	—	56.8	—	—	—	—	—
	r	—	—	—	—	—	—	—	—	—	—	—
769(6)	l	—	70.6?	—	—	—	—	—	—	—	—	—
	r	—	71.1?	—	—	—	—	—	—	—	—	—
310W3	l	75.7	64.0	—	—	—	—	—	—	—	—	—
	r	75.8	—	—	—	—	—	—	—	—	—	—
310W7	l	75.2	—	—	—	—	—	—	—	—	—	—
	r	75.5	—	—	—	—	—	—	—	—	—	—
781(4)	l	80.7	—	—	70.0	—	55.8	—	—	—	—	—
	r	80.9	—	—	70.5	—	55.4	—	—	—	—	—
709(4)	l	74.6?	—	—	—	—	—	—	—	—	—	—
	r	—	—	—	—	—	—	—	—	—	—	—

1 = Maximum length, without epiphyses
2 = Maximum measurement from condyle to chin
3 = Maximum measurement from the anterior superior spine to the posterior superior spine
4 = Maximum measurement from the acetabular region to the iliac margin, taken at right angles to the breadth measurement
5 = Maximum measurement from the most anterior part of the ex-occipital (a small bony projection anterior to the condyle) to the posterior part of the lateral margin.

Sub-adults

435(5). Possibly female, aged between 13 and 15 years

A virtually complete, well preserved skeleton of an adolescent, possibly female (suggested by the shape of the pelvis). The skull is almost complete, with slight lateral distortion. All major epiphyses are unfused. The dental formula is:

V OC	V	
8 7 6 5 4 3 2 1 | 1 2 3 4 5 6 7	8	$M_1 = 2$
8 7 6 5 4 3 2 1 | 1 2 3 4 5 6 7	8	$M_2 = 1$
NP or V	OC OC NP or V	

Very slight calculus deposits were observed, but no alveolar bone recession. The upper left canine has not fully descended into the tooth row, and is displaced labially. $\lfloor 2$ and $\lfloor 3$ are crowded together, although there is no lack of space in the dental arch. $\lfloor 2$ is also reduced in size. There is localised alveolar bone recession on the palatal side of $\underline{4}\rfloor$ and $\underline{5}\rfloor$, associated with slight osteitis of the maxilla in this region (extending over an area a few cm square). This type of lesion can be caused by periodontal disease and is known to occur in living patients of this age (McCall and Wald 1957, 263—266).

An inflammatory response (periostitis) was observed in the mid-shaft region of the right tibia. A thin layer of spongy bone has been laid down on the front of the tibia over an area about 5mm × 15mm, presumably as a reaction to infection.

The segmentation of the sternum is slightly anomalous. The two surviving sternebrae are almost triangular in shape.

31(6). Female, aged between 16 and 19 years

The complete skeleton of a young female is present. The skull is almost complete with slight lateral distortion. The dental formula is:

OC OC		$M_1 = 2+$
8 7 6 5 4 3 2 1 | 1 2 3 4 5 6 7 8		$M_2 = 2$
8 7 6 5 4 3 2 1 | 1 2 3 4 5 6 7 8		$M_3 = 1$
0 DC	DC SC AE	

There is slight calculus and alveolar bone recession. In the region of $\lceil 6$ there is medium recession associated with severe caries of the tooth and a dental abscess. There are two main areas of partly healed inflammation on the outside of the mandible. One of the areas of porous bone (about 15 × 5mm) seems to be associated with the loss of $\lceil 6\rfloor$ and caries of $\lceil 5\rfloor$. A smaller region of osteitis occurs in the region of $\lceil 6$.

All major epiphyses are unfused or still clearly visible except those of the humerus (distal end), ulna (proximal end), and clavicles. An estimation of maximum stature was made assuming that growth was virtually complete.

On the proximal articular surface of the proximal phalanx of the right hallux, there is a small porous pit about 5×7mm. (Plate XXXIV)

The left clavicle is smaller in size than the right and is rather twisted in shape. The left humerus also seems slightly smaller and thinner than the right. This suggested that there might have been disuse and associated wasting of the limb. However, X-ray examination did not confirm the presence of a condition of this kind.

Adults

62(7). Female, aged between 20 and 25 years

A fairly well preserved and complete skeleton of a young adult female. Erosion of the skull has occurred in restricted areas, producing a pseudo-pathological effect. The skull is fairly complete, but lacks some of the left side of the face. The dental formula is:

MC   AE   E
OC DC   DC SC   SC $M_1 = 4$
8 7 X 5 4 3 2 1 | X 2 3 4 5 6 7 8
———————————————————————— $M_2 = 2$
8 7 6 5 4 3 2 1 | 1 2 3 4 5 6 7 8
OC DC SC DC   labC NP
E   DC $M_3 = 2$

There is no alveolar bone recession (except in the region of |6) and slight calculus deposits. The calculus is slightly green in colour.

There is a small osteophyte on the margin of the foramen magnum. Horizontal vascular marks were observed on the distal ends of the tibiae.

At the vertebral end of one rib there is a crack, a few mm deep and about 10mm long, across the tubercle. X-ray examination indicated that this was possibly a congenital anomaly.

On the posterior side of the distal articulation of the right humerus, there is a groove about 10mm long, with slight proliferation of the bone at the proximal end. This might be due to ante-mortem injury to the elbow, but the damage was too slight to be observed on an X-ray.

285(3). Male aged 22 (± 2) years

A virtually complete skeleton of a robust young adult male. The skull is fairly complete. The dental formula is:

MC
8 7 X 5 4 3 2 1 | 1 2 3 4 5 X X 8 $M_1 = 4+$
————————————————————————
8 7 6 5 4 3 2 1 | 1 2 3 4 5 6 7 8 $M_2 = 2+$
MC   DC   A   OC
OC   (?) $M_3 = 1$

There are slight to medium, green calculus deposits and slight alveolar bone recession. In the region of 6 there is considerable, but localised, alveolar recession and an enlarged tooth socket on the labial side. Just below the neck of 8| there is a small enamel pearl. There is slight lingual displacement of |2 and labial displacement of |3 due to crowding.

A depression about 7 × 5mm and a few mm deep was noticed on the sternal articular end of the left clavicle. A similar pit is present on the distal articular surface of the first metatarsal.

There is a poorly healed mid-shaft fracture of the right humerus (Plate XXXV). There is considerable proliferation of new bone associated with slight angulation of the shaft. X-ray examination indicated that although the fracture may not have been complete, there was evidence of a long-standing infection.

On the back of the left parietal there is an injury caused by a sharp implement. The cut is about 40mm long, 3mm wide, and 2—3mm deep. It has not penetrated to the interior of the skull. The injury was apparently inflicted some time before death, as there is lipping of the bone around it and partial obliteration of the cut mark in the middle.

There are also a number of injuries caused by a sharp instrument (e.g. sword or axe), immediately prior to (or possibly just after) death. These are discussed in detail later (Plates XXXV and XXXVI).

387(6). Male, aged between 35 and 45 years

A virtually complete skeleton of an adult male. The skull is almost complete with only slight distortion of the base. The coronal and sagittal sutures are completely obliterated. The dental formula is:

AE   AE
SC DC   DC   SC MC $M_1 = 5$
8 7 6 5 4 3 2 1 | 1 2 3 4 5 X 7 8
————————————————————————
8 7 X 5 4 3 2 1 | 1 2 3 4 5 6 7 8 $M_2 = 5$
OC MC   DC   MC
AE $M_3 = 4$

There is slight to medium, green calculus and slight alveolar bone recession. The xiphoid process is ossified, but not fused to the sternal body. There is a supra-trochlear foramen on the left humerus.

There is a well defined ring of osteitis on the mandible around the aperture through which the abscess of 6 had discharged, and a slight suggestion of a similar reaction associated with the abscess aperture of 6|. In both cases, the infection had probably spread to the bone from the dental abscess.

There is degenerative joint disease of the vertebral column, varying from a slight degree in the cervical region, to severe in the thoracic and lumbar regions. The second and third lumbar vertebrae are partially collapsed. The ribs are also affected to a medium degree. Most of the other bones of the body are affected from a slight to a medium degree.

There is a porous pit about 2mm in diameter on the distal articular surface of the left tibia. There are a few horizontal vascular impressions in the mid-shaft regions of the tibiae.

On the posterior side of the trochlea of the left humerus there is a deep groove about 5mm long. This may be due to an ante-mortem injury of the elbow, but the damage was too slight to be observed on an X-ray.

410 (6) Adult female, between 35 and 45 years

The almost complete skeleton of an adult female. The skull is virtually complete, with slight lateral distortion, particularly affecting the base. The sutures are open. The dental formula is:

DC   A   ?
8 7 6 5 4 3 2 1 | 1 2 3 4 5 6 X – $M_1 = 5$
———————————————————————— $M_2 = 4+$
8 7 6 5 4 3 2 1 | 1 2 3 4 5 6 7 X $M_3 = 4$
DC   lab C   lab C

There is slight to medium alveolar bone recession, associated with medium green calculus. There is a slight depression in the skull vault at bregma.

At the apex of the root of |5 there are two rounded apertures. These seem to be due to abscessing. The bone in

this area is slightly porous, suggesting the presence of an old inflammatory reaction. The cause of this condition is not readily apparent; there is no caries of the associated teeth. Presumably, it may be associated with periodontal disease (which has also caused alveolar bone recession).

Six vertebrae in the lower thoracic and lumbar regions are slightly affected by degenerative joint disease. The fourth and fifth lumbar vertebrae display considerable lipping and partial collapse of the bodies. The femora, pelvis, some metacarpals, and the right shoulder joint are also slightly affected.

There is a raised circular area about 20× 10mm, projecting about 5mm on the posterior, lateral side of the upper part of the right tibia. At the centre of the mound there is a very small area of porous bone. X-ray examination indicated that this was probably a localised type of fracture (infraction), such as might be caused by a blow from a semi-sharp instrument.

Both proximal phalanges of the hallux have a small pit about 2mm in diameter and 1mm deep on the proximal articular surface. There is a cyst-like cavity about 3× 5mm, and about 6mm deep, just below the proximal articulation of a metacarpal.

204 (8) Middle aged/elderly female (more than 45 years old)
The fairly complete but fragmentary skeleton of an adult female. The skull is fairly complete, with no marked post-mortem distortion. The dental formula is:

					AE			E	E	AE		DC			
				DC	SC	E	E	A	SC	SC		MC			
–	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
		DC	SC	SC					A	SC	MC			labC	MC
		MC	E	AE						AE	labC			LC	LC
		labC												DC	OC
		A													

There is medium alveolar bone recession. The tooth wear is anomalous:— the upper anterior teeth are very heavily worn, but there is much less wear on the lower teeth. This is discussed in more detail later (Plate XXXVII).

The right condyle of the mandible has a small mound of extra bone on the anterior edge of the articular surface. This is probably due to degenerative joint disease, as there is slight destruction of the articular surface and slight roughening of the glenoid fossa.

Much of the facial region displays periostitis, almost certainly due to spread of infection from the very poor dentition (Plate XXXVII). A thin layer of new periosteal bone has been deposited over much of the right maxilla, probably due to a spread of infection from the chronic dental abscess at the apex of the root of 3|. There is also slight osteitis on the right side of the mandible. On the palate, the bone is arranged in a radiating fashion from the space left by 6|. This would seem to suggest that an abscess may once have discharged into this area, causing a localised infection of the palate.

The vertebrae in the lumbar region display a medium degree of lipping due to degenerative joint disease. The fourth and fifth lumbar vertebrae are severely affected, with partial collapse of the body of the latter. The sacrum, femora, radii, pelvis (auricular areas), and some bones from the hands and feet are also slightly affected. The right knee joint displays considerable lipping and eburnation of the posterior halves of the medial condyles of femur and tibia.

139 (3) Middle aged/elderly female (more than 45 years old)
The fairly complete but fragmentary and poorly preserved skeleton of an adult female. The skull is fairly complete, with marked post-mortem distortion. The coronal and sagittal sutures are almost obliterated. The dental formula is:

												A			
												MC			
												DC	?		
–	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
?		A													?

3| and |1 are worn to the roots, but secondary dentine has formed, blocking the pulp cavity. The roots of |7 are thickened to form one large rounded root. This is probably a reaction to infection, and is associated with chronic abscessing of the socket. There is medium to considerable alveolar bone recession and slight calculus.

There is very slight osteitis of the mandible on both sides, just posterior to the positions which the third molars occupied. This is probably associated with the infection which caused the loss of the molars.

Most of the vertebral bodies display slight lipping due to degenerative joint disease. One cervical, one thoracic, and the lumbar vertebrae are affected to a medium degree. The femora, ulnae, radii, clavicles, pelvis, humeri, and some bones from the hands and feet are also slightly affected.

There are a few vascular impressions in the mid-shaft regions of the tibiae.

Although this individual was elderly (as assessed by the dental condition), there are relatively few signs of advanced degenerative joint disease.

205 (5) Elderly adult, probably female, (more than 45 years old)
The fairly complete, but rather fragmentary and poorly preserved skeleton of an adult. The skull is fairly complete with slight post-mortem distortion and a poor facial-vault join. The coronal, sagittal, and lambdoid sutures are almost obliterated. The dental formula is:

		A									←	A	→		
8	7	6	5	4	3	2	1	1	2	3	4	5	6	–	
–			5	4	3	2	1	1	2	3	4	5	6	7	8
			DC	MC					DC		MC			A	MC
															OC

Only a heavily worn root of 3|, with secondary dentine blocking the pulp cavity, remains in the palate. There is considerable alveolar bone recession and slight calculus.

There is slight bony lipping of the bodies of some cervical, thoracic and lumbar vertebrae. Both knee joints are severely affected by degenerative joint disease, resulting in eburnation and destruction of the articular surfaces of the medial condyles of tibiae and femora. The left shoulder joint is fairly severely affected, with some destruction of the articular surface of the glenoid cavity and a small area of eburnation. The pelvis, radii, and most phalanges are also slightly affected.

There is a porous pit (about 10× 5mm) on the articular surfaces of both navicular bones. There is a similar pit (probably a degenerative cyst) about 10mm in diameter on the interior surface of the lateral condyle of the right

femur (Plate XXXIV). The first and second phalanges (probably from the second digit of the foot) are fused together. The fusion is not quite complete. The joined area is enlarged, but there is little disruption of the bone. X-ray examination indicated that this is probably a case of healed infective arthritis. This may be caused by a variety of factors; for example, blood stream infection, spreading of infection from adjacent soft tissue, or injury. There are a few horizontal blood vessel marks in the mid-shaft regions of the tibiae.

359 (4) Middle aged/elderly male (more than 45 years old)
This is the fairly complete skeleton of an adult with weak male characteristics, lacking the distal ends of the tibiae and fibulae, and the feet. The skull is fairly complete, with slight post-mortem distortion and a poor facial-vault join. The lambdoid, coronal, and sagittal sutures are partly obliterated. The dental formula is:

	A
— 6 5 4 3 2 1	1 2 3 4 5 6 8
8 7 6 5 4 3 2 1	1 2 3 4 5 6 8
MC	
OC	
DC	

|1 is very heavily worn, but the pulp cavity is blocked by secondary dentine. There is considerable alveolar recession, and slight greenish calculus on the remaining molar.

The body of the sternum is perforated by a triangular hole (10mm max. dimension) near the lower end.

The bodies of the vertebrae in the lower cervical and thoracic regions display slight lipping due to degenerative joint disease. The vertebrae of the lumbar region are affected from a medium to a severe degree. The left femur (distal), first metacarpals, and some phalanges, also display slight lipping.

There is severe osteitis of the proximal end of the first phalanx, probably of the fourth digit of the hand. This has resulted in destruction of the bone, producing a depression about 20× 15mm surrounded by a ring of bone proliferation. In the centre of the depressed area is an aperture about 5mm in diameter. X-ray examination indicated that this was formed by an infective process, and had probably originated in adjacent soft tissues.

At the sternal end of one rib there is marked angulation associated with slight swelling and exostoses. X-rays showed that this was a healing fracture, probably inflicted several months before death.

Scattered fragments
The following fragments (representing a minimum of four individuals) were scattered over the site.

387(4) A mid shaft fragment of a right femur and a fibula fragment. The bone surfaces are badly eroded.

IP(4) The left half of the palate of a fairly young adult individual. The dental formula:

—	1 2 3 4 5 6 —
—	—

$M_1 = 3+$

IP A fragment of left and right parietals with the sagittal suture almost obliterated.

IM(4) Several fragments of the right parietal bone.

IC(4) A fragment of the left part of a frontal bone with part of the orbit.

IG(3) Fragments of left and right parietal bones, with slight osteoporosis.

IG(4) A fragment of a left femur shaft.

IM(5) A fairly complete skull vault. The general size and thickness of the bone suggests that the individual was adult, although all of the sutures are open.

IN A mid-shaft femur fragment, possibly matching IG(4). A second mid-shaft femur fragment is present which does not match the first.

209(6) A left parietal fragment.

310G A mid-shaft femur fragment.

381 A small skull vault fragment.

426 A fragment of left femur shaft (not matching 470).

428 An occipital fragment with a well developed external occipital protuberance. One lambdoid wormian bone.

468 A shaft fragment of a left femur.

470 A right femur with the distal end missing.

584 A small fragment of skull vault.

815(3). Roman adult male, aged 35—45 years
A fragmentary skeleton, lacking most of the ribs and vertebrae, and some hand and feet bones. The preservation is poor; the ends of the long bones are friable and there is much surface erosion. The skull is fairly complete, but there is considerable post-mortem distortion. Only one lambdoid wormian bone was observed, (the lambdoid, sagittal, and coronal sutures are partly obliterated). The dental formula is:

	A	
8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8	$M_1 = 4+$
8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8	$M_2 = 4+$
lab C		$M_3 = 4+$

There is also one loose, carious, heavily iron stained molar which could not be fitted into the above formula. There is medium alveolar bone recession, and slight to medium calculus. Most teeth display slight hypoplasia of the enamel.

There is slight lipping (due to degenerative joint disease) of the hip joints, scapulae, radii and ulnae (distal), and a few phalanges. One first phalanx and the first metacarpals are affected to a medium degree.

Summary and discussion
The Roman skeleton (815) is excluded from the following discussions.

Age
It cannot be assumed that the small sample from Gussage All Saints is representative of the entire population, particularly with regard to age and sex. There are obviously many factors which might influence the age and sex distribution of the people casually buried in the rubbish pits. However, a few general comments may be made.

The infant to adult ratio is approximately 5:2. Although this is a much higher ratio than is found on many sites, it does not necessarily indicate that infant mortality was unusually high, as this ratio will obviously be influenced by prevailing burial customs.

Although there are many 'new born' infants, there are no other children until the age of adolescence. There are no individuals between twenty-five and thirty-five years old. However, it is not clear whether this distribution is meaningful or not.

Sex
There are 7 adult females and 3 males in the Iron Age group. In such a small series, this cannot be considered to represent a significant sexual bias.

Discontinuous traits

Wormian bones

A total of 27 lambdoid wormian bones were observed (15 from three male skulls, 12 from four female skulls). There was an ossicle at lambda in two cases. No ossicles were definitely observed in the coronal or sagittal sutures. Two parietal notch bones (from one male and one female), and three squamo-parietal ossicles (from one male and one female) were observed.

Metopic suture

Three out of the 11 fairly complete skulls (410(6), 1M(5) and 204(8)) display a metopic suture. This is a very high incidence, but it is difficult to assess its significance in this small sample.

Articulation at pterion

In all observed cases, the articulation was normal (i.e. spheno-parietal).

Nature of bite

In some cases, it was difficult to assess the type of bite, due to post-mortem distortion of the skulls, which did not allow good articulation between the skulls and mandibles. However, in most cases there appeared to be slight overbite of the upper anterior teeth. In one case, the bite seemed to be edge to edge.

Parietal foramina

This area of the parietals was preserved in seven skulls. In three of these, it was not possible to locate the foramina. In the remaining four cases, one displayed foramina on both sides, and three on one side only (one left, two right).

Supra-orbital foramina

Great variety was observed in these foramina. The results were as follows:

	No. of cases
a. left and right foramina both open at the orbital margin	2(? 3)
b. left and right foramina both closed at the orbital margin	2
c. left foramen as in a., right as in b.	2
d. left foramen as in b., right as in a.	2
e. foramina complex shape (double grooves)	2

Tori: orbital and parietal osteoporosis; erosion fossa of the femoral neck

The occurrence of these traits was assessed as absent, slight, medium, or considerable; it is therefore convenient to tabulate them together under these grades, as follows:

Table XLI.

	Absent		Slight		Medium		Considerable	
	♂	♀	♂	♀	♂	♀	♂	♀
Torus mandibularis	2	2	1	5	0	0	0	0
Torus auditivus	4	6	0	1	0	0	0	0
Torus palatinus	3	6	0	1	0	0	0	0
Torus maxillaris	3	6	0	1	0	0	0	0
Orbital osteoporosis	2	6	2	1	0	0	0	0
Femoral neck	2	4	1	1	0	2	0	0
Parietal osteoporosis	3	6	0	1	0	0	0	0

The erosion fossa of the femoral neck is a slight depression on the anterior surface just below the head, over which there is a deficiency of compact bone, producing a porous appearance. It is interesting to note that the occurrence of this feature is highly correlated with the age of the individual. Mediumly developed fossae occurred in the two individuals under twenty, and slightly developed fossae in the two individuals under twenty-five. None of the older individuals displayed this condition. This is fairly consistent with the finding of Angel, (Angel 1964) who suggested that in many cases bony scar tissue may gradually form over the porous area as the individual grows older. He considered that the fossa was caused by mechanical stress, e.g. over-extension of the hip joint. This is more likely to occur in individuals of weak musculature (e.g. women and children).

Skeletal anomalies

Five out of the ten fairly complete adolescent and adult skeletons displayed a mild skeletal anomaly (or a marked example of a normal variant) of some kind. The adolescent (435(5)) and adult 359(4) both had a congenital anomaly of the sternum; there is a supra-trochlear foramen on the left humerus of 387(6); 410(6) displays a slight depression in the skull vault at bregma, and 62(7) had an anomalous rib.

Ante-mortem injuries

Healed fractures (Plate XXXV)

Considering the small size of the series, there is a fairly large number of fractures. At least five healed, or partly healed, fractures (from five individuals) were observed.

There is one rib fracture, (at the sternal end). In two cases, there is a deep groove on the distal articulation of the humerus, in one case associated with a slight inflammatory reaction. This may represent an injury caused by a blow to the elbow when the arm was flexed (no associated injury of the ulna was observed in either case). There is a healed mid-shaft fracture of the right humerus of 285(3). 410(6) displays an infraction (partial fracture) of the cortex on the upper part of the right tibia.

Injuries caused by a sharp instrument (Plates XXXV and XXXVI)

Evidence for this type of injury was obtained from the young robust male skeleton (285(3)). There is a partly healed cut on the back of the left parietal. There are also four, possibly five, injuries on the left humerus, a very shallow cut on the front of the tibia and a small cut on the left clavicle. None of these show any signs of healing or infection and were therefore probably inflicted shortly before (or possibly after) death. At some places on the cut surfaces, there is slight root erosion, similar to that on the exterior surface of the bone. This indicates that the damage is not of modern origin. The only exception is the shallow cut on the tibia, which may be a 'trowel mark'. One rib fragment also displays a straight edged break which, in view of the other injuries, may be an ante-mortem cut.

The largest injury is on the lateral side of the distal end of the left humerus. An area of bone 35mm long, 10mm wide and about 7mm deep at its deepest part is missing. The lower end of the cut is smoothly curved (representing the entry of the sharp implement—possibly a sword or axe), and there are three grooves at the upper end, probably where the weapon jarred against the bone on its way out of the wound. The direction of the cut was therefore from the distal towards the proximal end of the humerus.

There is also a small groove on the medial side of the bone opposite the larger injury. This may also represent an ante-mortem cut, possibly inflicted when the arm was raised (as the inside of the arm is not exposed when the arm is held at the side).

The remaining three cuts are on the upper lateral side of the humerus and all occur within an area 30mm sq. Two of these are shallow, slicing, cuts. The larger is 30 × 15mm wide, maximum depth about 3mm. The smaller is about 15 × 10mm wide and 3mm deep (however, it is partly obliterated by the third cut). The injury has not penetrated to the medullary cavity in either case. There is a small ridge running diagonally across the larger cut, presumably representing a notch in the blade which caused the injury. The third cut is 15mm × 5mm and about 5mm deep directed from the proximal towards the distal end. It has penetrated to the medullary cavity.

The small injury on the front of the left clavicle consists of a shallow slicing cut towards the sternal end (maximum dimensions 7 × 5mm, penetrating about 3mm).

It seems unlikely that three separate blows should fall coincidentally in precisely the same area: it would seem more likely that this was the result of a deliberate attempt to increase the damage in an area already weakened by the first cut. However, the fact that all (except one) of the wounds are of a 'slicing' and not a 'chopping' type, suggests that the injuries are unlikely to be the result of an attempt to amputate the arm of a helpless (or dead) man. This is further suggested by the fact that the blows were struck from at least two different directions relative to the arm.

These injuries therefore seem to be consistent with those which might be received during an assault on a living person or in face-to-face combat, rather than from mutilation of a helpless body. The concentration of injuries on the left arm might indicate an attempt to render that arm useless. It is interesting to note that the right humerus which had previously been fractured and was poorly healed, displayed no 'cut' injuries.

None of the above injuries would have been sufficient to necessarily cause death, but as they were inflicted shortly before death, it seems likely that the individual died by violent means.

Pathology

Osteochondritis dissecans

A number of lesions were described as 'porous pits' when the individual skeletons were discussed. They were observed bilaterally and unilaterally on the proximal articulation of the proximal phalanx of the hallux (410(6) and 31(6)); bilaterally on the navicular bones (39(3)); unilaterally on the sternal articulation of the clavicle (285(3)) and distal articulation of the tibia (387(6)) (Plate XXXIV). These are similar in appearance to the lesions caused by osteochondritis dissecans. This is a pathological condition which is found mainly at the knee joint in modern patients (Paul and Juhl, 1967). However, it is not generally thought to occur in the regions observed at Gussage. It remains to be seen whether these were caused by osteochondritis dissecans, or merely mimic this. They may possibly represent a form of the condition which does not produce clinical symptons. This condition has been discussed by Wells (Wells 1974).

Degenerative joint disease (osteoarthritis, osteoarthrosis)

There is a fairly high frequency of this condition in the vertebral column. Slight bony lipping occurs mainly in the middle of the cervical region, lower thoracic, and upper lumbar region, whereas considerable changes occur mainly in the lower lumbar region. The hands and feet are commonly affected to a slight degree. The knee joint is commonly affected (almost half of the skeletons are affected in this region, in two cases to a severe degree). The hip joint is affected (slightly) in only a few cases.

Oral health

The occurrence of caries, ante-mortem tooth loss, and dental abscesses is shown in Table XLII (number of teeth/sockets affected)

The percentage of teeth affected by caries seems high for the Iron Age (Moore and Corbett 1973). This is possibly due to the old age of some of the individuals, but even the young skeletons display high incidences. Many factors (such as quality of the dental enamel, etc.) may have contributed to the high frequency of caries, and it seems quite likely that some dietary factor may have been involved.

Table XLII.

	I_1	I_2	C	PM_1	PM_2	M_1	M_2	M_3	Total	No. teeth (sockets) examined	Approx. % frequency occurrence
Caries											
Upper dentition	0	1	2	1	4	3	7	3	21	101	21%
Lower dentition	1	1	1	6	6	7	6	5	33	119	28%
Ante-mortem loss											
Upper dentition	3	5	4	7	6	11	4	3	43	154	28%
Lower dentition	4	3	1	2	4	8	4	6	32	154	21%
Abscesses											
Upper dentition	1	0	2	1	1	2	3	1	11	154	7%
Lower dentition	0	1	1	1	0	5	1	0	9	154	6%

Ante-mortem tooth loss is more advanced in the upper dentition than in the lower. It is interesting that exactly the opposite is true for the caries frequencies. Presumably, caries may have been equally developed on the upper and lower dentitions, but earlier ante-mortem loss of the uppers has reduced the apparent number of carious teeth there. There are fairly high frequencies of ante-mortem loss of the anterior teeth, although caries and abscessing are rare in this region. Caries is most frequently present (in roughly equal percentages) in the second premolars, and first and second molars. Ante-mortem loss and abscessing occurs most frequently in the first molars. This suggests that the first molars are most commonly affected by caries, spreading from here to the adjacent teeth.

The number of cases of periodontal disease (as indicated by alveolar bone recession), calculus deposits, and hypoplasia of the enamel were assessed as follows:

Table XLIII

	None	Slight	Medium	Considerable
Alveolar recession	1	4	2	3
Calculus	1	7(2 green)	2(2 green)	0
Hypoplasia	5	4	1	0

The high proportion of mandibles and maxillae affected by periodontal disease again indicates the very poor oral hygiene of the series.

Osteitis

Seven out of the ten fairly complete individuals displayed an inflammatory reaction in at least one region. However, in six cases the infection was of the maxilla or mandible and could be directly associated with the poor oral condition.

There was one case of osteitis of a long bone. This was a small area of spongy periosteal bone on the right tibia of 435(5). It was not possible to associate the inflammation with a direct cause. One phalanx shows signs of a reaction to infection at the proximal end, possibly spread from adjacent soft tissues, (359(4)).

Dental anomalies

All canine roots observed were single. Only one definite case of congenital absence of a lower third molar was discovered (62(7)). This was confirmed by X-ray examination.

There were two cases of slight tooth rotation; in both it was the upper left lateral incisor and canine which were affected (435(5) and 285(3)).

Abnormal dental attrition (Plate XXXVII)

The skull of an elderly female (204(8)) was found to display a very unusual pattern of dental wear. There is little doubt

Table XLIV. Gussage—Adult Long Bone Measurements (mm)

			435(5)*	31(6)† ♀	62(7) ♀	410(6) ♀	204(8) ♀	139(3) ♀	205(5) ♀?	285(3) ♂	387(6) ♂	359(4) ♂	815(3) Roman ♂	470	IG(4)	426
Max l femur	l	FeL_1	344	408	407	421	434	423?	398?	453	444	421	447	—	—	—
	r		338	—	399	416	—	—	—	—	436	424	442	—	—	—
Min ant-post diam	l	FeD_1	20.4	20.4	22.0	20.9	21.5	22.4	21.1	24.7	24.9	21.7	29.8	—	24.4	24.0
	r		20.4	19.2	21.3	21.0	—	21	—	—	25.3	21.9	27.1	21.8	—	—
Transverse diam	l	FeD_2	25.0	28.9	29.7	33.4	31.4	32.4	30.6	31.7	31.5	32.0	36.0	—	32.6	35.3
	r		23.3	28.1	30.4	34.5	—	33.6	—	—	31.8	31.7	34.5	35.5	—	—
Max l tibia	l	TiL_1	264	—	327	339	347	—	322	355	—	—	348?	—	—	—
	r		269	—	327	338	—	338?	—	355	350	—	—	—	—	—
Max ant-post diam	l	TiD_1	32.0	26.1	30.7	34.5	32.9	—	28.3	32.3	34.6	29.9	36.7	—	—	—
	r		31.0	27.5	30.7	34.3	—	34.1	—	31.1	35.0	29.1	34.6	—	—	—
Transverse diam	l	TiD_2	20.4	19.5	17.6	22.5	21.9	—	20.9	24.0	23.1	21.3	26.7	—	—	—
	r		21.2	19.5	18.6	21.8	—	22?	—	25.4	22.7	21.4	26.7	—	—	—
Max l humerus	l	HuL	232	—	294	300	306	312	288	303	330	291	308??	—	—	—
	r		234	291	306	309	—	—	—	—	—	300	—	—	—	—
Max diam	l	HuD_1	15.5	—	20.0	18.8	20.1	19.5	18.8	20.6	20.9	20.9	23.6	—	—	—
	r		18.8	15.8	20.8	20.3	—	—	—	—	—	21.0	—	—	—	—
Min diam	l	HuD_2	13.0	—	14.1	15.4	18.1	16.4	15.3	17.1	17.3	16.4	19.3?	—	—	—
	r		14.3	13.3	14.8	16.0	—	—	—	—	—	16.9	—	—	—	—
Max l radius	l	RaL_1	—	208	213	215	219	—	214	240	248	249	—	—	—	—
	r		176	—	—	221?	221	230	—	239	243?	243	249	—	—	—
Max l ulna	l	UlL_1	—	—	235	234	245	—	—	264	—	276	—	—	—	—
	r		193	—	241	242	249	249	—	—	—	270	273	—	—	—
				[Fe]	[Fe + Ti]	[Fe + Ti]	[Fe + Ti]	[Fe + Ti]	[Ti]	[Fe + Ti]	[Fe + Ti]	[Fe]	[Fe + Ti]	—	—	—
STATURE‡			—	5′1″? 155cm	5′1″ 155cm	5′2½″ 159cm	5′4″ 162cm	5′3″? 159cm	5′1″ 155cm	5′6½″ 169cm	5′5½″ 166cm	5′4″ 164cm	5′6½″ 169cm	—	—	—

* Immature skeleton—measurements are for shaft without epiphysis

† Sub-adult, but growth probably almost complete (measurements with epiphyses)

‡ Calculated from Trotter and Gleser (Trotter and Gleser 1958)

Table XLV. Gussage—Adult Skull Measurements (mm)

		435(5)*	31(6)† ♀	62(7) ♀	410(6) ♀	204(8) ♀	139(3) ♀	205(5) ♀	285(3) ♂	387(6) ♂	359(4) ♂	815(3) Roman ♂	IM(5) ♂	IM4 ♂
Glab-occip. l.	L	171	179	182	182	181	189	178?	191	189	187	174	189	—
Max. parietal b.	B_1	137	131	126	130	135	136?	133	134	137	144	154	141	—
Min. frontal b.	B	96.1	104 E	92.4	96.7	100.8	105.8	95.9	101.1	89	88.2	102.7	104.1	—
Basi-bregmatic ht.	H^1	—	136?	126	143?	133	—	—	141	144?	—	—	—	—
Basi-nasion l.	LB	—	99?	100	112?	99	—	—	102	110?	—	—	—	—
Frontal arc	S_1	121	132	123	119	126	124 E	122?	128	134	138	131	136	—
Parietal arc	S_2	135	124	119	119	127	145 E	118?	131	121	134?	133?	127?	138?
Occipital arc	S_3	—	109	118	120?	119	105 E	113	—	117	118?	117	—	—
Frontal chord	S_1	107.4	112.1	107	105	108.7	105 E	106	—	119	118.6	109?	113.6	—
Parietal chord	S_2	116	112.3	108.4	109	113.2	130 E	106?	117.4	112	117	120?	115.4	116?
Occipital chord	S_3	—	95.5	97.7	102?	103.2	95 E	97?	—	98.7	103.2	88.5	—	—
Biasterionic b.	BiB	101	106	108.5	109	108.4	112	106.5	107.7	108	105	122	115.6	—
Nas-alv. pnt	G^1H	57.3	66.8?	64?	70.0	65.9	—	63?	73?	76.6	—	—	—	—
Bas-alv. pnt	GL	—	87?	94?	110?	93.3	—	—	86.6	100.2	—	—	—	—
Facial b.	GB	86?	82.4	100 E	89.4	88?	—	89 E	92?	102.3	—	—	—	—
Palate b.	G_2	37?	38.6	35?	—	—	—	—	—	—	—	—	—	—
Palate l.	G_1	40	42.6	—	—	—	46.1	—	39.9	45.3	40?	46.1	—	—
Max. zygom. b.	J	—	117 E	118.2	—	124.9	—	—	—	133?	—	—	—	—
Orbit b.	OI^1	—	—	40.6?	39	39?	—	38?	—	—	—	—	—	—
Orbit ht.	O2	—	—	32?	33	28.3	—	32?	—	35?	—	—	—	—
Foraminal l.	FL	—	38.1	34.1	38?	37.6	—	—	—	42.9	—	—	—	—
Foraminal b.	FB	—	31	26	29?	—	—	—	—	30.0	—	—	—	—
Nasal b.	NB	18.7	20	20?	—	—	—	—	20.8	—	—	—	—	—
Nasal ht.	NH^1	40	49?	46	51	45.5	—	49?	49.6	57.2	49?	—	—	—
Simotic chord	SC	—	—	—	12.6	—	—	—	9.4	9.6	—	—	—	—
Bi-dacryonic ch.	DC	—	—	20?	—	—	—	—	—	—	—	—	—	—
Bi-condylar width	W_1	—	113.4	108.5	111.4	112.9	117 E	116 E	120 E	112.2	—	122?	—	—
Bimental b.	ZZ	40.5	40.6	39.8	—	43.9	42.1	41.8	42.2	46.9	39.9	42.5	—	—
Least ramus b.	RB	30.5	28.5	29.8	36.4	33.8	32.3	32.0	32.8	31.8	26.7	34.7	—	—
Sagit. ht. mandible	H_1	25.3	31.2	28.2	29.6	35 E	32 E	32 E	37?	36.7	—	—	—	—
Max. mandible l.	ML	—	91	95	100	97	102 E	—	—	107	—	109	—	—
Proj. l. ramus	RL	47?	45	51.5	68	60.5	64?	—	—	70	—	63	—	—
Ht. at 2nd molar	M_2H	21.6	22.3	26.0	31?	35?	—	—	33?	35?	—	31?	—	—
Condyle l.	CYL	18.4	18.2	20.1	21.2	20.5	21?	—	—	20.5	—	20?	—	—
Coronoid ht.	CH	48.5	48.3	54.2	62.4	63.4	57.9	—	68.5	75	63.1	70.4	—	—
Mandible angle	M	124°?	130°	122°	113°	121°	121°?	125°	115°?	113°	—	125°	—	—

* Adolescent individual
† Sub-adult individual
E estimated measurement
? measurement doubtful, due to incompleteness of skull

that the skull and mandible belong to the same individual, as they articulate well. However, the upper incisors and canines are very heavily worn, with the pulp cavities exposed, whereas the lower anterior teeth are worn relatively little. Usually, wear occurs equally on the upper and lower dentitions. It is difficult to envisage a natural process by which such a difference in tooth wear could occur; it is therefore tempting to suggest that an artificial (i.e. cultural) factor was involved. It is well known that personal habits will influence tooth wear (Van Wyk 1976).

The anomalous wear might be compared to that caused by hide chewing in the female Eskimo (Pedersen 1952). In this case, the hide is pulled forward and downward between the anterior teeth. This produces a slightly open bite, and the lower incisors are rounded facio-incisally. However, the Gussage example does not match this wear pattern particularly well; in the Eskimo, the wear is fairly equal on upper and lower dentitions. Also, in 204(8), only the upper left canine displays slight rounding on the labial surface. The other teeth are worn straight across the occlusal surface. Although these patterns of wear are not directly comparable, the case of the female Eskimo does at least provide an example of the type of cultural factors which may cause abnormal tooth wear. Of course, in the Gussage example, the abnormal wear may not be due to a widespread cultural practice, but to a personal habit, the nature of which it is impossible to guess at. Filing of the teeth may also produce this appearance. There are no scratch marks on the worn surfaces, but subsequent wear may have smoothed away any such evidence.

There are no other clear examples of anomalous tooth wear in this series. In a few of the younger skeletons there is

slightly uneven wear, but not to a significant degree. It might be suggested that 205(5), another elderly (probably female) individual, represents a more advanced stage in the process of anomalous tooth wear, since only one heavily worn canine remains in the palate, whereas at least twelve teeth are still present in the lower jaw.

General comments

Although the series is small, and therefore it becomes difficult to draw general conclusions, several interesting observations have arisen from this study. The injuries suffered by the young man (285(3)), and the anomalous tooth wear of 204(8), are of particular interest.

There is a relatively high frequency of fractures, degenerative joint disease and extremely poor oral health, (associated with much inflammation of the bone of the maxilla and mandible). The dental condition may be partly dietary in origin. The fairly high frequencies of skeletal anomalies, torus mandibularis, and metopic sutures, might be considered to represent a certain amount of inbreeding. However, there is no good evidence for close familial ties between particular individuals.

Acknowledgements

I should like to thank the staff of the Sub-department of Anthropology, British Museum (Natural History) for their help and advice. I should also like to thank Dr J L Price (consultant radiologist) for his valuable comments concerning the X-rays, which I have incorporated into the text.

Chapter XII
The Plant Remains
by A M Evans and M K Jones

Of the features excavated at the site, 78 were investigated in detail for seed samples. These 78 features were dated as 17 Phase 1, 13 Phase 2, 43 Phase 3 and five undated. The features consisted of 71 pits, two ditches, three post holes, one gulley and one burial. Several layers within these features were sampled giving a total of 134 samples. These were sub-sampled after decanting the carbonaceous material in water and ultimately sieving through 1 mm and 200μ sieves to give approximately 500 sub-samples in all, each of about 50g. The sub-samples were carefully examined and the carbonised seeds were separated with a fine paint brush from soil particles.

Table XLVI gives details of the classification of the seeds into wheat, barley, oats and grasses, legumes, crucifers, weed species and unidentified, charred seeds. The frequency of each of these classes is given in the Key.

Wheat

Wheat grains were present in greater frequency than barley and *Triticum spelta* (spelt wheat) was the most frequent wheat. Although there is some difficulty in identifying individual grains of spelt wheat there were some spikelet parts present which enabled this species to be identified with certainty. *T. spelta* spikelets have a characteristic mode of articulation with an upward pointing internode in contrast to Emmer wheat (*T. dicoccum*) spikelets which have a downward pointing internode. No spikelets or grains of emmer wheat were found. Some rather more plump rounded grains of wheat were also identified and they were probably *T. compactum* (club wheat) or *T. aestivum* (bread wheat). The largest quantities of spelt wheat were found in features 61, 380, and 587, all dated to Phase 3 and 209 dated to Phase 2.

Barley

The barley found was all of the hulled type; no naked barley being present. Spikelets of barley were seen, as well as some internode parts and individual grain. The barley is undoubtedly of the six-row type (*Hordeum hexasticum L*) since many of the grains were twisted. Only small quantities of barley grains were found, the most numerous in features 202, 286, 297 and 400, all dated to Phase 1.

Oats and Grasses

Individual grains of oats were found and it was not possible to determine whether they were of *Avena sativa*, *A. strigosa* or *A. fatua* (wild oat). The oat species were not present in quantity but a few grains were recorded in features 45, 209, 328, 371, 380, 400 and 684. The only grass caryopses which could be identified were those of *Bromus* species (brome grass) and these occurred in the same features as the oat grains.

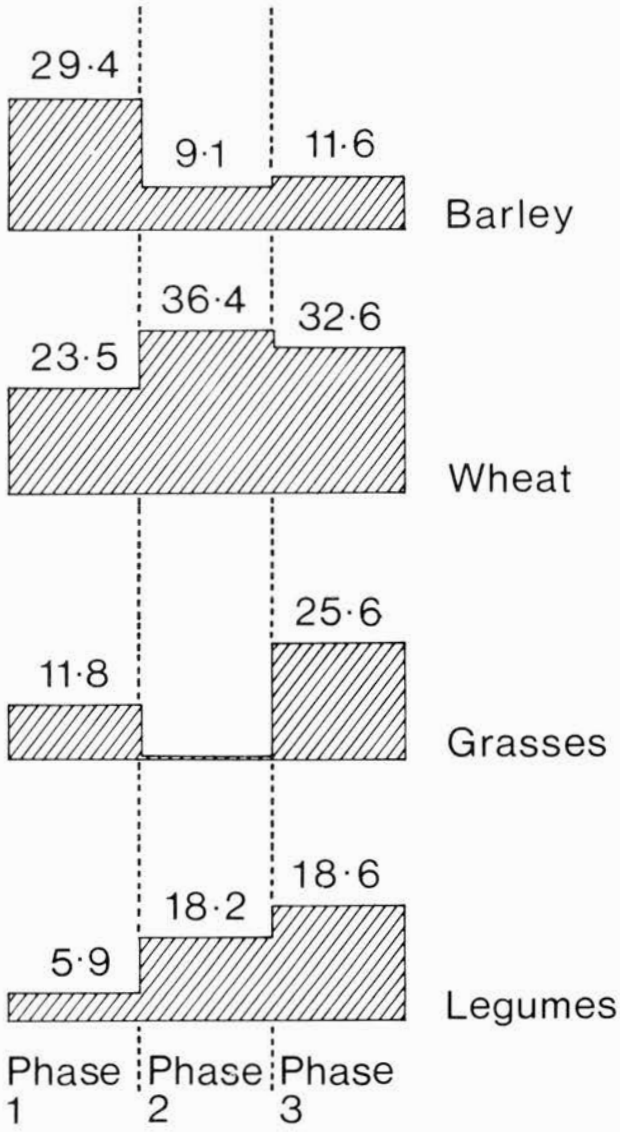

Figure 110 Histograms showing percentages of features in which carbonised seeds occur

Legumes

Two whole seeds were found of the horse bean (*Vicia faba* D. var. *minor*) in feature 297. Small quantities of other *Vicia* species (vetches and tares) were also found possibly *V. tetrasperma* (smooth tare) particularly in features 209, 328, 347, 371, 376, 380, 432, 437 and 587. A number of seeds of other leguminous species were seen particularly in feature 380 and the size of the seeds suggests the presence of *Lens esculenta*, the lentil.

Other seeds

Small quantities of seeds of Cruciferae were found in association with the legumes and these were probably *Brassica* species. Other weed seeds were identified namely *Atriplex patula* (the common orache) *Rumex crispus* (dock) *Agrostemma githago*—corn cockle and *Lithospermum arvense*—corn gromwell. Seed of *Atriplex patula* was found in quantity in one of the features suggesting that this species was grown as an agricultural crop, possibly for eating as a spinach.

Summary of Species Listed

Triticum spelta Spelt wheat
T. compactum club wheat
T. aestivum bread wheat
Hordeum hexasticum 6-rowed barley
Avena sativa/strigosa/fatua oats
Bromus spp Brome grass
Vicia faba var. *minor* Horsebean
V. tetrasperma smooth tare
Lens esculenta lentil
Brassica species Field brassica
Atriplex patula common orache
Rumex crispus dock
Agrostemma githago corn cockle
Lithospermum arvense corn gromwell

Discussion

Figure 110 shows in histogram form the samples in which carbonised seeds of various plant groups were present. It is interesting to note that in the case of wheat and legumes and possibly grasses (chiefly *Avena* and *Bromus*) this percentage increases with time and in the case of barley it decreases. The situation is reminiscent of Helbaek's scheme for the whole of Southern Britain, in which spelt wheat became adopted in the Iron Age as the main cereal crop and is habitually accompanied by the two species of grass mentioned above, possibly as weeds in the crop. (Helbaek 1952)

The figures could thus be tentatively interpreted as representing a gradual transition on a single site, from barley to spelt wheat and legumes as main crops in the Iron Age.

Table XLVI. List of the Carbonised Seeds found in the Excavation at Gussage All Saints

Feature	Phase	Layer	No of samples	Wheat	Barley	Oats and Grasses	Legumes	Crucifers	Weeds	Unidentified charred seeds
23	3	(5)	1		X					XX
36	—	(4)	1							
45	3	(13)	2		X	XX				
54	3	(8)	4							
60	3	(2)	1							XXXX
		(12)	1							
		(19)	2	XX	X					
61	3	bulked		XXXXX						
80	3	(16)	2							
116	1	(9)	2							X
120	3	(6)	2							
123	3	(9)	1							
130	3	(4)	1							
139	3	(5)	1				X	X	XX	
		(8)	1							
153	3	(1)	1							
155	3	(6)	1					X	XX	
		(10)	1							
		(19)	1							
172	3	(7)	2	X						XXX
202	1	(5)	1		XX					
209	2	(6)	4	XXXXX	XX	XX				
		(9)	1							
		(10)	14				XXX	XXX		
		(11)	14				XX	XXX	XX	XX
		(12)	4							
212	1	(11)	1							X
215	2	(8)	2	X						
275	—	(4)	1							XX
282	3	(4)	1							
285	3	(5)	1							
		(8)	1							
286	1	(3)	2		XX					

Table XLVI. (cont.)

Feature	Phase	Layer	No of samples	Wheat	Barley	Oats and Grasses	Legumes	Crucifers	Weeds	Unidentified charred seeds
288	3	(6)	1	X		X			XX	X
290	3	(4)	2			X			XX	XXX
		(5)	1							
296	1	(6)	2		X					
297	1	(6)	1	X	XX					
		(8)	2			X	XX			
302	3	(12)	3	X		X			X	X
		(14)	1	X						X
305	1	(3)	1							XXX
		(5)	1							
306	3	(5)	1					XXX	XXX	
310	3	(3)	6							X
311	—	(5)	1							
318	3	(9)	1				X			
328	3	(4)	2				XX	XX		
		(5)	4			XX				XXXX
		(8)	4			XX	XX	XX		X
		(11)	1							
329	3	(3)	2							
		(13)	1							
330	3	(7)	5						X	X
		(8)	2						X	X
340	1	(3)	1							
347	3	(3)	2	X		X	X			
		(5)	7				XXX	XX		XX
		(6)	5							
		(8)	2							
351	2	(5)	2		X					XX
358	3	(6)	3						X	XX
361	1	(4)	2							XX
		(5)	1							
		(9)	2							XXX
367	3	(3)	1							
367	3	(10)	1						X	XX
368	1	(6)	1							
371	3	(4)	1	X		XX		XX		
		(8)	3	X			XX	XX		
		(9)	2	X				XX		
		(12)	1	XX				XX		
		(15)	2							
		(16)	1							
376	1	(5)	2							XXX
377	1	(7)	1							
380	3	(4)	1							
		(5)	1							
		(6)	1	XXXXX				XXX		
		(7)	6	XXX			XXX	XXX	X	
		(8)	6	XXXXX			XXX			
		(9)	3			XX	XXX			
		(10)	6							
381	3	(4)	2	XX			XX			
		(5)	1						X	
		(6)	1							
		(8)	2		X					
		(10)	1		X	X		XX		
382	1	(4)	3	X						XXX
394	3	(8)	2	X			XX	XX		
		(11)	2							X
		(12)	2							

Table XLVI. (cont.)

Feature	Phase	Layer	No of samples	Wheat	Barley	Oats and Grasses	Legumes	Crucifers	Weeds	Unidentified charred seeds
396	3	(4)	1		X?					
400	1	(5)	2	XXXX	XXX	XX				XX
415	3	(7)	1							
418	3	(8)	1					X	X	
421	1	(5)	2							XXX
425	2	(3)	1							XX
427	2	(5)	1							
		(6)	1	XX						
429	2	(4)	1	X						
432	2	(5)	5				XXX	XX	X	
437	2	(5)	1				XXX	XXX		
		(6)	3				XXX	XXX	XX	
438	2	(7)	1							
439	2	(3)	2						X	
		(4)	3					XX	XX	
		(5)	1						XX	XX
		(7)	1							
		(10)	1					X		XX
422	—	(5)	1		X?			X	X	
474	3	(5)	1							
		(7)	1							
476	3	(3)	1	XXX				X		
490	—	(5)	1							
518	3	(5)	1	XX						XX
519	2	(6)	1							
520	1	(6)	3	XX						
522	3	(10)	1							
587	3	(5)	4	XXXXX			XXX	XXX	XXX	
		(7)	1				XXX			
640	1	(5)	1							
		(9)	1							
655	1	(11)	1							
678	3	(10)	2	X		X	XX	XX	X	
		(7)	1							
683	3	(6)	1							
684	3	(9)	1							
		(10)	1			XX	XX			XXXX
		(12)	1							
709	3	(5)	1							
		(6)	1							
724	2	(6)	1	X						
Total 78		134	262							

Key to frequency of seeds XXXXX Very Many XXXX Many XXX Few XX Very Few X Trace

PART IV

Discussion

Chapter XIII
Gussage in its Setting

by H C Bowen

This note looks in some detail at the position of the excavated settlement within a small block of Cranborne Chase selected because it also contains some of Dorset's best known archaeological monuments (Figure 111).[16] The two parishes of Gussage All Saints and Gussage St Michael are chiefly involved. The archaeological context here allows a brief consideration of Iron Age settlement morphology. It will be suggested that the excavation itself has disclosed a quite unexpected mark of status.

The most noticeable characteristic of this area, and indeed of that from the River Tarrant to the Hampshire Avon, is a series of chalk ridges extending north-west to south-east between tributary streams flowing south-east through Valley Gravel. The Gussage Brook, one of these streams, joins the River Allen two miles below Gussage All Saints and this flows into the River Stour which in turn empties into Christchurch Harbour by Hengistbury Head, a total distance of just over 20 miles from Gussage. The Upper Chalk of the area is often capped by 'Clay-with-flints', many patches of which are, not surprisingly, omitted from Geological Drift Maps. The settlement lies on the shoulder of a ridge canted gently down to the north-east. To north-west the ground rises gently. To south-east it drops to a saddle where the modern road is joined by another that links it to Gussage All Saints village. Beyond this, to south-east is a sharp rise to a knoll whose former name, Beacon Hill (shown on the 1841 Tithe Map) is the best indicator of its prominence. It is no higher above sea-level than 'Gussage', half a mile away, but has such defensive potential, equally accessible to water, that had military considerations been paramount it would surely have been favoured.

The distribution of archaeological features on Figure 111 and our knowledge of them is uneven and very incomplete. It derives from former ground recording and from air photographs. Flattened sites are, moreover, difficult to date except by analogy of form since in this area pre-Roman pottery is rarely found on the surface. For the same reason, unless air photography has exposed a site, it is only likely to be discovered by digging. (The Middle Bronze Age settlement site G by Down Farm at SU 00011467 was discovered by Mr Martin Green in a pipetrench. No pottery survives in the ploughed ground above it.) 'Celtic' fields have, it can be assumed with fair certainty, been mostly destroyed—and in a way that, by contrast to ditched sites, admits no recovery.

There are virtually no pre-medieval upstanding earthworks, save a very few round barrows and some Roman road, in the parish of Gussage All Saints. Destruction had already begun in the Iron Age. The settlements and enclosures now known are shown on Figure 111. Those recognised since the publication of RCHM's *East Dorset* (Vol. V) are listed with map references, in an appendix to this chapter. Most were put to the medieval plough, whatever earlier flattening had taken place. 'Gussage' may have fallen later. It lies in field 87, 'part of South Field' on the Tithe map of 1841, by which time it was certainly being ploughed over. It seems likely, however, that this South Field was not one of the medieval arable open fields of 'Gussage' since there is no sign of medieval strip cultivation (as there is, for instance, so clearly on the east side of Beacon Hill) and 'Celtic' fields between 'Gussage' and the brook, winding through meadowland ¼ mile away and 25m below are still just recognisable. It is therefore likely that it was part of the 'common called Southdown', 'being all good pasture ground', described in a manorial survey of about 1618.[17] There is no doubt that at times since then ploughing has been intense and had totally levelled the former earthworks. This may have been facilitated by the abandonment of the main enclosure ditch before the end of occupation on the site. Field walking, before excavation was contemplated, had produced only a few small scraps of coarse pottery although the farmer is said to have recognised that there had been former settlement here before Dr St Joseph's air photographs first restored the site to archaeological appreciation. In 1959 (the last time before 1976 that extended drought caused ditch fills to dry up completely) it was possible for RCHM staff to plan most of the enclosure and some of the pits by reason of the parched marks in the grass.

In the area illustrated there is evidence for much Neolithic activity to the north of 'Gussage'. Long barrows cluster around the cursus, the building of which in, presumably the third millennium BC, suggests that its line was substantially clear of trees. Concentrations of Bronze Age barrows (and, just outside Figure 111 the group of large monuments, the 'Knowlton Circles', two miles south-east of 'Gussage', interestingly distant from the cursus and long barrows), proclaim a Bronze Age population whose settlements, other than by Down Farm, have not been found. Intensive aerial photography of the area, especially since 1970 by Mr John Boyden, has, as already noted, revealed many 'new' archaeological features, most thought to be Iron Age. One of the most interesting is, by sad chance, the least clear. This is an apparent ditch which curves out to the south-east and then south-west from the

16. I am grateful to RCHM (England) for permission to use information in its files and to Mr R Palmer for much help in transcription from air photographs. Opinions expressed are my own.

17. Survey made for Mr. Penruddock, 'A Breif of the Manor', in Dorset County Record Office. This is dated '1618' in a later hand. My thanks to Miss Margaret Holmes for producing this document.

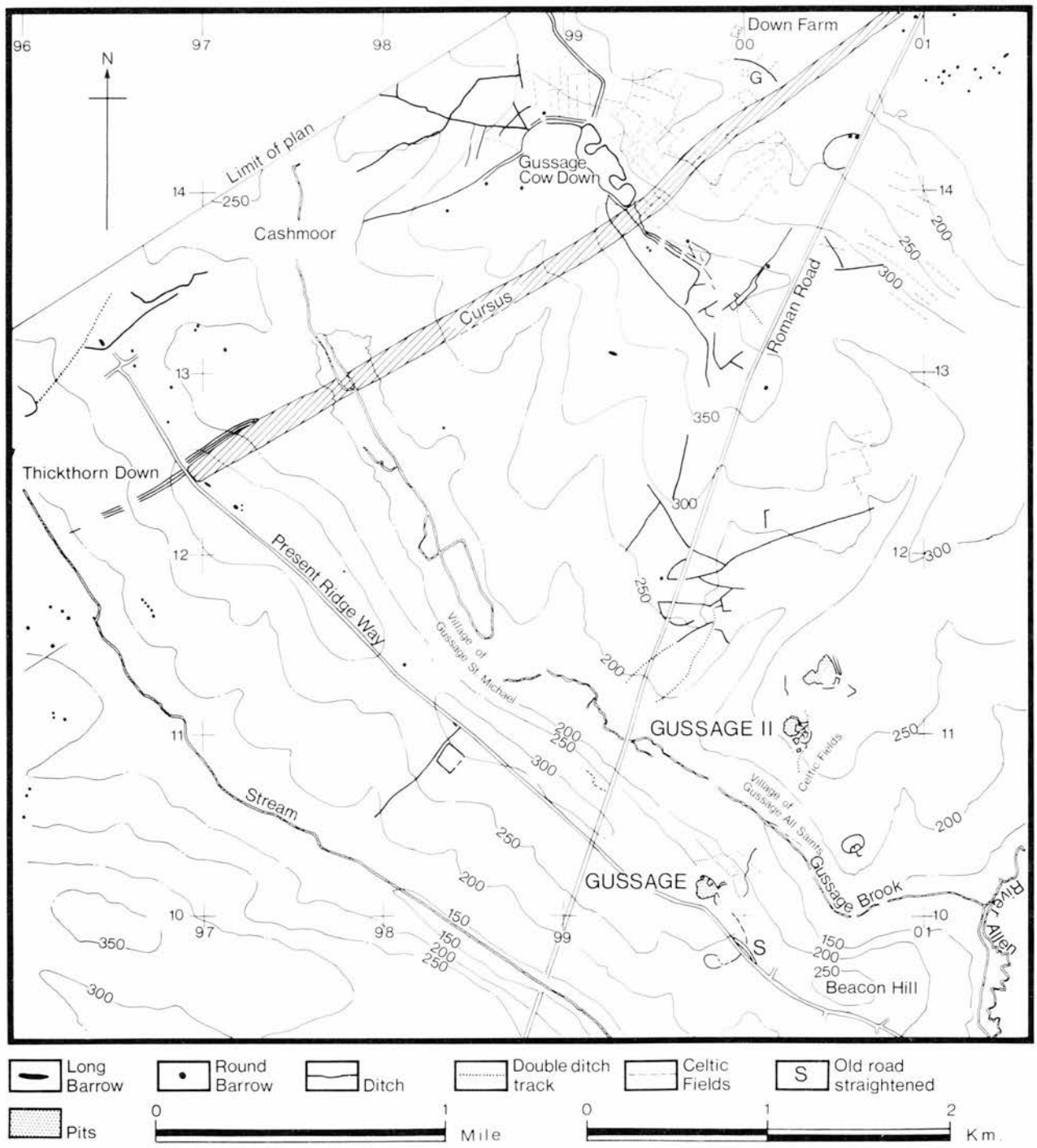

Figure 111 Map of the area around Gussage All Saints

area of 'Gussage' and appears to join a kite-shaped ditched feature, about one acre (0.4 hectare) in area, which suggested to Mr Boyden that it was a 'banjo' enclosure. A pair of ditches following the contour just north-east of 'Gussage', only very roughly parallel and different enough in aspect, as crop-marks, to suggest different origins, might represent a boundary between the settlement and its surround from the 'Celtic' fields, already noted, downhill. Equally, it could be, or could have become, a track. It appears to connect with another linear feature which certainly ran between 'Celtic' fields as it made a sinuous way down towards the brook. Of the 'Celtic' fields little can be said except that they formerly existed and on both sides of the river valley had formed lynchets up to a metre or more high. On the north they only survive as scarps preserved across the grassy width of the old road leading north-east out from the village past the Inn and through the presumed medieval arable fields in which, by contrast with the fields by 'Gussage', they have been flattened beyond recognition.

Just over half a mile north-north-east from 'Gussage' is the most remarkable of the newly-discovered sites, (here-

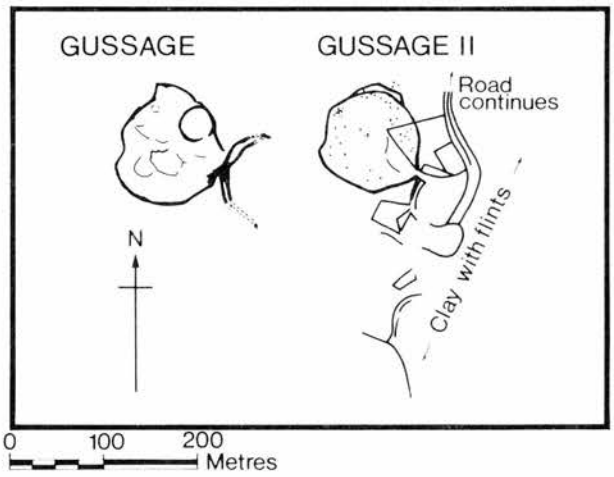

Figure 112 Comparative plans of Gussage and Gussage II

after called 'Gussage II'). It is an almost identical twin of 'Gussage' (Figure 112),[18] with the situation mirrored. In size it is fractionally smaller; in shape more of the full circle, while displaying some of the same curiously irregular outline on the west side and its 'antennae' ditches, while massive, display only one phase on the north side. The enclosure itself was, from a loop on its perimeter on the north side, exposing an earlier ditch, clearly of more than one phase. Its interior is spotted and daubed with crop-marks of pits and the remains of other activity in just the same way as within 'Gussage'. In one most important aspect, however, it is crucially different. North of its entrance the enclosure ditch is intersected by that of a quite different, sharply-angled, enclosure. This is part of a settlement complex which embraces and almost conceals the 'antennae' and sprawls across this forward area in such a way as to indicate that the old settlement in its original form had been superseded. (The intersection of crop-marks indicates no priority but this assumption is made on grounds of common-sense.) Archaeological expectation might just favour a Romano-British date for this secondary settlement. If so, and by common analogy, it would be reasonable to expect pottery and other remains of the period to lie scattered in the ploughsoil. The chances of plough action are such that some might be pulled up at some time in the future but careful searching under the acute and archaeologically experienced eyes of Mr Martin Green[19] has revealed, up to 1975, no signs of Roman occupation. It must be assumed, therefore, until excavation or unusual chance should alter the picture, that the secondary settlement is of Iron Age origin—which is one of my reasons for suggesting earlier that the levelling of earthworks had begun in that period. A much worn track, contemporary at least with the later phase, leads down towards water from the settlement and another extends north towards a further—almost certainly Iron Age—settlement complex.

18. The plan was made with the assistance of Mr R Palmer who provided a plan based on computer transcription of an oblique air photograph of Mr J Boyden's.
19. I am most grateful to Mr Green for doing this as part of the collaborative research encouraged by the Society of Antiquaries of London's 'Evolution of the Landscape' project.

All these three settlements would have been clearly intervisible in open conditions. A further enclosure of about 2½ acres (1 hectare), undated by finds but likely to be Iron Age on our present knowledge of form, lies on almost level ground, just south-east of Amen Corner at grid reference 006104. This too would have been visible from 'Gussage' and, probably, from 'Gussage II'.

A mile north of 'Gussage' is a complex of ditches overlain by Ackling Dyke, the Roman road joining Salisbury (*Sorviodunum*) to Dorchester (*Durnovaria*) via an important junction five miles south-west of 'Gussage' by Badbury Rings, the nearest hill-fort. Some of these early ditches were intended to mark, or, became, roads (if parallel ditches here can be so interpreted) but the most notable feature is convergences to a sharp apex which, if the component parts were contemporary, would suggest use for stock of some sort. North-west of the Roman road west of the Gussage brook an undated linear ditch has, attached to it, a roughly square enclosure of about 4 acres (1.7 hectares). At first sight this suggests comparison with elements of the Wessex linear ditch system, (*vide* Bowen 1978) but the size of the enclosure in this sort of relationship is without parallel, to my knowledge, in that system. The pointed apical pattern is similarly unusual within that system as is the pattern of multiple ditches discussed below.

Two and a half miles north of 'Gussage' is the astonishing series of remains on and about the ridge of Gussage (St Michael) Cow Down or Hill, first made familiar to archaeologists by Sir Richard Colt Hoare (Hoare 1821, 31-3) and, for the first time in splendid air photography, by O G S Crawford (Crawford and Keiller 1928, Plates XV and XVI). On the gentle north brow of the ridge is the main evidence for Iron Age development. This is a pair of 'banjo' enclosures integrated within a ditched compound related to ditches forming part of a complex multiple ditch system. This fact strongly suggests that the whole of this arrangement was connected with a stock management system originating in the second half of the Iron Age.

Romano-British settlement sprawls across the enclosed area between the 'banjo' enclosures (marking the continuity of occupation which is now generally expected in relation to this type of monument) and is found elsewhere on Gussage Hill. Multiple ditches of this sort are rare in south Britain and are only paralleled in Dorset by a series on Worgret Heath, west of Wareham (RCHM 1970, 516-7). If form can be equated with extent of control then in some sense we have here a block of management activity extending over some 3 sq miles (700 or so hectares) at least. The cursus, by reason of its massiveness and extent, has influenced the pattern of development. Its north side is somehow integrated with the multiple ditch system and its south-west end can reasonably be seen as a ligature joining the Thickthorn Down arrangements to those on Gussage Cow Down. East of the latter area 'Celtic' fields are arranged axially with the cursus bounds, which must have been deliberately degraded to make them reasonably ploughable. Whether this destruction took place before the Roman period is not yet known but it was obviously not later. It is tempting to consider that many of the long ditches also marked tracks in the Iron Age, if not earlier. The tendency for this to occur at any date is shown by the present lane which springs from the main road ¼ mile east of Cashmoor and follows one of the old ditches up to Gussage Hill. Whether the natural ridgeways supported straight roads in the Iron Age is far from certain. The

present ridgeway road shown skirting 'Gussage' on Figure 110 is of considerable antiquity, followed as it is by parish boundaries for much of its length, but it cuts the curved feature, already mentioned, joining the 'Gussage' area to an enclosure 300m to the south.

The 'consideration of Iron Age settlement morphology', anticipated earlier, must indeed be brief. It is clear that establishments created for particular purposes will tend to have a similar pattern on the ground when left to decay into earthworks. Monastic houses of different orders make the point adequately in a historic context. Their *actual* use, however, for both spiritual, secular and funerary purposes was vastly more complicated than could be worked out from a study of their plans, or, for that matter, from excavation unsupported by documents. It is possible, therefore, to say that 'banjo' enclosures, of the sort illustrated on Gussage Cow Down, defined as rough circles of 45m to 80m in diameter with long parallel-sided single entrance and splaying end-ditches, recalling a 'banjo' to the musically imprecise, can be recognised as such when seen, but their original function (apart from a likely guess based on common-sense deduction and analogy in stock farming) is actually quite unknown. It is important, however, to note that in almost all instances the ends of the ditches are continuous with extensions and that these may double back to enclose the 'banjos' themselves, as on Gussage Down, or extend forward to form other enclosures. The essence of the matter here is that they are different from 'antennae' as at 'Gussage'—or Gussage II—or Little Woodbury and that the 'banjos' are, at most, half the size of the Gussage enclosures. Coarse morphological distinction is already clear. It would be inappropriate to press this further without massive illustration of a great variety of cropmarks, only a minority of which fall into replicated patterns and some of which suggest hybridisation between 'banjos' and Little Woodbury types of enclosure. It may, however, be noted in passing that the settlement which succeeded Gussage II is obviously quite different from it in shape, is based on a 'street' form and has features in common with the later Iron Age and Roman-British settlement at Woodcutts, five miles to the north.

Some years ago I suggested that Little Woodbury marked a decided type of settlement enclosure (Bowen 1969, 6—10). I made the point in reaction against the idea that it was a mere peasant homestead. It seemed to me that the large size of 3 acres plus and the fact that Little Woodbury itself was being turned into a hill-fort, on Bersu's reckoning, when danger passed, suggested that it was an establishment of a nodal kind and some pretension. The big house at Little Woodbury and in other, different types of establishment might represent rank or not but it undoubtedly influenced me in putting forward the notion originally. In a society which was known from classical authors to be hierarchical it seemed reasonable to suggest that this was the home of a man of local pre-eminence, an *eques* living in what the Celts would certainly call a *llys*. I linked Little Woodbury morphologically with 'Gussage'. Does it still stand as a legitimate *type?* The extraordinary and unexpected manifestation of Gussage II surely corroborates this. Moreover, it emphasises the importance of the 'antennae', which I paid too little attention to before. The numbers of enclosures of irregular but roughly rounded shape like Little Woodbury, with undoubted 'antennae', are small, though forty candidates of the size and shape containing spots and smears can be easily mustered after routine inspection of Wessex air photographs. The 'antennae' may escape recognition. We have seen at Gussage II how easy it is for them to be obscured by later development. It may also be remarked that a similar function could be served by some device such as a palisade which need leave little to mark its former presence even after excavation on the ground (and rarely, indeed, on air photographs). But in 'Gussage' and Gussage II they are similarly defined by relatively massive ditches. (The area so partially enclosed must have been important and would merit excavation!) Are they purely functional—to funnel in cattle? After Dr Wainwright's excavation this seems to me less likely, not least because the entrance seems to have been an elaborate affair and one not easily rushed by cattle or other invaders! What sort of evidence is there further to resolve this question of status? The antennae at 'Gussage' are, from their size, arguably the most important ditched element of the settlement. As a 'ballon d'essai' I should like to suggest that *part* of their function was to impress—in a chiefly way—whether friend or enemy.

It is the remarkable discovery and evaluation of the *cire-perdue* moulds for bits and harness fittings which may now provide a major clue to the status of this site. It should at least be argued and the point of the argument is provided in the song of *Culhwch and Olwen*, part of the *Mabinogion* which contains the oldest folk elements in that cycle of tales (Jones and Jones 1949, ix). Briefly, it shows with repetitious clarity that a craftsman with his craft is a privileged entrant to the King's (Arthur's) hall and that the man who bars the way to entry is a porter of rank controlling the gate. 'Open the gate' says Culhwch. 'I will not'. 'Why wilt thou not open it?' And the porter says: 'Knife has gone into meat and drink into horn, and a thronging in Arthur's hall. Save the son of a King of a rightful dominion, *or a craftsman who brings his craft* (my italics), none may enter'. Should it be asked what constituted a craftsman there is an example (on p.121 of the translation being quoted): Cei, 'a furbisher of swords'. It is not too far from a provider of fine metal pieces for chariots. If 'Gussage' were a *'llys'* then surely so in its original form was Gussage II.

These are highly speculative matters but one further observation may be made. The brook is the likely boundary between these two settlements. It is arguable that the water and the narrow band of meadow drew them together and that they are most unlikely to be central to their territories.

Appendix

For most of the sites on Figure 111 *see* RCHM *East Dorset* (1975).

The following sites have been recognised, chiefly from air photographs taken by Mr J R Boyden, since that volume went to press.

Gussage All Saints Parish

Ring ditch c. 9m across close north-east of 'Gussage' entrance.

ST 99850975: 1 acre enclosure 300m south of 'Gussage'.

SU 006104: 2½ acre enclosure 750m east-north-east of 'Gussage', north-east of Amen Corner: probably Iron Age.

SU 00351105: 'Gussage II' and settlement adjacent, 900m north-north-east of 'Gussage': Iron Age.

SU 005113: Enclosures and settlement 200m north-north-east of 'Gussage II': Iron Age.

ST 998117: Complex of ditches, pre-Roman road.
ST 998132: Complex of ditches, (extension of RCHM, Gussage All Saints (21)).

Sixpenny Handley Parish
ST 967134: Ditches north of a cross roads.

Gussage St Michael Parish
SU 00011467: ¾ acre enclosure, Middle Bronze Age, discovered by Mr M Green: marked 'G'

Detail has also been added to the complex on and around Gussage Hill.

Chapter XIV
General Considerations

Settlement History

Before embarking on a consideration of general matters relating to chronology, material culture, economy, environment, trade, population and settlement status it seems convenient to review the structural history of the settlement which has been described in detail in Chapters I—V.

The Phase 1 settlement comprised a 3 acre area surrounded by a shallow ditch with an external bank and a main entrance in the east which was defended by a timber gateway and flanked by antennae ditches. The pits, post-hole structures and working-hollows of this phase occurred in the main at some distance from this enclosure ditch and possessed a distinctive distribution pattern. The pits and working-hollows were distributed around groups of post-holes which in some cases form four-post structures. The latter were grouped in the centre of the enclosure and seventeen 'quartets' can be identified of which two were replaced twice and one replaced once. The majority are square in plan with dimensions which range from 1.70m to 2.50m, although most are between 2.20m and 2.50m square. These are the only post-hole structures from the Early Iron Age settlement at Gussage which could be interpreted as domestic buildings. Such structures are common in Iron Age contexts where they have been variously interpreted as granaries, watch-towers, excarnation platforms and domestic buildings. At Croft Ambrey hill-fort, to take only one example, the buildings were small, rectangular, four-post huts between 1.80m and 2.40m sq and varying in size up to 3.60m sq (Stanford 1974, 123f). They date to the sixth century BC and Stanford considered that some of the structures at least must have been dwellings. A similar view is taken of the Gussage structures, two of which were rebuilt three times and for one of which there is some evidence for a wooden floor. However, the ineradicable failing of the evidence from Gussage is that plough erosion has removed an unknown percentage of the evidence for buildings and only the remains of the larger structural elements have survived. Of these, the pits are the most numerous. In the entire excavation 477 pits were recorded of which 128 (27%) can be assigned to Phase 1, 69 (14%) to Phase 2, 184 (39%) to Phase 3 and 96 (20%) are undatable. In this report, greatest emphasis has been placed on the analysis of profiles and volumes—details of section drawings and contents have been deposited in the archives. The pits are of normal Iron Age type, few appear to have silted naturally, some may have been used for grain storage but at the end of their useful lives they were used for the disposal of rubbish and carcasses—both human and farm animal. Analyses of the Phase 1 pit dimensions showed that they were smaller than in the later settlement with a high proportion of barrel-type profiles. The average cubic capacity of each pit was 1.79m^3 and the total volume for all pits of the early phase was 229m^3.

There is some evidence for continuity between the Phase 1 and Phase 2 settlements—the enclosure ditch was enlarged on the same alignment, the east entrance was maintained though reconstructed, and the distribution of pits in the interior is virtually mutually exclusive to that of Phase 1. In addition, a number of old ceramic forms continued although new types appeared. The Phase 2 settlement was therefore of similar acreage to that of Phase 1, albeit surrounded by a larger boundary ditch and with a stronger gateway at the entrance. The internal structures consist of pits, a single round house and traces of a second such structure. The pits are not numerous and number only 69 or 14% of the total. The analyses of the profiles showed a decrease in the numbers of barrel-type pits as compared with Phase 1 and an increase in the percentage of cylindrical and bell-shaped pits. Furthermore, the pits are much larger—the mean cubic volume for Phase 2 pits is 3.00m^3 as opposed to 1.79m^3 for Phase 1 pits and the total volume for all pits sampled is 207m^3 as opposed to 229m^3 for Phase 1 and 497m^3 for Phase 3. The total theoretical storage capacity is therefore only a little less than for Phase 1 which has nearly twice as many pits. Superficially, taking a simple pit count as the criterion one may have assumed much less reliance on cereal cultivation in Phase 2 and the value of profile and volume assessments such as those undertaken by Mr Jefferies has been clearly emphasised.

The only certain hut structure is circular, about 9.00m in diameter with a single entrance in the south-east and a single central post-hole. The traces of a second circular hut were recorded 32.00m to the south. There is, however, a strong possibility that other huts existed and have now been destroyed by ploughing.

Some continuity can again be assumed in terms of the Phase 3 settlement which respected the limits of the earlier settlements and continued to maintain the east entrance. New ceramic forms appeared with the introduction of the potters' wheel, a large number of pits were dug and subsidiary enclosures constructed within the settlement. Three such enclosures were created of which the most important are a trapezoid enclosure with a timber gateway facing east which may have been a stock-enclosure, and a substantial ring-ditch with a timber gateway orientated in the direction of the main enclosure entrance. It seems likely that the ring-ditch was intended to provide greater security to timber structures of indeterminate plan which were sited at its centre and which are the only post-settings that can be assigned to the Phase 3 settlement. On account of a C14 date and the sherds and artefacts contained in its silts the ring-ditch is considered to be very late in the history of the settlement. It has silted rapidly and not been cleaned out so that the need for the enclosure seems to have been short-lived.

The total of Phase 3 pits that were recorded is 184 or 39% of the total. The profile analyses indicate an increase in bell-shaped pits and not much change in the percentages

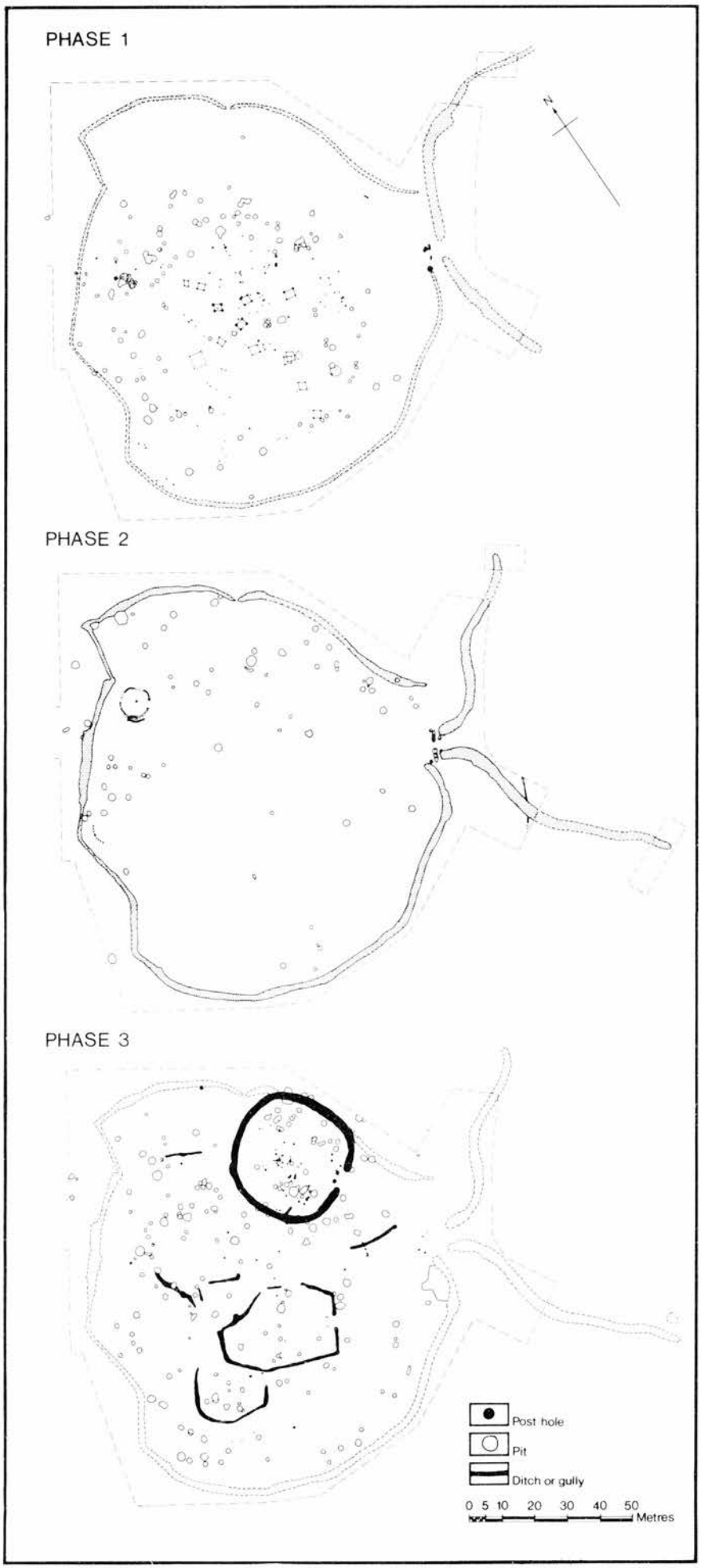

Figure 113 Gussage All Saints: comparative period plans

of other pit types, although the pits are somewhat smaller than those recorded in Phase 2. This is reflected in the mean pit volume of 2.77m³ and a total volume for all pits of 497m³. Because of our lack of understanding of issues such as pit-use and longevity it is impossible to ascertain whether these figures are indicative of length of settlement or population statistics.

The Chronology

Nine samples for radiocarbon dating were submitted to Dr V R Switsur of the Radiocarbon Dating Research Laboratory at Cambridge. These dates have been fully published and described (Wainwright and Switsur 1976) and only a brief summary of the results and comment is necessary. The dates obtained are as follows:

Table XLVII.

Lab ref	Sample	Provenance	Age BP	Age bc/ad	Uncertainty ±
Q—1204	Charcoal	Pit 297 layer (8)	2,460	510 bc	80
Q—1209	Bone	Ditch 1X layer (4)	2,400	450 bc	75
Q—1203	Charcoal	Pit 379 Layer (7)/(8)	2,370	420 bc	90
Q—1201	Charcoal	Ditch 1M layer (4)	2,180	230 bc	75
Q—1205	Charcoal	Pit 437 layer (5)	2,160	210 bc	75
Q—1207	Charcoal	Pit 209 layer Y	2,100	150 bc	65
Q—1206	Charcoal	Pit 209 layer (10B)	2,020	70 bc	70
Q—1202	Charcoal	Ditch 310L/N layer (4)	1,930	ad 20	75
Q—1208	Charcoal	Pit 139 layer (5)	1,900	ad 50	65

It is well-known, however, that despite the high precision with which the laboratory measurements of the radioactivity of the carbon are made, the resultant calculated conventional radiocarbon dates do not, in general, accord with normal historic dates. The discrepancies are of the order of one or 2% during the past two millennia, but become progressively larger in the preceding few millennia. Several calibrations to remove such discrepancies have been proposed and that given by Ralph, Michael and Han was used by Dr Switsur in order to assign historical dates to the phases of the settlement at Gussage All Saints (Ralph *et al* 1973). As a result, the following calibrated radiocarbon dates for Gussage were calculated:

Table XLVIII.

Lab ref	Calibrated Age BC/AD
Q—1204	790—480 BC
Q—1209	750—430 BC
Q—1203	730—420 BC
Q—1201	410—170 BC
Q—1205	410—140 BC
Q—1207	390— 10 BC
Q—1206	AD 190— 50 BC
Q—1202	AD 60—130 BC
Q—1208	AD 30—150 AD

It will be noted that the chronological range within which the true age of any event might fall is very broad and the determinations cannot be used for fixing a detailed chronology. With this proviso it can be stated that in all instances the archaeological assessment and radiocarbon measurements are in good agreement. The settlement appears to have been occupied from a time prior to the middle of the first millennium BC to the latter part of the first century AD and there are grounds for assuming that the occupation was continuous. The agreement between dates from the enclosure ditches in Phases 1 and 2 and from contemporary pits in the interior is very good and it is particularly satisfactory to have dates for the foundry debris since finds of decorated metalwork of the Late Pre-Roman Iron Age are not normally associated in any archaeological context and have had to be dated on stylistic grounds alone. It would be wrong, however, to assign a spurious accuracy to the determinations in order to refine the site chronology even further.

Any chronology based on artefacts for the Iron Age is notoriously difficult to apply (eg Hodson 1964B). A single La Tène la brooch from a Phase 1 pit should be dated on stylistic grounds to 400±50 BC and this is not at variance with the calibrated date from that same pit of 730—420 BC. A small series of samian sherds from five features (2, 155, 156, 243 and 293) are of Claudian, Neronian and Flavian type and indicate that the settlement was abandoned by the third quarter of the first century AD. The dating of other artefacts from the settlement can only be done in the most general terms, with the exception of a few sherds which are likely to have come from imported vessels. Such vessels are post-Augustan but could equally be post-Conquest in date. They include a single Arretine sherd, sherds from Terra Rubra beakers and platters, from butt-beakers and from an imported flagon. Their occurrence in ring-ditch 310 is thought to be significant in dating that enclosure to a period late in the history of the settlement.

The Artefacts

Artefacts recorded from the settlement other than pottery were not numerous and have been summarised in Table XLIX. They consist of those finds that have survived in the archaeological record—objects of wood and hide having long since perished although these materials must have played an important role. The analysis of querns present in each settlement phase has emphasised the accepted view that saddle querns were largely replaced by rotary querns in

the course of the Iron Age, but also shows quite clearly that rotary querns were first used in the Early Iron Age. Nine such implements were recorded in Phase 1 pits and there is more than one instance of saddle and rotary querns having been found side by side in both early and late pits. Whetstones are surprisingly few in all periods.

Both triangular and cylindrical clay loomweights occur throughout but the number of spindle-whorls increases markedly in Phase 3, possibly in response to an increase in the importance of the weaving industry at that time. It is also possible to see fluctuating fashions prevailing in the practice of decorating clay hearth or oven fragments. These are also more numerous in Phase 3 and may be linked to an intensification of corn drying.

Personal trinkets are not numerous at any time. In Phase 1 they include shale bangles, glass beads, an iron flat-bow brooch, penannular brooches of iron and bronze, large iron ring-headed pins, a bronze La Tène la brooch, a bronze bangle and bone toggles. Such items are less common in Phase 2 and are confined to a bronze bangle, clay beads, a bronze brooch and brooch pins, a bronze ring-headed pin and a bronze ear-ring. In Phase 3 brooches are more common, twenty bow brooches of bronze or iron were recorded, four bronze penannular brooches, a ring, toilet articles and bone pendants. Objects that might be taken to connote some personal status are found in all three phases although it is possible that they were brought to the site as scrap. In Phase 1 contexts were recorded chape and scabbard fragments of bronze, in Phase 2 a conical spear butt and scabbard tip of iron and from Phase 3 a decorated bronze chape fragment and scabbard binding strips.

The remaining objects are those used in the home or on the farm and include a few ard tips from Phases 1 and 2, only four iron knives from the whole site—one from Phase 2 and three from Phase 3, and socketed bone knives which occur in all periods but more especially in Phase 1. Only nine bone combs were recorded, two undecorated examples in Phase 1, six decorated specimens in Phase 2 and a single weathered decorated example in Phase 3. Objects of speciai interest include a steelyard weight from Phase 1 and an equal armed balance of bronze from Phase 2.

The collection is small; most forms are well-known in Iron Age contexts and have been fully discussed elsewhere. However, the very scarcity of objects is a matter of some interest and will be returned to later. Specific points of wider interest include the appearance of rotary querns at an early stage in the history of the settlement, the appearance of decorated bone weaving combs in Phase 2 and the establishment of the socketed bone knives as primarily Phase 1 artefacts.

The most striking artefactual evidence from the site relates to the evidence for metalworking described by Dr Spratling in Chapter IX. Bronze and iron were worked at the settlement throughout its history but the bulk of the material was obtained as a rubbish deposit in a Phase 2 pit (209) which comprised approximately $3m^3$ of metallurgical debris which for quantity, variety and preservation is unrivalled in pre- and proto-historic Europe. The bulk of the deposit contained many fragments of tuyeres and other industrial hearth matrix, some unused, unfired lumps of prepared clay, iron-working slag, bronze and iron scrap, hammer scale, a billet of tin bronze, nearly 600 fragments of crucibles, thousands of fragments of fired clay investment moulds made in one piece by the *cire perdue* (lost-wax) technique for casting bronzes and four fine bone tools for modelling the patterns around which the moulds would have been invested. None of the material is weathered—the debris had been thrown into the pit immediately or shortly after it was created and it is clear that the workshop from which it came lay in the immediate vicinity of the pit. No trace of this workshop was found and it had presumably been destroyed by ploughing. That area of the settlement near the main east entrance where pit 209 was located appears, from the distribution of metallurgical debris, to have been reserved for metalworking over a long period—both north and south of the thoroughfare. The objects being manufactured were terrets or rein-rings of four types—one of which is represented by at least eleven varieties; 3-link bridle-bits of Arras type with decorated side-links; linch-pin terminals of 'Yorkshire' type with decorated heads, strap unions and button and loop fasteners. These objects were bronze castings for chariots and for the harness of the pairs of ponies that drew them. In addition, the pit contained some domestic rubbish, potsherds, animal bones, worked bone and glass—some of which have been described in this report. The remainder will be described when Dr Spratling publishes the definitive account of the material.

Table XLIX

Material	Object	Phase 1	Phase 2	Phase 3
Stone	Saddle querns	43	3	16
	Rotary querns	9	10	63
	Saddle quern rubbers	2	1	1
	Whetstones	3	2	8
	Roof/loomweights	2	1	1
Shale	Bangles	4	–	2
Clay	Spindle whorls	6	2	18
	Triangular loom-weights	7	6	4
	Cylindrical loom-weights	1	2	2
	Sling missiles	1	2	1
	Hearth/oven fragments	3	7	24
	Beads	–	2	3
	Brick fragments	–	–	5
Glass	Beads	3	–	–
Iron	Miscellaneous objects	11	77	60
	Bow brooches	1	–	6
	Penannular brooches	1	–	–
	Large ring-headed pins	3	–	–
	Ard tips	1	2	–
	Steelyard weight	1	–	–
	Chape and scabbard fragments	2	–	–
	Bucket hasp and handle	–	1	–
	Knives	–	1	3
	Chisels	–	1	1
	Conical spear-butt	–	1	–
	Scabbard tip	–	1	–
	Ox-goad	–	–	1
	Arrowhead	–	–	1

Table XLIX—continued

Material	Object	Phase 1	Phase 2	Phase 3
Bronze	La Tène la brooch	1	–	–
	Penannular brooches	1	–	4
	Bangles	1	1	–
	Decorated needle	1	–	–
	Bow brooches	–	1	14
	Brooch pins	–	2	1
	Ring-headed pin	–	1	–
	Ear-rings	–	1	1
	Equal-armed balance	–	1	–
	Finger-ring	–	–	1
	Toilet articles	–	–	2
	Decorated chape and scabbard fragments	–	–	1
Bone	Socketed knives	28	5	5
	Undecorated bone combs	2	–	–
	Decorated bone combs	–	6	1
	Toggles	2	–	–
	Knife handles	2	–	1
	Awls	2	1	8
	Needle	1	–	–
	Pins	–	1	–
	Chisel or gouge	–	–	1
	Pendants	–	–	2

The Economy and Environment

The charcoal fragments recorded from the archaeological deposits provide a limited insight into the woodland environment of the settlement. The principal limitation in such studies is that the wood may have been selected and burnt for specialised purposes. This may particularly be so in the case of pit 209 where the charcoal fragments were subjected to intensive analysis and consisted largely of oak charcoal—primarily from branches or trunks in excess of 10cm diameter, together with much smaller amounts of hazel and "hawthorn" charcoal which consisted of twiggy material. This size and species distribution is consistent with the use of small twigs of certain species when lighting a fire and then the use of oak to feed the fire when it was burning well[20].

In all, approximately 475 specimens were identified, together with an additional number from pit 209. It would be rash to make suggestions regarding frequency of species from these fragments as some of them may have come from the same twig or branch. With this in mind the species recorded from Phase 1 deposits in order of frequency are *Fraxinus, Corylus, Quercus,* Rosaceae, *Tilia?, Alnus, Acer, Viburnum?, Carpinus* and *Populus/Salix.* Of these, *Fraxinus* and *Corylus* are by far the most common species followed by *Quercus* and Rosaceae, the remaining species being represented by one to four fragments only. A similar pattern emerges from charcoals in the Phase 2 deposits if one excludes pit 209. *Fraxinus* and *Corylus* are again the most common species but are now equalled in frequency by *Quercus.* The remaining species are represented by between one to seven fragments and include *Prunus, Tilia?, Alnus,* Rosaceae, *Populus/Salix, Acer, Carpinus, Viburnum?,* and *Ilex.* The frequency of oak fragments results from large quantities in pits 426 and 427 and this may be due to specialised requirements.

The largest number of identifications (205) were made from Phase 3 deposits where the frequency of *Corylus* and *Fraxinus* is equalled by *Quercus,* and some Rosaceae. These are followed by *Alnus,* other Rosaceae, *Carpinus, Populus/Salix, Tilia?, Taxus, Ilex, Betula, Buxus, Acer* and *Viburnum?,* which are each represented by between 10 and one fragments.

The most that can be extracted from these data in environmental terms is that such trees were growing in the vicinity of the settlement and had been burned within its precincts.

Evidence for the arable economy of the settlement was obtained from a variety of sources including carbonised seeds. The results of this investigation were fairly predictable and indicated that wheat grains (mostly *Triticum spelta*) were present in greater frequency than barley. In addition, there is some evidence to suggest a gradual transition from the production of barley to wheat as main crops during the life of the settlement. Other crops represented were oats and legumes, the frequency of the latter also increasing with the life of the settlement. As with charcoals, great care should be taken in interpreting these results. Considerable uncertainty surrounds the circumstances under which carbonised grain was introduced into pits and the nature of the selective processes which occurred beforehand. The remains that we have may not therefore be representative of the crops that were grown in the fields that surround the settlement to the north, west and south. Furthermore, of the wheats, only the so-called glume wheats (spelt and emmer) require parching before threshing, a process during which accidental carbonisation may occur, and it is these wheats that are principally represented in the record from Gussage. Bread and club-wheats can be threshed without being parched, are less likely to have been carbonised and are therefore not represented in the deposits to any great degree. Finally, it should perhaps be emphasised that the presence of these carbonised cereals in pits is not confirmation of the use of the latter for grain storage. The grains are related to the use of the pits for rubbish disposal (cf Dennell 1976).

Implements related to the arable farming include three iron ard tips from Phases 1 and 2 contexts—such objects were presumably not discarded but re-forged. The crops were sown in the fields surrounding the settlement to the north, west and south and the ploughs pulled by oxen—a single goad was recorded from a Phase 3 context, although Mr Harcourt has pointed out that some horse remains exhibit lesions that are normally produced by use of the animals for traction. These animals, however, may not have drawn ploughs but wheeled vehicles. The fields would have been fertilised with the manure resulting from the settlement's stock-breeding activities and the crops harvested with iron sickles that have not survived in the archaeological record. Some of the harvested grain would have been dried before threshing in clay ovens, fragments of which were found in all periods, but most particularly in

20. Identifications of the charcoals were carried out by G V Carbone and J Palter and the fragments from pit 209 by Mrs C Keepax. Their detailed reports are housed in the Ancient Monuments Laboratory.

Phase 3. It was not possible to reconstruct the oven fragments, many of which were decorated. The grain would then have been stored, either in pits or above ground, and ultimately ground on stone querns of which 149 were recorded from the entire settlement (52—Phase 1; 13—Phase 2; 79—Phase 3). Both rotary and saddle querns were used from the earliest settlement, although the former became more popular at the expense of the latter.

The faunal remains from Gussage have been fully treated by Mr Harcourt (Chapter X) and only a brief summary of the evidence and his conclusions is necessary here. The number of specimens identified was 15,500—articulated groups of bones such as a limb or a complete skeleton being counted as one specimen and discounting the rodent and amphibian remains. Interpretation of true age is complicated by the fact that for cattle, sheep and pigs the epiphyses provide one answer and the mandibles another for the different age groups—this is neatly illustrated by the careful recording of a heifer that had died because of a difficult calving. The mandibles indicate a markedly higher proportion of old animals. With this proviso and with the exception of the horse, all parts of the body of all domestic farm species are more or less equally represented and all the age-groups from the foetal and the new-born right through to those of advanced age are present in proportions suggesting a dynamic 'natural' population. For all periods the general pattern of peak mortality was similar and occurred within the range four to six years old. For the cattle this would have represented a culling of steers not required for draught purposes and which were therefore killed for meat and of females because of infertility, poor milking performance or other defects. The mortality pattern for sheep indicates some 5% natural deaths in the very young and a 16%—26% selective kill of lambs not required for flock replacement—an age pattern that would be anticipated if the sheep were kept mainly for wool or milk with meat as a secondary product.

The cattle are of common Iron Age type being small, lightly built and with a shoulder height between 100—113cm. In terms of percentages of farm species cattle comprise 28%, 20% and 27% in the three site phases and the percentage of meat contribution represented by cattle similarly varied little throughout the history of the settlement (61%, 57%, 60%). However, Mr Harcourt is at pains to point out that meat is a terminal product whereas a subsistence economy demands a sustained yield. It follows that totally false views might be derived from regarding all farm animals purely in terms of meat yield. A Phase 2 pit produced the skull of a polled animal, prehistoric evidence for this having been found at four other sites in Wessex and nowhere else. This trait arose among horned cattle as a mutation and Mr Harcourt suggests that its occurrence in Wessex is strong evidence for cattle exchange as the gene for the trait is dominant and the off-spring of polled cattle also exhibit the feature which may have originally been transmitted in imported cattle.

The sheep were unusually small and slender animals with a shoulder height between 53 and 64cm. The percentages of the minimum number of individuals represented in each period were respectively 46%, 60% and 54% and percentages in terms of meat contribution 10%, 16% and 12%. Amongst the pigs only domesticated animals are represented and there was a complete absence of entire long-bones. The percentages of the minimum number of individuals represented were 13%, 14% and 8% in each phase and meat yield 4%, 6% and 3%. The goat was also represented in all periods—most commonly by horn cores. Other domestic animals present were dogs and cats. A minimum number of 30 dogs were represented with an average shoulder height of between 36—38cm. The bones of very young puppies, some new-born, were quite numerous and may have resulted from deliberate number control. Cats occur in Phases 2 and 3 and include a number of kittens from which Mr Harcourt concludes that the animals were domesticated.

Horse remains were numerous and included a high proportion of entire long-bones. Percentages of the minimum number of individuals represented in terms of the domestic stock were 9%, 5% and 8% for each period. Most individuals fall within the normal Iron Age size-range of between 110 and 135cm, although the smallest and largest specimens extend this range to 102—145cm—the smallest in this size range would have been as small as a modern Shetland pony. The age structure of the horse population showed a feature which set it apart from that of all other species such as cattle, sheep and pigs, for the bones of the latter included not only many from young animals but also from new-born and from foetuses. Such specimens were totally and conspicuously absent from the horse material and the presence of only adult and mature animals allows for only one interpretation which is that no breeding of horses was practised but that they were rounded up periodically and selected animals caught and trained. An identical mortality pattern was recorded at the unpublished Iron Age settlement of Longbridge Deverell in Wiltshire and it will be of interest in the future to establish whether the periodical round-up, capture and training of mature horses was widespread in Wessex. The most common lesion in the horse material was osteoarthrosis of the proximal metatarsus which was seen in five specimens. This lesion is associated with the use of horses for draught purposes.

The keeping of domestic poultry figures fairly prominently in the economy of the settlement, remains of goose were recorded from Phase 1, duck and fowl in Phases 2 and 3. Wild birds that could have been hunted for food are numerous and suggest three hunting areas—marsh and freshwater, woodland and open bushy country. They include heron, mallard, wigeon, common scoter, crane, kittiwake, woodpigeon, hedge-sparrow, gold-finch, jay, jackdaw and rook/crow. The predators, which must have been common around such settlements, include the common buzzard, the hen harrier and the raven. Fish do not appear to have featured in the economy with the exception of two dace in Phase 1 contexts.

A few bones were found of Red deer and Roe deer but evidence for hunting may be under-represented and indeed there are indications from Gussage that meat was removed from deer carcases at some distance from the site and hence their bones are not common. Clearly deer were still widespread and it would be surprising if they were not exploited.

The faunal material from Gussage represents a large sample in which all the major domesticated animals have been recorded. In addition, the sample represents virtually all the data available from the settlement. Mr Harcourt's point regarding meat contribution per species deserves to be stressed, for it is clear that although the majority of the bones are the waste product of eating meat there are two variables which must be taken into account. The first is exemplified by a heifer that died giving birth to a calf—there is no suggestion in this case that the carcass was dismembered for food and the same stricture presumably applies to the complete animal skeletons that are a feature

of Iron Age rubbish pits. Secondly, animals were not kept solely for meat production and it is through studies of the age structure and mortality rate amongst the beasts represented at Gussage that Mr Harcourt has formulated alternative hypotheses regarding the functions of the herds such as traction, wool and milk. Few assemblages in Britain have been so thoroughly studied in this way.

Whatever the reasons for which stock were kept, and the Gussage data hints at some of these, the herds were clearly of great economic importance to the community and there are no grounds for assuming that the stockmen were not both skilful and knowledgeable. Indeed the wealth of the settlement was probably more to be counted on the hoof than in trinkets. The entrance lay-out, which as Mr Bowen has shown is by no means unique to Gussage, could be seen as emphasising the importance of stock-breeding—the antennae earthworks being intended to funnel stock into the settlement area from grazing grounds to the east. Of considerable interest are the suggestions of community enterprises—the exchange of polled cattle and the periodic round-up of horses. The latter must have been a community exercise and probably generated considerable trade and social intercourse.

In addition to the arable farming and pastoralism, cottage industries would have been practised in the settlement and evidence for some of these have survived in the archaeological record. Evidence for weaving is provided by the presence of spindle-whorls of chalk or baked clay, of loomweights and bone weaving combs. Sheep were commonly represented in the faunal record (46%, 60% and 54% of the minimum number of individuals in each phase) and their mortality pattern is one that would be anticipated if they were kept mainly for wool or milk with meat as a secondary product. The socketed bone knives may also hint at a hide industry for they are best interpreted functionally as skinning knives. They are most common in Phase 1 (28 specimens) when this industry appears to have been most intensive. Finally, dairy produce must have figured largely in the economy of the settlement. The herds of cattle, sheep and goat would have provided milk surplus to domestic requirements and in Phase 3 the numerous perforated vessel bases suggest that milk was converted into cheese and possibly other dairy produce.

This leaves only the metalworking tradition to be discussed as part of the settlement economy. On general archaeological grounds the debris from Pit 209 can be assigned with reasonable certainty to the first century BC. However, Dr Spratling has produced evidence which indicates that bronze and iron were worked at the settlement throughout its history. Furthermore, it seems likely that about 50 sets of pony harness and chariot fittings were represented and Dr Spratling has estimated on the basis of five terrets or rein-rings per set that 38kg of bronze would have been required for fifty pairs of such sets together with some 10 litres of beeswax with which to make the models. In addition, clay would have to be selected and washed, quartz temper obtained and if the chariot bodies and iron fittings were assembled close by, these would have required large stocks of iron and seasoned timber—the latter possibly having been laid down for decades. It is now considered, therefore, that metalworking was a normal feature of the economic life of the settlement as it would hardly have been worthwhile setting up a complex foundry with the attendant complications of laying on all the necessary raw materials simply to cast for a brief period and then move on to another site to repeat the same process. Consequently, the Gussage population were not only farmers but metallurgists, who necessarily had to organise the logistics behind the foundry operations.

Trade and External Contacts

Some evidence from the excavations sheds light on the trade and external contacts of the settlement community. The age structure of the horse remains, already commented upon, suggests that no breeding of horses was practised as part of normal settlement activities but that they were rounded up periodically and selected animals caught and trained at the age of about three years. Gussage does not stand alone in this for an identical mortality pattern was recorded at the unpublished Iron Age site of Longbridge Deverell in Wiltshire. If this is substantiated by results from other settlements it is clear that such periodic round-ups are likely to have been communal events which must have engendered commercial and social intercourse.

One such commercial venture is likely to have been the cattle trade and it will be recalled that a Phase 2 pit produced the skull of a polled animal, prehistoric evidence for this having been found at other sites in Wessex and nowhere else. This trait arose among horned cattle as a mutation and Harcourt suggests that its occurrence is strong evidence for cattle exchange in Wessex as the gene for the trait is dominant and the off-spring of polled cattle therefore exhibit the feature which may have originally been transmitted in imported cattle.

Other settlement activities that probably yielded produce surplus to domestic requirements were wool production and weaving, the curing of hides, and dairy produce such as milk and cheese and bee-keeping—the evidence for which has been given above.

The settlement participated in specialised trading patterns in Wessex that appear to have originated from centres producing querns and ceramics. In this trade the settlement community were consumers rather than producers. From the earliest settlement they participated in a trade in rotary and saddle-querns which were made of Lower Greensand, Tertiary ferruginous sandstone and Tertiary gritstone—149 querns were recorded with a total weight of 340kg. The dominance of Greensand for this purpose is clear throughout the settlement period (104 querns). Greensand is found as a narrow outcrop eight miles west of the settlement reaching three miles northwards from Child Okeford on the River Stour, whilst approximately the same distance north of the settlement it outcrops as an even narrower band along the side of the Vale of Wardour. It seems likely that one or both of these outcrops supplied the stone for the Gussage querns which were not manufactured at the settlement itself but were brought to the site from established production centres. Querns of Tertiary ferruginous sandstone would have been derived from the Hampshire Basin and two coarse-grit rotary-querns of probable Devonian stone from Phases 1 and 3 respectively hint at wider contacts. Such contacts are confirmed by the presence of a lump of Dartmoor granite from a Phase 2 pit and a fragment of Bembridge Limestone from the Isle of Wight.

The settlement was a consumer in a trade in ceramics, evidence for which is provided by a microscopic study and heavy mineral analysis of the pottery fabrics from Gussage by Mrs Gale. This study showed, from a small sample, that 91% of the total ceramic assemblage is composed of two fabrics. Fabric 1 (66%) is sand-tempered containing quartz and quartzite with high percentages of both tourmaline and

zircon which possibly originated in the Wareham-Poole harbour area of Dorset. Fabric 2 is also sand-tempered with quartz and quartzite present but the heavy mineral assemblage is distinct with a low tourmaline and high zircon content and sometimes comparatively high garnet and rutile. Mrs Gale considers that vessels in this fabric were locally produced in the home or by potters serving small communities. In general, the earlier ceramic forms at Gussage are found in Fabric 2 but not in Fabric 1. From this, Mrs Gale would deduce that in the earliest phases of the settlement, local production of pottery seems to predominate—either in the home or by a potter serving a small settlement, or possibly by an itinerant potter working with local clays. In the later Iron Age, however, the local market seems to have been superseded by vessels made in Fabric 1 which probably originated in the Wareham-Poole harbour area of Dorset, implying a more organised and commercially orientated industry, although it is unsafe to generalise from a single settlement.

Such items—pottery vessels and querns, would have been essential to the economic and domestic life of the settlement. Produced at specialised centres they would have found ready outlets at many settlements in Wessex as well as Gussage. They would have been exchanged for goods produced at the settlement—wool, cloth, hides, cattle, dairy produce, honey, beeswax and metal objects, as coinage was not found on the site even though it was introduced into Durotrigean territory by the mid first century BC and persisted late into the first century AD.

Trade items not essential to the economic and domestic life of the settlement do not figure large in the archaeological record. A few sherds are from imported vesels of Gallo-Belgic type (terra rubra platter and beaker, butt-beakers, flagons) and an Arretine sherd, but these are not common nor are the fragments of Dressel 1 and Spanish Globular Amphorae reported on by Dr Peacock. The six shale bangles would have come from production centres on the Dorset coast, whilst the few glass beads and personal trinkets of bronze and iron—brooches, pins and rings would presumably have resulted from occasional trading contacts. There is no evidence for the smelting of iron within the settlement until the late first century AD so that domestic tools and implements of this material were obtained by trade exchange and this may be a reason for their scarcity.

The impression gained is that of a settlement prosperous in terms of its herds, crops and domestic crafts, which produced sufficient surplus to enable it to participate in contemporary trading patterns in Wessex but which had little regard for items not directly related to the life of the settlement and its functioning.

An exception to this suggested pattern is the metalworking industry which has been shown to persist throughout the history of the settlement, although the major find is assigned to Phase 2—probably early in the first century BC. It seems likely that the surviving industrial debris represents about fifty sets of pony harness and chariot fittings of both simple and elaborate type. The simple sets comprise a pair of bridle-bits with bronze mouth-pieces that are decorated with triangular panels of ornament and five terrets of simple form—all the other pieces must have been of forged iron or steel. The more elaborate sets, however, consisted of a pair of bridle-bits with side-links bearing profuse relief ornament, five bronze terrets of ornate type, a pair of bronze strap unions, bronze linch-pin terminals and bronze button and loop fasteners in addition to other fittings of forged iron or steel. The proportion of simple to elaborate sets represented appears to be in the order of 15 or 25:1. Given that the pit 209 material is a rare survival, these sets cannot have been solely for home consumption but intended for distribution and exchange further afield. Dr Spratling has pointed out, however, that the possibility of identifying an object made at Gussage is extremely low unless in a votive hoard or as a chance find, as such items would have tended to be re-cycled into the metalworking process at the end of their useful life. Nevertheless, the production of the sets must have formed part of a trade pattern which had its impact on the economic life of the settlement.

The Human Population

The human skeletons from Gussage represent a minimum of 53 individuals—15 adults and 38 infants. Of these, one infant was recorded from a Phase 1 context, one adult and six infants from Phase 2 deposits and the remainder from Phase 3. It would be unwise to see in these figures evidence for settlement population at any particular time, rather one should relate them to changes in burial practice throughout the history of the settlement. Certainly in Phase 1, not one burial was put into a rubbish pit or ditch—the single infant burial was placed in a pit that had been especially dug for that purpose. In Phase 2, one adolescent female burial was recorded which, although in a rubbish pit, had nevertheless been laid with comparative care on a patch of clay and the spine crudely outlined with stones. Of the infant burials, two were recorded from the enclosure ditches and four from pits.

Scattered fragments of skeleton were comparatively numerous in Phase 2 deposits. They include nine fragments of skull, including a nearly complete skull vault—six from the enclosure ditch and three from pits, and three fragments of femur from the enclosure ditch and a pit. Clearly by Phase 2, the interment of the dead within the confines of the settlement was still not common practice, but the numbers of skull and long-bone fragments hint at some excarnation procedure. In Phase 3, however, there were nine adult and 31 infant burials in ditches and pits associated with the settlement, suggesting that this practice was now much more common, although burial elsewhere in addition is a strong possibility. The posture is normally crouched—often the arms and legs were flexed to get the body into the pit and in one case the body may have been bound. The orientation of the body was variable and the only example of a formal burial was an infant which had been covered with flint nodules. Similarly, there were few grave-goods and the bodies had been disposed of casually with the domestic rubbish. Isolated skeletal dispersal is represented by four long-bone fragments and one skull vault fragment. It is therefore better to interpret the human remains from Gussage less in terms of populations, than in terms of changing burial practice. This appears to have developed from a stage where no burials were interred within the settlement (Phase 1) to a period when very few were deposited—and that with care in the case of the single adult burial and when excarnation can be implied (Phase 2) to the late pre-roman Iron Age when casual interment in rubbish pits and ditches was comparatively common. The trend is one of decreasing concern for formal burial and carries with it the implication that cemeteries may well be associated with settlements or groups of settlements of this type.

Of the 38 infant burials, four died as a result of premature birth (all in Phase 3), 22 were new-born in which death occurred at about the time of full term birth (Phase 2(3); Phase 3(19)) and the remainder may have survived a short time after birth (Phase 1(1); Phase 2(3); Phase 3(8)). Because of lack of knowledge regarding possible extramural burial practices it is not possible to say whether these figures represent a higher infant mortality rate in Phase 3. One can, however, point to the four infant burials from pits 34 and 132 respectively and three burials from 293. These pits were filled in quickly and the high incidence of infant burials in them may indicate an epidemic(s) as the cause.

Only one female adolescent burial was recorded in Phase 2 so most comments relate to the adult population of Phase 3. Of the six females, three were 45 years+at the time of death, one aged 35—45 years, one 20—25 years and one 16—19 years. Of the three males, one was 45+, one 35—45 years and one 22±2 years. It is noteworthy, that no burials aged between 25 and 35 years are represented but in such a small sample this is probably not significant.

Various points of interest have emerged from a study of the remains by Mrs Keepax and I am indebted to her for discussions of these points subsequent to the production of her report. There was a fairly high frequency of degenerative bone disease (osteoarthritis, osteoarthrosis) in the vertebral column — particularly in the lower lumbar region. The knee joint is commonly affected as are hands, feet and hips to a slight degree. The symptoms of this affliction are unfortunately only too well known and mainly manifest themselves in stiffness and aching of the joints and the formation of outgrowths and spurs of bone (osteophytes). Despite the common occurrence of the disease, very little is known about its causes. In fact it is so common that many consider it to be only the result of the ageing process although the condition can be caused or accelerated by abnormal stresses on the joint.

The percentage of teeth affected by caries is extremely high, even in the young individuals. Although many factors such as the quality of the dental enamel may have contributed to the high frequency of caries, it seems quite likely that some dietary factor may have been largely responsible. Poor enamel will allow the development of caries cavities. This may be hereditary, or induced by environmental conditions such as low fluorine content in the water supply. Dietary factors, not deficiencies as such, could include a high intake of sweet foods, or a diet consisting mostly of soft foods that encourage decay. The skull of an elderly female was found to display a very unusual pattern of dental wear in which the upper incisors and canines are heavily worn, whereas the lower anterior teeth are worn relatively little. Mrs Keepax suggests that this anomalous wear might be an example of some cultural factor causing abnormal tooth-wear.

Five out of ten adult skeletons displayed a mild skeletal anomaly of some kind and a few anomalies were noted in the infant skeletons. There is a fairly large number (five) of healed fracture injuries. These include injuries to the rib, humerus and tibia and testify to the heavy rough work involved in maintaining the economy of the settlement. The skeleton from pit 285 was of particular interest. It was that of a robust young male of 22±2 years. A poorly healed mid-shaft fracture of the right humerus was present and X-ray examination indicated that there was evidence of a long-standing infection. On the back of the left parietal was an injury caused by a sharp implement some time before death. There are also a number of injuries caused by a sharp instrument such as a sword or an axe immediately prior to or possibly just after death. These include four, possibly five, injuries on the left humerus, a very shallow cut on the front of the tibia and a small cut on the left clavicle, which show no signs of healing or infection and were therefore probably inflicted shortly before, or possibly after death. On the lateral side of the distal end of the left humerus a whole area of bone is missing where it had been removed by the entry of a sharp implement. Mrs Keepax concludes that the injuries are consistent with those which might be received in self-defence and it seems likely that the individual died by violent means. The body had been deposited in the top of a Phase 3 pit and two iron fragments were found at the waist.

The osteological evidence for inbreeding and family relationships is slight and concerns certain non-metrical variants, some of which might be inherited. At present there is little comparative data so it may be that the Gussage series fits into the usual occurrence frequencies for this area and period. However, in the absence of this data it may equally be assumed that the Gussage population forms a group with a high frequency occurrence for these features, possibly maintained by inbreeding.

Settlement Status

There are many socio-economic problems that should be answered by the Gussage excavation for with all the surviving information available it should be possible to construct hypotheses which were not possible previously. It must be stressed at the outset, however, that Gussage is unique amongst enclosures of its type as not only has its complete plan been revealed but also the majority of its surviving archaeological deposits were examined. The temptation to over-generalise from this one site should therefore be resisted. Furthermore, the surviving archaeological deposits occurred below subsoil level in pits, ditches and post-holes — the occupation levels had long since been ploughed away. As a result of this erosion the plan of the settlement may lack an unknown number of hut-plans and valuable environmental evidence that could have been obtained from buried surfaces beneath the enclosure bank is not available. The population of the settlement at any given time is difficult to ascertain as one cannot be certain how many domestic structures have been destroyed and estimates based on meat or grain consumption possess too many variables to have any credibility. In Chapter II, Mr Jefferies has estimated 30—60 individuals, having made various assumptions and outlined the problems surrounding estimates of population that are based on grain storage and consumption. We have no secure basis for such estimates and the calculation should be regarded with the same caution as employed by Mr Jefferies when proposing it.

Even with these restrictions, however, it is possible to attempt some discussion of the status of the Gussage settlement in contemporary society. There is little scope for arguing on the basis of the available evidence that the status of the settlement fluctuated from its foundation to abandonment and this consideration has been set aside in order to approach more directly the general theme of settlement status. It should be emphasised that the discussion refers solely to Gussage which is representative of one type of settlement in southern England amongst a broad spectrum of sites ranging from hill-forts to one family establishments of Tollard Royal type (Wainwright 1968); which encompasses extensive enclosed settlements

such as that at Boscombe Down West (Wilts) (Richardson 1951), the lake-villages at Glastonbury and Meare (Som) (Bulleid and Gray 1911), a 26 acre enclosure at Hog Cliff Hill (Dorset) (RCHM 1963, 14—15) and an enclosure of one-third of an acre at Draughton (Northants) which surrounded three huts (Grimes 1961).

Any discussion of this nature must begin with Little Woodbury which provided the inspiration for the Gussage project. The excavations by Dr Bersu showed the settlement to be of two phases:

Phase 1: a palisaded enclosure traced only on the east side. It possessed a four-post gate and contained a round hut 45ft in diameter with its entrance porch aligned on the gate. On ceramic grounds this settlement should belong to the fourth and third centuries BC.

Phase 2: the palisade was replaced by a ditched enclosure in the third or second century BC. The ditch was 11ft wide and 7ft deep and enclosed 4 acres. Linear ditches (antennae) radiated from the single entrance, which faced east. Apparently there was no gate.

There was no Late Pre-Roman Iron Age occupation as at Gussage and it appears that the settlement could have been replaced by Greater Woodbury, 500m to the west. In effect, the settlement partially excavated by Dr Bersu forms part of a larger complex which includes Greater Woodbury in the same way as Gussage forms part of a larger complex with the unexcavated Gussage II. Mr Bowen has indicated that other sites of Little Woodbury type are known in Wessex and all show signs of intensive occupation. Such settlements include Meon Hill near Stockbridge (Hants), Spettisbury (Dorset) and Farley Mount west of Winchester which is associated with at least 60 acres of Celtic fields with a large area of pasture outside the eastward facing entrance (Bowen and Fowler 1966 and Bowen 1969). No rich finds occurred at Little Woodbury and in this respect it has sometimes been compared unfavourably for example with the Early Iron Age site at All Cannings Cross in north Wiltshire where the occupation levels had been preserved under soil slip. However, Bowen, in his papers cited above, viewed Little Woodbury as a recognisable type of settlement which possibly had the status of a Lord's establishment because of its size, because of the number of similar settlements which were converted into hill-forts and possibly because of the large house.

Similarly, Professor Jones viewed Little Woodbury as the *llys* of the local lord (Glanville-Jones 1961), the residence of a Celtic territorial lord who, on the analogy of the medieval grouping of band hamlets under a *llys* would have ruled over one or more Wessex hamlets. The converse argument was put by Professor Alcock who considered that if Little Woodbury was a *llys* one would expect the finds to suggest this, but the only luxury items from Little Woodbury were a bead, a pin, a brooch and a fragment of a bronze bangle (Alcock and Glanville-Jones 1962). To Alcock, Little Woodbury was a probable nucleated settlement where the absence of prestige finds and activities suggested a more lowly social level than that propounded by Bowen and Glanville-Jones (Alcock 1965).

If one excludes the bronze foundry debris, finds which indicate any status for the Gussage settlement are few in number. From Phase 1 there are chape and scabbard fragments which could well be scrap and a handful of brooches and pins. From Phase 2 contexts were recorded a conical spear-butt and possible scabbard-tip, whilst only in Phase 3 is there an increase in the number of personal trinkets together with a decorated chape fragment and scabbard binding strips. Tacitus, however, noted the German fondness for cattle in terms which might well have been written of the Durotriges and the wealth of the Gussage and Little Woodbury settlements may well have been on the hoof and invested in their crops and domestic produce rather than in trinkets and 'prestige' possessions.

The arthritic farmers of Gussage should also be viewed within the more general theme of Celtic society in which the traits of frankness, spirited temperament, bravery, boastfulness, personal vanity, feasting and love of eulogistic verse combine to produce a type which Professor Cunliffe has bleakly castigated as combining a 'furious impetus . . . and the total lack of forward planning' (Cunliffe 1974, 309). It is in this context, imbued with tradition and personal example, that one should view the status of the Gussage farmers.

In simple societies such as that prevailing in the second half of the first millennium BC, status would have been derived from contributions which benefited the community and hence would have been represented mainly by intangibles that are not apparent in the archaeological record because they do not consist of differential distributions of material possessions. Even in complex societies there is fortunately no inevitable correlation between status and property and it is unwise to use this equation when considering Gussage and Little Woodbury.

The discovery of the bronze foundry debris must be central to any discussion of the status of the settlement. The initial interpretation placed on the material involved a peripatetic smith who operated a foundry for a short period within the settlement in the first century BC. Metalworking was not regarded as a regular feature of the life of the settlement. Dr Spratling has now revised these views in the light of the nature, quantity and contexts of the metallurgical debris from Gussage and other pre-and proto-historic sites in Europe. It is now considered that metalworking was a normal feature of life at the settlement carried on there intermittently for several centuries as there is evidence for both bronze and iron-working at the settlement in all three phases. The objects being manufactured were prestige items — bronze castings for chariots and for the harness of the pairs of ponies that drew them, comprising bridle-bit components, terrets, terminals of linch-pins, strap-unions and button-and-loop fasteners. The manufacture of such prestige items within the settlement need not necessarily confer comparable status on the inhabitants. It has already been noted that the objects were mainly for distribution rather than domestic use. However, the elaborate embanked entrance to the enclosure with a strong timber gateway just wide enough for a chariot may be indicative of an assured position in the social order for a member or members of the community.

Doubts also exist concerning the frequency with which such foundries were established within settlements. Dr Spratling has advanced arguments which conclude that the bulk of foundry debris from settlements does not normally survive to the present day but is destroyed by trampling and weathering processes. Discoveries of large quantities of metallurgical debris such as that from pit 209 at Gussage are likely to remain exceptional on this account but this need not indicate that the establishment of foundries was not more widespread than is at present supposed. The community at Gussage included not only farmers but metallurgists — a diversified economic base which may not have been uncommon at this time. What remains to be shown is whether Gussage formed part of a regional

economic network in which different settlements specialised in different products. Developments towards further understanding of this concept can come only from extensive field-work to identify the other settlements in the network (*vide* Chapter XIII), supported by a planned series of excavations. Until this is achieved, that status of the Gussage settlement cannot be evaluated and this has important implications of a wider nature which revolve around whether it is academically preferable to concentrate resources on understanding one such economic system and the settlements within it, or to attempt Gussage type operations within separate economic systems across the country.

The chronology of the abandonment of the settlement is not easy to establish on traditional archaeological grounds as ceramic styles changed little in the rural Durotrigean settlements throughout the first century AD and only the presence of a samian sherd or a brooch is indicative of a post-conquest date. It did not survive the third quarter of the first century AD but the intensity of settlement in the immediate post-conquest period is impossible to ascertain. Events late in the history of the settlement — probably in the second quarter of the first century AD — are the construction of a substantial ring-ditch (310) with a strong timber gateway that protected timber structures huddled in its centre and the burial of a robust young male in pit 285 who had met a violent death. The ring-ditch appears to have been constructed to cope with a physical threat, (a similar enclosure is appended to the enclosure ditch of the Farley Mount enclosure near Winchester), it was later than all related pits and ditches, and had silted up rapidly and never been cleaned out. The young man had died violently and been buried with relative ceremony — with a pottery tankard and an iron buckle at his waist.

These events may be related to the advance of the Second Augustan Legion under their legate Vespasian across southern England and Durotrigean territory in AD 43/44. Archaeology has provided evidence for their passing — the war cemeteries at Maiden Castle and Spettisbury and the incomplete attempt at multi-vallation at Hod Hill. The small settlement at Tollard Royal (Wilts) was abandoned at this time (Wainwright 1968) and the economic life of the Gussage settlement also seems to have terminated.

It is in these contexts that we must view the status of the Gussage community which it may be unwise to assign to a lowly social order on account of the absence of prestige possessions in the archaeological record. To set against this one should bear in mind their stock-holdings and cereal harvests, the presence of bronze-smiths manufacturing prestige items, the creation of an imposing entrance to the settlement by virtue of the flanking earthworks and timber gateways — surely an indication of some status, and finally their need to convert the settlement into a stronghold in the troubled times of the mid first century AD, implying that there was something, or more probably in contemporary Celtic society *someone* to defend.

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Figure 3
Detailed Excavation Plan

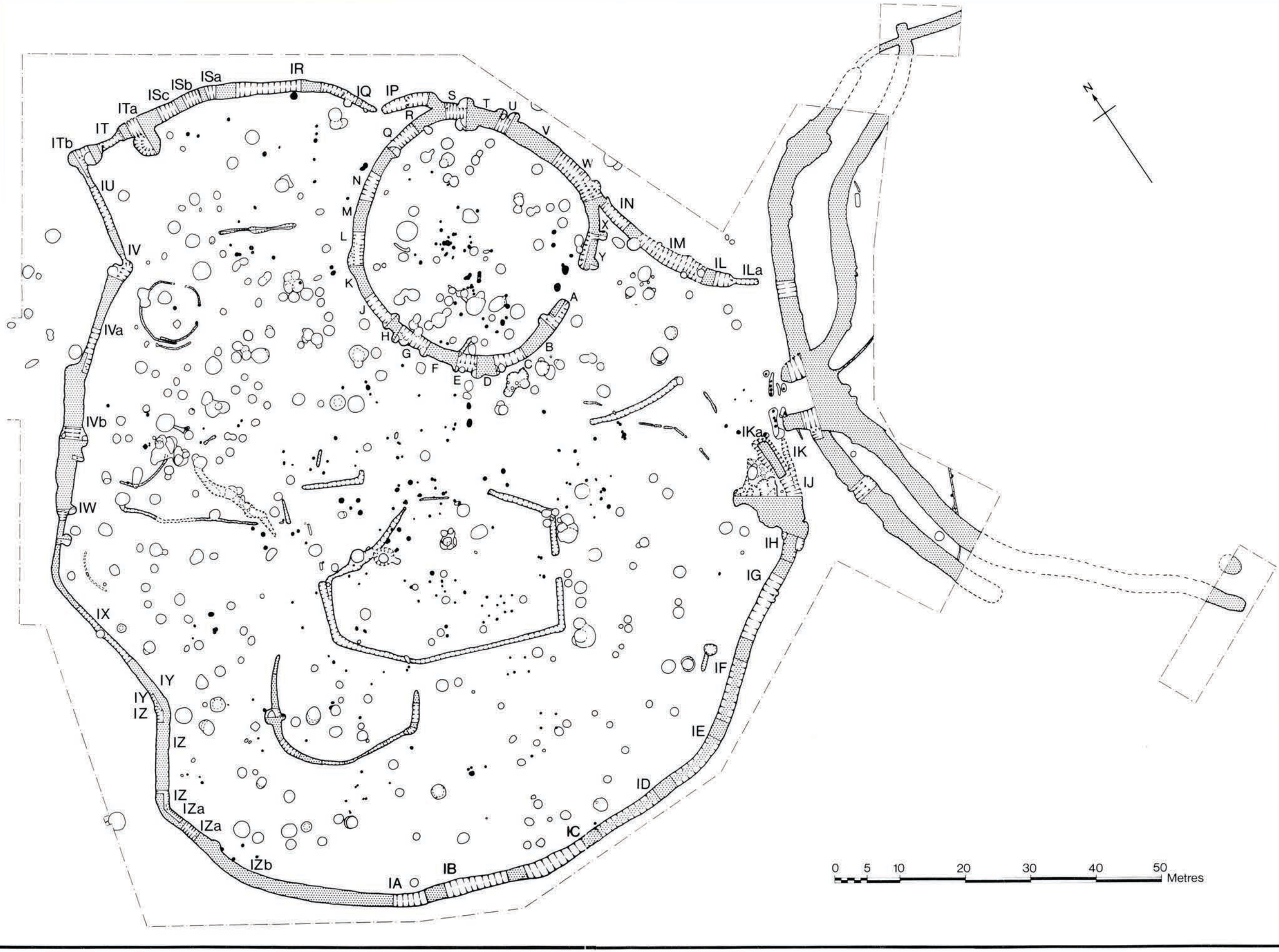

Figure 4 Plan of the Excavated Settlement

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